COLLABORATIVELY MOVING FORWARD:

EXPLORING STRATEGIES FOR THE SELECTION AND PRESERVATION OF IMMERSIVE MEDIA IN CULTURAL HERITAGE INSTITUTIONS

LIEVE BAETENS

SUPERVISORS
JOHAN OOMEN NISV
CAMILLE FRANCOISE NISV
GERDIE BORGHUIS RWA
EDWIN VAN DER VELDT RWA

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Abstract

The immersive media collections of cultural heritage institutions are expanding. Institutions see the cultural significance of collecting immersive works and look at how these immersive works can fit in their existing collection policies and selection criteria. Once the immersive works have entered the collection, the preservation of immersive media starts. Institutions collaborate with artists to gather as much information as possible in the, sometimes limited, time available based on workflows for software-based art. While the risks of immersive media becoming obsolete are amplified, the preservation of these works brings challenges. Institutions try to apply, yet again, existing preservation strategies to preserve the immersive works based on their institutional goals. Since technology is rapidly changing and multiple different technologies fall under the umbrella term immersive media, the preservation strategies for immersive media are often bespoke. Collaboration between institutions with similar preservation goals is recommended to create common guidelines for the preservation of immersive media.

Keywords: immersive media, selection, preservation

Prologue

This research was conducted as part of my internship at the Netherlands Institute for Sound and Vision (NISV). During my time as an intern, I was given the opportunity by NISV to explore the field of immersive media in cultural heritage institutions. Previous research sparked my interest in this topic, and I am therefore very happy that I was able to learn more about this emerging field. I am very grateful for all the people that have supported me and contributed to this research and would like to express my heartfelt gratitude to a few people in particular.

First and foremost, I want to deeply thank my supervisors Johan Oomen and Camille Françoise from NISV and Gerdie Borghuis and Edwin van der Veldt from the Reinwardt Academy. My supervisors provided me with their feedback, supported me and mentored me. Their guidance gave me the opportunity to learn and grow as a heritage professional.

Johan Oomen and Camille Françoise made me feel very welcome in their institution and were very kind in introducing me to their colleagues. From the start all the colleagues that I met at NISV showed their interest in my internship and expressed their willingness to help me. I am very thankful to Rasa Bočytė, Wytze Koppelman, Kiki Lennaerts, Amy Welten, Steffen Wright, and Tamara van Zwol in particular, for sharing their expertise, providing me with feedback and brainstorming with me.

I wish to acknowledge the contributions of all the institutions that provided this research with their interviews. I want to express my gratitude to Savannah Campbell, Candice Cranmer, Dragan Espenschied, Patricia Falcao, Wytze Koppelman, Kiki Lennaerts, Jack McConchie, David Neary, Cass Fino Radin, Claudia Roeck, Giulia Carla Rossi, Morgan Stricot, Amy Welten, and Gaby Wijers for making time in their busy schedules to collaborate and contribute to this research by sharing their expertise and insights in the conducted interviews.

I want to emphasize that this list is not exhaustive. During the past few months, I have had many encounters with people who all supported me. I had a wonderful time being an intern at NISV, because of all the gained experiences and people that I met. Thank you for making my internship so wonderful.

Table of contents

Introduction

Context

The Netherlands Institute for Sound & Vision (NISV) is an institution founded with the intention of archiving all of Dutch public broadcasting, but has since come to encompass more. The Institute showcases the Dutch media landscape, which is why NISV has one of the largest born-digital archives in the world.[1] The multi-year policy plan 2022-2026 “Iedereen mee in media” (Everyone joins in media) states, "NISV ensures that media of today are archived and preserved for the future."[2] They want to guarantee the accessibility of the collection in the longer term. NISV also states that it is important to preserve "new, ephemeral media" in time.[3]

Immersive media is a form of new and ephemeral media. Immersive media is described as “a set of related technologies that aim to extend our physical reality”.[4] Those technologies include Virtual Reality, Augmented Reality, Mixed Reality, 360 video, and real-time 3D software: “For Virtual Reality (VR), this means immersing a user in a virtual environment. For Augmented Reality (AR), this means integrating virtual elements with a physical environment. Together, VR, AR, and other related terms, are sometimes referred to using the umbrella term XR.”[5]

The rise of immersive media in cultural heritage institutions brings preservation issues for these institutions. Preserving immersive media is a new area where best practices are still evolving. NISV has a longer history of researching ways to best preserve immersive media.

For example, in 2013 Jesse de Vos (former product manager, NISV) researched how interactive video and computer games can be preserved. Furthermore, Jesse de Vos explains different methods for preserving interactives.[6] He recommends having preservation pilots in collaboration with other institutions to form new practices.[7] Four years later, in 2017 Candice Cranmer (time-based media conservator, ACMI) researched on behalf of NISV how NISV could preserve VR-works. The research of both Jesse de Vos and Candice Cranmer were the starting point of a preservation plan of NISV that is still being worked on for immersive media.[8] Then, in 2022, Kiki Lennaerts (new media preservation advisor, NISV)

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[1] Sound & Vision, ‘Geschiedenis’, https://sites.google.com/beeldengeluid.nl/bieb/over-bg/geschiedenis, accessed March 23, 2023.
[2] Sound & Vision, ‘Iedereen mee in media, Meerjarenbeleidsplan 2022-2026’ (Sound & Vision), 3, https://files.beeldengeluid.nl/pdf/Meerjarenbeleidsplan_2022-2026-Iedereen_mee_in_media.pdf, accessed March 23, 2023.
[3] Sound & Vision, ibid, p. 15.
[4] sasha arden e.a., ‘Preserving Immersive Media Knowledge Base’, https://pimkb.gitbook.io/pimkb/, accessed July 7, 2023.
[5] arden, e.a, ibid.
[6] Jesse de Vos, ‘Preserving Interactives: Preserving audio-visual materials in a post-broadcasting paradigm’ (Sound & Vision, May 2013), 35, https://publications.beeldengeluid.nl/pub/31/final-report-archiving-interactives-2013.pdf, accessed July 9, 2023.
[7] de Vos, ibid, 36.
[8] Candice Cranmer, ‘Preserving the emerging: virtual reality and 360-degree video, an internship research report’ (Beeld & Geluid, 2017), 4,

conducted research into documentation as a strategy for preserving immersive media. In this research, she describes that there are no international guidelines regarding the preservation of immersive media, forcing institutions to come up with their own strategies.[9]

NISV believes it is important that these strategies are shared so that institutions can build on the knowledge that is already available. Therefore, NISV partnered with the institution Tate to create the Preserving Immersive Media Knowledge Base (PIMKB). This website provides an environment for sharing information about preserving immersive media.[10] According to PIMKB, institutions need knowledge when determining preservation strategies for immersive media.[11]

NISV is currently working on making a policy for its own collection on how best to select and preserve these immersive media. Multiple cultural heritage institutions already have immersive media in their collection and are working on workflows. Therefore, NISV wants to investigate how institutions involved in the selection and preservation of immersive media approach this.

Relevance

Cultural heritage institutions are increasingly collecting immersive media. The preservation of immersive media presents challenges for cultural heritage institutions, as best practices are still being developed. In 2017 Savannah Campbell concluded that preservation workflows or best practices were not yet available for VR. She explained that collaboration "within the media archiving community" is necessary to form practices and standards.[12]

According to sasha arden there “is a growing field of study and practice” for the preservation of immersive media in cultural heritage institutions which can benefit from existing strategies for digital complex objects, but the “unique characteristics [of immersive media] lead to unique preservation needs”.[13]

Tom Ensom and Jack McConchie explained in their research that even though time-based media conservators are used to the difficulties of preserving technology-based artworks, for VR preservation the frequency of hardware failure, the rate of hardware change and the dependency of manufacturer-specific software is particularly severe.[14]

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https://web.archive.org/web/20210218115345/https:/publications.beeldengeluid.nl/pub/584, accessed July 9, 2023.

[9] Kiki Lennaerts, ‘Anticipating Obsolescence. Documentation as a strategy to preserve immersive media’, July 11, 2022, 2.

[10] arden e.a., ‘Preserving Immersive Media Knowledge Base’.

[11] arden, e.a, ibid.

[12] Savannah Campbell, ‘A Rift in Our Practices?: Toward Preserving Virtual Reality’ (Department of Cinema Studies New York University, mei 2017), 96, https://miap.hosting.nyu.edu/program/student_work/2017spring/17s_thesis_Campbell_y.pdf, accessed July 10, 2023.

[13] sasha arden, ‘Augmenting Our Approach to Preservation: Documentation of Experience for Immersive Media’ (Tate, June 2022), 1-2, https://www.tate.org.uk/documents/1793/Augmenting_Our_Approach_to_Preservation.pdf, accessed July 6, 2023.

[14] Tom Ensom and Jack McConchie, ‘Preserving Virtual Reality Artworks’, August 13 2021, 41, https://www.tate.org.uk/documents/54/tate_pim_preservingvrartworks_01_00.pdf, accessed by July 6, 2023.

It is necessary to form preservation strategies to prevent immersive media becoming obsolete. Candice Cranmer said in her research: “if institutions collect an array of new technology before they are ready to preserve in a proactive manner, loss of files and the integrity of the work may be compromised”.[15]

Kiki Lennaerts explains in her research that not only institutions, but also artists are important stakeholders for the preservation of immersive media. They have a "pivotal position" to document their works and the components that their work consists of. They are the ones who have the knowledge to understand the intent of the work. According to Kiki Lennaerts, institutions "occupy an assisting role by managing the documentation process" once they acquire or present the work.[16]

NISV wants to contribute to the creation of international guidelines by researching which strategies institutions currently apply. In her research, Kiki Lennaerts gives examples of strategies that can be used.[17] NISV now wants to know which strategies institutions apply and how they have incorporated this into their collection policies. Collection policies of institutions state what criteria they use to collect immersive media. These criteria show what type of immersive media (for example, virtual reality, augmented reality or mixed reality) institutions collect. Different types of immersive media require different preservation strategies. Gathering this information creates shared knowledge to eventually come up with international guidelines for a preservation policy.

Research questions

The main research question that is answered in this research is: What strategies are cultural heritage institutions using for the selection and preservation of immersive media?

To answer this question four sub-questions are formed:

1. What type of immersive media are institutions selecting and collecting?
2. Which criteria do institutions use for the selection of immersive media?
3. How are institutions collaborating with artists and makers of immersive media?
4. Which strategies are institutions using for the preservation of immersive media?

Methodology

The research questions are answered through qualitative research consisting of literature review and interviews. Qualitative research is chosen for gathering data because of the need to gain insight in current practices of cultural heritage institutions that are still being developed.

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[15] Candice Cranmer, ‘Preserving the emerging: virtual reality and 360-degree video, an internship research report’ (Beeld & Geluid, 2017), 14, https://web.archive.org/web/20210218115345/https:/publications.beeldengeluid.nl/pub/584, accessed July 6, 2023.
[16] Lennaerts, ‘Anticipating Obsolescence. Documentation as a strategy to preserve immersive media’, 16.
[17] Lennaerts, ibid, 7-8.

Through traditional literature review, what is already known about strategies for the selection and preservation of immersive media in cultural heritage institutions is examined. For this review a diverse set of literature was used, mostly consisting of academic research. The selection of literature consists of research that has been done by known researchers in the field of preserving immersive media.

Besides literature review, structured interviews were conducted to gather data. These structured interviews are the primary source of information in this research. The interviews were conducted with international institutions to gain insight into how advanced institutions are in terms of a preservation policy. These interviews provide the current status of how immersive media is selected and preserved in different types of cultural heritage institutions.

The selection of case studies was made by approaching multiple institutions and gaining inside in their collection and preservation policies of immersive media. Initially 20 institutions were approached to contribute to this research. Those institutions were chosen because of their known born-digital collections or their published research on immersive media.

The institutions that were approached were museums, archives, and libraries to give a broad perspective on how different types of institutions collect and preserve immersive media. The size and collection focus of the institutions differs to give a broad overview of perspectives and practices.

All institutions were asked the same questions. They were asked how they preserved their immersive media collection, if they already had a workflow or preservation policy for their immersive media collection, how they collaborate with artists surrounding an immersive media work and if they could share documents that were interesting for this research.

Fourteen institutions responded to the request and answered the questions. Four institutions couldn't contribute to this research because they had no immersive media in their collection yet. Two institutions couldn't participate due to a lack of time. The eight institutions that answered the questions and had immersive media in their collection were approached for an interview. With NISV counting, nine interviews were conducted for this research.

For each interview the same questionnaire was used. The questionnaire was tested in two mock interviews and adapted with feedback from multiple experts within NISV. All institutions received the questionnaire before the interview so there was time to prepare the questions. Since this research is focussed on both the selection and the preservation of immersive media it was important that the people that were interviewed had time to discuss the questions with their colleagues if necessary.

All the interviews were recorded and transcribed with the use of Sonix. All interviews were held in English due to the international character of this research. The transcriptions of the interviews are added in this research in the appendix. Therefore all interviewees were asked to approve the transcription.

Structure

In every chapter one sub-question is answered. Chapter 1 gives insight into what immersive media works institutions currently have in their collection. It also provides information about what staff is available within the institutions to select and preserve the immersive media works. Chapter 2 gives an overview of criteria used by institutions to collect immersive media. It shows how collecting immersive media fits in their collection policies. Chapter 3 explains how institutions are collaborating with artists. It provides information about strategies that institutions have when collaborating with artists and at what moments institutions collaborate with them. Chapter 4 gives insights into how institutions are currently dealing with the preservation of immersive media. It shows current approaches to preservation strategies for immersive media works. Chapter 5 provides a summary of the conclusions which can be drawn from the previous chapters. It also provides recommendations for future research.

Chapter 1 An introduction to immersive media within cultural heritage institutions

The first chapter of this research explains the different terminology mentioning immersive media works, how the term immersive media is used (or perhaps not used) by cultural heritage institutions, what immersive media works institutions have in their collections, and their human resources capacity for the immersive media in their collections. This chapter answers the sub-question: What type of immersive media are institutions selecting and collecting?

The term immersive media

When it comes to defining immersive media, multiple explanations are possible. What technologies can be experienced as 'immersive' can differ. Therefore different views of what can be seen as immersive technology are possible. The Preserving Immersive Media Knowledge Base (PIMKB) sees immersive media as extended reality (XR). XR is an "umbrella term" for virtual reality (VR), augmented reality (AR), 360 video or real-time 3D software.[18]

The cultural heritage institutions that contributed to this research were all asked how they define immersive media in their institution and what technologies can be viewed as immersive according to them. A similarity between the institutions is that most institutions do not actually use this term within the institution.

For most institutions the definition adopted by the PIMKB is common. But it remains difficult to categorize works into this definition. Kiki Lennaerts (advisor, The Netherlands Institute for Sound and Vision) said: "As the term is still expanding (...) we are having internal discussions into what we include as emerging/immersive."[19] Other technologies, or even analog works, can be viewed as immersive as well. Giulia Carla Rossi (curator digital publications, British Library) mentions that it is difficult within the British Library to talk about immersive media since with books "you just get in the story. And so that is immersive as well."[20] Therefore within the British Library the term emerging formats is used instead of immersive media.

Another reason why immersive is uncommon to use within institutions is that the collection of immersive works is simply too small to refer to this specific term. David Neary (time-based media conservator, Whitney) explains that within his institution, only a few works would qualify for this term. Therefore, referring to these works with an umbrella term has not been

[18] arden e.a., 'Preserving Immersive Media Knowledge Base'.
[19] Wytze Koppelman, Kiki Lennaerts, and Amy Welten, Conservator Culture & Entertainment, Advisor New Media Preservation and Media Manager at the Netherlands Institute for Sound and Vision interviewed by Lieve Baetens, Recording, May 26, 2023.
[20] Giulia Carla Rossi, Curator Digital Publications at the British Library interviewed by Lieve Baetens, Recording, June 2, 2023.

necessary to this day. David Neary adds that when more immersive works would come into the collection, the term immersive media will be considered for adoption.[21]

Terms that are more commonly used by institutions to categorize these works within their institution are for example: installations (HEK), emerging formats (the British Library), digital art (Whitney), time-based media (ACMI) and video art (ZKM). Savannah Campbell (time-based media conservator, Whitney) mentions that calling it new media isn't fitting, since the technologies used for immersive media have been around for "many decades at this point".[22]

Collections of immersive media within institutions

Even though immersive media might not be a common phrase within cultural heritage institutions, these institutions do have works within their collection that can be viewed as immersive media. The size of the collection holders that were interviewed differs.

The British Library has a large collection of emerging formats. In 2013, the British Library received a legal deposit for born-digital collections. Since 2017, the British Library has collected emerging formats. Currently the collection consists of around 200 emerging format works, 200 works from the New Media Writing Prize (a British prize for stories made with emerging formats) and around 10 to 12 interactive apps. Giulia Carla Rossi mentions that considering the size of the institution and its capacity with the legal deposit, the scope of their actions is quite small.[23]

The Australian Center for the Moving Image (ACMI) has around 400 time-based media works in their collection. Around 40 of those works could qualify as immersive. Since 2000, ACMI has been expanding their collection as it commissions works and then acquires them for the collection. A reason for collecting immersive media is that the institution felt the importance of offering a place where people could experience these works, according to Candice Cranmer (time-based media conservator, ACMI).[24]

Rhizome does not have an immersive media collection program but does distribute accessible 3D environments on the web that consists of multiple works. Rhizome is an institution without a physical building where works can be shown. Therefore, online accessibility is very important, says Dragan Espenschied (preservation director, Rhizome). Rhizome has had VR pieces in their collection as early as the nineties.[25]

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[21] David Neary and Savannah Campbell, Project Manager Media Preservation Team and Project Media Preservation Specialist at Whitney interviewed by Lieve Baetens, Teams, May 31, 2023.
[22] Neary and Campbell, ibid.
[23] Rossi, Curator Digital Publications at the British Library interviewed by Lieve Baetens.
More information about the New Media Writing Prize can be found on their website: New Media Writing Prize, 'Previous Shortlists & Winners',
https://newmediawritingprize.co.uk/archive/?prize-year=2021, accessed July 25, 2023.
[24] Candice Cranmer, Time-based media conservator at ACMI interviewed by Lieve Baetens, Teams, June 14, 2023.
[25] Dragan Espenschied, Preservation Director at Rhizome interviewed by Lieve Baetens, Teams, June 16, 2023.

LIMA has around 10 immersive works in the collection. The institution started presenting and collecting these works in the 90's. Gaby Wijers (director and founder, LIMA) mentions that not many works have been collected so far because it can be challenging to select and exhibit these works. She adds that making 360 videos is becoming less problematic, which means that she has high hopes for collecting these works in the future.[26]

The Center for Art and Media Karlsruhe (ZKM) has 5 works that could be qualified as immersive, and started collecting in 1989. The peculiarity of the ZKM collections is around how the institution participates in the creation of the works, by supporting artists with technical equipment during the creative process. They then collect the works that have been produced within ZKM. According to Morgan Stricot (media art conservator, ZKM), ZKM had the resources to provide artists with the right equipment for making immersive works early on.[27]

The collection of the Whitney Museum of American Arts (Whitney) consists of 27.000 works in total where 900 works are time-based media works. This time-based media collection is "insanely large" when compared to other collections, according to David Neary.[28] In this collection, only four works are qualified as immersive: one VR-work, two 360 videos and one AR-work. The first collected piece was made in 2016 and collected in 2017. In 2018, the Media Preservation Initiative started to preserve all these time-based media works.[29]

The House of Electronic Arts (HEK) has a VR-piece and two pieces with a game-engine where one is an installation. However, the installation doesn't feel immersive according to Claudia Roeck (time-based media conservator, HEK) even though it qualifies as immersive. The works are early examples of immersive artworks in Switzerland and were therefore collected.[30]

Both Tate and the Netherlands Institute for Sound and Vision (NISV) do not at this current stage have immersive media in their respective collections. Tate uses immersive media in exhibitions, but these works are not part of the collection. Tate is working on the Preserving Immersive Media project where "strategies for the preservation of artworks" are being developed.[31] NISV has not preserved immersive media in their collection so far. NISV has currently researched and is looking into preservation strategies that can be used for immersive media, since they expect to start collecting it soon. The institution has experience

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[26] Gaby Wijers, Director and founder LIMA interviewed by Lieve Baetens, Teams, June 5, 2023.
[27] Morgan Stricot, Media Art Conservator at ZKM interviewed by Lieve Baetens, Teams, June 22, 2023.
[28] Neary and Campbell, Project Manager Media Preservation Team and Project Media Preservation Specialist at Whitney interviewed by Lieve Baetens.
[29] Neary and Campbell, ibid.
The Media Preservation Initiative was a project to research conservation strategies for the time-based media collection of Whitney. More information about this project can be found on their website: Whitney Museum of American Art, 'Media Preservation Initiative (MPI)', https://whitney.org/conservation/mpi, accessed July 25, 2023.
[30] Claudia Roeck, Time-based media conservator at HEK interviewed by Lieve Baetens, Teams, 24 mei 2023.
[31] Tate, 'Preserving Immersive Media', https://www.tate.org.uk/about-us/projects/preserving-immersive-media, accessed July 3, 2023.

with collecting and archiving websites and games. As a partner of IDFA DocLab, in 2022 they attempted to archive an Instagram page with AR.[32]

Staff for immersive media

The staff and amount of staff for immersive media within the institutions differs. A similarity is that in each institution the staff is not dedicated to immersive media. Usually, a time-based media conservator is responsible for the immersive works, among other time-based media works, within the collection of an institution.

Most institutions have one or two time-based media conservators that work on the preservation of immersive media. They are supported by curators and technicians. Larger institutions such as the British Library, ZKM and NISV developed internal collaborations across other departments depending on their needs. For instance, they might request the research, curatorial, technical or archive departments. Those departments consist of, for example, archivists, researchers, and technicians.

Claudia Roeck mentions that internal collaboration is essential to the process of selecting and preserving immersive media in an institution. You need to have technical and digital expertise to preserve these works and time-based media conservators do not always have this specialized knowledge. She says: “because most of us are not software engineers or computer scientists, we need to collaborate with them. (...) But the problem is that you have to find people who want to deal with old code.”[33]

Conclusion

Even though the term immersive media is an uncommon term to use within cultural heritage institutions and multiple definitions are possible, most institutions agree with the definition of the PIMKB, which mentions that VR, AR, 360 video or real-time 3D software can be viewed as immersive. As the term is still expanding, not many institutions use this term to categorize works in their collection. Another aspect why this term is not commonly used is related to the reduced amount of collected works in some institutions, which limits generalizing the nomenclature for these works.

Among the institutions that contributed to this research, the collections vary from 40 works to 3 works. The British Library has, with a legal deposit, the biggest collection with more than 400 works. Tate and NISV have yet to collect these works. The amount of staff members who are responsible for immersive media works in their institutions vary. A similarity between the institutions is that none of the institutions have a staff particularly for immersive media. Most institutions have one or two time-based media conservators that collaborate with curators, technicians, researchers and archivists. Larger institutions have multiple departments that together work on the selection and preservation of immersive works.

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[32] Koppelman, Lennaerts, and Welten, Conservator Culture & Entertainment, Advisor New Media Preservation and Media Manager at the Netherlands Institute for Sound and Vision interviewed by Lieve Baetens.
[33] Claudia Roeck, Time-based media conservator at HEK interviewed by Lieve Baetens, Teams, May 24, 2023.

Therefore, collaboration is important and, if possible, collaboration with computer science- or digital experts is advised.

Chapter 2 The selection of immersive media in cultural heritage institutions

In this chapter, the motives of cultural heritage institutions behind the selection of immersive media are explained. This provides insights in how immersive media fits in the collection policies of cultural heritage institutions. The sub-question that is answered in this chapter is: Which criteria do institutions use for the selection of immersive media?

Type of collection strategies

Institutions find it relevant to represent immersive media within their collections. Kiki Lennaerts explains why it is important that institutions are collecting immersive media: "Immersive media as a media type is becoming increasingly important and is developing rapidly, in order to be able to track these developments in the future it is of great importance that they are collected and cared for."[34]

Although institutions find it relevant to collect immersive media it is noticeable that most institutions do not collect immersive works, because the works are immersive.[35] Most institutions have a collection policy that does not look at the medium of works. The medium of the work is not relevant, it is the concept of the work that makes it interesting to collect certain works.[36]

This means that when collecting immersive media, immersive works have to fit within the already existing collection policy of the institutions, including its existing selection criteria. Institutions then collect immersive media, for example, because of their interest in technology and/or digital art. Therefore, collecting immersive media fits in the role and mission of the institution.[37]

As most institutions do not specifically collect immersive media as a medium, there are no specific criteria used for the collecting of immersive media. The general selection criteria that institutions use apply.[38] For example, an important criteria for HEK is that the artworks they

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[34] Koppelman, Lennaerts, and Welten, Conservator Culture & Entertainment, Advisor New Media Preservation and Media Manager at the Netherlands Institute for Sound and Vision interviewed by Lieve Baetens.
[35] For example, Claudia Roeck says that in HEK "The immersivity is not a reason for its acquisition.": Roeck, Time-based media conservator at HEK interviewed by Lieve Baetens.
[36] Jack McConcie (time-based media conservator, Tate) explains that Tate “isn't looking at technology. It's looking at our concept." when collecting artworks.: Patrícia Falcão and Jack McConchie, Time-based media conservators at Tate interviewed by Lieve Baetens, Recording, May 31, 2023.
[37] For example, Claudia Roeck said: "The House of Electronic Arts is focused on technological artworks or electronic artworks. So, it's kind of natural to collect such artworks. It's just part of all different kinds of objects we acquire and collect.": Claudia Roeck, Time-based media conservator at HEK interviewed by Lieve Baetens, Teams, May 24, 2023.
Candice Cranmer adds that ACMI is interested "in specific technologies and how artists are using them" and therefore finds collecting immersive media "culturally significant": Cranmer, Time-based media conservator at ACMI interviewed by Lieve Baetens.
[38] Gaby Wijers says that there is "no distinction to medium" for the selection criteria used in LIMA.: Wijers, Director and founder LIMA interviewed by Lieve Baetens.

collect "use new technologies to discuss how we deal with technology through art".[39] Rhizome collects works because of artistic reasons and they have an unofficial condition that the works need to have a version that can be presented and exhibited by Rhizome.[40] If those general criteria apply to immersive media, then those works could be collected.

In this research, there is one exception. Whitney is the only institution that collects works by medium, because their collection strategy is to have a representation of digital art by different mediums. Whitney specifically collects immersive works, because it is immersive.[41] David Neary adds that it is still a condition that "it's good art, aside from the fact that it is also immersive (...) I'm sure there are institutions that do have this philosophy of collecting representative works and have collected some terrible works purely because they're representational of a certain technology."[42]

The British Library is the only institution in this research that has a non-print legal deposit which includes immersive media. Therefore, the British Library is legally required to collect all immersive works that fall under the legal deposit. While this legal framework brings support to cultural heritage institutions in helping them collect immersive media without sorting out intellectual property issues, it also brings its own challenges as the scope is a monumental task to achieve. Giulia Carla Rossi explains that this is especially challenging for 'interactive narratives', because these narratives are often made by individuals who can be more difficult to identify and locate.[43]

Conclusion

Cultural heritage institutions see the importance of collecting immersive media, however most institutions do not collect immersive works because of their immersivity. Most institutions do not collect by medium, but look at how the work fits within the mission of their institution.

The general criteria in the collection policy apply and if an immersive work happens to fit those criteria it is collected. Those general criteria look at the concept of the work, such as the artistic perspective or how technology is viewed in the work.

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[39] Roeck, Time-based media conservator at HEK interviewed by Lieve Baetens.
[40] Espenschied, Preservation Director at Rhizome interviewed by Lieve Baetens.
[41] According to Savannah Campbell, Christiane Paul (Curator Digital Art, Whitney) is "interested in the overall history of digital art and she wants anything representative of it. Basically anything that captures certain moments and technological developments, she wants all of that represented at the Whitney.": Neary and Campbell, Project Manager Media Preservation Team and Project Media Preservation Specialist at Whitney interviewed by Lieve Baetens.
In her book "Digital Art", Christiane Paul gives a reason why it is important that institutions collect digital art, according to her: "Digital art has made enormous developments since the early 1990s and there is no doubt that it is here to stay. The expansion of digital technologies and their impact on our lives and cultures will induce the creation of even more artworks that reflect and critically engage with this cultural phenomenon.": Christiane Paul, *Digital Art*, 3rd edition. (London: Thames & Hudson, 2015), 25.
[42] Neary and Campbell.
[43] Giulia Carla Rossi says: "It is very much a continuous exercise of making sure that we know there are more things out there and we are trying to reach them as much as we can.": Rossi, Curator Digital Publications at the British Library interviewed by Lieve Baetens.

There are two exceptions. Whitney does collect immersive works by medium in order to have a representative collection that shows the overall history of digital art and the developments in technology. The concept of the work still has to fit in the mission of the institution, meaning that it has to be good art. The British Library is the only institution in this research that has a legal deposit. With what the British Library calls ‘interactive narratives’ it is a challenge to know if the institution has collected everything since a lot of the artists are individuals that need to be tracked.

Chapter 3: Collaborating with artists

This chapter explains how the collaboration with artists' works, when the collaboration can happen and what institutions want to know from artists about the immersive works they have collected. ZKM has made an acquisition workflow for software-based artwork. In this workflow ZKM mentions three phases when institutions and artists can collaborate: pre-acquisition, during acquisition and post-acquisition.[44] This helps institutions gather all the information that is necessary to preserve the works. This chapter answers the sub-question: How are institutions collaborating with artists and makers of immersive media?

Pre-acquisition

Tom Ensom and Jack McConcie explain in their research the importance of gathering all the information of a VR-work during the acquisition process, that can be used for the preservation of a work.[45] Some institutions start gathering the information from the artist once the work has been acquired, other institutions prefer to collaborate with the artist before the work is acquired.

ZKM advises that, during the pre-acquisition phase, the first step is to gather information from the artist. This is basic information about the documentation, hardware and software of the work for example.[46] This step is important according to Morgan Stricot, because this can give an insight into how willing the artist is to cooperate with the institution. If an artist is difficult to collaborate with, the artist might not provide the information needed to preserve the work.[47] Claudia Roeck adds that before the acquisition, an artist is interested in collaborating with an institution, so during this time it is easier to ask for all the information. Once an institution has already paid the artists this can become more difficult.[48]

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[44] ZKM Werke Wiki, ‘Acquisition workflow (Software-based artworks)’, https://werke.zkm.de/wiki/index.php/Acquisition_workflow_(Software-based_artworks)#Post-Acquisition_marathon_(be_prepared_to_be_proactive), accessed July 16, 2023.

[45] Tom Ensom and Jack McConcie explain: “For real-time 3D VR artworks, the point of acquisition is the time to gather together materials and documentation that will serve to support the work's life in the collection.”: Tom Ensom en Jack McConchie, ‘Preserving Virtual Reality Artworks’, August 13, 2021, 41, https://www.tate.org.uk/documents/54/tate_pim_preservingvrartworks_01_00.pdf, accessed July 6, 2023.

[46] For more information see: ZKM Werke Wiki, ‘Acquisition workflow (Software-based artworks)’. ZKM suggest to send the artist the text “Best practices for conservation of media art from an artist’s perspective” by Rafael Lozano-Hemmer to show the artist what kind of information is useful: Rafael Lozano-Hemmer, ‘Best practices for conservation of media art from an artist’s perspective’, March 24, 2023, https://github.com/antimodular/Best-practices-for-conservation-of-media-art.

[47] Morgan Stricot explains: "This is part of my assessment now because when the artist is not answering, not giving information, it's also jeopardizing the whole acquisition process after. Because I can't have the information I need to preserve the work.": Stricot, Media Art Conservator at ZKM interviewed by Lieve Baetens.

[48] Claudia Roeck says: "Because the acquisition process is the time and the moment when I can ask for everything. Later, it is more difficult because then we already paid. So it's better to ask before you pay. And it's also the time and moment when artists are interested, when they remember.": Roeck, Time-based media conservator at HEK interviewed by Lieve Baetens.

The second step, according to ZKM, is to make an assessment of how the work needs to be preserved and decide if the institution could do this.[49] Morgan Stricot explains that the conservators in ZKM give their assessment to the curatorial team when an artwork might be acquired based on a technical assessment and an exhibition assessment. Since artworks are often already exhibited in ZKM before the works are acquired, the conservators and technical team know how the work needs to be maintained during the exhibition. Those assessments combined make an advice for the curatorial staff about the investment of time, money and energy for the institution when acquiring a work. Eventually the decision to acquire a work is an equilibrium between the assessment of the preservation team and the conceptually wishes of the curatorial team according to Morgan Stricot.[50]

ACMI takes the collaboration with artists pre-acquisition one step further. Since ACMI commissions a lot of works the conservators can be present during the time when the work is being made. Candice Cranmer explains: "I can sit in production meetings and see how the work's going to be made with what materials, what rights we might need to consider, if there's any ethical issues or challenges that might come up with the work".[51]

Acquisition

According to ZKM the phase after a work has just been acquired is meant "to complete the documentation to have enough information to setup and maintain the artwork by yourself and gather every pieces of software and hardware to store it in your institution in order to preserve the artwork in the near future (with software-based we cannot make long-term plans)."[52] To do this, artist interviews are conducted.

Most institutions use questionnaires in this phase to gather all the information from artists. The questionnaires shared on the Preserving Immersive Media Knowledge Base are specifically made for immersive media.[53] Jack McConcie explains that there are technical questions and conceptual questions about the artwork that you want to ask. He adds: "But crucially (...), you're trying to understand that relationship. Therefore, every kind of case is a little bit different because that entanglement is not always clear."[54]

The technical questions are, for example, about what software and hardware are used, how the work is displayed and of what components the work consists of.[55] This is similar to questionnaires used for installations or digital art. Jack McConchie and Tom Ensom found in their research that, for example, real-time 3D VR could benefit from existing workflows for the acquisition of software-based art while 360 videos could benefit from acquisition workflows of digital video.[56] According to Savannah Campbell it is specifically important for

[49] According to ZKM the question is: "Is it doable to show this artwork in the next 3 to 10 years in my institution in terms of obsolescence, manpower, costs, knowledge etc.)?": ZKM Werke Wiki, 'Acquisition workflow (Software-based artworks)'.
[50] Stricot, Media Art Conservator at ZKM interviewed by Lieve Baetens.
[51] Cranmer, Time-based media conservator at ACMI interviewed by Lieve Baetens.
[52] ZKM Werke Wiki, 'Acquisition workflow (Software-based artworks)'.
[53] Samantha Rowe e.a., 'Documentation', Preserving Immersive Media Knowledge Base, https://pimkb.gitbook.io/pimkb/acquisition-resources/documentation, accessed July 16, 2023.
[54] Falcão and McConchie, Time-based media conservators at Tate interviewed by Lieve Baetens.
[55] Savannah Campbell and Mark Hellar, 'Virtual Reality Artwork Acquisition Template', March 2019, https://pimkb.gitbook.io/pimkb/acquisition-resources/documentation, accessed July 17, 2023.
[56] Ensom and McConchie, 'Preserving Virtual Reality Artworks', 52.

immersive media to document what kind of game engine is used and if the artist used 3D-modeling in their work.[57]

Some institutions ask the artist to fill in the questionnaire themselves. Most institutions use the questionnaires in an artist interview. Morgan Stricot explains that she prefers to speak to the artist in person then have them fill in a written questionnaire. When the artists were asked to write down their answers, she noticed that the answers were often incomplete and it took a long time before ZKM received the written forms from the artists. She now invites the artists to come to ZKM to have multiple meetings about the artwork to gather all the information.[58] They will dismantle and build the work together while they talk about the work. She says: "It's important to have the experience of building it with them, because sometimes they had some information that they didn't thought of or we didn't thought to ask."[59]

Claudia Roeck also prefers to speak to the artist in person. She explains that it is important to talk about the concept of the artwork with the artist: "Because that can be very helpful for preservation. If you need to change a lot, then you know what the basic idea of the artwork is so that you do not compromise that."[60] But she adds that there is not always enough time to talk about the concept of the artwork. Therefore, even though understanding the concept of the artwork is very important, the artist interview will often only focus on the technical parts.[61]

Dragan Espenschied explains that institutions have to be realistic about what information is important to know and what is doable in the time they have. He prefers the ‘iterative approach’ where he thinks about how the work can be presented and preserved and then asks the artist what they think about the suggested approach. This approach is less time consuming.[62]

Post-acquisition

It is common that institutions only collaborate with artists during the period when the immersive work has just been acquired. However, there are moments after the acquisition of a work when the artist could be approached with questions. First, artists can be approached when a work is about to be displayed or exhibited after time has passed since the acquisition. Gaby Wijers mentions that it is something that institutions and artists often already talk about in the artist interview, to discuss how the artists "see the presentation of

[57] Neary and Campbell, Project Manager Media Preservation Team and Project Media Preservation Specialist at Whitney interviewed by Lieve Baetens.
[58] Morgan Stricot says: "The transfer of knowledge is better if it's made in real life, in front of the work and with multiple meetings. Like multiple times of setting up the work together, confronting ourselves to new exhibition conditions and making decisions together.": Stricot, Media Art Conservator at ZKM interviewed by Lieve Baetens.
[59] Stricot, ibid.
[60] Roeck, Time-based media conservator at HEK interviewed by Lieve Baetens.
[61] Roeck, ibid.
[62] Dragan Espenschied says: "I think many conservators are beating themselves up and are setting completely unrealistic goals for themselves. For instance, I once heard that conservatives were putting the virtual reality goggles and all the equipment on the scale and noting down what the weight of these things was. So that in the future this experience could be reproduced.(...) Let's say in the future you would have really comfortable goggles and they would give you a super nice image. Would you then actually put half a kilogram of things on the audience for the experience? I don't think so.": Dragan Espenschied, Preservation Director at Rhizome interviewed by Lieve Baetens, Teams, June 16, 2023.

their work in the future".[63] Candice Cranmer agrees with Gaby Wijers saying that during the artist interview "you can map out some of the parameters for acceptable change in the work and some of the parameters for redisplay of the work."[64]

Even though it is already discussed during the artist interview, it can still be helpful to ask the artist if he agrees with the approach of the institution to display the work.[65] Candice Cranmer says that this is important, because artists can change their minds after a while about how they want their work to be presented.[66] Jack McConchie recognizes this, because "artists who are working with technology quite often like to revise their artworks". When an artwork is redisplayed again, this is an important moment to engage with the artist about whether the artist would like to revise the work.[67]

Another moment when artists can be approached again is if there are changes in the preservation of the works that have an impact on the work. Candice Cranmer explains: "We'd go back to them when we're ever unsure about our next moves or if we thought a preservation strategy might severely change the work."[68] Morgan Stricot adds that you cannot always foresee preservation issues when a work has just been acquired.[69] An example of this is when a feature of the artwork is no longer working with a new display. In that case, Morgan Stricot contacts the artist to explain what she thinks would be a solution for the problem and asks the artist what they think the best solution would be.[70] Jack McConcie adds that it can be difficult for artists to think about how their work is "going to exist in the future" and therefore answering questions about how they want the work to be preserved can be new to them.[71]

Morgan Stricot mentions that it depends on the artist if they are involved after the work has been acquired. It is important to keep in mind that asking for the time of the artist is not always something that artists are interested in. Morgan Stricot says: "Some of them ask to be involved. Some of them don't want to be involved. Like it's yours now, you take care of it.

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[63] Wijers, Director and founder LIMA interviewed by Lieve Baetens.
[64] Cranmer, Time-based media conservator at ACMI interviewed by Lieve Baetens.
[65] David Neary says: "We will always check in with an artist before an installation to make sure that they are at least happy, or to whatever degree is necessary to sign off on the installation.": David Neary and Savannah Campbell, Project Manager Media Preservation Team and Project Media Preservation Specialist at Whitney interviewed by Lieve Baetens, Teams, May 31, 2023.
[66] Candice Cranmer says: "Things do change. People do change their minds. And I think the interview probably allows you to see where people stand, even if they don't say it out loud, sometimes gestures can mean everything. If they're thinking about it, then maybe over the years things have shifted and they suddenly would think that that was the coolest thing ever. Or it's only been seen once at ACMI and so many people want to see it now.": Cranmer, Time-based media conservator at ACMI interviewed by Lieve Baetens.
[67] Falcão and McConchie, Time-based media conservators at Tate interviewed by Lieve Baetens.
[68] Cranmer, Time-based media conservator at ACMI interviewed by Lieve Baetens.
[69] Morgan Stricot says: "We can be proactive, we can have spares, we can have backups, but there are some technological discontinuities or technological breaks in the history of technology that we are never ready for.": Stricot, Media Art Conservator at ZKM interviewed by Lieve Baetens.
[70] Stricot, ibid.
[71] Jack McConchie says: "Some have really considered the way that technology will change and the way that that will influence the artwork and some don't. So you also have to be aware that for some artists, this idea of the museum thinking about the work on an extended timeline, might be new to them.": Falcão and McConchie, Time-based media conservators at Tate interviewed by Lieve Baetens.

So, this is also something I'm writing in my documentation. Like, don't bother, the artist is not interested."[72]

While it is helpful to be in contact with the artist after the work is acquired, this is not always doable for institutions, because limited means are available. With a couple of works in the collection it is possible for institutions to collaborate with artists a lot, but when more immersive works are being collected by institutions, extensively collaborating with artists becomes more difficult. Since it is very time consuming for institutions to collaborate with artists extensively, the question is what a standardized strategy for collaboration with artists will look like in the future. This strategy might need to take the amount of time that institutions can spend with the artists into account.

Intellectual property rights

Most institutions do not have a legal deposit for collecting immersive media. Therefore, institutions have to make agreements about the intellectual property with each individual artist when acquiring artworks. It costs time for institutions to make agreements with all the individual right holders of the works. When asked if the rights can be a limit to the preservation, Wytze Koppelman (conservator culture & entertainment, NISV) explains that it "limits your possibilities to a certain extent. On the other hand, working together with a rights holder can also give you an extra source of information about a work."[73]

When making an agreement, institutions find it important that the intellectual property remains with the artist. Candice Cranmer says that it is embedded into the contracts of ACMI that the intellectual property remains with the artists: "So their ideas remain their ideas."[74] Wytze Koppelman adds that it is even stated in Dutch law that the copyright always remains with the artist.[75]

Agreements that institutions make in contracts can depend on what the institution finds important. Whitney, for example, finds it important to have the rights to make a copy of the work for preservation purposes and use the work on their social media. If this is not possible, they would not acquire the work in general.[76]

ACMI and Tate both make agreements on what part of the work is owned by the institution. Jack McConchie explains that they discuss with the artist "whether [the work is] an addition, whether there's aspects of the artwork that lives outside of the artwork".[77] This is similar to the approach of ACMI. ACMI negotiates "owning an edition of the work" and "what that looks like if artists want their work to also be made open access". In that scenario ACMI can

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[72] Stricot, Media Art Conservator at ZKM interviewed by Lieve Baetens.
[73] Koppelman, Lennaerts, and Welten, Conservator Culture & Entertainment, Advisor New Media Preservation and Media Manager at the Netherlands Institute for Sound and Vision interviewed by Lieve Baetens.
[74] Cranmer, Time-based media conservator at ACMI interviewed by Lieve Baetens.
[75] Koppelman, Lennaerts, and Welten, Conservator Culture & Entertainment, Advisor New Media Preservation and Media Manager at the Netherlands Institute for Sound and Vision interviewed by Lieve Baetens.
[76] Neary and Campbell, Project Manager Media Preservation Team and Project Media Preservation Specialist at Whitney interviewed by Lieve Baetens.
[77] Falcão and McConchie, Time-based media conservators at Tate interviewed by Lieve Baetens.

negotiate an exclusivity clause to exclusively show the work for a period of time when they commissioned the work.[78]

ZKM negotiates, just as ACMI, with the artist that they own a version of the work. Artists are allowed to make duplicates or enhanced versions of their work. Morgan Stricot explains that artists know when making a new version that "an older version of the artwork is somewhere as a witness of the development of their own artworks."[79]

ZKM also negotiates access to the source code of the works when the artist made the software. This is needed for the preservation of the work, but not easy for the artist. Morgan Stricot explains: "With time we understood that it was very hard for the artists to give us the source code, because it's very private."[80] In the contract it is added that the source code is stored on a secured server and no aesthetical or behavioral changes are being made to the software. ZKM only uses it for a new computer environment if necessary to preserve the work.[81]

For the intellectual property rights institutions usually have a generic legal contract or agreement that can be adapted for each case if that is necessary. Even though there are generic legal contracts, immersive works often need a case-by-case approach. Claudia Roeck explains that, for example, for the work Zone*Interdite in the collection of HEK the artist "used open source game engines so there was no need to buy the software rights."[82] But to show the work they are dependent on Windows as the operating system, which means that in this case they needed to buy a license.[83]

Most institutions do not acquire the software rights. Dragan Espenschied explains that it is very difficult for institutions to acquire all the rights that were used in the making of a work. He says: "Because what an artist may hand over to you, as an artwork of what they created or what they put their hands on and have the creator's rights over, is like 1% of the things you need to make this work." Therefore "you don't come to the bottom of it (...) if you would clear the copyright of every single thing".[84]

Dragan Espenschied worries about the licensing issues that a lot of institutions have. For a lot of software, you need online accounts to have access to the software. Sometimes multiple accounts are needed for one work. That brings preservation risks with it, explains Dragan Espenschied: "If this company that provides this license stops to exist and the license server goes down, then they take their intellectual property with them into their grave. And leave the collecting institutions on the other end to suffer."[85] In the United States of America it is legal to use crackers for the software of the work to remove those mechanisms, but that is not yet legal in the European Union. That needs to change to preserve these works according to Dragan Espenschied.[86]

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[78] Cranmer, Time-based media conservator at ACMI interviewed by Lieve Baetens.
[79] Stricot, Media Art Conservator at ZKM interviewed by Lieve Baetens.
[80] Stricot, ibid.
[81] Stricot, ibid.
[82] Roeck, Time-based media conservator at HEK interviewed by Lieve Baetens.
[83] Roeck, ibid.
[84] Espenschied, Preservation Director at Rhizome interviewed by Lieve Baetens.
[85] Espenschied.
[86] Espenschied.

Conclusion

ZKM has made an acquisition workflow for software-based artwork and it appears that immersive media can benefit from this existing workflow. According to the workflow of ZKM, there are multiple occasions when institutions and artists can collaborate to provide the best way in which a work can be collected and preserved.

Before acquiring the work, institutions can gather as much information and documentation as possible from the artist. This is important, because this is the moment when the artist is interested, and institutions are able to ask for all the information. When reviewing this information, it can provide insights in how the work should be preserved and how the institution is capable of preserving the work.

The next step in collaborating with artists is to ask the artist questions that institutions have after reviewing all the initial information they received. Often institutions use questionnaires. Some institutions send the questionnaires to the artists and ask them to fill it in. The downside of this is that the answers that artists give can be incomplete. Therefore, most institutions choose to have in-person interviews with the artists. The in-person interviews are time-consuming. Therefore, sometimes the interview only focuses on the technical parts of the work and not the conceptual idea of the artwork. Preferably, institutions can dismantle and rebuild the work together with the artist and have multiple meetings to document all the information necessary.

After the work is acquired, some institutions choose to contact the artists again when the work is being displayed again or if there are preservation changes to the work. In the artist interviews artists are already asked what they find acceptable for displaying and preserving their work, but when time passes artists can change their minds or unforeseeable changes can happen. In those moments institutions can contact artists to explain what they want to do and ask what the artist thinks and if they agree with the approach. Not all artists are interested in being contacted again, so institutions can ask during the artist interviews if the artist would want to be approached in the future for these situations.

In the best case scenario, institutions start collaborating with artists before the acquisition, then have multiple in-person interviews when the work is acquired and in the future approach the artists when the institution wants to present the works or wants to discuss preservation changes. However, this approach is very time consuming and therefore not realistic for some institutions. With a couple of works in the collection, institutions try to collaborate as much as possible with artists, but with growing immersive media collections the question is whether extensively collaborating with artists would be doable for institutions.

Institutions need to take intellectual property into account when collecting immersive media. Institutions without a legal deposit often have a generic contract, but even with a generic contract collecting immersive media is often still a case-by-case approach. This means that it is time consuming, and therefore costly, for institutions without a legal deposit, to make individual agreements with the artists. Since the intellectual property remains with the artists, institutions have to negotiate the rights to duplicate the work for preservation purposes, for dissemination and to provide access to the works.

Institutions have to make agreements with artists about what version of the work institutions own and what they can do with that version. When institutions have the rights to own a version of the work, artists can still make duplicates, enhanced versions of the work or open access versions. The institution can receive permission to use the work for their social media and discuss with the artist how the source code is used. The source code is very private for the artist and therefore it is important to make agreements on how the source code is stored and that there will be no aesthetical or behavioral changes being made.

A challenge with the intellectual property of immersive media is that often there are a lot of parts made by third parties. To access the software of immersive works, institutions need to have licenses and multiple accounts. It is difficult and very time consuming for cultural heritage institutions to clear all the copyrights of the software made by third parties. Therefore, institutions often do not make agreements with software institutions about the copyright of the software of an immersive work. Another problem is that when the companies who own the software go out of business or no longer support the older software, institutions lose access to the software which causes big preservation issues. In the United States of America, it is legal to remove those mechanisms by using crackers, but this is not legal yet in the European Union.

Chapter 4: Strategies for the preservation of immersive media

After the work has been collected and all the information is gathered from the artist, the institution can start preserving the work. This chapter dives into the current institutional strategies. It discusses how professionals approach preservation policies and their hopes for developing these policies around immersive media. Based on the interviews, the research highlights that the preservation of immersive works is defined by the goals and missions of each institution. However, despite their institution's goals, preserving immersive works is a challenge due to the rapid changing technologies, and the multiple technologies immersive media consists of. This chapter answers the sub-question: Which strategies are institutions using for the preservation of immersive media?

Preservation risks

As mentioned in the introduction, there are three main preservation risks for preserving VR: the frequency of hardware failure, the rate of hardware change and the dependency of manufacturer-specific software.[87] Institutions are concerned about these risks when collecting immersive media. For example, Patricia Falcao (time-based media conservator, Tate) explains that if Tate were to collect immersive media, she would be worried about the dependency on the headset. After all, Tate is not a technology institution.[88] While technology is rapidly advancing, the sale of commercial hardware is relatively short before a new edition is brought to the market. The availability of an older device decreases, making it become obsolete.[89]

The dependency on software, specifically the subscription-based software, is a bigger concern than with software-based art. Jack McConchie explains that in the past, the institution often owned the software, such as with a video file. If you own the software, the software and the work become easier to maintain. With software used for immersive media, you often need a subscription to use and access the software. The company owning the software will update it and earlier versions of the software will deprecate and therefore become obsolete.[90] Besides preservation risks, this also brings ethical issues for institutions. For an Oculus account, users need to have a Meta account. David Neary explains that Whitney is concerned with their online security, so they needed to make a strategy for this. They created a dummy Meta account to access the Oculus.[91]

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[87] Ensom and McConchie, ‘Preserving Virtual Reality Artworks’, 52-53.
[88] Falcão and McConchie, Time-based media conservators at Tate interviewed by Lieve Baetens.
[89] Olivia Brum e.a., ‘A Practical Research into Preservation Strategies for VR artworks on the basis of Justin Zijlstra’s 100 Jaar Vrouwenkiesrecht In the collection of Atria Kennisinstituut voor Emancipatie en Vrouwengeschiedenis’ (Netwerk Digitaal Erfgoed, November 1 2021), 19, https://www.li-ma.nl/lima/sites/default/files/Rapport_A-Practical-Research-into-Preservation-Strategies-for-VR-artworks-on-the-basis-of-Justin-Zijlstras-100-Jaar-Vrouwenkiesrecht.pdf, accessed July 19, 2023.
[90] Falcão and McConchie, Time-based media conservators at Tate interviewed by Lieve Baetens.
[91] Neary and Campbell, Project Manager Media Preservation Team and Project Media Preservation Specialist at Whitney interviewed by Lieve Baetens.

Current strategies for preserving immersive media

With these risks in mind, there are multiple strategies to preserve immersive works. First, institutions try to use existing preservation strategies in their institutions for immersive media. Candice Cranmers mentions that it is helpful to see if currently existing strategies can operate for immersive works as well.[92] For their research paper "Preserving Virtual Reality Artworks", Jack McConchie and Tom Ensom looked at existing preservation strategies that could apply to VR, such as hardware stockpiling, hardware migration, emulation, and code migration. They concluded that for VR, code migration and stockpiling hardware are unlikely to be very useful as a preservation strategy. Hardware migration is an option but one of the downsides is that characteristics of the work could change.[93] The British Library conducted research into how the webcrawler Heritrix of the UK Web Archive could capture the interactive narratives they wanted to collect. They found that in combination with web recording this strategy can work for the British Library.[94]

Institutions have different approaches, aligning with their missions and goals, when it comes to selecting preservation strategies for their works. Claudia Roeck explains that selecting a preservation strategy for a work in HEK heavily depends on the gathered or given materials and information about the artwork and is therefore a case-by-case approach. The approach taken relies more on external factors, like what is available. This can limit institutions' options. The software of the work "Zone*Interdite" from HEK was deprecated and no longer being developed so emulation or using a virtual machine was the only way possible to preserve the work. With the work "We were looking for ourselves in each other" the artist did not have the project anymore because she didn't know that the project was important for the preservation. For that work documentation was the only possibility, explains Claudia Roeck.[95] As documentation a 360 video was made.[96]

Candice Cranmer explains as well that the preservation strategies for immersive media within ACMI are bespoke. The strategy of ACMI is to look into "freeing digital files from their original hardware and software environments and putting them in a preservation storage system".[97] This strategy needs in depth research to identify how the work can "be used outside of the original hardware", for example, and if emulation is possible. With emulation, there is a possibility that the work will look slightly different and ACMI needs to engage with the artist to consider if the potential changes are worth it to still access the work.[98]

In contrast, the goal of ZKM is to "maintain the artworks in their historical environment" as long as possible, because ZKM has a media archeological approach, and it focuses on displaying historial technologies through their evolutions.[99] This strategy indicates that ZKM

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[92] She says: "I guess we're looking at best practice from what we know in digital preservation and trying to apply that to new formats and trying to use systems.": Cranmer, Time-based media conservator at ACMI interviewed by Lieve Baetens.
[93] Ensom and McConchie, ‘Preserving Virtual Reality Artworks’, 52-53.
[94] Rossi, Curator Digital Publications at the British Library interviewed by Lieve Baetens.
[95] Roeck, Time-based media conservator at HEK interviewed by Lieve Baetens.
[96] HEK made a report about how the 360 video was made: Claudia Roeck en Tim Marti, ‘Capturing a VR-executable as a 360-degree video: A test report.’ (House of Electronic Arts, August 26 2021), accessed July 18, 2023.
[97] Cranmer, Time-based media conservator at ACMI interviewed by Lieve Baetens.
[98] Cranmer, ibid.
[99] Stricot, Media Art Conservator at ZKM interviewed by Lieve Baetens.

tries to preserve the works within their original hardware environment while using hardware stockpiling for keeping spares. Similarly, ZKM professionals make back-ups and imaging processing to safeguard softwares. For the future, Morgan Stricot explains that they are working on migration as one cannot just focus on the preservation of the hardware or the preservation of the software since "they are both one entity working together".[100] For example with VR, the software and the VR-glasses are related to each other, and you cannot just show the software on another pair of glasses. The relationship between the software and the hardware should be documented.[101]

The interviewed institutions agree that documentation is very important for the preservation of immersive media. Kiki Lennaerts states in her research "Anticipating obsolescence" that documentation can capture the interpretation of an artwork. Therefore, the captured "vividity of the immersive media" will remain in the documentation after the work becomes obsolete.[102] Patricia Falcao explains that not just institutions should document the works, artists should also document their works.[103] Morgan Stricot adds that it would be very beneficial if students from art schools also learn how they could best document their immersive works so the preservation of immersive media becomes a collaborative responsibility.[104]

Besides these strategies, Gaby Wijers emphasizes the importance of collaboration and exchanging knowledge. She explains that within LIMA, whenever they are not sure what the best way is to preserve the work, they invite experts, colleagues, and artists to look at the preservation proposal LIMA made and provide feedback.[105] The institutions agree that working with specialists for the preservation of immersive media is important. With hardware and software, the knowledge needed can be very specialistic and therefore it can be necessary (if possible) to outsource these challenges to specialists.

Next steps for a preservation policy

Jenny Mitcham from DPC wrote in an article that when talking about best practices in digital preservation, the current practices that are seen as best practices still bring challenges when preserving. Even with 'best practices' there is not a one-size-fits-all approach, which means that talking about 'good practices', or even 'good enough practices' instead of 'best practices' might be more fitting. Jenny Mitcham concludes that "Rather than fixating on best practices, it is better that organizations with digital preservation challenges just try to get started with doing something. Taking (even small) steps in the right direction is something we encourage, rather than waiting for everything to be perfect before moving forward."[106]

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[100] Stricot, Media Art Conservator at ZKM interviewed by Lieve Baetens.
[101] Stricot, ibid.
[102] Kiki Lennaerts, ‘Anticipating Obsolescence. Documentation as a strategy to preserve immersive media’, July 11, 2022, 50.
[103] Falcão and McConchie, Time-based media conservators at Tate interviewed by Lieve Baetens.
[104] Stricot, Media Art Conservator at ZKM interviewed by Lieve Baetens.
[105] Wijers, Director and founder LIMA interviewed by Lieve Baetens.
[106] Jenny Mitcham, ‘When is “good” better than “best”? In support of digital preservation good practice’, Digital Preservation Coalition, April 18, 2023, https://www.dpconline.org/blog/when-is-good-better-than-best-in-support-of-digital-preservation-good-practice, accessed August 2, 2023.

Savannah Campbell explains that because technologies are frequently changing, best practices have not been established yet.[107] The strategies that institutions are applying are bespoke, however institutions do have strategies for preserving immersive works that are working and therefore might be viewed as good practices.

When forming a preservation policy, a next step would be to find ways to see if the preservation of immersive works can be less bespoke. This comes with great challenges. Morgan Stricot explains that the intricacy of the preservation of immersive media is particularly complex as there are multiple technologies that are forming the immersive media works. Each of these immersive works require "different strategies [to respond to] with different problematics."[108]

This means that making a preservation policy that would fit all immersive works might not be realistic. However, looking at similarities between the preservation approaches of institutions and building a framework of good practices that could work for these institutions might be helpful. This starts with differentiating the preservation goals of institutions and finding similarities. Dragan Espenschied explains that he recognizes two different preservation goals in institutions. The goal of an institution could be to have a historical collection of works to show the audience how technologies have developed over the years. That means that people get to experience how the work was in (if possible) its original state. According to Dragan Espenschied institutions with this approach have "to show [the audience] why people were so excited" about a work when it was just made.[109] In this scenario, preservation strategies can be chosen that do not change the work and keep the work accessible in their original state for as long as possible.

Another goal can be to show the audience the newest technical possibilities of an immersive work. According to Dragan Espenschied "A lot of the attractiveness for many of [immersive] works come from the fact that there's something experimental, something that hasn't been done before".[110] After a while technology evolves and the initial feeling of the experimental effect fades.[111] When that happens institutions and artists can choose to rebuild the work, so it uses the newest technology again. This requires different preservation strategies than when institutions want to keep works in their original state.

After the preservation goals are established, institutions can collectively gather the strategies that fit these goals. Institutions agree that a preservation policy should contain multiple topics. First, the preservation policy should contain strategies for the technological preservation of both the hardware and software. Interviewees mention that current

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[107] David Neary and Savannah Campbell, Project Manager Media Preservation Team and Project Media Preservation Specialist at Whitney interviewed by Lieve Baetens, Teams, May 31, 2023.
[108] Stricot, Media Art Conservator at ZKM interviewed by Lieve Baetens.
[109] Espenschied, Preservation Director at Rhizome interviewed by Lieve Baetens.
[110] Espenschied, ibid.
[111] sasha arden explains this phenomenon in their research as the socio-technical context. An artist uses cutting-edge technology which makes the work feel groundbreaking. It shows "how the artist values that technology, but how the message lands, and is interpreted, can change over time". As time passes people can still value works and understand how groundbreaking the technology initially was, but the initial excitement that the work brought can't be recreated: sasha arden, ‘Augmenting Our Approach to Preservation: Documentation of Experience for Immersive Media’ (Tate, June 2022), 6, https://www.tate.org.uk/documents/1793/Augmenting_Our_Approach_to_Preservation.pdf, accessed July 19, 2023.

preservation steps that institutions are taking should be included. For institutions with a historic approach this means gathering strategies where the work stays in the original state for as long as possible. Institutions that want to show the newest technology can gather strategies that allow the work to be shown with the newest technology.

Second, a preservation policy should include strategies to grasp the concept of an immersive work. Preserving the concept of immersive media is challenging according to Jack McConchie, as one needs to understand the concept of the artwork, and "what makes the artwork, the artwork". This is crucial when choosing preservation strategies because it makes you understand what you can lose while keeping the artwork or what makes you lose the artwork. He makes the comparison with preserving performance art. With performance art, "you're preserving the ability for that to happen again".[112] Documentation and collaborating with the artist helps when preserving the concept of a work.

Third, the preservation policy should contain strategies for how and when to collaborate with artists according to the interviewees. Here the acquisition workflow of ZKM can be used. It should be about how artists can give their point of view about the concept of the work and what the check-ins with the artists should look like. There is also a need for strategies on the legal rights and obligations to artists about the works. Besides collaborating with artists, it would be relevant to collaborate with users of the works as well to capture their experience, finds Claudia Roeck.[113]

To be able to make a preservation policy in the future that fits multiple approaches of institutions, it is important to have a better understanding of how institutions approach their own goals and then regroup the various institutions to draw conclusions about what a preservation policy could look like for the goals of the institutions, based on the approach they are taking. To achieve this, collaboration between institutions with similar preservation goals is necessary. Together, institutions can work on case studies that can ultimately lead to forming preservation policies that fit the various institutional strategies for the preservation of immersive works.

In order to research and form case studies, funding, shared resources and capacity in institutions to conduct research is required. This is necessary to provide people with time and means to conduct research and to collaborate with artists.

Conclusion

Institutions notice that the preservation risks for immersive media can be found in software-based art as well. However, these risks are amplified for immersive media which brings challenges for preserving immersive works.

To tackle the preservation challenges of immersive works, institutions are trying to apply existing preservation strategies to immersive works, which seem to work in certain cases. Preserving immersive works is often a case-by-case approach. This means that institutions need to research each work individually in order to decide what would be the best option to

[112] Falcão and McConchie, Time-based media conservators at Tate interviewed by Lieve Baetens.
[113] Roeck, Time-based media conservator at HEK interviewed by Lieve Baetens.

preserve it and have the resources to do so. However, institutions can have different approaches when choosing what strategy they will use for immersive works in their collection.

For some institutions keeping the work in its original state as long as possible is an important goal. In this case, institutions use preservation strategies that do not alter the work as long as possible. Other institutions choose strategies that allow the work to exist with different hardware and software to keep the works accessible for as long as possible. Institutions agree that documentation is in every scenario, an important strategy. It would also be beneficial if artists learned how they could best document their immersive works, so the preservation of immersive media becomes a collaborative responsibility.

Besides this, collaborations among institutions should create spaces for professionals to explain their challenges when preserving immersive works, to discuss their own cases to build capacity in the field.

Since the technology of immersive media is changing so fast and immersive media consists of multiple technologies, best practices for the preservation of immersive media have not been established yet. However, with digital preservation, the question is how fitting the term best practices is.

A preservation policy could help in gathering good practices. However, what a good practice is for an institution, depends on their preservation goals. For example, an institution could have the goal to represent the historical developments of technology. In this case the work should remain in its original state as long as possible. Another goal is to show the audience the newest developments in technology, which means that the work can be rebuilt with new technologies.

A preservation policy should fit the multiple approaches of institutions. To form this preservation policy, as a next step, institutions should collaborate with other institutions that have similar preservation goals. Together institutions can work on forming a preservation policy with fitting preservation strategies based on their goals. The topics that should be included in the preservation policy are preservation strategies for the hardware and software, strategies for capturing the concept of a work and strategies for collaborating with artists. This requires funding, shared resources and capacity.

Conclusion

The Preserving Immersive Media Knowledge Base provides a definition of immersive media that most institutions relate to. In this definition VR, AR, 360 video or real-time 3D software is included. The term immersive media is not a common adopted term to categorize works in cultural heritage institutions. It is even so that this term is still expanding; and it is also important to acknowledge that most institutions do not have enough works in their collection to refer to this specific term.

The amount of immersive works in collections vary from 40 works to 3 works. Only the collection from the British Library, that contains 400 works, is collected under a legal deposit. So, it is easy to understand that institutions do not have staff, particularly focused upon immersive media. Depending on the capacity of the institution, the time-based media conservator is often responsible for these works and collaborates with different curators, technicians, researchers, and archivists. If possible, they also collaborate with computer science- or digital experts.

When collecting immersive media, most institutions do not use collect by medium. Immersive works are mostly collected when the work fits within the mission of the institution. In that case more than often the regular selection criteria are used and the immersivity of a work is not a selection criterion. Whitney is the exception. Whitney wants to represent the overall history of digital art and developments in technology and therefore does collect by medium. Ofcourse, even though collecting by medium is a valuable strategy, it is still a necessary criterion that the work itself is seen as good art.

Just as Whitney, the British Library also has a different collection strategy. The British Library has a legal deposit which means that the institution is legally required to collect works. This brings challenges in making sure that everything is collected. While collecting the interactive narratives this is even a bigger challenge because the artists are often individuals that need to be tracked.

So, when immersive works are being collected, almost every institution uses the existing institutional workflows that they have for the collaboration with artists of immersive works. In that case immersive media can benefit from the existing workflow of ZKM for software-based artwork. This workflow consists of three phases: pre-acquisition, acquisition, and post-acquisition.

Before the acquisition, institutions can gather existing documentation and information, because at this time the artist can provide this information. This information can help in deciding how the work can be preserved by the institution. Some institutions can work more intensively with the artists during this phase, for example, because they commissioned the work or already exhibited the work.

During the acquisition phase, institutions can gather other information by asking the artist questions about the work, after reviewing the initial information. Most of the time, a questionnaire is used. The PIMKB has developed questionnaires especially meant for immersive media. Most institutions use this questionnaire. However, how the questionnaire is used differs. Some institutions ask the artist to fill in the questionnaire, others ask the

questions during artist interviews. If the artist is asked to fill in the questionnaire, there is a risk that the information will be incomplete. The artist interview on the other hand can be time-consuming. Ideally, an artist interview covers both the technical parts as the conceptual idea of the artwork. Besides this it is preferable to rebuild the work together with the artist. However, since the artist interview is time-consuming, sometimes the artist interview can only focus on the technical aspects.

In the third phase, the post-acquisition phase, sometimes institutions again reach out to the artist. For example, if there are preservation changes to the work or if the work is being displayed again. During the artist interview institutions and artists can already discuss what is acceptable for displaying and preserving their work. However, when time passes changes can happen for the institution or the artist. Then the artist can be contacted by the institution to discuss these changes. During the artist interview in the acquisition phase the artist can be asked if they are interested in being contacted in the future when changes are happening.

Institutions are very willing to collaborate with artists and find this collaboration important. However, it should be stated that collaborating with artists also can be quite time-consuming. This means that it is not always possible for institutions to collaborate as much with the artist as they would prefer. Even though institutions at this moment stress the importance of collaboration with artists, they also declare that this collaboration now is time-consuming with their current collection. So, the question can be asked what collaborating with artists will look like in the future once more works enter the collections. Will it still be doable for institutions to collaborate as much?

Institutions also have to collaborate with artists to make agreements about the intellectual property if the institutions do not have a legal deposit. Institutions have a generic contract that needs to be adapted for the specific needs of the work. This process can be time consuming and costly for institutions. The intellectual property remains with the artists, but institutions also need to have rights. For example, the right to make a duplication of the work for preservation purposes, dissemination and to provide access to the work. But even if institutions have the rights to make a duplication, artists can still make duplicates, enhanced versions of the work or open access versions. Institutions also need access to the source code. Since the source code can be very private for artists, it contains the essence of the work, it is important to make an agreement on how the source code will be stored so, for example, the institution cannot make aesthetical or behavioral changes to the source code.

Immersive media often consists of parts made by third parties. Software made by third parties can contain copyright. Institutions make agreements with the artists, but the software companies are often not approached to make agreements about their copyright. To access the software multiple licenses and accounts are needed. This can bring all kinds of ethical issues for the institution, for example, when dummy accounts have to be made that can risk their online security. Besides this, it also brings preservation risks. When the software is no longer supported by the company, access can be lost to the software which can make works become obsolete. In the United States there is a solution to this problem because institutions are legally allowed to remove those mechanisms by using crackers, but in the European Union this is not legal yet.

Preservation risks of software-based art can be seen in immersive works as well. With immersive media these risks are amplified. As is the case with collaboration strategies, the preservation strategies that institutions use for immersive media are often existing preservation: the strategies that institutions have experience with. Institutions then try to apply those strategies to immersive works. Even testing and adapting the existing strategies takes time and it means that the preservation of immersive works is often bespoke.

Establishing best practices for the preservation of immersive media is difficult since the technology of immersive media is changing so fast and immersive media consists of multiple technologies. This does not mean that institutions do not have preservation strategies. It is noticeable that the preservation strategies that institutions use depend on the preservation goals of the institution that align with their institutional mission. If the goal is to focus on the historical technologies, then the work needs to stay in its original state as long as possible. Then the preservation strategies can not alter the work.

If the institution does not mind the possibility of changes, but wants to make sure that the work remains accessible, then preservation strategies can be chosen that allow the work to exist with different hardware and software. Institutions find documentation important for every work. Besides this, institutions could also collaborate with each other in discussing cases and explaining their challenges when coming up with a preservation strategy.

To make the preservation of immersive media less bespoke, forming a collective preservation policy that fits the different preservation goals could be the next step. To achieve this, there needs to be a better understanding of what the different preservation goals of institutions are. Institutions with similar goals can collaboratively share strategies that have worked for them and test the strategies in case studies. The collaboration with different institutions will then hopefully lead to a policy that provides strategies based on case studies that fit with the different preservation goals.

In the policy strategies for the hardware and software, strategies for capturing the concept of a work and strategies for collaborating with artists should be covered. To allow institutions to collaborate in forming a preservation policy there is a considerable need for enough capacity in order to conduct research and practice with case studies. Besides this, sharing resources is important, and ultimately funding.

Recommendations

Based on the conclusion of this research it appears that there is a need for institutions to collaborate to formulate next steps. For example, by creating common guidelines and strategies for the selection and preservation of immersive media. This conclusion has led to multiple recommendations intended for conservators, curators and researchers of institutions that are already working on the selection and preservation of immersive media. These recommendations are also useful for institutions who are just starting in this field.

Recommendation 1: Co-create in making common guidelines and strategies
This research concludes that collaboration is recommended to create common guidelines for the preservation of immersive media. Collaboration between institutions can strengthen the network system that already exists, by sharing experiences and currently used individual

strategies. This network will help the institutions to build a common understanding and build knowledge, so existing capacity in the field will be used more efficiently. There are already network spaces for professionals to explain their challenges and show their work, for example the PIMKB.[114] In order to create common guidelines, research and case studies should be shared to make the information accessible. The logical next step would be that the existing network spaces not only share the work of individual institutions but spend more time together in co-creating common guidelines and strategies. For example, by organizing hackathons.[115]

Recommendation 2: Find existing communities where knowledge and challenges can be shared

Institutions are already in contact with each other. They gather on irregular moments. There are also already examples of institutions that are collaboratively working together by sharing challenges and knowledge. For example, in this research Gaby Wijers explained that LIMA organizes roundtables to discuss their preservation strategies with specialists in the field.[116] Another example is the #DPConnect session, a weekly online meeting where specialists can discuss their preservation questions.[117] More institutions could follow these examples by creating an online meeting space where they can discuss their challenges and findings for preserving immersive media. And by doing so further strengthen the network and collaborations that exist.

This recommendation is mainly aimed at institutions who are new to collecting and preserving immersive media. Institutions who have been working on immersive media for a longer time know where to find each other. Over time more and more organizations will be asked to preserve immersive media and will have to learn the ropes. It is important that these institutions, who are new to the field of preserving immersive media, find the already existing communities and share their challenges and good practices on a regular basis.

Recommendation 3: Research the existing similarities in preservation goals

In this research it appears that institutions use different preservation strategies based on their institutional goals and mission. For example, an institution with a historical approach wants to use strategies that do not alter the work whereas other institutions can be more accepting of strategies that might change the work. Further research could explore similarities between the missions of different institutions that are collecting immersive media or are interested in collecting immersive media. Such insights would help them share their preservation strategies and conduct case studies that are accessible to other institutions who recognise the goals of these institutions in their own institutional approaches. Based on the joined preservation strategies, institutions can construct common guidelines that fit the institutional goals.

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[114] sasha arden e.a., 'Preserving Immersive Media Knowledge Base', https://pimkb.gitbook.io/pimkb/, accessed August 10, 2023.
[115] For example, see the hackathons organized at iPRES in 2019: iPRES 2019, 'Conference Programme HACKATHONS', https://ipres2019.org/program/conference-programme/, accessed August 10, 2023.
[116] Gaby Wijers, Director and founder LIMA interviewed by Lieve Baetens, Teams, June 5, 2023.
[117] Digital Preservation Coalition, '#DPConnect (weekly)', https://www.dpconline.org/events/eventdetail/187/-/dpconnect-weekly, accessed August 6, 2023.

Recommendation 4: Involve curatorial perspectives in research
This recommendation is to involve curatorial perspectives in research regarding the collection and preservation of immersive media. The perspectives of both conservators and curators are needed to understand how immersive media should be collected in institutions. In this research, besides Giulia Carla Rossi from the British Library, mostly conservators were interviewed. Therefore, in chapter two of this research, conservators explained the collection strategy of their institution. However, curators might provide more information about how immersive media fits in the existing collection policies of institutions and what criteria institutions use when collecting immersive media. Currently it appears that most institutions do not collect by medium. It would be interesting to research how curators identify what immersive works should be collected by their institutions. When immersive works are not collected by medium for most institutions, do the existing selection criteria apply well enough for collecting immersive media? Are enough works collected to represent the developments of immersive media in institutions?

Recommendation 5: Research the artists needs and responsibilities
Besides the preservational and curatorial perspective, institutions could consider making artists also part of the conversations about how institutions should collect and preserve immersive media. Although the role of the artist is not the primary focus of this research, the role of the artist did come up a lot. Institutions use different strategies to collaborate with the artists before, during and after the acquisition of immersive media. But these forms of collaboration are time consuming, and institutions are not able to collect and preserve all the works. With immersive works becoming obsolete quickly, artists have a responsibility to document and preserve their own works. Therefore, the artist itself has to develop a new sense of ownership, a new sort of responsibility to make sure that their work of art can be preserved and presented. When institutions are collectively creating guidelines for the preservation of immersive media, these guidelines could also be targeted towards artists. To do this the needs and capabilities of the artists need to be researched. How are artists aware of their responsibility to document and preserve their works? What strategies are artists using to preserve their works? What needs do they have in being able to document and preserve their works and how can institutions help in their needs?

Recommendation 6: Collaborate with art schools and academies to train new artists
In this research concerns were raised whether thorough collaboration with artists will remain possible given existing resources as collections of immersive works grow, since this is already very time-consuming for conservators. Institutions have suggested that artists also have an important role in documenting their work so their works do not become obsolete. Morgan Stricot suggested that it is important that art students learn how they can document their works best.[118] Institutions could organize workshops for students where the students are invited to visit the institution and the conservators can explain to the students what an artist interview looks like, how the works get rebuilt and what information they expect from artists. For this to happen art schools and academies need to be involved in the preservation communities. Institutions could collaborate with art schools and academies more closely to ensure that preservation topics are structurally integrated into the training of future artists.

[118] Morgan Stricot, Media Art Conservator at ZKM interviewed by Lieve Baetens, Teams, June 22, 2023.

This could also help in making the students more aware of what they think their work should look like in the future.

Recommendation 7: Conduct and share case studies on how immersive media can be exhibited

Besides selecting and preserving immersive works, institutions have to exhibit the works. During the interviews, questions were raised by interviewees about how immersive works can be best displayed. Often works are made to be experienced by only one person in a virtual space, while publicly funded heritage institutions prioritize accessibility and aim to exhibit works in the physical space to multiple people at the same time. The traditional view of looking at art in an institution is seen as a collective experience, whereas immersive media is often made to be an individual experience. Jack McConchie raised the question how cultural heritage institutions that are not set up for virtual spaces can be displayed best.[119] Is this even the right place for it to be exhibited? To answer questions such as how or if immersive works should be exhibited so that multiple people can experience them at the same time, additional case studies based on various immersive works and immersive formats should be researched and compared. Decisions could differ, for instance, depending on whether it is a VR artwork or a browser-based experience. What do we gain or what is lost by making immersive (not) works accessible for multiple people at the same time in institutions?

[119] Patrícia Falcão and Jack McConchie, Time-based media conservators at Tate interviewed by Lieve Baetens, Recording, May 31, 2023.

Bibliography

ACMI. ‘ACMI Collection Development Strategy’, November 2019. http://www.acmi.net.au/about/reports-policies/collection-development-strategy/.

arden, sasha. ‘Augmenting Our Approach to Preservation: Documentation of Experience for Immersive Media’. Tate, Juni 2022. https://www.tate.org.uk/documents/1793/Augmenting_Our_Approach_to_Preservation.pdf.

arden, sasha, Rasa Bocyte, Tom Ensom, Eric Kaltman, Jack McConchie, Jesse de Vos, and Samantha Rowe. ‘Preserving Immersive Media Knowledge Base’. https://pimkb.gitbook.io/pimkb/.

British Library. ‘About Us’. The British Library. The British Library, July 14, 2023. https://www.bl.uk/about-us.

Brum, Olivia, Mauricio van der Maesen de Sombreff, Eléonore Bernard, and Gaby Wijers. ‘A Practical Research into Preservation Strategies for VR artworks on the basis of Justin Zijlstra’s 100 Jaar Vrouwenkiesrecht In the collection of Atria Kennisinstituut voor Emancipatie en Vrouwengeschiedenis’. Netwerk Digitaal Erfgoed, November 1, 2021. https://www.li-ma.nl/lima/sites/default/files/Rapport_A-Practical-Research-into-Preservation-Strategies-for-VR-artworks-on-the-basis-of-Justin-Zijlstras-100-Jaar-Vrouwenkiesrecht.pdf.

Campbell, Savannah. ‘A Rift in Our Practices?: Toward Preserving Virtual Reality’. Department of Cinema Studies New York University, May 2017. https://miap.hosting.nyu.edu/program/student_work/2017spring/17s_thesis_Campbell_y.pdf.

Campbell, Savannah, and Mark Hellar. ‘Virtual Reality Artwork Acquisition Template’, March 2019. https://pimkb.gitbook.io/pimkb/acquisition-resources/documentation.

Cranmer, Candice. ‘Candice Cranmer Time-Based Media Art and AV Conservator ACMI - Australian Centre for the Moving Image’. https://au.linkedin.com/in/candice-cranmer-856b4916a.

———. ‘Preserving the emerging: virtual reality and 360-degree video, an internship research report’. Sound & Vision, 2017. https://web.archive.org/web/20210218115345/https:/publications.beeldengeluid.nl/pub/584.

———. Time-based media conservator at ACMI interviewed by Lieve Baetens. Teams, June 14, 2023.

Digital Preservation Coalition. ‘#DPConnect (weekly)’. https://www.dpconline.org/events/eventdetail/187/-/dpconnect-weekly.

Ensom, Tom, and Jack McConchie. ‘Preserving Virtual Reality Artworks’, August 13, 2021. https://www.tate.org.uk/documents/54/tate_pim_preservingvrartworks_01_00.pdf.

Espenschied, Dragan. Preservation Director at Rhizome interviewed by Lieve Baetens. Teams, June 16, 2023.

Falcão, Patrícia. ‘Patricia Falcao Time-Based Media Conservator at Tate’. https://uk.linkedin.com/in/patricia-falcao-b3136475.

Falcão, Patrícia, and Jack McConchie. Time-based media conservators at Tate interviewed by Lieve Baetens. Recording, May 31, 2023.

HEK. ‘About HEK’. https://hek.ch/en/ueber-das-hek.

iPRES 2019. ‘Conference Programme HACKATHONS’. https://ipres2019.org/program/conference-programme/.

Koppelman, Wytze, Kiki Lennaerts, and Amy Welten. Conservator Culture & Entertainment, Advisor New Media Preservation and Media Manager at the Netherlands Institute for Sound and Vision interviewed by Lieve Baetens. Recording, May 26, 2023.

Lennaerts, Kiki. ‘Anticipating Obsolescence. Documentation as a strategy to preserve immersive media’, July 11, 2022.

———. ‘Kiki Lennaerts (She/They) Onderzoeker bij het Nederlands Instituut voor Beeld &

Geluid'. https://www.linkedin.com/in/kiki-l-2659b7157/.
LIMA. 'About LIMA'. https://www.li-ma.nl/lima/nl/node/30.
Lozano-Hemmer, Rafael. 'Best practices for conservation of media art from an artist's perspective', March 24, 2023. https://github.com/antimodular/Best-practices-for-conservation-of-media-art.
McConchie, Jack. 'Jack McConchie Time-Based Media Conservator Tate'. https://uk.linkedin.com/in/jack-mcconchie-350800123.
Mitcham, Jenny. 'When is "good" better than "best"? In support of digital preservation good practice'. Digital Preservation Coalition, April 18, 2023. https://www.dpconline.org/blog/when-is-good-better-than-best-in-support-of-digital-preservation-good-practice.
Neary, David. 'David Neary Digital Asset Manager Whitney Museum of American Art'. https://www.linkedin.com/in/david-neary-3354b236.
Neary, David, and Savannah Campbell. Project Manager Media Preservation Team and Project Media Preservation Specialist at Whitney interviewed by Lieve Baetens. Teams, May 31, 2023.
New Media Writing Prize. 'Previous Shortlists & Winners'. https://newmediawritingprize.co.uk/archive/?prize-year=2021.
Paul, Christiane. *Digital Art*. 3de dr. London: Thames & Hudson, 2015.
Rhizome. 'Dragan Espenschied'. https://rhizome.org/.
———. 'Rhizome'. https://rhizome.org/.
Roeck, Claudia. 'Claudia Roeck Time-based media conservator'. https://www.linkedin.com/feed/.
———. Time-based media conservator at HEK interviewed by Lieve Baetens. Teams, May 24, 2023.
Roeck, Claudia, and Tim Marti. 'Capturing a VR-executable as a 360-degree video. A test report.' House of Electronic Arts, August 26, 2021.
Rossi, Giulia Carla. 'About'. https://www.giuliacarlarossi.com/about.
———. Curator Digital Publications at the British Library interviewed by Lieve Baetens. Recording, June 2, 2023.
Rowe, Samantha, Jack McConchie, Tom Ensom, Savannah Campbell, and Mark Hellar. 'Documentation'. Preserving Immersive Media Knowledge Base. https://pimkb.gitbook.io/pimkb/acquisition-resources/documentation.
Sound & Vision. 'About Sound & Vision'. https://www.beeldengeluid.nl/en/about.
———. 'Amy Welten'. https://www.beeldengeluid.nl/kennis/experts/amy-welten.
———. 'Geschiedenis'. https://sites.google.com/beeldengeluid.nl/bieb/over-bg/geschiedenis.
———. 'Iedereen mee in media, Meerjarenbeleidsplan 2022-2026'. Beeld & Geluid. https://files.beeldengeluid.nl/pdf/Meerjarenbeleidsplan_2022-2026-Iedereen_mee_in_media.pdf.
———. 'Wytze Koppelman'. https://www.beeldengeluid.nl/kennis/experts/wytze-koppelman.
Stricot, Morgan. Media Art Conservator at ZKM interviewed by Lieve Baetens. Teams, June 22, 2023.
———. 'Morgan Stricot Conservator-Restorer'. https://fr.linkedin.com/in/morgan-stricot-79788253/en.
Tate. 'About Us'. https://www.tate.org.uk/about-us.
———. 'Collection'. https://www.tate.org.uk/about-us/collection.
———. 'Preserving Immersive Media'. https://www.tate.org.uk/about-us/projects/preserving-immersive-media.
Vos, Jesse de. 'Preserving Interactives: Preserving audio-visual materials in a post-broadcasting paradigm'. Sound & Vision, May 2013. https://publications.beeldengeluid.nl/pub/31/final-report-archiving-interactives-2013.pdf.
Whitney Museum of American Art. 'About the Whitney'. https://whitney.org/about.
———. 'Media Preservation Initiative (MPI)'. https://whitney.org/conservation/mpi.
Wijers, Gaby. Director and founder LIMA interviewed by Lieve Baetens. Teams, June 5,

2023.
———. ‘Gaby Wijers director and founder LIMA’.
https://www.linkedin.com/in/gaby-wijers-0348907/.
ZKM. ‘The ZKM’. https://zkm.de/en/the-zkm.
ZKM Werke Wiki. ‘Acquisition workflow (Software-based artworks)’.
https://werke.zkm.de/wiki/index.php/Acquisition_workflow_(Software-based_artworks)#Post-Acquisition_marathon_(be_prepared_to_be_proactive).

Images

Cover page:
Shaw, Jeffrey. *The Virtual Museum*. 1991.
https://www.jeffreyshawcompendium.com/portfolio/virtual-museum/.

Appendix

A. Introduction institutions and interviewees

Institutions

Australian Centre for the Moving Image (ACMI) "is Australia's national museum of film, TV, videogames, digital culture and art. Distinct in the museum landscape in Australia, ACMI celebrates the moving image and its profound impact over the last 120 years as it transports, challenges and entertains people of all ages and backgrounds, right across the globe. ACMI holds a collection that encompasses art, film, television, videogames, ephemera, digital culture and social memory."[120]

British Library is "the national library of the United Kingdom and gives access to the world's most comprehensive research collection. We provide information services to academic, business, research and scientific communities. Our collection of over 170 million items includes artefacts from every age of written civilisation. We keep the nation's archive of printed and digital publications, adding around three million new items to our collection every year. We have many books, but we have so much more. Our London and Yorkshire sites have everything from newspapers to sound recordings, patents, prints and drawings, maps and manuscripts. Our inspiring exhibitions interpret these collections and bring their stories to the public."[121]

House of Electronic Arts (HEK) "in Basel is dedicated to digital culture and the new art forms of the Information Age. Since 2011, the institution has been central to the creative and critical discourse on the aesthetic, socio-political and economic effects of media technologies. As a platform for contemporary art that explores and employs new technologies, HEK promotes aesthetic practices related to information technologies. This not only enables a better comprehension of the changing world we live in, but also serves to actively engage with these processes and confront pressing questions of 21st century culture, while actively contributing to their mediation."[122]

LIMA "is a prominent platform for media art based in Amsterdam. All our activities aim at fostering a critical understanding of media art and technology and sustainable access to media art. At an international level LIMA is a pioneer and centre of expertise in the fields of preservation, research and distribution of media art. As a distributor LIMA represents an array of artists - ranging from early pioneers to upcoming artists, and supports them in the presentation and promotion of new work. LIMA houses the collections of the Lijnbaan Center, MonteVideo, Time Based Arts and De Appel. The memory of Dutch media art is not only preserved by LIMA through its collection and archive but also through her digital repository and conservation services for various museums, artists, archives and collectors.

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[120] ACMI, 'ACMI Collection Development Strategy', November 2019, http://www.acmi.net.au/about/reports-policies/collection-development-strategy/, accessed August 1, 2023.
[121] British Library, 'About Us', The British Library (The British Library, July 14, 2023), https://www.bl.uk/about-us, accessed August 1, 2023.
[122] HEK, 'About HEK', https://hek.ch/en/ueber-das-hek, accessed August 1, 2023.

In collaboration with a multidisciplinary national and international network LIMA researches and develops services and tools for artists and institutions, as well as methods and practices for dealing with digital art thoughtfully and sustainably. LIMA actively develops best practice guidelines, performs case studies and shares knowledge through projects, lectures, presentations and workshops. New methods for the preservation and distribution of media art are continuously investigated through a public programme with various (online and offline) projects, events and activities."[123]

Netherlands Institute of Sound and Vision (NISV) "manages one of the largest digitalized media archives in the world. Packed with (among others) radio, television, YouTube videos, objects, written press, podcasts and games. We preserve our daily growing media collection as cultural heritage for eternity. At the same time, we closely follow all movements of the global media landscape. Our starting point in everything we do is the importance of free media for our democracy. We shed light on current affairs from a media-historical perspective. We show how you use media to tell your story, but we also show the influence of media on your personal life and on society. We do this in various ways; online and in our museums in Hilversum and The Hague. We organize numerous public activities, debates and lectures for young and old at both locations. We offer schools a wide range of media literacy workshops and we encourage academic and journalistic research."[124]

Rhizome "champions born-digital art and culture through commissions, exhibitions, scholarship, and digital preservation. Founded by artist Mark Tribe as an email discussion list including some of the first artists to work online, Rhizome has played an integral role in the history of contemporary art engaged with digital technologies and the internet. Since 2003, Rhizome has been an affiliate in residence at the New Museum of Contemporary Art in New York City. Founded in 1977, the New Museum is a leading destination for new art and new ideas. Together, New Museum, Rhizome, and NEW INC, the first museum-led incubator founded by New Museum in 2014, explore the future of contemporary art and technology."[125]

Tate "Our mission is to increase the public's enjoyment and understanding of British art from the 16th century to the present day and of international modern and contemporary art."[126] "Tate holds the national collection of British art from 1500 to the present day and international modern and contemporary art. British art is represented by artists chosen for their contribution to its history and development, rather than their nationality alone. The collection continues to expand its holdings of modern and contemporary art from around the world."[127]

Whitney Museum of American Arts (Whitney) "As the preeminent institution devoted to the art of the United States, the Whitney Museum of American Art presents the full range of twentieth-century and contemporary American art, with a special focus on works by living artists. The Whitney is dedicated to collecting, preserving, interpreting, and exhibiting American art, and its collection—arguably the finest holdings of twentieth-century American

[123] LIMA, 'About LIMA', https://www.li-ma.nl/lima/nl/node/30, accessed August 1, 2023.
[124] Sound & Vision, 'About Sound & Vision', https://www.beeldengeluid.nl/en/about, accessed August 6, 2023.
[125] Rhizome, 'Rhizome', https://rhizome.org/, accessed August 6, 2023.
[126] Tate, 'About Us', https://www.tate.org.uk/about-us, accessed August 6, 2023.
[127] Tate, 'Collection', https://www.tate.org.uk/about-us/collection, accessed August 6, 2023.

art in the world—is the Museum's key resource. The Museum's flagship exhibition, the Biennial, is the country's leading survey of the most recent developments in American art."[128]

Center for Art and Media Karlsruhe (ZKM) "is a unique cultural institution worldwide, because it is a place that expands the original tasks of the museum. It is a house of all media and genres, a house of both spatial arts such as painting, photography and sculpture and time-based arts such as film, video, media art, music, dance, theater and performance. ZKM was founded in 1989 with the mission of continuing the classical arts into the digital age. This is why it is sometimes called the »electronic or digital Bauhaus« – an expression that is traced back to the founding director Heinrich Klotz."[129]

Interviewees

Candice Cranmer (ACMI) has a Fine Arts Degree in painting and has a Master of Cultural Materials Conservation in Audiovisual Conservation.[130] She has worked for ACMI for over a decade and became their time-based media art and AV conservator in 2018.[131]

Giulia Carla Rossi (British Library) is an artist, researcher and curator with a Bachelor's degree in Language, Culture and Society of Eastern Asia and a Master's degree Publishing and Language. She works as a Curator for Digital Publications at the British Library.[132]

Claudia Roeck (HEK) studied Preservation of Digital Arts and Cultural Heritage and has a Master's degree in Conservation of Time Based Media and Contemporary Art. She is a PhD researcher and has worked as a time-based media conservator for HEK since 2014.[133]

Gaby Wijers (LIMA) founded LIMA ten years ago and is the director of LIMA. LIMA comes from the legacy of the Netherlands Media Art Institute where Gaby Wijers was the head of collections and conservation.[134]

Wytze Koppelman (NISV) studied Law and has a Master's degree in Film and Television Studies. He has worked for NISV since 2017 and is the Conservator Culture & Entertainment.[135]

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[128] Whitney Museum of American Art, 'About the Whitney', https://whitney.org/about, accessed August 6, 2023.
[129] ZKM, 'The ZKM', https://zkm.de/en/the-zkm, accessed August 6, 2023.
[130] Candice Cranmer, 'Candice Cranmer Time-Based Media Art and AV Conservator ACMI - Australian Centre for the Moving Image', https://au.linkedin.com/in/candice-cranmer-856b4916a, accessed August 8, 2023.
[131] Cranmer, Time-based media conservator at ACMI interviewed by Lieve Baetens.
[132] Giulia Carla Rossi, 'About', https://www.giuliacarlarossi.com/about, accessed August 8, 2023.
[133] Claudia Roeck, 'Claudia Roeck Time-based media conservator', https://www.linkedin.com/feed/, accessed August 8, 2023.
[134] Gaby Wijers, 'Gaby Wijers director and founder LIMA', https://www.linkedin.com/in/gaby-wijers-0348907/, accessed August 8, 2023.
[135] Sound & Vision, 'Wytze Koppelman', https://www.beeldengeluid.nl/kennis/experts/wytze-koppelman, accessed August 8, 2023.

Kiki Lennaerts (NISV) has a Bachelor's degree in Liberal Arts and Sciences, General Studies and Humanities and a Master's degree in Applied Museum and Heritage Studies. She has worked for NISV since 2022 and is the Advisor New Media Preservation.[136]

Amy Welten (NISV) has a Bachelor's degree in Language- and Culture Studies and a Master's degree in Gender Studies. She has worked for NISV since 2021 as a Media Manager.[137]

Dragan Espenschied (Rhizome) has a background in electronic music, net activism and net art.[138] He has worked for Rhizome since 2014 and is the Preservation Director of Rhizome. He manages the archive of Rhizome, the ArtBase.[139]

Patricia Falcao (Tate) has a Bachelor's degree in Conservation and Restoration and a Master's degree in Conservation of New Media. She has worked for Tate since 2008 and is the Time-based Media Conservator.[140] She currently works on the acquisition and digital repository of Tate.[141]

Jack McConcie (Tate) has studied Electrical and Electronics Engineering.[142] He works as a Time-based media conservator for Tate. He is engaged in the acquisitions, digital repository, exhibitions, display and research within Tate.[143]

Savannah Campbell (Whitney) has a background in Cinema Studies and studied Moving Image Archiving and Preservation. She has worked for Whitney since 2018 as a Project Media Preservation Specialist.[144]

David Neary (Whitney) has a Bachelor's degree in History, a Master's degree in Film, Cinema and Video Studies and studied Moving Image Archiving and Preservation. He started working for Whitney in 2018 as a Project Manager of the Preservation Team and has been their Digital Asset Manager since July 2023.[145]

Morgan Stricot (ZKM) has a Bachelor's and Master's degree in the Conservation and Restoration of Media and Digital Art. She is a PhD researcher in Media Archeology and

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[136] Kiki Lennaerts, ‘Kiki Lennaerts (She/They) Onderzoeker bij het Nederlands Instituut voor Beeld & Geluid’, https://www.linkedin.com/in/kiki-l-2659b7157/, accessed August 8, 2023.
[137] Sound & Vision, ‘Amy Welten’, https://www.beeldengeluid.nl/kennis/experts/amy-welten, accessed August 8, 2023.
[138] Rhizome, ‘Dragan Espenschied’, https://rhizome.org/, accessed August 8, 2023.
[139] Espenschied, Preservation Director at Rhizome interviewed by Lieve Baetens.
[140] Patrícia Falcão, ‘Patricia Falcao Time-Based Media Conservator at Tate’, https://uk.linkedin.com/in/patricia-falcao-b3136475, August 8, 2023.
[141] Falcão and McConchie, Time-based media conservators at Tate interviewed by Lieve Baetens.
[142] Jack McConchie, ‘Jack McConchie Time-Based Media Conservator Tate’, https://uk.linkedin.com/in/jack-mcconchie-350800123, accessed August 8, 2023.
[143] Falcão and McConchie, Time-based media conservators at Tate interviewed by Lieve Baetens.
[144] Neary and Campbell, Project Manager Media Preservation Team and Project Media Preservation Specialist at Whitney interviewed by Lieve Baetens.
[145] David Neary, ‘David Neary Digital Asset Manager Whitney Museum of American Art’, https://www.linkedin.com/in/david-neary-3354b236, accessed August 8, 2023.

Preservation. She has worked for ZKM since 2017 as a Senior Media and Digital Art Conservator.[146]

[146] Morgan Stricot, ‘Morgan Stricot Conservator-Restorer’, https://fr.linkedin.com/in/morgan-stricot-79788253/en, accessed August 8, 2023.

B. Transcription interview ACMI with Candice Cranmer

Lieve Baetens: Can you tell me a bit more about yourself and your role within ACMI?

Candice Cranmer: So, hello, I'm Candice. I am the time-based media conservator at ACMI, which is the Australian Centre for the Moving Image. I've been in this role since 2018 specifically, but I've been at ACMI for over ten years doing various roles. That's my start at ACMI. I guess I started here in front of house really, and I worked my way through different roles. I became really interested in the collection and how people access the collection. So, I moved into a collections access role, which was facilitating onsite access to our collections. We used to have what we called a mediatheque, where anyone from the public could come and watch any film in our collection. We have a steenbeck on site where people can come and watch films and any moving image content. I really love that idea about access. And it was all free. I love that you could come and watch artists films. So, my background is, I did a painting degree which moved into moving image practice. And then I was really interested in the history of video art and practice. I just really love that idea that anyone could come and watch any material from the collection. That interest sparked a preservation interest as well. I studied a master's in cultural materials conservation, because I really took an interest in the materiality of film and how to preserve that particular format. My art background pairing that with conservation just led to this natural progression of looking at contemporary materials and time-based artworks. That's where my real passion is. So, I guess having been a maker, it gave me this real understanding or underpinning for what other makers might be thinking in terms of preservation. Also, as a maker, I started to think about how do I store all of these digital files? If I'm making all of these video works, what happens to them and what happens when the formats become obsolete? If I'm thinking that, other people might be thinking that. And what if they're not thinking about all of these formats and works going to become obsolete and inaccessible in the future? That really drove my interest in wanting to do time-based media conservation.

Lieve Baetens: That's such a great story. From painting to media.

Candice Cranmer: It's a strange path. I really thought I'd be a painter.

Lieve Baetens: It makes sense that you think about your preservation and then move on to this part. It's interesting. I would like to know a little bit more about ACMI. What staff do you have within ACMI for the acquisition and preservation of immersive media?

Candice Cranmer: So, we are a really small team at ACMI. We have a collection team, collection and preservation. It's myself, a digital preservation technician, we have Vernon which is our database specialist, and that's the core of our team. Just three people at the moment. Different streams of funding at different times have meant that we can expand that staff and skill set when it's possible. But really, it's three people and then we have freelancers come in as well. So, in terms of acquisitions, really, I'm the core staff member responsible for acquisitions. Then I have a digital preservation technician to help with some of the processing. If I'm really lucky, I can have two sometimes, when funding allows. But really, it's me looking at those processes.

Lieve Baetens: How do you or how does ACMI define immersive media?

Candice Cranmer: This is a good question and I'd be keen to hear your definition as well. I guess I use the term time-based media and I think it still means the same thing as immersive. So, I guess it's a work or an experience that unfolds over time in a particular space or context. It's a bodily experience that really needs you to be in it and experiencing it. So that's how I would describe immersive. I guess in terms of like what format that takes at ACMI, I think its multi-screen works, VR experiences and performances. All sorts of artworks like that. What is your definition?

Lieve Baetens: Well, that's a good question, because initially when I started this research, I thought there was only one definition possible. So naive. I just thought, well, immersive media, if I Google this, it says VR, AR and mixed reality. So that's immersive media. And then remember when I started sending all my emails to the institutions, multiple institutions asked me, how do you define it? And I was so confused. What do you mean with how do you define it? Google it. And then actually, I started researching it a bit more and thought: "Oh no, I might be a bit wrong on this part, because it can be so much more". And also thinking about what immersive means. I can definitely understand that these technologies as VR or AR are immersive, but there's so much more. I went to Tate Modern a couple of weeks ago and I saw this big sculptural piece and I thought: "Well, it's so weird because this can almost be immersive as well". And I can understand that if you would ask the artist questions about this work, that it would be very similar to asking questions about VR. Which is so weird to me. But then I thought, well, this is so much broader. And also, because it's such a beginning term, we are still giving a definition to it that isn't limited to the technology that I initially thought it was. So, when I first started, I thought that it was very clear. And now that I'm researching it more, the more unclear it gets.

Candice Cranmer: The more you research, the clearer it gets. I guess that's why I used quite a broad definition, because I think the same.

Lieve Baetens: Could you tell us more about the immersive media collection from ACMI?

Candice Cranmer: We have about 400, what I'd call time-based media artworks or immersive pieces. Well, there'd be a mixture. I think maybe the difference with immersive and non-immersive is, some of the artworks could be shown on a single screen or on a phone or online. And perhaps that's not immersive. Perhaps the idea of immersive is that you have something in your peripheries, and it really needs to be contextual and about a space. So, we have about 400 works, maybe not all of them are immersive. 40 major works that probably are completely immersive. We have a handful of VR pieces. What else? Software based works, multi-screen works and then works with bespoke sculptural components as well. So, you've got different facets that need to be preserved. So, you've got in some cases software, in some cases sculptural elements, and then maybe a spatial aspect to the work that needs to be preserved or represented. So that's the scope of the collection.

Lieve Baetens: Impressive. That sounds like quite a lot of works.

Candice Cranmer: It's a lot of work for a tiny team.

Lieve Baetens: What is the history of the immersive media collection from ACMI?

Candice Cranmer: So just to give you a background for ACMI in general on or our collection. ACMI's collection is over 70 years old. We started in 1946 as the State Film Center, which was largely a film collection with education and state government films. And then up to now, we've evolved into different institutions to one. I guess sociopolitical economic changes in the wider world has also meant changes to the collection. In the 90s and 2000 we became Cinemedia, which was an organization interested in popular titles. So, we became competitive with video stores. As well as these state government films, we also have popular titles and then everything in between. So indie films, film and TV equipment, cinema papers, all sorts of things. And around 2000 we change again, and we become ACMI, the Australian Centre for the Moving Image. We move into this big building that we're still in now in Federation Square in Melbourne. And suddenly we've transformed from a library that just was a lending facility and an access facility to a museum that suddenly needed different things in the collection. So, we wanted to acquire more immersive works so people could come and experience those in the museum, in the building itself. Just before

reopening, there was a huge acquisition push to collect some of these works and there were some commissions made from 2000 onwards. We're still commissioning today for new immersive or time-based media works. So that's the background of the collection. So, it really ramps up in 2000 and it hasn't stopped. And it's now the biggest aspect and certainly in a monetary sense of the value of the entire collection, because we've really focused on it in the last 20, 30 years.

Lieve Baetens: Why is ACMI collecting immersive media as part of your collection?

Candice Cranmer: Yeah, it's a good question. It's a good question, because they're complicated and they're quite resource intensive to try and preserve and represent. But I think we're really interested in specific technologies and how artists are using them. So, we commission works and then acquire them. That's our main method of acquisitions in immersive media. So, we have this real opportunity to look at artists practice and work with them right up to their exhibiting stage and then beyond that in the preservation as well. So, in terms of why we're collecting acquisitions, why we're collecting immersive media, because we think that they're culturally significant. And I think some of our commissions allow artists to really stretch the brief. So, there's been a commission, the Simon Mordant Commission, which is specifically for VR, which has usually paired an artist that doesn't usually work in VR with a technologist or somebody that does work in VR, and allows them to take their artistic practice and flesh it out in a new sphere or a new format. And that produces really exciting work. We want that in our collection, and we want people to see that now and then in the future to see how that technology evolves. So, we think that's really exciting.

Lieve Baetens: I completely agree.

Candice Cranmer: Yeah. Challenging and exciting.

Lieve Baetens: How does collecting immersive media fit within your collection policy?

Candice Cranmer: We have a collection development strategy and immersive media or time-based media. We don't try and collect everything. We can't represent the whole of Australian media history. So, we're selective, as I said, working with artists to not just collect the work, but the story about making the work. So, I think we would always gravitate to artists, commissions and acquisitions that are going to allow us to do this sweet of both preservation and telling of the stories of the making. So, if we can have that opportunity to work directly with people, alongside what is specified in our collection development strategy, then that's what we would do. I guess an example of this is we recently collected Untitled

Goose Game, which is a video game by a Melbourne based company which was renowned worldwide. There's an opportunity to collect the game and then the story about how the collective made the game and then looking at all the preservation strategies around that. We also did a live event with them where the game was played in our cinema with a live orchestra score. So, there's many different ways you can collaborate with people, and I think ACMI is really interested in that. I think that's answer the question in terms of policy. Selection criteria, again mapped out in our collection development strategy. But essentially, we're looking at Australian content and particularly Melbourne or Victorian content and commissions, very much something that we want to have in our collection because of that being able to work directly with artists.

Lieve Baetens: How do you manage the intellectual property rights around these works?

Candice Cranmer: It's quite case by case, and it depends on how they've been made. But the IP always rests with the artists, and that's embedded into our contracts. So, their ideas remain their ideas. What we might negotiate in contracts is owning an edition of the work, and then we might negotiate what that looks like if artists want their work to also be made open access. So, what is the difference between an official museum edition and something that you can download as a game that's playable? So, we'll negotiate that with the artist. We might have an exclusivity clause that says if we commission a work, we have the exclusive rights to show the work for a period of four months and then after that it's a non-exclusive right to show the work in perpetuity in the ACMI venue.

Lieve Baetens: For the collaboration with artists, you already mentioned that you work directly with artists. I also read your documents about how you approach this interview with artists. So, I'm wondering, can you explain more about what information you want to know from the artist when acquiring an artwork?

Candice Cranmer: I like to be a part of the process if I can, right from the work go. So again, the commissioning stream allows us to do that so I can sit in production meetings and see how the work's going to be made with what materials, what rights we might need to consider, if there's any ethical issues or challenges that might come up with the work. We work with a lot of First Nations artists. What does it mean to have intellectual property rights, but also moral rights in those cases? And how do we best look after First Nations artists and their works going into the future? So, the acquisition process, if you can be a part of those conversations really early on, gives you a really good understanding of what has changed in the making of the work. Then what you need to do to preserve the work long term. So, I guess there's three parts. There's like pre-interview and pre-production where you can just

sit and listen to all the things going on. And then there's the exhibition period and the interview period. And then all of the preservation after that. And it's almost cyclical, I guess, because you would come back to that almost each time you want to redisplay the work. I guess things shift contextually as well. In terms of what I want to know for the acquisition, I want to know what it's going to be, what file formats are going to be a part of the work, and if it's appropriate for us to have a conversation about best practice or what file formats we like. So, we like to use ProRes. But some artists might like higher resolution for their artworks. We can just have that conversation. I want to know if the materials that they're using are perishable or if they're going to last into the future, and if they're perishable or we think they're not going to last. What are the solutions that we can use to ensure that we can redisplay the work in the future? So, we have a really beautiful work in our foyer called Yanmeeyarr by Vicki Cousins and she's a First Nations artist. That work is painted directly onto the ceiling. If the museum changes in the next ten years and completely reshapes the space, which they did in the last two years, what does it look like for that work? How can we restore that work or not restore it? How can we save it in a way that's agreeable to both the artist and the organization? I guess we might work through some strategies to template the design so it can be recreated. And then we talk to the artists in the interview. So, Vicki has suggested that this is a very special work that is special to the women in her family. So, she painted it with her sisters and her niece. And so, if it was ever recreated, she would want her community and women from her community to recreate that work in that space. So, I guess that's some of the strategies, that it's good to work through before you get to the end so you can understand. You're in the space and you need to collect those templates and you need to document how that work is being painted or installed and what that's going to look like for the future.

Lieve Baetens: So, if I understand you correctly, you're in contact with the artist when you acquire the work and then also during the preservation of the work?

Candice Cranmer: Yeah. I guess I'm saying it really starts before the exhibition and acquisition. If you can be a part of those conversations really early on, you get to understand why they've made certain choices and why those choices affect preservation. So, all future preservation.

Lieve Baetens: How does the contact work during the preservation part, when you already acquired it? When do you reach out to the artists if you already acquired it?

Candice Cranmer: So hopefully in the preservation interview, you can map out some of the parameters for acceptable change in the work and some of the parameters for redisplay of

the work. What we would do is interview the person to have that transcribed, and then we would gather all the information that we've collected around the commissioning process, acquisition process. Literally just being in the space and observing. Bring all of that information together in a template, then we would fill that out and then have the artist sign off on that. So, they're happy with things like can your file be migrated to a new format if it becomes obsolete? Can your work be shown on a screen? Can it be shown without sound? Important contextual questions that allow us to understand and for them to be feel reassured that we are doing all that we can to represent their work in the most authentic way. I guess we would get back in touch if we were unsure and if there were new questions. So, if there was an instance where we could display the work outside on a huge screen or the VR experience could be in the middle of the square and then projected everywhere, and we hadn't discussed that. And we thought actually the artist prefers an intimate space. I think we would go back to them and see if they change their mind about the context for the work. It's possible. Things do change. People do change their minds. And I think the interview probably allows you to see where people stand, even if they don't say it out loud, sometimes gestures can mean everything. If they're thinking about it, then maybe over the years things have shifted and they suddenly would think that that was the coolest thing ever. Or it's only been seen once at ACMI and so many people want to see it now. We'd go back to them when we're ever unsure about our next moves or if we thought a preservation strategy might severely change the work. I think we would go back to them then to see what level of authenticity they thought that either achieved or didn't achieve.

Lieve Baetens: I actually think it's so interesting that with these types of work, it's more normal to ask in what conditions you can present it. Because for example, with paintings, I never heard a conservator for paintings ask the artist: "How do I put this on the wall? It's white wall now, but we want to paint it red. And in your painting, you see red". I've never heard that conversation, but I feel like with these types of works, it's so much more natural to have these conversations.

Candice Cranmer: It's so true, isn't it? Well, contemporary painting is different, but for conservators working on older paintings, the artist is no longer there to consult. So maybe we would, but we just don't have the opportunity. I guess because they're more static objects. Maybe their purpose is to be on the wall, and you know, they're not immersive. Well, you know, not immersive. People would argue against that, I'm sure.

Lieve Baetens: Yes. I'm just thinking about this now. If a painting would be hanged upside down, yeah, it'd be immersive.

Candice Cranmer: My mind did the same thing. As soon as I said it out loud, I was like, well, maybe I should take that back.

Lieve Baetens: I also wanted to know if you have a questionnaire for artists. I think you answered that. Yes, you have?

Candice Cranmer: Yes. I think I sent you that template. That comes from the Media Matters in Media Art. It's a collaboration where they've got excellent templates and tips for lots of acquisition challenges. So, we've taken that template and adjusted it slightly. I think it's quite a general template that is probably quite good for linear moving image or multi-screen moving image works, but in terms of software based and VR works or anything that is more bespoke, then we just tend to make a question list based on the work and the artist and what we know from their experience. So that's the template. But because all works are quite bespoke, the template is loosely used.

Lieve Baetens: That's interesting that this is also case specific.

Candice Cranmer: I think that's a better preservation method. Obviously, you want to adhere to best practice, but who is best practice for and what does it suit? It doesn't suit everyone all the time. So, it's great for an institution to have consistency across the templates. But if you're bending that to make it suits an artwork, it is problematic in the end.

Lieve Baetens: Why is it so case specific each time with these works and not, for example, with paintings? I can think of some things, but I would like to hear your perspective.

Candice Cranmer: I guess for us the work could be VR. So, you're talking about super different technologies to just a moving image artwork, which maybe is just a projection or several projections. And I guess you want to find a space where you can list all of those technologies and then what technologies are dedicated to the piece? What hardware has to be kept to redisplay that work every time or what is non-dedicated? So, I feel like there's a lot more moving parts. That interview process should be a space where you can talk about all of those things. I guess with a painting, again, it's a static object that maybe you put on the wall with a frame, and it has a backing. Maybe you only have to think about a few different things. Whereas immersive works, as we just said, hardware files, what the experience is like in that space, that's really important. Is it dark, is it light? What is the sound levels? Is the angle of the work really important? Do people encounter one screen before the other? I think there's just a lot more moving parts.

Lieve Baetens: So many more options to think of instead of just in what frame are we going to put this artwork?

Candice Cranmer: Correct. Yeah.

Lieve Baetens: What answers surprised you when interviewing artists about their immersive media works?

Candice Cranmer: I always ask if the works can be played with or without sound, and sometimes I'm really surprised by the answers. I just figure that audio visual material needs to be married together because sometimes we're asked for works that we can just put up on the wall for an experience. Audio might not necessarily be heard. And some people think that's fine. Or some people are like, absolutely not, it can't be in headphones either. It has to be an authentic experience from speakers, and they must be these speakers. I think I was also surprised that we had an artist show a work that was three screens, and the middle screen was quite a big projected work, a 16:9 piece. And then there were two monitors to the side showing content as well. They were quite big monitors. When we interviewed him, I said: "Is there any parameters around scale for the work?" And he said: "No, no scale". I said: "So could the monitors be mobile phones?" And he said: "Absolutely. That's fine". So, I think scale questions are really interesting. I asked another artist if their work could be displayed without sound. And she really thought about it. And she she really wanted it to be contextual. So, to your earlier question, we would definitely go back to this artist. If she said if it could be played in Times Square, then yes, that would be fine. But it would need to be quite monumental for it to be played without sound because it's quite integral to the work. So, all other places have to have sound, but Times Square, that's fine. She really thought about it. I thought that's appropriate, isn't it? It's like, what is the grandeur and the scale and what's your audience?

Lieve Baetens: Yes, I think she made a really good point there. How do you decide how you're going to preserve an immersive media work in your collection?

Candice Cranmer: Well, this is a good question, and one of the biggest challenges. I think everything is pretty bespoke in our collection. So even with VR pieces, if they're the same proprietary hardware, updates to software mean that things change and they're not always accessible through the same software and or hardware. So, I think one of the first steps is freeing digital files from their original hardware and software environments and putting them in a preservation storage system. And making those really clear in your catalog to where they're located and what function that they serve in the overall artwork. So that's really the

core first steps and then it's a lot of documentation. So how did that artwork go together? What are those files mean? What software version was used? What hardware version was used? Can that be used outside of the original hardware? Can tools like emulation free us from those physical constraints? If not now, perhaps in the future? And then, a lot of documentation and research as you would have seen from all of this. I guess with new technologies, nobody knows how we're going to preserve these. I guess we're looking at best practice from what we know in digital preservation and trying to apply that to new formats and trying to use systems. We use BAGA here, which is an open source tool that allows you to bag a whole work or a whole suite of files, create checksums and metadata, and then store that whole bag or folder in our preservation system. That allows us to see metadata, any file movements and corruption. And then digital preservation is cyclical. So you have to keep going through that system and it's resource intensive. So, you need somebody to do that acquisition work, someone to do that file migration and somebody to look at making that work in the future. Now and in the future.

Lieve Baetens: And I could also imagine that this, again, is something that you need to discuss with the artist, because when you transfer it to other software or hardware changes might come with it.

Candice Cranmer: Yeah, absolutely. That is one of the key questions, migration. And I feel like emulation is a platform that people either love or struggle with. So, it depends on how people feel about access to the work, because there's potential for things to look slightly different in emulation. Maybe it's not the same, maybe the sounds aren't the same or the behavior of the work isn't the same. Some of our documentation strategies look at how did the work look in its original context, how can we document that? So, if we do any future preservation work, how do we compare how it's actually looking?

Lieve Baetens: If you were to make a preservation policy for immersive media, what would that policy need according to you?

Candice Cranmer: It needs a suite of things. And because we have such diverse formats, it would need to cover a whole lot. I think it's about some of the questions you've asked. What are the legal rights and obligations we have to artists? What does that look like? And that has to be in a policy. And what does that look like for First Nations artists? We have a slightly different document for that. What methods do we use for digital preservation and how can they be consistent? What is best practice for the formats that we take into our archives? And should best practice always be used if it doesn't suit the artwork? I think consulting with the artist should be in a strategy like this. And then probably like a migration strategy should be

in this overall strategy. And maybe a statement about access, how works are accessed and how that relates back to contracts and rights.

Lieve Baetens: Are you working with a third party for the preservation of immersive media?

Candice Cranmer: Yeah, absolutely. I don't know everything. I guess I'm across the acquisition process at ACMI. If I had unlimited resources, I would hire a whole team of time-based media conservators and perhaps they would look at different aspects of time-based media preservation. So, I know that the Tate hires people specifically for acquisitions, for software and possibly video games performance. Maybe you would have people just doing specialized things. I certainly can't do all of those things by myself. So right behind me today, I have somebody working with our video game collection and emulation. She's an expert in the field, so she's helping us in terms of hardware. We need to outsource bits and pieces of our hardware, because we certainly can't maintain everything ourselves. So, we're constantly sending things out for repair, our magnetic tape players, so we can continue digitizing the collection and looking after our immersive works, our legacy. We're a part of a few community practice groups that allows us to have conversations with other time-based media practitioners in Australia to share ideas and exchange challenges and solutions. And we're often exchanging details for outsourcing bits and pieces. How do you fix that cathode ray tube TV that we really need to fix for this exhibition? I don't have the skills to do that. Who have you found that can fix that thing? Software preservation is hugely complex. We're lucky to be a part of an Australian Research Council grant at the moment that's looking at emulation as a service infrastructure so we can leverage the expertise of this group to not just look at emulation, but emulation embedded in the web browser that we can also put into our work pages, our website and have video games accessible to people. Even internally it's really important. So, I work with our team, our curatorial team, our exhibition production team, our experience and engagement team to bring all of these moving parts together.

Lieve Baetens: I was also wondering, do you ever work with the makers of the software itself? So, when an artist uses the software of a third party, are you ever in contact with them or is that not necessary?

Candice Cranmer: I think where we can we definitely will. We did look at a work from 2004 where the artist is still in Melbourne and able to talk to us. He had the software for his work commissioned. So, he did get in touch with this creator, and it was great. He really helped us for a long time, except for when it got really hard. I think it's a monetary issue. Taking somebody's time and asking a lot from them, from a work that we're just looking at

preserving that we're not even necessarily going to put on display. So, I guess we need to balance the ask of people and how much time we're asking of them for our preservation needs. But absolutely, if people are willing to help, sometimes it's good to reach out to them. The gaming community who's looked at a range of software, they're really keen to help. I think where we can, we absolutely will.

Lieve Baetens: What are your goals in the future for preserving immersive media in ACMI?

Candice Cranmer: So, I guess from that big list of works, we need to prioritize what we can achieve short term and long term. We need to do some obsolescence monitoring to see what we think will no longer be accessible. And then we need to come up with a strategy to make that accessible and how we might connect with other people and organizations for help doing that work. I think there's a matrix of complexity. So single channel, linear moving image works, or even multi-channel compared to software-based works is quite a different level of complexity. So, there's a little bit of advocacy work in letting people understand that process and what that takes from one staff member, what you can achieve with three staff members or 5 or 10. So how can we expand staff and skill in our collection? That's a main goal. Securing the works for future redisplay. Securing every work in the collection is the ultimate goal, but how we do that and how we prioritize has to be a one-, three- and five-year strategy and then beyond. And what collaborations can help us do that?

Lieve Baetens: How could you achieve those goals? Would it be a case where you just need more people and more money, basically?

Candice Cranmer: I mean, that is the main way to achieve that. We're a part of three Australian Research Council grants that allows us to connect with university partners and leverage research that multiple organizations are doing simultaneously. So again, this community of practice where we can share challenges and ideas for preservation really helps us to advance our preservation skill set. Because research is really intensive as you would have found out. Then implementing that research in your organization is also really labor and resource intensive. So, if you can leverage the opportunities and the work already done by people specializing in particular areas of preservation, then I think that's really useful and can really alleviate some of the pressure. So, it's not just about money and people, it's about sharing that knowledge. How do we distribute both collections and knowledge across not just Australian organizations but all organizations across the world? It feels like an international conversation. You're picking up this work.

Lieve Baetens: I hope so. I hope I can let other institutions know about the work that the institutions are doing. Because I can imagine that as an institution itself, it can sometimes be hard to reach out to all these institutions that are working on it. So, I just hope that my research can be a small part of this.

Candice Cranmer: That's all you can hope for.

Lieve Baetens: Are you working on any initiatives, or do you know of any initiatives that ACMI keeps an eye on that are interesting for this research?

Candice Cranmer: I Think sound and vision always does interesting things. We're interested in immersive art and technologies, but so many other things in our collection too, data connections, metadata and lots of preservation methods. I think the Tate has done some really interesting thing in VR preservation. I think they continue to do really interesting things in software preservation. So, in terms of immersive, I think that's where we're at and Rhizome as well. Their initiatives are really interesting. Rhizome is interesting too, with their emulation work and making net art available online on their website. Um. Oh gosh. There's so much going on, isn't there, in the world of preservation? We have a good connection to the Tate. So, they've been here, and we've visited them. I think they're interesting too, in the performance space, which is time-based art. And what does that look like? What about you? What have you found from your research?

Lieve Baetens: There are so many interesting initiatives. The resources that people share. For example, you shared the Matters in Media Art. I didn't know about that website or application, so that is already really interesting.

Candice Cranmer: Yeah, that's a good one, isn't it?

Lieve Baetens: The resources and just all the institutions that I spoke to so far all have been thinking about how to preserve these works. And there is so much knowledge in the institutions, so that is really interesting. I don't know if I know of any interesting initiatives right now that I can share with you besides the interesting organizations that I spoke about. But if I do, I will let you know.

Candice Cranmer: I think a lot of organizations with different backgrounds are doing interesting things. We try and work with the glam sector, you know, libraries, galleries, museums. And what does the library context mean? Because they collect immersive works as well. What does it mean in a library space? What does it mean in a museum? What does

it mean in a gallery? What methods are they using that are the same or different for digital preservation? What can that bring to this whole field?

C. Transcription interview British Library with Giulia Carla Rossi

Lieve Baetens: So, as an introduction first, could you tell us a little bit more about yourself and your role within the British Library, please?

Giulia Carla Rossi: Yes, sure. So, my name is Giulia Carla Rossi and I work as curator for digital publications at the British Library. I work within the contemporary British and Irish published collections team. And in my role, I help the library develop their capability to collect and also manage the collection and preservation of what we call complex digital publications, which are publications that are born digital, but also more structurally and technologically complex than more standardized formats that the library can already collect at scale. So more or less this, if it makes sense. Do you want me to expand on any of it?

Lieve Baetens: Is there anything you want to expand over?

Giulia Carla Rossi: I can talk more about emerging formats. Another word that we use for the complex digital publications is emerging formats. Basically, that refers to all digital publications that don't necessarily have a print counterpart. Sometimes they have some sort of print outputs, but they can't really fully be replicated in print without that having an impact on the experience of reading the narrative. And we've mostly been focusing on apps like mobile apps for tablet or phone and interactive narratives that are delivered via the web. So online interactive narratives. We've tried to experiment with different collection methods and tried to collect different files from publishers or sometimes individual authors that have been creating this sort of publications. It's been going well. It's been challenging. Also, quite an interesting area to work in.

Lieve Baetens: How did the British Library decide to do this? Because the libraries I know usually focus on books and this is something else.

Giulia Carla Rossi: So, the British Library is a national library of the U.K. and it's a legal deposit library. So, we collect everything that is published in the U.K. and that includes digital publications as well. And since 2013, I think, it was the legal deposit libraries non-print works regulations, something very complicated. But basically, the legal deposit regulation extended to include non-print works as well, which very much means like e-books or e-journals, but also things like websites or digital maps. So, the UK Web archive is based at the British Library, even if it works across legal deposit libraries in the UK, and they've been collecting the UK web since it's existed as the UK Web Archiving consortium in 2005. But since 2013 they've been collecting under non-print legal deposit regulations. And as part of this

collecting, we've also started to look at those publications that are a bit less standardized. So, a lot of the, for example, interactive narratives that we've been trying to collect use different tools to write a narrative. Like authors sometimes write their own code and decide to use sometimes more popular and common tools, but other times very bespoke tools to write their own narratives. So, it's been quite interesting to research and understand how people are changing the way they write and also publish some of these narratives. As a library, we are very much interested in the narrative itself, the text and the book in some way. They are still very much publications in the eyes of the library. So that's why we are interested in these sorts of formats.

Lieve Baetens: What staff do you have in the British Library for the acquisition and preservation of immersive media?

Giulia Carla Rossi: So, we have quite a few different teams doing different roles. We have a digital preservation team that we've been working with quite closely. So emerging formats is me as the person that is dedicated to it full time. But I work very closely with some of the colleagues in digital preservation as well as colleagues in the UK Web Archive whenever I need to use web archiving tools to preserve some of these narratives. And then there is also other colleagues working more in outreach and collaborating with artists and emerging formats. It started as a project, and it was a project across legal deposit libraries. So, it's six legal deposit libraries in the UK, and it was always a joint effort. So, the British Library leads on it, but we do get input from other libraries as well to decide what to do next. So, it's spread across different institutions as well.

Lieve Baetens: How do you or how does the British Library define immersive media?

Giulia Carla Rossi: That's a tricky question.

Lieve Baetens: That's why we ask.

Giulia Carla Rossi: I don't know if we talk about immersive media a lot. We definitely talk about complex digital publications or emerging formats. As I mentioned, what we've been focusing on are very much apps and interactive narratives. We have been looking at a VR game that is in the exhibition that we have on right now, which is very much a story told through a VR medium. But what we've been doing for that is more trying to document the experience. So, we had a PhD placement student with us for six months looking at contextual information for this kind of emerging formats and what material we can collect that is not the publication itself, but can help us document how the publication worked or the

original context it was published in. And they've created playthrough videos for three of the narratives that we have in the exhibition. In the gallery, they work as instruction videos, so the people know how to use and interact with the kind of playable version that we have in the gallery. But then we very much want to add those to our collection as well as documentation of those works. Two of them work on an iPad tablet. So, the idea is also if, or actually when, one day that work will not be accessible anymore on a tablet, we think it's quite important to have some documentation of how the work was originally accessed and what the experience was for people to read it on the device it was intended to be used on. And the third one is the VR game. We haven't made any sort of progress preserving the VR itself, but what we're trying to see is what we can do with preserving this sort of documentation. So, Florence was our PhD placement student who did a two-minute video playing the VR experience. And in the video, you can see what they see in the VR headset, but also, they can see how they interact with the controllers and get an idea of the experience of it. So, I think maybe that is the most immersive of the narratives that we've been trying to collect. But otherwise, I think we've we talked a lot about interactivity, more than immersion with a lot of the things we've been collecting. I don't know if that answers the questions.

Lieve Baetens: Yes, I think so, because interactivity is actually a key component, I think, in immersive media. So, it's interesting that you named that as part of immersive media.

Giulia Carla Rossi: Yeah, I think sometimes there are just different definition to refer to almost the same thing. Because I know there are people that are very adamant that a print book is quite immersive. When you read a book, you just get in the story. And so that is immersive as well. And so, it is quite hard to define what is an immersive medium versus what is not.

Lieve Baetens: Yeah, that's a good point, because the book isn't VR or AR, but it is immersive in a way. Could you tell us a little bit more about the immersive media collection from the British Library?

Giulia Carla Rossi: So, we have collected a few different things through the years. We got some apps. Sometimes collected directly from the publisher where they send us the packaged files for Android or iOS apps, and sometimes the individual files that make up the apps. And we've we put that on our minimum preservation tool storage, which allows us to make sure that we don't have any bitrot on the files, although it's not really a long-term preservation strategy. It's more for now, while we sort out how we can preserve these different files. But we also have two different thematic collections on the UK Web archive. One is called Interactive Narratives, and it's part of a bigger collection that is called Emerging

Formats. And then we have another collection called the New Media Writing Prize, and that is a collection of all the shortlisted and winning entries to the New Media Writing Prize, which is a prize that is based in the UK and funded by Bournemouth University. They started in 2010 so it's been going on for a bit. It's really interesting because it's new media writing, so it's very much focused on writing, text and the story, but they don't really have any limitations in terms of formats. So, they really have a variety of things that get submitted every year. For the UK Web archive collection, what we can do with that is add all the entries that are online, or web based, because we use the web archiving technology that they use and the web crawlers that they use. It's probably the most successful collecting activity we've been doing for emerging formats because we can give access to what we've collected to readers in the library. Because they can access all the things, we collected through the UK Web archive and most of them are only accessible on site. So, you have to be in the library or one of the other legal deposit libraries in the UK and use one of the library terminals in the reading rooms. But sometimes some of the things we collected are open also remotely. So, you can look at it at the archived copy on your computer from home. But that is only if the domain owner gave us access and permission to open it outside of the library premise.

Lieve Baetens: What is the history of the immersive media collection within the British Library?

Giulia Carla Rossi: I think in terms of digital or born digital collecting, it does go back to 2013 when we started collecting under non-print legal deposit regulations. There have been some collect before then. But since 2013, we've been collecting more consistently because we have a regulation that allows us to do so. And emerging formats is something I think it started as a project in 2017. I joined the library in 2019, so that was before my time. But it started as a small project that was supposed to be, I think, three years. And then now it's become business as usual and we're just doing more emerging formats work. We're trying to grow, understand how we can apply what we learn from what we collected so far to new format types and new collections and try to look at the future as well and see what else is coming up.

Lieve Baetens: Why is the British Library collecting immersive media?

Giulia Carla Rossi: If it falls under non-print legal deposit regulation, it's our mandate to collect as widely as possible across what is published in the UK, including things that are publicly published digitally. A lot of the interactive narratives we've been collecting are very much narratives, so are very much publications. It's especially for things that exist uniquely in the digital form, they are even more ephemeral than something that is in print. So, I think it

is quite a time sensitive task as well. We are trying to make sure that a lot of these publications won't disappear.

Lieve Baetens: How does collecting immersive media fit in your collection policy?

Giulia Carla Rossi: If it's within non-print legal deposit regulations and it is very much part of the wider collection that the library is doing. As I mentioned, it includes things like PDFs, Epubs or formats that are much more standardized and common. The library knows we can just ingest and collect at scale without too many issues. But we are trying to also experiment with collecting more less standardized formats, but it's all very much part of the same collecting activity that we're doing.

Lieve Baetens: What selection criteria do you use when collecting immersive media? It's about UK publications, I understand.

Giulia Carla Rossi: So, when we collect under non-print legal deposit, we do have to collect UK publications. How you define UK publications when a publication is online is a bit tricky. So, for the UK web archive, they do collect top level domains that are from the UK. So .uk but also. scott .kamri and .london. It could be that it's a domain that is .com but it's based in the UK. And so, if there is an address that is based in the UK or if the author of a narrative, for example is based in the UK, while they write that narrative, that could still qualify. Sometimes it's a bit of a blurred line. In that case, it comes down to asking for permission to make sure that we're not collecting something that doesn't fit within the policy. So, for the New Media Writing Prize, for example, that is a UK based prize. So that was our rationale behind deciding to create that collection. But it is open globally. So, people from all over the world can participate. And for the people that send in their entries, maybe one was shortlisted who are not UK based, but we still wanted to add their entry to the collection. In that case, we had to ask for permission to collect. While if it was a UK website, we could just collect it under our regulations. For the Interactive Narratives collection and the New Media Writing Prize collection in the UK Web archive, we also created scoping documents before even starting on the collection, just to make sure that it was clear what was in scope, what wasn't in scope and what some of our limitations might be. The documents are actually available publicly so researchers can also have a look and understand why maybe something is missing or why we made certain choices. So, I think that is also quite important in being transparent and hopefully helpful to researchers when they come and visit, consult these collections.

Lieve Baetens: You have already answered the next question because we wanted to know what the intellectual property rights are. We actually haven't encountered an institution with a legal deposit. You're the first.

Giulia Carla Rossi: We can collect under this regulation. We're almost, legally required to collect. So, it becomes more of an issue once we are not collecting on the legal deposit. It's more like a donation or maybe an acquisition. For emerging formats, we have been acting on the legal deposit. That has helped us. It makes things easier for sure.

Lieve Baetens: I can also imagine that it might be difficult sometimes. Can it be difficult to know what you need to add to your collection? Because how do you know everything that's out there and you have the right to collect?

Giulia Carla Rossi: I think identifying things to collect and being aware of what is going on and what we need to collect is something that we are very aware is a challenge. Especially for things like this interactive narratives where a lot of the times there are individual authors behind a narrative. Sometimes it's a medium scale or small scale studio, I have a different budget and there is marketing promotion, so we are aware they exist. But when it's an individual writing, maybe a more personal story and published online, it is really hard sometimes to be able to find everyone. And I don't think we have found everyone. I think we try to get as many as we can. So, we are not trying to establish a literary canon or we're not making any judgment on literary value. We are just trying to collect as widely as possible to make sure that we are representing as many voices as possible. Being aware of different communities and different other organizations that are doing similar things and collaborating with the artists, for example during the exhibition or doing outreach events, really helped us in becoming aware of things going on, like the New Media Writing Prize, for example. But it is very much a challenge because if we are trying to collect everything we know, that's almost impossible because there will always be something that slips through the cracks. It is very much a continuous exercise of making sure that we know there are more things out there and we are trying to reach them as much as we can.

Lieve Baetens: What information do you want to know from the artists when acquiring an immersive media work? I don't know if acquiring is the right term with a legal deposit.

Giulia Carla Rossi: I think maybe we say collecting.

Lieve Baetens: Are you collaborating with artists within legal deposits?

Giulia Carla Rossi: I think it depends because with emerging formats, it's been quite small scale so far and we have only collected for the interactive narratives. I think now it's about 200 websites and New Media Writing Prize is 200 as well, if not more. But for apps we have a handful, I want to say maybe 10, 12 apps. And so, it is quite small scale compared to how the library operates. So, I think we were able to have a direct collaboration with a lot of the artists or publishers and in the sense that we were asking them: "We are trying to collect interactive narratives or apps or these emerging formats, would you be interested in sending us your files or can we collect your website for websites that are UK based?" Often, we just add them to the collection because we can under legal deposit, but for things like the apps, for example, we couldn't use our web crawler. In all those instances we had to ask the artists or the publishers and see whether they were willing to give us the files or not. I think one interesting example is 80 Days, which is an interactive narrative that is actually in the exhibition and that was originally published as an app for iPad. It is loosely based on "Around the world in 80 days", but it's much more interactive and you can make different choices to how the narrative unfolds as well as plan your route around the world. In that case, we got in touch with the studio Inkle that produced 80 days. We asked them: "What do you have? What do you think we should collect if we want to collect 80 days?" And they were very happy to collaborate with us. They were very nice and very helpful and gave us all the files they had and even a copy of the source code for the game. But I think often we found that asking the creative what they think is necessary for us to collect in order to preserve this publication is probably the best way to proceed. We have some publications that, for example, use live data feeds and in that case, creating an archival copy might not be as useful as maybe documenting how the specific publication works in a live environment. So, it's a lot of thinking what is the best way of preserving this specific thing? Or what are the elements that make this publication, this publication? So, I think definitely collaborating with the artists is a good way of going around that. We've been quite lucky to be able to do this because this is still very small scale. The problem is also technical capability at the moment. We can't really collect these things at scale because we know we don't have a system in place to do so. So, it's still quite, if not manual, definitely smaller scale process. So, it is much easier to have that relationship with the creatives as well.

Lieve Baetens: I can understand that a legal deposit is great, but I can also understand that in this specific case, it might be difficult for you. Because collaborating with artists is a really important part in the preservation process, but at the same time it's really time consuming. And as you say, the technical part of it, it's so difficult for a lot of institutions. If you acquire works, then you only have to focus on one work. But if you have a legal deposit and you have to have everything in your collection, especially when it becomes on a bigger scale, that's going to be time consuming.

Giulia Carla Rossi: The nature of emerging formats work is more complex, and it is often things that are bespoke or not really fully standardized. It might never really scale up to that point. And it has been very much a lot of trial and error and trying different things and seeing what works. And I think the fact that it is so experimental also allowed us to try different things with the artist and see what they thought would be the best way of doing so. It is quite experimental, and we don't have to collect at the same pace or scale that the rest of the library does.

Lieve Baetens: What questions are important for you to ask to the artist? Do you have a standard questionnaire or is it based on the specific work that you're collaborating with an artist with?

Giulia Carla Rossi: I think it is more based on the specific work. There used to be a test questionnaire that was created when emerging formats as a project first started, to understand what the creatives had and what they were willing to give us. And also, how did they define their publications? I think, especially for collecting the apps, we've done quite a lot of case-by-case work where we just had conversations with the artists and authors as well and understand what they had in archives or what they were willing to give to the library. It's very been very much a conversation we've been thinking about, I think I mentioned before, contextual collecting as well. So sometimes people had things like initial sketches for some graphics or photos or even sound files that made the app, but weren't the actual final published file of the app. So that is, I think, what we would consider the publication. But other things are maybe elements that make the publications, but they are not the publication itself. So, we've been thinking, if sometimes the app might not exist anymore or might not be working anymore, if we can't collect that specific publication, what can we collect around it that will allow us to still have a trace of that publication in our collection? And that has been very much a conversation with the artist to understand what they had that we could collect. But it has been mostly on a case-by-case basis, I think.

Lieve Baetens: How do you decide how you're going to preserve an immersive media work in your collection?

Giulia Carla Rossi: So, I think we do try and make use of existing infrastructures, so for example the UK Web archive. We had a postdoc doing a placement for six months and experiment with the different web crawlers that the UK Web archive was already using, and a few new others, and experimented with different tools to see how interactive narratives could be best captured. And we found that, there was a way in which we could use Heritrix,

which is the web crawler that the UK Web archive use, as well as a bit of web recorder to collect some of the more dynamic or complex interactive narratives. But in general, the infrastructure of the UK web archive was a good place to collect and archive this type of emerging formats. And so, it's actually been very useful for us to have this archive that is already available. We do have an access solution for this. People can come to the library and reading rooms and they can see it. So being able to just put these emerging formats into the structure of the library was very useful. I think with apps it has been more challenging because we don't really have an access solution at the moment. So, we have the files, and we have them on storage, but we don't really have a preservation strategy for the long term. And we don't really have a way of providing access to them in the reading rooms because a lot of apps especially are very hardware dependent, and they were created for a specific device that's a tablet. We don't really have a tablet loan system in the library, and we don't really have a way of providing access to them. Emulation could be a solution, but we haven't really made much progress on that front. And I think it is also not just thinking about providing access, but providing access within the library and within the regulation that the library has. We do think about preservation slightly differently based on the format that we are collecting. And if there is something in place that we know would work for it, we tend to go down that route.

Lieve Baetens: Let's say you make a preservation policy. What would the policy for immersive media need according to you?

Giulia Carla Rossi: It's a big a challenge for us. A big question is access, and that is quite important. We have some files and publication that we collected. We are a library, and we provide a service to readers and that service is for them to be able to consult all the publications that we collected if we have collected. If we have preserved this publication, but we don't have a way of providing access to them, I think it's almost like we haven't preserved them at all. So, I think access is definitely a big part of it. I think thinking about software dependencies, but also hardware dependencies is also another challenge, at least for the emerging formats that we are looking at. Either thinking of a policy that includes hardware collection as well as hardware maintenance for the long term or some emulation strategy. But I guess that feeds into access again. So how do you access the files we've preserved if the hardware doesn't work anymore? I would say access is my main point.

Lieve Baetens: Access is key. Are you working with a third party?

Giulia Carla Rossi: Not really. Well, we're working across legal deposit libraries, so it's not just us. It's Bodleian Library in Oxford, Cambridge University Library, National Library of

Wales, National Library of Scotland and Trinity College Library in Dublin. We have regular meetings with representatives from all the other libraries as well, where we talk about progress, emerging formats, what we are doing next and the challenges we're having. We're also have quite a lot of contact and sharing of knowledge with other cultural institutions like Tate, V&A, the BFI and Cambridge University Library. I think we are all facing very similar challenges, whether it's interactive narratives or video games or net art. And so, I think sharing knowledge and lessons learned is very important in this field.

Lieve Baetens: What are your goals in the future for preserving immersive media in the British Library?

Giulia Carla Rossi: Not to repeat myself, but I think being able to provide access to the files that we've been collecting. I think it's great that we can provide access to the interactive narratives in the UK Web archive. But I think having something that is more sustainable for the apps, something that we know we can implement and be able to present this collection to people, something to see also how researchers use the collection and maybe what need they might have that. I feel like until we are able to provide some access to these files for people, we can't really understand how they will use it and what they would need from us. So, I think access is really what's on my mind and it's the big thing that we need to sort out in order to understand how to proceed in the future.

Lieve Baetens: What does it take to achieve those goals? How do you get to sustainable access?

Giulia Carla Rossi: Oh, that's a good question. I want to say resources because it's usually that. I think having more resources dedicated to this goal and being able to understand how that works within the context of the library, because there are so many aspects of the British Library. It's not just providing access in general, but it would be providing access within a reading room. And also, ideally providing access not just in this reading room but also across legal deposit libraries. So, I think it needs a collaborative effort from all of the libraries and maybe other institutions as well. If someone tackles the problem of access and they know how to provide access to all the apps ever, that would be great.

Lieve Baetens: Are you right now working on initiatives, or do you know of any initiatives that you are keeping an eye on for the British Library that are interesting for immersive media?

Giulia Carla Rossi: I mean, I want to say the digital storytelling exhibition. It's been a few years in the making, and it's actually been really useful for us. I think it will be very useful once it has closed, to reflect back on what we learned from it because it's very much an exhibition. Our goal was also to try and understand how to display these digital formats in a physical space. I think what we've learned will help us in our collecting policies and decisions in the future. And being able to work so closely with the artists as well has been incredibly useful and amazing. I think we've also understood more about context and interpretation and the contextual documentation that we want to provide and could be useful for researchers in the future. I think the exhibition is definitely the thing that is occupying most of my time right now, but it's also been a really interesting experience. We're having a few events coming up in the summer and autumn as well, public events. But also, hopefully chances to get more people to understand what we're doing at the library and the fact that we are collecting this interactive narratives and not just manuscripts and medieval books. Other chances to outreach and maybe get more of creatives or people interested in these interactive narratives within our doors. And let them know that we are interested in collecting these things. Those are very much publications that the library wants in its collection.

Lieve Baetens: You said that it was a few years in the making. Can you share something about the findings so far on presentation and all the things you worked on?

Giulia Carla Rossi: I think it's been quite interesting to think about not just putting digital objects in a physical space but putting objects that very much exist in a network environment into a gallery as discrete entities. So, some of the things that, for example, use live data, how do you present that as an object in a gallery? We have been reflecting on, what the features are that make this publication, this publication. If it needs live data in order to work, removing that will not allow visitors to have the same experience as actually on the web. Some of the works in the gallery have a live connection because they need that connection in order to function and maintain their meaning as well. So, I think it's been interesting in thinking about each of the works almost individually and not treating everything the same and thinking that the script is what we want for everything. Because maybe the text is the most important thing for this. We have something that is an audio drama adventure. You don't have the script the same way. It's more like an audio experience. So how do you convey that experience instead? It's been quite interesting. But again, I think what we learned the most was from the artists themselves and asking them these questions. Like, this is our idea, what do you think? Does that work? A lot of them have been very generous with their time and also help us create gallery ready versions for some of the works. So that has been really helpful as well. It'll be very exciting, after today, after the first day of the exhibition, to see how the visitors interact with the works as well. We are hoping to learn from it as well, because in our

head I think we just say: "Okay, you put this here, you put that there". We try to provide instructions on use for everything, but we as curators know these works so well now that we definitely have blind spots. We think it's obvious. It will be definitely interesting to see how people react to it and, how they interact with the things in the gallery.

Lieve Baetens: Are you going to do something with these findings? Write a paper or present it somewhere?

Giulia Carla Rossi: I think we probably will present it somewhere. I don't know where yet. The exhibition closes in mid-October and then I think we probably take a little break, breathe, and then reconvene. And yeah, I think we would definitely like to keep the momentum going as well because I think it is quite interesting and is quite useful for us to understand these things and then apply them to our collection as well. So yeah, definitely there will be something, but I still don't know what.

Lieve Baetens: I understand. I think it would be really interesting because so many institutions that are collecting it, want to show it and want to give access to all the people that want to view it. So, I think it's really what you said, the momentum is great because so many institutions want to know how you could present this work to the audience. As a final question, would you maybe want to add something that I haven't asked already?

Giulia Carla Rossi: I don't know. I think it's been quite extensive. I don't have anything at the top of my head. I think I would be really interested to know, once you've done all the interviews, what other people have said as well and what other institutions are doing. I mean, I might know Tate and maybe some other institutions in the UK, but it would be interesting to know more broadly what other cultural organizations are doing. Because I think it is really important to share that knowledge and we really don't want to be in isolation and just do our own thing.

D. Transcription interview HEK with Claudia Roeck

Lieve Baetens: So, my first question is just to get to know you a bit better. Could you tell us a little bit more about yourself and your role within the House of Electronic Arts?

Claudia Roeck: I am freelancing there since the beginning of the House of Electronic Arts. I think it was either 2012 or 2014, I don't remember. There was no conservator so I, as a freelancer, had the role of the conservator. Since one year, or I think it's a bit more than one year, I am employed there. Like a regular employee for one day per week. I work a lot from home, but I also go there. I have to go there, of course, because not all of the artworks are not physical. And not all of the artworks are purely digital. So, there is also a need to see people and discuss certain topics with them.

Lieve Baetens: For the people that are working on immersive media, what staff does the House of Electronic Arts has for the acquisition and preservation of immersive arts?

Claudia Roeck: That's me. Maybe I have to say a bit more about the House of Electronic Arts so that you understand my role better. So, the House of Electronic Arts is specialized in contemporary art that has to do with digital media. That can be software-based art, net art, immersive art, or it can be anything. It can also be digital video that was digitally produced, a born digital video. And most of the exhibitions are with artworks that come directly from the artists. The works are exhibited there and then they go back to the artist. So, they are just borrowed from the artist. But the House of Electronic Arts is also building a collection of artworks. I am the one who is responsible for the collection. Then there are two technicians, each 50%, who mainly do the exhibitions with the artworks that are not part of the collections. About every three to four months there's an exhibition. They also support me with the collection a bit. But that's totally on the side because of course, they have to deal with all the installations of the artworks. Then there are two curators who are responsible for the exhibitions. They choose, the artworks, they curate the exhibitions. Sabine Himmelsbach, who is the director, is the one who decides which artworks are acquired for the collection. That's not me. I only preserve them. The decision which artworks enter the collection are made by Sabine Himmelsbach, the director of the House of Electronic Arts. Mainly due to the funding, it has to be mainly art that was created in Switzerland or by Swiss artists. It can be everything. I mean, anything that has a relationship to digital technology somehow or electronic technology. It could also be analog electronics in theory.

Lieve Baetens: So, for the staff working on immersive media, if I understand you correctly, it's mostly you. What kind of skills do you need or have within the House of Electronic Arts for immersive media? Or what skills would you want to have, that isn't in the institution yet?

Claudia Roeck: I mean, ideally, you have the skills of a software engineer or computer scientist, or something like that, combined with the conservator. Ideally, I am combined with the time-based media conservator. Because that's its own specialization. But time-based media conservators are usually educated to deal with video. Digitizing video film, digitizing film, software-based art, net art, anything. So, because most of us are not software engineers or computer scientists, we need to collaborate with them. And it's also very nice. But the problem is that you have to find people who want to deal with old code. So, what skills? You need to collaborate. You need to find a computer scientist who works with you. You need, of course, to work with the artists and with the curators. Maybe the technicians can support me. Our technicians were initially actually more specialized in installing artworks. But now HEK selects them on their digital skills so that they have skills like computer scientists. So, they also support me with the digital repository that we are still setting up. That takes a long time. And you need to be interested in technology and in digital technology. If you're not, then it's not working. If you can call that a skill. I'm trying to get more skilled with programming or let's say basic programming. I'm getting skilled with Linux. Because Linux is important, for instance, for web-based artworks, for web server, and also for our digital repository.

Lieve Baetens: Okay, great. Thank you. Then on to the immersive media in the institutions. How do you or how does House of Electronic Art define immersive media?

Claudia Roeck: Actually, I checked quickly on our website whether we have a category immersive media, and we don't. But I must also say that this is quite arbitrary. You know, the categories we set up. We don't really speak about immersive media. We have three different artworks that I mentioned to you that could go into this category. One is a VR artwork, so that's definitely immersive. Then one of them has a VR headset. Two of them are made with a game engine. So that could also be a definition, that if an artwork is made with a game engine that it's immersive. But it could also just be like the way it's installed because one of them, Zone*Interdite, is installed in a U-shape. So, three screens are installed in a U-shape, and you are kind of immersed in the screens. You could say that is immersive. Those are the three works we have that could be defined as immersive. The third one, the display room, it is made with a game engine, but it doesn't feel immersive at all because it's just an installation basically. It's an installation of a water pool and things are happening in this water

pool. There's a little screen with information about it. So there the game engine is actually used to produce an installative artwork.

Lieve Baetens: And in what categories are they now if they aren't categorized as immersive media?

Claudia Roeck: I'll check quickly how the curators categorize them, because I don't do it. Let's say, I would categorize them probably more according to the technology. Okay, let's check Displuvium. Mm. Nothing interesting. It's a format. It says software, electronics, mixed media installation. I think I would say that they categorize it as an installation. Not so telling. But you know what? I will write you because it takes too much time now. Because I need to know the artist's name and I need to click at the right place. And the Mélodie Mousset that's clear because that is VR. It's categorized as VR.

Lieve Baetens: Okay. Thank you. As a next question, what is the history of the immersive media collection within House of Electronic Arts, if you count those three works? When did you start collecting it? Why?

Claudia Roeck: It was not a criterium, that it was immersive or not. I don't think so. It's kind of difficult to say why they collected these three pieces because I didn't select them. I would have to ask them why. But I think that all three of them are important artworks. Mélodie Mousset was one of the first VR-based artworks in Switzerland. So, all three artists have a relationship with Switzerland. "We were looking for ourselves in each other" is the artwork that was made by Mélodie Mousset and it was made in 2015. So I think that's why they selected it, because it was very early and important for that reason. Then Zone*Interdite. I think that's probably, I'm saying probably because I don't know, also collected for the topicality regarding the topic of it. Because it is a reconstruction of the Guantanamo prison in Cuba. And a few years ago, that was totally surprising that they were able to do it, because it's secret information. That's also why it's called Zone*Interdite. I think it was really quite surprising that they could reconstruct that prison so well from information that was freely available on the Internet. And I think that was mainly the reason why they acquired this. And not because it was immersive or something. But the immersivity is not unimportant for this artwork, of course, because within the prison, you are moving around virtually. This work was made in 2009. It's very early, and they didn't use one of the common game engines because they only developed later. I don't think they already existed in that year. And then Displuvium. That's something completely different again, because it's basically an installation that just uses a game engine. They are artists from Switzerland. I don't know what the precise reason was that they chose that artwork. It deals with the fact that we humans try to

influence the rainfall. Even something that you think you cannot influence, that is created by nature, where you can do nothing about it, we human beings try to influence. It is quite an interesting artwork regarding the topic and how it's implemented with this pool where you can see the raindrops falling. The content of the artwork and how our technology interacts with nature was probably more the reason why it was acquired. The immersivity is not a reason for its acquisition.

Lieve Baetens: How does collecting immersive media fit within your collection policy?

Claudia Roeck: It fits very well. Because the House of Electronic Arts is focused on technological artworks or electronic artworks. So, it's kind of natural to collect such artworks. It's just part of all different kinds of objects we acquire and collect.

Lieve Baetens: You spoke a little bit about this already, but what selection criteria is House of Electronic Arts using when collecting immersive media?

Claudia Roeck: As I said, it's not focusing on immersive media. This is just naturally a part of it. It's rather focused on artworks that use new technologies to discuss how we deal with technology through art. So, it's a contemporary art platform that has as a focus on the relationship between society and new technology, I would say. And those are basically the criteria. Plus, what I said, Swiss artists or artists working in Switzerland.

Lieve Baetens: So, if I understand you correctly, the technology itself as immersive media doesn't really matter in this situation. It's about the content and the regular criteria that count for other technologies as well.

Claudia Roeck: So, we have a few net art pieces. Net art can also be immersive. For instance, Zone*Interdite, is an artwork that you can still access on the internet, but it's flash based and so it won't work properly anymore. You could theoretically see it also on a website. But then of course, you only have your monitor. It's not a proper installation. There are also immersive artworks as net art pieces. We have many different kinds, so it's not focused on immersive. That's just comes naturally.

Lieve Baetens: And just for my understanding because I'm so new to this, why can you view some net art as immersive? What makes it immersive?

Claudia Roeck: For instance, this walk through the Guantanamo prison. You could do it on the website and then it's a bit simpler because you only have one screen instead of three.

But they made it with the flash technology. There was also a little window where you could navigate where to go. And you had this walkthrough, through the prison on your screen. So that's why I'm saying it's immersive. It's like a game. You are moving in a virtual world. You're navigating in a virtual world. That's why I'm saying it's immersive. And there is actually also Web VR. So, there are pieces where you can wear goggles, but you're actually viewing a website with a VR headset, I mean, with goggles. We don't have those in the collection.

Lieve Baetens: My next question is about property rights. How do you manage the intellectual property rights around the immersive media works?

Claudia Roeck: For the pieces that we acquire that are part of our collection, we make an agreement with the artist. Of course, it depends on each case again. So, if I speak about Zone*Interdite, they used open source VR game engines. They are not developed anymore. You can also not migrate it. So, from that point of view, we didn't have to acquire any software rights or anything. What you have to think about is if you want to show it, you're dependent on an operating system. And in this case, it was Windows. And for Windows, you need a license. We acquired virtual machines where Windows was installed, including the license that you need for it. For "We were looking for ourselves in each other" by Mélodie Mousset, she used a game engine. We only got the executable. Which means that we don't really need the game engine because the executable is independent. But of course, if your operating system is updated, there will be a point of breakage when this executable won't work anymore. But she didn't have the source code or, let's say, the project. So, we tried to create a 360 degree video documentation. In that case we didn't need the game engine because we didn't have the project. We created this 360 degree video documentation. Until now, we haven't presented it because we can still use the executable. Because the documentation is limited. It is just like a walkthrough where I decided where I walk and for how long. It's not as interactive as the original work. I would have to discuss this with the artist if we wanted to show it. We haven't done that yet. Then there was a third one, Displuvium. There it's a different case again because we got the project. Then you need a game engine for this. There, you could think that maybe in the future you can migrate it because you have the project, and you have the game engine. But I must say, I haven't really looked deeply into it. I'm not sure whether they used any specific plugins because they often cost money and then you have a license problem. I haven't looked into that. But there we would really need an external software. Like the game engine, maybe plugins. I don't know. For the moment we have other problems with that artwork. Much more physical ones because it's a water pool and it has little pumps, and they have to be replaced.

Lieve Baetens: You don't have a legal deposit, so you have to contact the artist for each work. So, each work has an individual strategy. Do I understand correctly? And then as a next step, and please correct me if I'm wrong, you have to make appointments with the software maker because the artist doesn't always own the software. Is that correct?

Claudia Roeck: No, we don't. You mean like the game engine? No, we don't contact them. I could just download the game engine. But actually, I only download it to check the project that they delivered. But anybody can download this software. I didn't contact these people. The artists were doing the projects themselves, so I didn't have to contact the programmer. Well, no, in the Mélodie Mousset case, "We were looking for ourselves in each other" she actually collaborated with the programmer. She couldn't get in touch with him anymore because there was some dispute and stuff. They were not in good terms. But otherwise, we didn't need to contact any external software owners or license owners. I would say regarding Windows etcetera, it is difficult anyway because Microsoft isn't interested in any heritage, digital heritage. They're totally not into that. They don't care. Because it will be a problem in the future, or it already is. So, if you have an old operating system, how can you still get the license and how can you still use it? For Zone*Interdite it was on, I think, Windows 10 or 9 or less. 7? I don't remember. Now it's Windows 10 and we got the license, I think, for Windows 10. I'm not sure anymore.

Lieve Baetens: Okay. And then onto the next part, the collaboration with artists. What information do you want to know from the artist when acquiring an immersive media work?

Claudia Roeck: I want to know what software they used to create it and also the software that you don't need to play back, but only to create it.The game engine they used. I would like to have the project. Although sometimes I'm not sure whether I really want it because these projects can be very complex and I'm not a game designer. So that means you have to dive deep into it. Whether you have the time or not is the question. So, to create the production history I would like to know the tools they used. What you need to play it back now. Hardware, of course. If there is a headset, what headset? We actually have a form that we're using. I got it from Tate. interactivity, of course. Is it interactive? What kind of interactivity is it? Can you only navigate, or can you also do things? Is it a walkthrough or is it really totally interactive?What else do you ask? Let's check. Is it an installation? How do you need to install it? And what are the spatial requirements? Can you show it on a screen, a flat screen or projection screen? And if it's VR, do you want it only to be shown for the person who is wearing the goggles, or do you also want it to be shown on the screen so that other people see what the person is experiencing from outside? It's also about production history, display requirements. Are there assets we need to have if you want to preserve the work?

Like images, shaders or whatever? Logins, special sounds, video files, installation documentation. I could send you this.

Lieve Baetens: I think it's on the Preserving Immersive Media Knowledge Base.

Claudia Roeck: Yes.

Lieve Baetens: And is it the one from Tate or have you adapted it for a House of Electronic Arts?

Claudia Roeck: It is the one from Tate. I don't remember whether I adapted it, but these are questions you're asking anyway as a time-based media conservator. I think I didn't adapt it. I'm not sure.

Lieve Baetens: And why are these questions so important for you to know?

Claudia Roeck: Because the acquisition process is the time and the moment when I can ask for everything. Later, it is more difficult because then we already paid. So, it's better to ask before you pay. And it's also the time and moment when artists are interested, when they remember. It's much more difficult to ask these things later. They might not even have them anymore or not remember any longer. They might have lost interest. It can be it can be different reasons. So, you need to ask things at the moment of acquisition as much as possible. Also, you need to ask them for documentation so that they document the artwork technically because they know better than I do what they did. So, I need to ask them where they stored it? What is the data path for that? What version of runtime environment did they use? What kind of graphic video card do you need? It's actually not only a topic of VR headset. It's also graphics cards that can be specific or that have to be compatible with this executable or project that you get.

Lieve Baetens: How are you collaborating with artists? Is it only at the acquisition part or is it after that? How does it work? Is it only an interview?

Claudia Roeck: Ideally, I would have an artist interview. An artist interview can be technical about the components of the artwork. Ideally, it's also about the concept of the artwork. Because that can be very helpful for preservation. If you need to change a lot, then you know what the basic idea of the artwork is so that you don't compromise that. That's actually even the most important thing, but unfortunately, we don't always do that. So, I will often only focus on the technical part to ask them, as I said, where did you store this? What data path

did you use? Etcetera. Usually, I write them an email first where I ask them to send what they have. Then I can go through it and have an idea of what it is. And then there's like a ping pong that starts. I don't always have time to do the artist interview perfectly.

Lieve Baetens: How do you decide how you're going to preserve an immersive media work in your collection?

Claudia Roeck: All three artworks that I mentioned are different. They all have a different path, a different conservation strategy. And I haven't really executed these strategies yet. Zone*Interdite is from 2009 where we used the software environment Windows 2010, I believe. I asked for virtual machines in the hope that we have the whole software environment that we need to play back, and it's already installed so that we can play back from virtual machines. It is not so simple, though. Because there are three displays and three virtual machines that you need to connect. These virtual machines, they need to be able to access the graphics card still. So that's not so simple. For Displuvium I'm not sure yet how I'm going to do this. Whether it will be migrated or whether we will use virtual machines to do it.

Lieve Baetens: How do you start with even thinking about this? Do you have some sort of process? Do you read a lot about it? How does this work?

Claudia Roeck: It has to do with what I get. And usually at the point of acquisition you try to get as much as possible so that you have the choice later. But in the case of Zone*Interdite the software was already deprecated. You cannot do anything about it. If it's not developed anymore, it’s not developed. That's it. Then you cannot update it. So that's already a given. So, you need to work somehow with emulation or virtual machines. In the case of Mélodie Mousset "We were looking for ourselves in each other" we didn't have a project and we didn't get it. We tried. It was not possible to get it because this project didn't exist any longer, only the executable. The artist didn't know that the project is so important for preservation. So, there we had to choose different strategies. It was a given. Migration is also not possible because we don't have the project. And the VR headset needs a very specific software or runtime environment. As long as you use the old VR headset, it's okay. But as soon as you replace it with a new one, which will not be the same as the one you had, then the software environment will no longer be compatible with it. That means that even if you play back in a virtual machine or on the same computer it still will not be able to play back on this new headset. That means that this virtualization path will not work either. So, then the last possibility is a kind of documentation, and that's what we did. We tried to make this 360 degree video. But that's also not so easy because you also need to technology that can do it.

But then in this case, it was possible. So that's how I decide. With Displuvium, I haven't decided yet because there I got a virtual machine. I got a bit of everything I would need. There it's more a question of complexity and how much time I can spend on that artwork. I will try to work together with the artists as much as possible in that case.

Lieve Baetens: If you would make a preservation policy, what would the preservation policy for immersive media need according to you?

Claudia Roeck: It would focus on acquisition, I would say. That you acquire all the components that are necessary for its preservation. I would start there. And then it depends also a bit on the institution, what kind of goals they have. I'm actually not sure what the latest developments with VR headsets are. How compatible they are with older versions of executables. But I think the safest is documentation. Sound and Vision did a project about game preservation. They interviewed game developers and game players. They also filmed them and let them tell their story about them playing it and what they liked and didn't like about it. I would do something like that I think to capture the user experience and the point of view of the developers of the piece. I think something like that. You need to think about the documentation at the moment you acquire it. It's best to do it in the beginning when you acquire it, to already produce the documentation. That would be the ideal thing. Because the risk is extremely high that it won't work any longer in a few years. It is really very high. Maybe there are other kinds of documentation. I'm not sure. I mentioned this 360 degree video, that's also a possibility. Let them play and film it. I'm not sure whether it's still online, but they were really good videos. Jesse de Vos organized this project. If you acquired the whole project, you could theoretically migrate it. And of course, it's a strategy to migrate it to the next following long term version of game engine. I mean, this will last two years then you have to do it again. So, it's a lot of work. And you will have to acquire new headsets all the time, so I'm not sure whether that's realistic for an archive. I don't know. I'm doubting it a bit, but maybe.

Lieve Baetens: Are you working with a third party for the preservation of immersive media, or is it just the people at the House of Electronic Arts?

Claudia Roeck: At the moment it's just us, but I have the possibility to contact computer scientists. We are working with somebody who is building our web art web server, because this art web server has very specific requirements different from a normal web server and I can't do that myself. So, I need somebody who can work with that. And I could also ask this person to help me with this kind of stuff, but maybe I would need somebody else. Maybe he

would say, "no, that's not my expertise. Ask somebody else". Then I would have to look for somebody else. I first try it myself and if I get stuck, I ask.

Lieve Baetens: What are your goals in the future for preserving immersive media in the House of Electronic Arts?

Claudia Roeck: I would like to have more time. This is more like a wish. I would have like to have more time to test things. Within this limited time, you get a complex artwork and when you acquire it, you should actually test things. Sometimes you can't do that properly, not as as you really should do it. I think I would like to have more time. And it would be so nice to have more time also with the computer scientist. So, I think that would be nice to be able to do it more thoroughly. I feel that I can't really do it as I should. I give it my best.

Lieve Baetens: Yes, I completely understand. I read the report you sent about Organ Islands, and I was really impressed by it because there were some great points that I actually hadn't thought about. For example, where you said that you needed to move your head slowly and actually practice moving your head slowly for capturing the 360 video. That's something that I would have never thought about. So, it's great that you documented the entire process because I can imagine that that's really interesting for other people as well.

Claudia Roeck: Yes. Actually, to do a 360 degree video, you shouldn't get sick with VR. And I always got sick all the time. Especially when viewing it, which is interesting. If you're in it yourself, it's okay. But if you're viewing it, then you realize suddenly, "Oh no, how is this as a as a visitor?". You get immediately sick from that and then you have to learn how to move within this virtual world so that somebody else who is in your shoes, doesn't get sick or doesn't get bored. And gets the gist of the work. And that's why ideally you would let the artist do it, because they created the work. If I do it, it's my choice. It's my selection.

Lieve Baetens: Yes, it was an interesting point that you made, that it's a curating decision on what you show because there are so many layers in a work. Really interesting. Looking at the time, I just want to ask you, do you want to add something that I haven't asked in this interview yet?

Claudia Roeck: Don't think so. No, I don't think so at the moment. Maybe rather I would be interested if you find other organizations who collect immersive art, no matter what it is. I would be interested to know what they do or know. It would be nice to exchange knowledge. I think your project is about that so I'm really curious about your results and interested in it.

E. Transcription interview LIMA with Gaby Wijers

Lieve Baetens: First, could you tell us a little bit more about yourself and your role within LIMA?

Gaby Wijers: My name is Gaby Wijers. I'm founder and director of LIMA. LIMA is a platform and knowledge center for the sustainability and the continuation of media art. LIMA is ten years old, but it builds upon a long legacy from the 70s on from Montevideo, Time Based Arts and the Netherlands Media Art Institute. At one hand, we are an agency, supporting artists in the worldwide presentation and promotion of their works. And at the other hand, we take care of about 65 collections, where museums and private collectors and so on outsource the maintenance and the storage of their media artworks to us. And on top of that we do research, curate exhibitions and presents screening programs and more. We're totally dedicated to media art.

Lieve Baetens: What staff do you have within LIMA for the acquisition and preservation of immersive media?

Gaby Wijers: We don't have a staff particularly for immersive media. We have staff for media art. It's from early video art till NFT's, sound art, immersive art, performative art, and lots of other forms. Also online. We have an artistic staff. So, a curator, distributors, and me. We have a technical staff. Three technicians that deal with distributing and preserving media art. A registrar and researchers. And people that are dealing with communication and finances. But we don't have dedicated staff for, as I said, immersive media. But for instance, Claudia Roeck, Mauricio Van der Maessen and Olivia Brumwork with us, as Tom Ensom and his colleagues from TATE do as Dragan Espenschied from Rhizome as well with the colleagues from ZKM and other specialized institutes

Lieve Baetens: Okay. Thank you. How do you or how does LIMA define immersive media?

Gaby Wijers: The works that deal with virtual reality and mixed reality. So, either it's 100% virtual or there is a level of the real and the virtual included. We are not a big organization, but work in a large network. We are very much a network organization a network that we support or that supports us. And we discuss all kinds of different preservation challenges. So also, the challenges of immersive media preservation.

Lieve Baetens: Could you tell us a bit more about the immersive media collection from LIMA?

Gaby Wijers: In our distribution collection, we have a few immersive works, maybe ten or maybe a bit more. Let's say around that number. Starting since, I think 2009 or so. We already presented and produced these type of works in the 90s. But in the collection, I think it started the second half of the 1990. There are not that many in total. And there's also not so much acquired by museums. This has also to do with the difficulty to select and watch these works. The difficulty to give a curator or a programmer access to the works and give an impression. Of course, 360 degrees video etc. are made, but that's always a bit problematic, it’s not the work itself. That's changing right now so that there's high hopes.

Lieve Baetens: You already stated that you started with the collection in the 90s. Can you tell a bit more about the history of the immersive media collection within LIMA?

Gaby Wijers: At that time the artists we worked with and the artists we represented were producing interesting works using this kind of media.

Lieve Baetens: Well, I think that's a good reason.

Gaby Wijers: Every new generation of technology brings artists that explore these new technologies to gain a new audience, to express their concepts within and with this new medium. I found a nice book. See this?

Lieve Baetens: Virtual reality.

Gaby Wijers: It's from 91. A Dutch book about virtual reality. So virtual reality is, of course, not that new. There are so many, let's say, early experiments. At a certain point, these technologies get accessible. And artists can afford to work with it. followed by the audience can afford to access it. It's not a particular line in our collection. We don't select by medium; we select media artworks in general. We collect or select media artists and - artworks that can be any medium.

Lieve Baetens: As for the collection policy, how does collecting immersive media fit in your collection policy?

Gaby Wijers: 100%. If artists are exploring these technologies and if the work is appealing to us it fits.

Lieve Baetens: What selection criteria do you use when collecting immersive media?

Gaby Wijers: Content wise, the same as for the rest of the collection. And technically there are some restrictions, but I don't think there are particular ones. We have a general collection policy. There's no distinction to medium. That's because we have thousands of works the main part is video art. And about 25% is more complex software based, interactive multiple screens, live digital performances.

Lieve Baetens: And as for the more general criteria, can you expand a bit on those criteria?

Gaby Wijers: We have a couple of lines for selection in the collection. These are Media criticism, documentation and reflection, short narratives and medium specific. These themes come from the collections we take care of. Of course, we take new artworks from new artists in the collection. And we collected works by the artists we work with, butwe don't necessarily collect their whole oeuvre, we make a selection. I know some museums that criteria like portraits specifically. But for us, that's not the case. Sometimes it's very abstract and technical, and sometimes the works are very poetic or new narratives. But of course, there always must be a sort of urgency to collect them. But that is very difficult to describe. It's always a reflection of the current society and the zeitgeist.

Lieve Baetens: How do you manage the intellectual property rights around these works?

Gaby Wijers: Since we are an agency, we make a contract to present and promote the works. Our task is then to present, promote and preserve these works and keep them accessible as long as possible.

Lieve Baetens: What information do you want to know from the artist when acquiring an immersive media work?

Gaby Wijers: First of all, the artistic concept. And then, a description of the technology used and why it's executed in this technology and how. Furthermore, collaborations and particular decisions made are important to address. We have a general questionnaire for more complex digital works. We also ask the artists how they see the presentation of their work in the future. But you probably have seen the questionnaire?

Lieve Baetens: In the Preserving Immersive Media Knowledge Base.

Gaby Wijers: Or in the preservation report of Justin Zijlstra’s VR work commissioned by Atria, that we did for NDE.

Lieve Baetens: Yes, which was very helpful for this field. Are there any answers in the questionnaire that surprise you or are more general or specific that might be interesting for this research?

Gaby Wijers: Not necessarily, maybe the number of files that's used as a source (footage). The question is if we should preserve them as well and how to.

Lieve Baetens: How are you collaborating with artists for preserving immersive media? Is it only at the time of acquisition or is it later? How does it work in general?

Gaby Wijers: Working with and for the artists is central to our work, so that's an ongoing process. When a work comes into the distribution collection, when the work is presented on a particular location or situation. And when the work is preserved. So, there are a couple of times and occasions we are in contact and that also differs from one to the other artists.

Lieve Baetens: Okay, that depends a bit on the artist?

Gaby Wijers: Yeah, it depends on the artwork and the artist. We execute at least 4 case studies a year and then we are very frequently in contact with the artists for particular exhibitions or preservation projects.

Lieve Baetens: How do you decide how you're going to preserve an immersive media work in your collection?

Gaby Wijers: We have a general and a flexible workflow, for more complex works. So, we can handle almost all technical challenges. At the time of the NDE/VR project LIMA was the only repository in the Netherlands that was able to ingest and take care of this particular VRwork. When ingesting the technicians and the registrar will always check the work and see if they understand and are able to document the technique used and the functionality of the work. And a quality check: If it's complete, if there are things missing and other information such as sound. It can be anything. Then they formulate questions if needed. It's depending on the work. Followed by extracting the files from former devices or asking for all the files from the artists. Researching the particular software and hardware. (We focus more on software then on hardware) Storing and monitoring the files, sourcode and documentation.

Lieve Baetens: Why is that?

Gaby Wijers: Many works are less hardware, more software depended. By preserving the software together with the documentation, we can execute the work eventually with different hardware. So, we make a description of the hardware and see if we understand the functionality. We store it and we check it. The first attention goes to the source. We make a disc image, and we store it together with the files, sourcecode and documentation. We have the same system as many others. We store it on LTO and monitor it constantly. We have three copies. If we explore newer technologies, we organize a roundtable or questionnaire and invite experts, colleagues, or artists to get feedback from, we make a preservation proposal and then invite a group of specialists or institutions. Sometimes all at once, sometimes in different groups. Dragan and Tom and others were also present when we discussed this Justin Zijlstra case. Then we discuss as well how we can maybe translate it to an open format. Sometimes the artist is also present or sometimes we have this discussion separately with the artists. Or we invite other artists, discussing how they deal with it. I think it's also very much dependent on the level of interactivity and preservation challenges and the practice in describing what is needed for this interactivity.

Lieve Baetens: You mentioned a workflow. What goes into making this workflow? How did you come up with this workflow?

Gaby Wijers: We have a workflow based on OAIS and following the NDE standards since we're taking care of thousands of media artworks for more than 60 collections and our own collection. It’s not one size fits all: as described. It's depending on interactivity, levels of dependencies, user interaction, etc. So, we adjust, or better tweak the workflow a bit for the diversity of media artworks. So, for instance, if you talk about online or VR artworks, you have very static ones and very interactive. With different levels of information and different actions to execute. We have a sustainable workflow that is adjusted on a regular base on the base of particular case studies and expertmeetings to adapt it to new technologies.

Lieve Baetens: I'm impressed by that. That sounds really thorough, which is so great to have. What would a preservation policy for immersive media need according to you?

Gaby Wijers: The policy needs the awareness that this means continuous change, not only in the technical infrastructure for heritage organizations but also in the knowledge needed. So, in the policy the room for making these changes, doing these round tables, getting knowledgeable, exchanging information, is of main importance. We talked about the artworks, but the caretakers, the infrastructure and the knowledge(sharing) is as important. So, the infrastructure and all the technical aspects need attention. Of course, you should

have an emphasis there. But I think there's a serious need as well for more emphasis in the awareness about the effort, amount of time to gain and to keep track of the knowledge transfer that's going on all the time.

Lieve Baetens: Are you working with a third party for the preservation of immersive media? I think you already mentioned that.

Gaby Wijers: We are the third party for many others.

Lieve Baetens: I think you mentioned that for specific cases you talked to, for example, Tom Ensom and Dragan Espenschied.

Gaby Wijers: And Claudia Roeck and others. So, we do that now once or twice a year. We also have the symposium to do so. We are also member of the immersive media network, and we are a member of the NDE. So also exchange from our side. And I think every five years nowadays, we also do a questionnaire to see how everyone is doing or what the solutions or difficulties are.

Lieve Baetens: What goals do you have in the future for preserving immersive media?

Gaby Wijers: The same goals as with the other media artworks. To keep them up and running as long as possible and accessible to be experienced. And as a knowledge center sharing facilities, documentation and understanding. So, if the experience itself is not possible anymore, we at least have the documentation. So, we know how it used to be. Expanding this knowledge, sharing more of this knowledge. Currently we have the knowledge and facilities, but we don't have the structural support for this structural task to be able to also translate what we do to the rest. So, people are more aware and know that it's out there. And this is something we, of course, in the future hope to do important and takes a lot of time and we have to make space for that as well. And basically, this needs support, financial support, and better collaboration. So, for instance, your research would be great if we could have been involved at the start and could do this together. Something like that. I think collaboration nationally and internationally is super important. And research to figure out how to deal with it on a bigger scale. Now it's still modest. There are not so many works in the collection. Of course, we take care of all these collections. For instance, the Justin Zijlstra case is from another collection, not our collection. In these collections are, not that many, but quite some immersive media artworks, of course, where we take care of. And when the research was done by Atria, how to preserve this work, LIMA was the only place in the Netherlands where you could outsource this.

Lieve Baetens: Are you working on initiatives, or do you know initiatives that LIMA keeps an eye on? I think it's important to state that LIMA itself is an important organization that has lots of initiatives in this field that are important to look into.

Gaby Wijers: In the conservation of these type of artworks, technicians and artists are very involved and interested. Not so much the curators and the museums if I may say so. So, this is something that does need extra attention. If they don't select it also doesn't come into the collections. As I said, it's a particular type of media artwork that needs particular attention. There are some national projects in some countries where also immersive media is included. I think the most important is the awareness that it needs a continuous effort, and we need to have time to keep track, to discuss, to reflect, to collaborate and to exchange knowledge and tasks.

Lieve Baetens: Then as a final question, would you like to add something that hasn't been mentioned in this interview?

Gaby Wijers: No, I think in between the lines I mentioned a lot. LIMA takes care of many collections, museum corporate and private collections can outsource the preservation and maintenance of media artworks including immersive media to us. Artists do as well, they also come to us for support. We have a substantial amount of research projects always in collaboration, I see the future as a netwerkstructure with sharing of infrastructure, knowledge gaining and knowledge-sharing.

F. Transcription interview Sound and Vision with Wytze Koppelman, Kiki Lennaerts and Amy Welten

Lieve Baetens: Could you tell us more about yourself and your role in Sound and Vision?

Amy Welten: Media manager at the 'Vereeuwigen' department. I am also part of Team Makers and the DEI workgroup. I mostly archive new media (YouTube, TikTok, Instagram, games, websites), but also documentaries. Sometimes I help Beeld & Geluid op School in making lessons with archive material for high school kids.

Kiki Lennaerts: Advisor new media preservation focusing on born digital and emerging materials and researcher into capacity building and impact assessment for cultural heritage institutions. Publication on documentation for immersive media on the Sound & Vision platform.

Wytze Koppelman: Conservator (curator) Culture and Entertainment; on the one hand responsible for the domains of Culture and Entertainment within NISV's collection policy. To further develop our policies and acquisitions. On the other hand responsible for developing/plugging this collection into concrete products together with product managers and external institutions, researchers, makers, etc.

Lieve Baetens: What staff do you have in Sound and Vision for the acquisition and preservation of immersive media?

All: We have an R&D department for research into new archiving methods and developments in the field, we have a preservation department to process/render what comes in. The preservation department has teams dedicated to archiving new media (games archiving, website archiving, webvideo archiving). An IT department to build the necessary digital infrastructure and a storytelling department that takes care of communication and contextualizing the content of the archive and also scouts new relevant developments in the different media fields. All in all at NISV it's a 'full service' package dedicated to archiving media history and also making sure we're at the forefront of new media developments.

Lieve Baetens: What skills do you need in an institution to select and preserve immersive media?

All:

- An understanding of the relevant parameters of (new) media developments and insights into the relation of those parameters to the bigger picture of media history.
- A big component of the work is experimentation as the objects/information do not fit into the 'traditional audiovisual formats'.
- Collaboration overspanning different departments as well as the archive suppliers and artists that bring their immersive media content to the archive.
- Digital literacy is important.

Lieve Baetens: How do you or Sound and Vision define immersive media?

Kiki Lennaerts: I do not believe that there is a clear definition for immersive media. As the term is still expanding and we are having internal discussions into what we include as emerging/immersive. One of the definitions that helps us navigate is defined on the Preserving Immersive Media Knowledge Base.

Lieve Baetens: Could you tell us more about the immersive media collections from Sound and Vision?

Amy Welten: We have a collection of webvideos consisting mostly of YouTube, TikTok and Instagram videos; we have a collection of video games; we have a collection of websites.

Lieve Baetens: What is the history of the immersive media collection within Sound and Vision?

Wytze Koppelman: It of course depends on the definition for immersive media, we started collecting websites in 2012 and in 2016 we launched our Game On! project in which we mapped the game archiving practice in NL, in addition to creating and collecting gameplay videos of 90's games as documentation.

All: We are also a research partner of IDFA DocLab (for several years). There have been artist interviews with the makers, white papers and other publications and in 2022 we have engaged in the (attempt to) archiving one of the works that was presented at DocLab. A project that combined an instagram page and AR with sound/podcast and illustrations.

Lieve Baetens: Why is Sound and Vision collecting immersive media?

Kiki Lennaerts: Sound & Vision has the intention to turn the audiovisual archive into a multi media archive. Meaning that in addition to collecting linear audiovisual materials (like the content from the dutch broadcasters) we also have the intention to collect more non-linear materials that have a connection to the dutch media field or other (inter)national projects that we are engaged in. Immersive media as a media type is becoming increasingly important and is developing rapidly, in order to be able to track these developments in the future it is of great importance that they are collected and cared for.

Lieve Baetens: How does collecting immersive media fit in your collection policy?

Wytze Koppelman: NISV wants to develop and position itself as a *media* archive (as differing from its position before, as a radio and television archive). So our policy is based more around an emphasis on what kind of content is being produced within media (news, entertainment, advertising) as opposed to an emphasis on a given *medium* itself (be it radio, television, print, etc.). Of course, one informs the other: the conditions of a given medium also dictate the conditions of the content to a certain extent (for example, games being interactive dictates another *interactive* form of content, where tv might be considered passive. And with that also come differing questions about archiving). But thematically, in pretty much every medium you see fictional storytelling, entertainment, etc.

Lieve Baetens: If it doesn't fit, why are you collecting it? Does it fit in your institutional strategy?

Kiki Lennaerts: It can also be difficult in a Dutch context to decide who is responsible for collecting specific materials. As there is no legal deposit and thus a division of the work

among several institutions. As a large institution we feel like we are partly responsible for researching and experimenting with ways to safeguard and collect immersive media (in collaboration with other Dutch institutions).

Lieve Baetens: What selection criteria is Sound and Vision using when collecting immersive media?

Wytze Koppelman: In general a work has to be made in the Netherlands, or for the bigger part made by Dutch creators. Our mission is to archive Dutch audiovisual heritage (which can also be just audio, just visual, interactive, etc.). Within these parameters, NISV uses different collection strategies or approaches. For example collecting an oeuvre of a certain creator, production house, broadcaster or studio. Or for example, to collect an overview of a certain media development: a webseries where you collect the first, last and middle episode. An online trend, of which you collect videos from a few big creators with a lot of followers, and a few smaller creators with few followers. There are of course more ways to go about this, but the above are a few examples of how NISV looks at its collection and new acquisitions.

Lieve Baetens: How do you manage the intellectual property rights around these works?

Wytze Koppelman: When it comes to immersive media, we have no legal requirement yet to archive these works. This might differ in the future, as public broadcasters start experimenting more with immersive media. We do have a legal requirement to archive the content of the public broadcasters. So up until now, we ask the rights holders of immersive media for permission to archive their work. They can choose as to how much ‘freedom’ they give us to use their work for educational, cultural and research purposes. But copyright always stays with them, as stated by Dutch laws.

Lieve Baetens: Do you have a legal deposit, or do you ask all the artists individually for the rights?

Wytze Koppelman: There is no legal deposit in NL. In many cases we have individual contact e.g. games, interactives. For websites and webvideo however we are working with opt out.

Lieve Baetens: Are the rights a limit for the preservation?

Wytze Koppelman: Depends on how you look at it. On the one hand, if someone else has a say in what you can do with a given work, object, etc. it always limits your possibilities to a certain extent. On the other hand, working together with a rights holder can also give you an extra source of information about a work.

Lieve Baetens: What information do you want to know from the artist when acquiring an immersive media work?

Amy Welten: Any documentation and descriptive metadata is welcome: a description of the work, the development process, who/what is involved, physical/technological requirements to access the work (such as: VR goggles in case of a VR project, or specific settings in case of a game).

Lieve Baetens: Do you have a questionnaire for an artist interview? If not: Why not?

Amy Welten: Not yet. Simply has not been done yet. I am currently creating a questionnaire that can guide artists in writing a description of their work that meets the requirements of our archive.

Lieve Baetens: What questions are important to ask to artists for immersive media?

Amy Welten: Questions like: what is the title of the work? Why was the work made? When was it created? For/with whom was it created? How was the work created (think of: the work process, research, used materials/software/hardware, etc.)? What is the end result/What kind of work is it?

Lieve Baetens: What answers surprised you when interviewing artists about their immersive media works?

Kiki Lennaerts: For the Doclab case I was surprised that they did not have any expectations of the archiving process - e.g. what we would be able to capture - as one of their previous artworks did not work anymore they were happy to capture any part of the work as possible. In this case Sound and Vision stepped in as a caretaker, while we are not sure of the best practices in this regard either.

Lieve Baetens: How are you collaborating with artists when preserving immersive media?

Amy Welten: Normal practice, in short, is that we reach out to artists and tell them we would like to preserve their work. We will make an inventory of what is exactly going to be preserved. The artist will need to sign a contract so that we can legally preserve the work. The work that is to be preserved will be transferred to Sound and Vision (either physically or digitally). I usually ask the artists if they can provide some (descriptive) metadata of their own work. After that, the work for the artist is done; we archive the works and update the artists on how it's going/when it's finished and findable in our catalog.

Lieve Baetens: How do you decide how you are going to preserve an immersive media work in your collection?

Amy Welten: It varies for each of the media types that we are preserving at S&V. For games we actively reach out via email or networking events to studios/developers whose games we'd like to archive. The games are migrated and emulated to keep them playable. The playability is important so we try to focus the strategy around that. For webvideo we actively look for channels/video's we'd like to archive and email the makers for permission (in case we want to archive an entire channel, the makers will sign a contract). Webvideos will be ingested in our digital catalog for the people to find - the strategy is roughly the same for other AV material. For websites we are working with Archive IT that has specific affordances for quality checks. NISV has a space on their platform where the websites are archived and available to see via the Wayback Machine. As with games, not just the preservation is important: the possibility to access the websites after archiving is important too.

Wytze Koppelman: This is also an ongoing process. If possible it would of course be easiest to archive everything (a YouTube video *and* the contexts of its UI/website), but technical limitations demand that you make choices in what to archive. Or better yet (or worse, depending how you look at it) limit your option to what you actually *can* archive within the boundaries of a certain medium.

Amy Welten: The team dedicated to archiving the works have to come up with a strategy that fits the specific medium. To do that we discuss 1) our wishes and 2) the possibilities within the institute. S&V is an audiovisual archive, originally made for television and radio, so archiving games for example brings the necessary challenges. In the case of games we had to look at emulation software to keep the games playable. In the case of websites we had to partner up with the Internet Archive. They are (sometimes pragmatic) solutions because our archive system simply is not made for new, immersive media. It's all a result of discussing

with the team what strategy would do justice to the medium and how/if the things we want are actually possible, working within the systems that we have. (But also to dream a little bigger: we can always work outside of the box, like we did with websites: work with a partner if we can't do it ourselves.)

Lieve Baetens: Are you focusing on the hardware, the software or both?

Amy Welten: Both. In the case of games we focus on the software and (if available) physical copies of the game, but we do not archive the consoles.

Lieve Baetens: What would a preservation policy for immersive media need according to you?

Wytze Koppelman: Our focus is mainly on the software. For most media (television, radio, games) we store a digital copy. Also for most media, we tend to keep certain objects which are 'hardware' examples of a medium (different televisions and radio throughout the years, a variety of game consoles). At the heart of this are basic questions as how do you preserve the experience of seeing/using/playing this audiovisual artifact? Do you *need* a Commodore 64 to have the same experience als playing a game made for this computer? Can you even have the same experience playing such a game from the 1980s when you yourself are playing it in 2023? These questions have no one straight answer and views on it can very well differ wildly throughout the years and decades. But as for now, NISV focuses mostly on preserving the software of these audiovisual artifacts - and where possible a carrier of it, if available - and sees the hardware more as contextual material.

Lieve Baetens: Are you working with a third-party for the preservation of immersive media?

All: Websites: Archive IT

Lieve Baetens: What are your goals in the future for preserving immersive media in Sound and Vision?

Kiki Lennaerts: Standardizing and creating a workflow will make it possible to not work case by case which is very time consuming. The question remains if this will be possible for very interactive immersive content as they are prone to be very specific and need the individual attention.

All: Collaborating with other institutions will be of great value in determining good practices in this field. As you (may) have noticed there are limited resources as well as limited institutions working on this topic. The best way to develop the knowledge is to share insights and workflows to be able to collect as sustainable as possible.

Lieve Baetens: What does it take to achieve those goals?

All: Open sharing of knowledge. Research to explore possible routes. Working with programmers / individuals that have software skills. As immersive media is so complex and variable we need the technical expertise to be able to make progress in the preservation and collecting.

Lieve Baetens: Are you working on initiatives, or do you know any initiatives that (institution) keeps an eye on?

All: LIMA, IDFA Doclab, MIT, Immerse, TRANSMIXR (EU project), PIMKB (with Tate)

Lieve Baetens: Would you like to add something that hasn't been mentioned in this interview?

All: NISV has not archived many (or any?) VR or AR projects yet, but that is slowly starting up. Our aim is to eventually have a workflow for that as well.

G. Transcription interview Rhizome with Dragan Espenschied

Lieve Baetens: Can you tell a bit more about yourself and your role within Rhizome?

Dragan Espenschied: So, my name is Dragan Espenschied. I'm the preservation director at Rhizome. I work at Rhizome since 2014. I'm focusing on Rhizomes archive, which is the art base. We have more than 2000 works in the ArtBase. We are an institution that doesn't have rooms or a storage or anything physical. We have office space as a collaboration with the New Museum in New York, but otherwise, we can't keep stuff. So, we are like a cloud internet software organization. And that of course, gives a particular perspective on collecting software or collecting any type of digital art. My work has been concentrated on infrastructure. I like to push the field into the direction of getting away from the particular use case and looking more at a bigger picture collection level preservation of digital art and building infrastructure. That can solve the issues that many artworks have.

Lieve Baetens: What staff do you have in Rhizome for the acquisition and preservation of immersive media?

Dragan Espenschied: We are with six people right now at Rhizome. At the moment the Preservation Department is me. I work with an intern and a master's student. We have our lead developer on staff as well who is just a very savvy programmer. And then we have curatorial staff, directors, editors. We are small. LIMA is also small. Everyone is, in fact, small. And I think this is not untypical for new media or digital art institutions in particular, which is also something that I always like to take into account when thinking about preservation. There is no specialty between different types of artworks, I would say, because everything that we collect is software. Software is, in some ways always the same. I mean, on a very abstract level. You don't necessarily need to distinguish between a digital video, an executable program, a game or an app. They are just different contexts in which software is produced and consumed. That determines much more what you can do in the realm of preservation. Like the term du jour, is it called a website, is it a web app, is it a streaming service or is it a community system or whatever? I mean, these terms change over time.

Lieve Baetens: How do you or how does Rhizome define immersive media?

Dragan Espenschied: I have a background in virtual reality. Around the turn of the century, I was working at the Fraunhofer. A virtual reality lab here in Stuttgart, South Germany. That is basically where my definition comes from. There are different terms around right now that are sometimes based on what companies are putting out, what product to differentiate

themselves from each other. So, I think people have now come to say that just anything that's like 3D and stereo vision or something, can be called XR in a rough way. But immersive media or immersive environments back in the day were defined as environments that consume your senses. Where you can dive into this environment as a user and the outside environment that you are physically placed in doesn't fades into the background. This is, for instance, something that with augmented reality is already not true. I was working, of course, in an industry at that time where virtual reality was too expensive for anyone except for the automotive industry, the aviation industry and the military. This is now obviously different. So, the immersion that drive non-consumer development, they have moved away from immersion. Something that you can hear a lot is that it's actually isolating users from each other. And even the biggest, most hierarchical companies want that. They work together in teams. So, for instance, you don't use goggles or anything like that anymore. Because that makes our communication between team members too hard. I think when you talk about immersive media or this term artificial intelligence, anything that's like super hard and really difficult to manage and expensive is called artificial intelligence. And as soon as everyone has it on their iPhone, it's just called face recognition or voice dictation. And before that it was artificial intelligence. With immersive media, I have the same feeling. I mean, I didn't do academic research like you are doing about it, but it is something that's at the bleeding edge and people don't know what to do with it. It's difficult to handle and artists love it. They build something and after one week it's broken and that’s immersing everyone. It's immersing the artist, the industry, curators, conservators, exhibition technicians, all of them are immersed. It's immersing you in that way. So that's how I would define it. This is not an official party line at Rhizome though.

Lieve Baetens: I understand, that is why I ask. Because when I started this research, I was really new to it and that also made me quite naive.

Dragan Espenschied: Which is great.

Lieve Baetens: I remember beginning this research and thinking: "Oh, I'm going to research immersive media. Oh, that's great. All these new media." And then one person in an interview actually said to me: "No, it isn't new though, because it's been around for decades". And I thought: "good point". This is older technology. It isn't as new as I was thinking. You mentioned in your email, how do you define it? Anything R related? I actually thought that it was only augmented, virtual and mixed reality. So, I never thought about any other possibilities actually. And then when I was sending these emails to all those institutions, everyone kept asking me: "how do you define it?" And then I thought: "What do you mean with how do you define it? You can just Google it and it says augmented reality".

And then that person said to me: "Well, maybe that's not entirely true. It's depending a bit on the perspective of a person. And that made me realize that it was a bit naive of me to just assume that it was virtual reality". So that's why I ask.

Dragan Espenschied: Yeah, it's fun. I think that is also which is fascinating about such a discourse and that this term wasn't able to stabilize over time. It's a conservation issue. It's very difficult for artists and anyone who hasn't worked with it by chance. I totally stumbled into this 25 years ago. I was working in this field. How would you even connect the dots over time and have development? So that's why I think this is very important. Because as long as there is no clear idea of what it is or what we are talking about, then the perpetuity of the same things returning over and over again is never going to stop.

Lieve Baetens: Can you tell me a bit more about the immersive media collection that Rhizome has?

Dragan Espenschied: We don't have an immersive media collection program. What might be called immersive media is probably things that can easily be distributed online. So, what we were working with is a web accessible 3D environments. For instance, you will find some of them in the online exhibition world on a wire. Which also contains 360 degree videos. If you're really lucky your browser supports it. You can view them in stereoscopic mode if you have the equipment, but in most cases that's not the case. Either you have gigantic downloads or it's video material and you need really high resolution for it to not look shabby. Artists say in many cases "no one has this equipment" and they want to reach an audience over the internet. So, they don't want to require anyone to have this equipment. So that is one thing. And if it's real time 3D graphics, that also means that the audience needs to have quite powerful computers to use it. Any handheld phone nowadays is pretty impressive, it's pretty impressive what it can do. It is still a a block, hard to access. And since we are an online organization, access is, of course, paramount. Easy access and easy distribution is paramount. So, this is different from a museum, a classic museum organization that has a building and everything. Because they can provide this equipment to the audience. And also, the need to provide this equipment to a new audience. Um, yeah. That's something that we cannot do.

Lieve Baetens: What is the history of immersive media within Rhizome?

Dragan Espenschied: Rhizome was founded in 1996. If you look at the history of Rhizome in the 90s, there was already a wave of VR art. Usually made in institutions and with the support of Silicon Graphics, the company. Rhizome wasn't able to collect that. However,

some artists like Victoria Vesna, for instance work with VRML, which is the Virtual Reality Modeling Language. Which at the time was really good. If you had a Silicon Graphics computer and a browser, you could use VRML to model 3D scenes and quite sophisticated interactive 3D scenes with spatial sound and everything that would be downloaded, like HTML or something. It would be really empowering. I think at the time it felt very empowering. I worked at the Fraunhofer with VRML and so there is like a continuity in this. And then later when browsers started to support WebGL, of course, everyone already forgot about VRML. They made the same things again, more or less, but more complicated. VRML was so beautifully designed, so easy to use and easy to author. So, I think there is definitely a continuity there. And that's also why we have an immersive environment work or however you want to call it, immersive media work from 1996, in the collection. Which is Victoria Vesna's Bodies INCorporated. What was fun over time is that these works that originally required high powered computers later became accessible through more normal computers, because the computers just got so much faster, and you didn't need a Silicon Graphics computer. You could look at it on some shabby Windows computer, but then when the plug in was discontinued it became inaccessible again. So, there were several plugins. They were all very good and they all disappeared. There was never really one for Macintosh. Artists insist on using Macs. So, it also was a like a little bit of an outlier thing. But that's the history. And you can look in the history of net art and find some pretty cool pieces.

Lieve Baetens: That's so great that your institution has been working on this for so long and that it has such a broad history in this field. Because when I first started researching the metaverse for my thesis, it almost felt like there wasn't a space for all of these things within the cultural heritage sector. And then hearing your story about your institution that is working on this for so long and is so enthusiastic about it, it makes me so happy that people have been working on this and have so much knowledge and love for it.

Dragan Espenschied: Yeah, that's nice. It is very true that many museums and other memory institutions have this huge burden of the things that they have collected for, sometimes, centuries and need to take care of these. So sometimes a new organization is able to take such challenges on. If I'm thinking in the future and Rhizome would still exist in a hundred years, we would still have to deal with this software from 1996. And people will probably say: "Oh, you're not doing the thing that will happen then". Sometimes new media institutions would say that they're always doing the latest thing and all new media is, so to say, the same. Then they become historical. So, I think this will be an interesting challenge for the whole field of new media. Which new media is not about that media are new, right? It's just an academic term about a certain type of medium. It will be interesting to see how the field will grapple with that.

Lieve Baetens: How does collecting immersive media fit in your collection policy?

Dragan Espenschied: Easy. I mean it fits and it doesn't fit. Because it is possible now to collect immersive media, but not necessarily to preserve it. That, I would say, is not possible. Rhizome is not really a collecting institution. We are not about collecting, but we are providing memory for the community and for the field. That is challenging with immersive media. I mean, apart from the things that are accessible over the internet. It's other software that is very difficult to contain or to preserve. Artificial intelligence projects that require so much computing power that we cannot pay for it, basically. So, you could say that we are collecting it, but in the end we couldn't do nothing with it. Since we are not actually collecting. I think this is where it's probably not different in other institutions where they say they collected this. Institutions in the 90s collected software and had no idea what to do with it and over time maybe developed strategies.

Lieve Baetens: What selection criteria are you using when collecting immersive media?

Dragan Espenschied: This is not really official, but Rhizome is striving for trying to put things into the archive that we actually have the ability to represent. In many cases when artists are working with a framework, like Unity, they have the ability to make an exhibition version where you have to wear some HTC Vive Pro or whatever to access it, or they can export another version that is an Android app, a Linux app or a website. So, we would ask them to do that so that we have something at hand that we can actually handle. But otherwise, it is a pure artistic decision. And, of course, the Preservation Department is contacted to discuss: can we actually deal with this? Or what do you think? How much effort would it take? Or do we need to make this into a research project? There's also a willingness if a work is really relevant to list it in Artspace without having the ability to preserve it and rather go for something like documentation. Because you can't say: "maybe if we have a three-year research project, we'll be able to preserve this type of work". Sometimes you can look at it and say: "No, this is absolutely impossible, and it will never be possible unless the work is completely reproduced from scratch in a completely different way. And I don't think that makes sense. I think that is worse than just saying: "Okay, we'll have maybe some nice videos and interviews and whatever".

Lieve Baetens: Interesting. It sort of makes me think about restorations on paintings. You have all these ethics for people that restore these paintings that you can't do harm to it. So, everything needs to be reversible, and you need to have this initial thought of the artist present in the work after it's restored. And even though that's a whole different technique, it

reminds me of this because it's so important to still have this sort of initial thought of the artist with these technologies, even though it might be difficult to then preserve it.

Dragan Espenschied: I'm not even concerned too much with the thought of the artist. Coming from a net art background, what the artist wants to do is one perspective. Because in the end, the artwork performs on the net with the audience, and the audience might use it in completely different ways than the artist thought. I know some artists want to execute very tight control over what people can do in an artwork or not. And on the net, you have to approach this in a much more different way. What I'm actually concerned about is that with immersive media, if you want to call it like that, something that is on the bleeding edge right now, the technological materiality plays a huge role in the work. A lot of the attractiveness for many of these works come from the fact that there's something experimental, something that hasn't been done before, something that is exciting, where artists are exploring new ways of expressing themselves. They might come from a filmmaker background and approach it in one way, and they might come from a video game background and might approach it in another way. But when you look at VR works from 2000 at ZKM or whatever, which I used to do, you go there, and you see this installation that is supposed to overpower. It's mystical, weird and high tech. And then you look at it five years later and think: "Okay, I see this now in every shopping mall, at an airport or as an attraction for the perfume that I can buy there. Then the classic new media approach is to rebuild the work. And to do it with higher resolution or a slightly changed concept and so forth. You can do that if you have the budget, but this is not conservation. This is like an opera that is staged again. Of course, the stage design changes, the arrangement changes or the interpretation changes just to make it relevant for the current time. But if you think about preservation and you want to tell the story of new media art, immersive media or virtual reality or whatever, you have to find a way to show something that is shabby, with low resolution or is ten frames per second. You have to show why people were so excited about this. That is what preservation needs to approach. That sometimes tells you that maybe this was not a great artwork. If after three years you already think it's not so interesting, I guess that's a good thing to learn. I wouldn't overestimate artists thoughts too much there. There is a balance that needs to be upheld with giving the artist all the responsibility and all the power or serving the bigger goal of preservation and telling of history. For many artists their business model is basically to make something that works only ones and the next time the museum wants to show it, you have to contract the artist or the studio again. I think that's absolutely fine. But you always have to take this into account when thinking about what preservation and collecting is. Do you want to be this, or do you want to be somewhere in between? So, unless you have a clear mission in mind you will not be able to figure out a good policy for your institution or for your personal practice. That is always a little bit of a trap with anything that is new media. Because many

institutions that are engaged with it do everything and they have the brightest people on staff and they can take this thing apart completely, understand it and together with the artists build it again. But that means that you can only collect ten works or so, and you need a staff of 20 people. That is not a memory institution. That's like a traveling theater. It's not traveling, but it has a certain repertoire that they can reproduce under great effort. That's not a memory institution. But if you want to be like that, if you want to have the spectacle repeated over and over, then that's the choice. But then you can't say you are a memory institution. At Rhizome we are very clear in the camp of Historicization. We want to go down the route of Historicization. Personally, I believe this is the only way software can be preserved at all, because otherwise the burden of knowledge that rests on an institution is unmanageable. And you might indeed need to a large staff that is constantly retrained or when staff is changing, someone that takes care about a single thing. I find that a little bit problematic. It's like the Cirque du Soleil of software, which is also a model.

Lieve Baetens: How do you manage the intellectual property rights around immersive media works?

Dragan Espenschied: Not different from any other. This is also something that is particular about software, I think. With software, you can never do anything that is exhaustive about intellectual property. Because what an artist may hand over to you, as an artwork of what they created or what they put their hands on and have the creator's rights over, is like 1% of the things you need to make this work. If you would clear the copyright of every single thing, like down to the typefaces that are displayed on screen that say press spacebar to enter the immersive environment, you don't come to the bottom of it. We are defining the point of access into an artwork as the thing that needs to be preserved and the rest is supportive. I think museums and science and culture, have a lot of freedom and exemptions. They enjoy that in most parts of Europe, the United State and many places. And they need to make use of that. It depends what type of lawyer you're working with, but if you ask your lawyer, can I actually do this? They easily say no to anything that has to do with digital things. A challenge that I found very concerning with immersive media and museum installations, that is kind of related to intellectual property rights, is that for many of the software tools you need online accounts. And it can easily happen that to just run one particular project, you need three different completely unrelated online accounts with a launcher, with a tool kit, with some plugin, whatever. They are license servers on the other end that provide a license to the software that you're running locally. If this company that provides this license stops to exist and the license server goes down, then they take their intellectual property with them into their grave. And leave the collecting institutions on the other end to suffer. So, what I think actually needs to be done concerning property rights, if you're thinking about collecting and

preservation, is to go into the software and work with crackers to remove these mechanisms. This is already legal in the United States, but not in the European Union. This is something that the field really needs to work on. Because in the 90s, I would say the VR went away because Silicon Graphics went out of business and the computers were so expensive that no one had them. There was no enthusiast scene that could then keep these computers going or analyze them and write emulators. That's very hard. But now everything is so accessible. Everyone has this stuff at home if they really care about it. But most of it can be remotely switched off. Not out of spite or something, but just by accident or because someone made a bad business decision.

Lieve Baetens: What information do you want to know from the artist when acquiring an immersive media work?

Dragan Espenschied: This is like the same with any other software as well. So, what we usually do is ask them to send as much of the work and the environment the work was created for over to Rhizome. Then we are trying to reproduce it in this environment and the work living inside of the environment. And then we show that to the audience and ask: "Does that look like you think it should look? Does it behave like you think it should behave?" And if they say yes, then it's great. And if they say: "this is looking awful", "this is too slow" or "too fast", then we need to work on it. I don't think there's so much sense to make a list or ask them. It has to be done in communication back and forth and looking at the thing as much as possible. I worked with the Transmediale Archive of CD-Rom art almost ten years ago. This was art that was at that time 14 years old. I was reading through the notes that the artist left with the words what you need to take care of and what is important. None of it was relevant at all. It gave not the slightest insight into what was supposed to happen. Because all the things that you think are the most normal and the most clear, no one will write them down. They don't seem like information. With CD-Rom works, for instance, no one ever wrote that you need a mouse for this. You can't use it on a touch screen, because touchscreens didn't exist. How would they write this down? It's impossible. Sometimes it said that you need four megabytes of RAM to run this. If I would take this seriously, I would be unable to get four megabytes of RAM anywhere because RAM is not sold in that unit anymore. Or they say that you need a double speed CD-Rom. I don't need a double speed CD-Rom. That's wrong. What you see sometimes with this artist interviews is that people try to get at the bottom of this idea of the artwork. But many artworks are not based on ideas. Most of them are not conceptual art with conceptual ideas. You can say, first this happens, then this happens, and then the audience walks in the room and then, I don't know, an ice bucket falls on their head or whatever. It can be very clearly set out. Although this is digital art and software in the end that is based on logic. But most artists don't work on that level. So, it's also kind of unfair to

make their artwork into something that it never was. If it is conceptual art, if it is code-based art, if it's really about programming itself you can do that, but this is rarely the case. I like really the iterative approach and say, this is what I think this artwork is, and then the artist can have their input and then I can try to improve it. Then he can say that's fine or it's not fine. And then I can say this is really the best that is possible right now. If computers get faster, maybe this will be better or if people's internet will get faster, it will get better. But at the moment this is what we can do. I prefer that approach.

Lieve Baetens: Do you only work with the artists during the acquisition part or also at a later time?

Dragan Espenschied: It depends. Sometimes we don't even work with the artists at acquisition time because it can be very hard. For instance, when we were acquiring this Tumblr accessions, because Tumblr is going through platform changes and so forth, we felt like we need to find these tumblers and get them. Artists submitted their own work and said: "I want to be part of this Tumblr collection". The tumbler thing in itself looks like some basic blog platform, right? But it's under the hood. It is so complicated and it's so hard to capture that sometimes we were just fighting to get anything out of it at all. And then you can say this is just what's possible right now. We can't even discuss it. We can say: "There is something with what we have that is maybe better not to show, because it's not giving a good impression of the work." But sometimes we were also working with the artists and saying: "Do you have the password to this, can you run this tool and type in your password so that we can get this one image out of it?" So, it's a collaboration. But in that case, we didn't even have the luxury to say: "Do we want to show this in Firefox or in Chrome?" In many cases, you can be happy if it works to some degree. I think many conservatives are beating themselves up and are setting completely unrealistic goals for themselves. For instance, I once heard that conservatives were putting the virtual reality goggles and all the equipment on the scale and noting down what the weight of these things was. So that in the future this experience could be reproduced. I mean the artists just bought a thing that is able to run their work. They were maybe able to put 50% of their vision that they had for the artwork into that device. Maybe it was sponsored. Maybe their uncle gave it to them or something. Let's say in the future you would have really comfortable goggles and they would give you a super nice image. Would you then actually put half a kilogram of things on the audience for the experience? I don't think so. A lot of times you struggle with software and with all the complexities around software. Then if you feel powerless in one area, you're trying to extract the artwork from the artist's brain or think "I will be very meticulous with all the measurements and timing and all of these things". But how useful is this information in the future? Will someone have the time and the resources to recreate the artwork from this

information? Or is it actually more realistic that there will be an approximation from a video? Or will it just be shown as documentation with an explanation why this work was so important at the point of the collection. That's important because I know that, including myself, lots of conservators are really stressed out and are always tense because they know it vanishes in between your fingers. But it's not our fault. It's the fault of how the industry is set up, of how the art world is set up, about how the art market is set up. About what Biennale's curators are getting invited and so forth.

Lieve Baetens: How do you decide how you're going to preserve an immersive media work in your collection?

Dragan Espenschied: There are no options. Institutions will have different abilities. For instance, I know that the Tate Modern works with a bunch of brilliant people who come from a game development background. Rhizome is focusing more on infrastructure. But if I would be in an institution that has brilliant game developers on staff and that has infrastructure, I would of course use both options. Because that increases the likelihood of a work to survive. That's why we ask artists if they have a piece of software, like a project in Unity, to please export it for Mac, Windows, Linux and Android. Because in the future we might have better ways of doing it with one of these options than with another option. For them it doesn't take much time. So, this question is sometimes coming from what path you are choosing. This is more from an exhibition perspective. Of course, you want to have multiple options in the future. Hopefully one of them will survive. If two options will survive, you have two options of how you stage the work in an exhibition. But usually, you don't have to do that with digital art, so you don't have to choose one path. So, for instance, for many of the executable poetry accession run that we did before we did web archives, we did containerization and emulation. Each of them being slightly different and having a slightly different good versus bad parts. But in the end that keeps the most options open, so I would always try to do that.

Lieve Baetens: What would a preservation policy for immersive media need according to you?

Dragan Espenschied: That's an interesting question. I think it probably comes back to my thoughts about what you want to do as an institution. You need to understand what you want to do and then you need to form your policy around that. Do you want to be the Cirque du Soleil? Do you want to be the memory institution? Do you want to be an oral history institution of immersive media? Figure something out because if you want to do everything, you will have a very stressful time. I think it would be better if there would be different institutions looking at what other institutions are doing. And then see a conceptual gap and

say: "We are going into that gap and then we will collaborate with the others to preserve immersive media as a whole, but together". Because if you think about your own collection too much and that you will be the sole proprietor of your collection, this would be super hard. I would even say almost impossible unless you have unlimited resources. This is something that I really appreciate about the Netherlands. There are such structures in place and there is a lot of collaboration going on. And there is state support. The state is pushing different institutions to not all do the same. You need to figure out your specialization. I think this is really a good policy. I'm a big fan of LIMA and Sound and Vision, of course. This is coming very much from an American perspective where museums are in competition much more than in the Netherlands. They build their profile and their reputation through the collection. But in reality, the field would be much better off if they would say: "We are collecting this, but you are taking someone else's. For preserving the work, we pool our resources". I think that would be a great policy. The Netherlands is probably the best place to do that, because there's so much already laid out. It's really great.

Lieve Baetens: I actually didn't realize that this was such a Dutch thing, because I'm only used to these big networks. I never realized that it was different in other countries and that institutions are actually be in competition with each other.

Dragan Espenschied: You can also see it across Europe. Every major museum needs to have a Nam June Paik sculpture. Otherwise, their reputation is like totally zero. But this means that every museum needs to have a conservation specialist that knows about neon tubes and CRT screens. This doesn't sound very glamorous or so, and I know there should be another solution, but there should actually be a Nam June Paik Memorial Institute where all the sculptures go. And if you want to exhibit it, you just get it from there. And you exhibit it for two months and then it goes back, and you maybe rent it out. And then there's one place where all the specialists for that type of thing are concentrated, can exchange knowledge and can keep that knowledge going. And some other place might be specialized in something. This doesn't sound glamorous, and it sounds very stupid. It's not a culturally interesting idea, but sometimes I just wish it would be like this. I hope there could be something in between that works and we could still look at Nam June Paik sculptures.

Lieve Baetens: Are you working with a third party for the preservation of immersive media?

Dragan Espenschied: I like to collaborate with the folks at Tate who I think are leading. They have this immersive media preservation initiative, which is great. It turned out that I didn't have the time to contribute. I wanted to also add. There was this idea that Rhizome should fund open source development of a 360 degree video player for the web. This is an

idea that I still find very exciting. But at the moment the partnerships have not evolved to that level. I think it is interesting to figure out these partnerships. Not so much to hire an external contractor or so. If I would need to hire someone, I would hire Tom and Jack from the Tate.

Lieve Baetens: I can understand. I think everyone wants to hire Tom and Jack. What are your goals in the future for preserving immersive media in Rhizome?

Dragan Espenschied: I think at the moment immersive media is at the level of a software development mode. You need to go into the software and update it so that it keeps working and you need to be very proficient with all these frameworks. With these things that were published on the web, we are already one step further where you are in a maintenance mode. You are able to use the same artifact and keep it working with tricks. What I would want is that it can be encapsulated. That there can be an abstraction, that you get the software running and you transport it into the future through standardized interfaces to the outside world. We are now currently in a partnership with Museum of Science and Technology in Vienna. They have this mandate to collect software from Austria. Of course, they start with games because everyone loves games. One part of the project is figuring out what to do with GPUs, because GPUs are like outside world. They're actually like an HTC Vive. They are completely opaque. You cannot reproduce them. You cannot really emulate them. They are outside world. You run an emulator and each time you connect to a different screen and the emulator runs on a different computer, you need to get to that level on the GPU first. That's a research project we are involved with right now. I hope that it will be a major step towards, for instance, being able to run a virtual reality project on a remote computer in some emulator. You rent GPU time, and then you get the visuals out of it. But it doesn't really matter what you're using in the future. I think that's a very important goal, because unless you are abstracting the GPU you will always be stuck in this update and in the need to update things. That's the goal. I think that's a very hard goal and we'll see how it goes. It already works, for instance, with cameras. So, you can run some super old version of Windows and connect a new USB camera and the image just arrives in this old Windows version, or you can connect it. A joystick then works with this super old operating system. So, these things are possible. But on the GPU level, it hasn't been tried yet really. So, we hope that it will get some results.

Lieve Baetens: It sounds very interesting. I'm keeping my fingers crossed for you that this will work out because.

Dragan Espenschied: It's groundbreaking. I hope it will have at least some positive outcome.

Lieve Baetens: Are you working on any initiatives or are you currently aware of any initiatives that might be interesting for this research that you want to share?

Dragan Espenschied: I guess you know them already. You have talked to so many people. I personally think that the preserving immersive media initiative is the most promising one and also has been designed as a as a community effort, which I really appreciate. So, I think that makes the most sense. I know that some hardware collections exist that are collecting legacy virtual reality equipment. I would recommend looking at it. And I'm not sure if any of it still works. I'm currently trying to get a few Silicon Graphics computers from my old colleagues at the Fraunhofer that they rescued from the trash. Because it will help you understand what is important over time. So if you look at the virtual reality work today that is 25 years old, and see if you still find something fascinating about it. Think about what's fascinating about it or go to the ZKM when they show the Jeffrey Shaw work, The Legible City. Because this is a work I hated when it was a new work, when it was a virtual reality. With a powerful Silicon Graphics computer in the gallery, like the size of a fridge. They made an absolutely mind blowingly good restoration of the work. They had the source code and were able to compile it on Linux and use a standard instead of this super expensive, and not existing anymore, Silicon Graphics computer. The work at the time felt like it's overpowering, or it was meant to show you computer power and how powerful this computer is. Now when you look at it, you see something completely different there. I see the struggle of the artist in trying to make this computer do what they had in mind. And this engineering team that was required to do it. They also have a particular projector that it is shown with. And you get the aesthetic quality of that image. This is much more in the focus when you look at it now. Every conservator will have another approach to it. But I think it's good to have an approach and to say: "I imagine this now in ten years, what will people find exciting about it?" And you can more focus on that than anything that is significant property. And that is because old immersive media exists. I think that can give you a great insight.

Lieve Baetens: That's great advice. Thank you. I'm going to look into that, because now I'm also really curious at how this old VR is looking.

Dragan Espenschied: It's very pixely. Yeah, but back in the day I thought, this is the highest resolution anyone would ever need. And today you have four times as much pixels. On the artistic level, you can maybe say that an older project might be more exciting. And how the pixels exactly look is not that important.

Lieve Baetens: I'm going to look into it if it's possible to see this old work. With the current VR headsets, I'm sometimes a bit annoyed, because they're so heavy and they make me nauseous. But there's this whole history of this old VR. I think that maybe by looking at VR older works, it might make me more appreciative of what we have now.

Dragan Espenschied: I guess so. When I first put on an HTC Vive, I felt like I was back in 2000 again. It was so exciting. In 1999 and 2000 there were this huge projection rooms, like cubic rooms. Three by three-by-three meters, and every wall floor and the ceiling were projected upon with stereoscopic projection. You would step into this room and have these glasses on. And it was like, this is outrageous. It was amazing. And of course, if you went too close to the walls, you would see the pixels and everything. The first time I put on an HTC Vive Pro, I felt like this was just as exciting. Just from the quality of the image and the reaction time. I thought I fell down when I walked towards a simulated hole in the ground. I thought I really fell down. You have this effect only 1 or 2 times. When I was in the cave every day seeing engineers have a new Mercedes car in the cave and then the computer crashes and the Mercedes car is just gone. The first time I saw it I felt nauseous. It's something that your brain cannot cope with that this object is suddenly vanishing, but you get used to it very quickly. That also means that this is not the essence. This is not what is exciting. This is just overpowering. It is probably important for engineering history, but for art history we can focus on other things.

H. Transcription interview Tate with Patricia Falcao and Jack McConchie

Patricia Falcao: So, if I ask you, what's one example for you of something that is clearly heritage in the metaverse, could you give me an example of sort of the first thing that comes into your mind?

Lieve Baetens: The first thing that comes to my mind is the examples that I saw from people in my network, which are Dutch examples. For example, there's one architect, Kuba Jekiel, and he gave a class to me saying, well, when I graduated there was no work for me as an architect because everything is already built, there's no space left. And he thought, well, there's a whole online space where I can just build it. So, he built this world that you can enter. That is sort of the image that stuck to my mind as a metaverse. But again, it's a really small example because I'm not sure yet either. So, in this research we don't use the word metaverse at all. We talk about immersive media and immersive media can be so many different things. I've already heard so many examples of web VR or social media that's bigger than the metaverse. So, maybe that gives you a bit more context.

Patricia Falcao: Because just this morning we were talking to someone from the Photographer's Gallery, and he was talking about virtual worlds. And that's why I'm sort of trying to figure it out. Because it's not necessarily Meta, but all the others open source communities and so on, that sort of even might broaden these immersive media even further, I guess. But I haven't thought about it much.

Jack McConchie: I find it kind of really like vague as well because it's like you're actually just talking about this kind of mirroring of the world as well, aren't you? You know, in the many different ways that you can kind of use it as like a modeling tool, or as a means to view media, or as a means to experience an artwork, or as a means to create a place for a community to sort of meet and stuff. Me and Tom started looking more at the kind of technical aspects. But earlier on when we were looking at the more kind of social mapping of it or something. I think that I found it quite sort of existential or something to kind of consider like, well, hang on, this is kind of like it's really hard to rule out anything as being distinct from this or something. Yeah, it's a weird feeling.

Lieve Baetens: Yes, I understand what you mean. That's why I'm also still struggling so much with my definition of the metaverse or clear examples, because I know that my teachers are going to ask this when I have to present my thesis. And I have examples, but how do I say, what's the metaverse? About you, could you tell me a bit more about yourself and the role that you have within Tate?

Jack McConchie: Would you like to start?

Patricia Falcao: Um, sure. I'm a time-based media conservator. I have a few different roles, and I have been here for 13 years now. But at the moment I work on acquisitions. So, whenever a new artwork is considered for acquisition, I look into it. I assess the risks for preservation and then define the steps that need to be taken at the moment of acquisition to allow us to preserve things over time. And I'm also working with Jack and a colleague, Duncan Harvey, on our Digital Repository project, where we're looking at ways of keeping our digital files safe and having an easy process to ingest those. And that's it.

Jack McConchie: I'm also a time-based media conservator, also working on acquisitions and the digital repository with Patricia. I have worked across various aspects of the department, including exhibition and displays. We're more tasked with realizing the artworks at a specific moment in time or a specific space and also loans out where we're tasked with trying to understand how an artwork could exist in a space outside of the Tate Gallery and kind of administrating that. I've recently was seconded to a research position as well where I was kind of looking at our inherited museum practices or the tendencies of a museum to remove an object from circulation of heritage and the mechanisms by which we do that. And I think maybe that's like quite an interesting thing to think about for immersive media as well in terms of where sometimes bits of immersive media are quite connected or have a community kind of aspect to them. What would it mean for that to exist as heritage or to preserve it? Would that mean extracting it from its network or its kind of community in some way? So yeah, I'm quite interested in that.

Lieve Baetens: Okay. Thank you. What staff do you have in Tate for the acquisition and preservation of immersive media and what skills do they need?

Jack McConchie: At Tate, Tom and I work on the Preserving Immersive Media Project, but Tate doesn't own any immersive media artworks. In terms of what we would consider them in the time-based media collection. Well, I think that may be depends on your definition of what is immersive media. It also depends on what your definition of an artwork is. Because Tate is quite a big bureaucratic place. And consequently, there are things that happen in the Tate Gallery that aren't part of the Tate collection. And so, we exclusively work on things that are entering or are in the Tate collection. So, Tate has used VR-technology before to bring to life exhibitions such as the Modigliani exhibition. There was this VR experience of his studio and that is not an artwork, so it didn't come under our care. But that did exist at Tate and was commissioned by Tate and is stored by the audiovisual department. They are distinct from

the artwork department in that they deal with the interpretation material at Tate. Thinking about the definitions of immersive media, the more kind of interactive media in an art gallery, it can sometimes tend towards being an interpretation layer. Interactive screens, like "you've seen this now make your own artwork" or "let's use this tool to bring something to life". So quite often examples of that would sit outside of our department. Then there are obviously elements of the website that are interactive or immersive in some way. Lots of VR artworks they are using real time processing, we call it, where a bit of software is generating the image or whatever you see in like real time. That's so close to some of the artworks that we have in the collection. Which you don't have a headset, but you see them on a projector, or you see them on a screen, but they are being generated in real time as you watch them. So, we would also include that in immersive media. And in terms of real time 3D works, do we have like maybe 4 or 5 in the collection? It's Sow Farm and there's the Craig-Martin Becoming.

Patricia Falcao: Yeah, that contains software, but I wouldn't call it 3D necessarily. There is the Ed Atkins. They use similar pieces of similar software to create them. I guess that's the similarity with what we're looking for with AR and VR. Well, not necessarily, but with VR is when you start using game engines. I think that's a big communal aspect with things that we do have in the collection. You probably should try and talk to Tom about this because he's done all the bulk work around the processes to disk imaging these things and what type of documentation we need. What we found with something like Sow Farm, for instance, is the importance of just playing around with it and sort of trying to figure things out by ourselves and then go back with questions. For Sow Farm, for instance, the developers had included a menu that tells you a lot of detail about how the piece is running that you wouldn't know about because you have to know the key to press. So, it's still a hoping it will work. You know, I think we're basing a lot of what we're doing in the sense of we have a disk image, so hopefully if the hardware dies, we still have a chance of playing this back. And in the future, we'll be able to run it on emulation. I'm keeping my fingers crossed. But I don't know that it will work in 10 years or 15 years. I'm slightly optimistic, but I mean the issue we have, which is probably also why we haven't acquired anything, is this dependency on the hardware for the VR work. For anything that needs a headset.

Jack McConchie: This is getting slightly abstract, I guess, but I think that there is a lot of stigma that exists around like immersive media, both in the kind of technology sense and in the kind of whatever other sense it is that I'm trying to describe. I know when we had the Mark Leckey retrospective recently at Tate Britain. I know the curator of that show really well and she was like, "he wants to show this VR work as part of his exhibition, and we're thinking about acquiring it afterwards. But we looked at what it would cost to put on the show, and we

did an estimate of maybe five stations or something". And they were like, oh no, that's just like really expensive. And that's just to have it on display. I also think there's this tendency to think of immersive media in the artwork sense as being a really easy way to experience an artwork. And maybe that's true if you're not in a museum. This is the kind of way that you can kind of maybe get closer to a different space. But if you're in a museum, it's actually a really hard way to see an artwork because we're not set up for virtual spaces. We're set up for real spaces. So, you need a load of space for one person to just experience something by themselves. You need a load of technology for somebody just to experience that by themselves. And so, I think because of the kind of legacy of what a museum is, in the fact that it's kind of a space to get people through the doors and in a space together experiencing artworks. I think that also doesn't entirely fit with the idea of a virtual artwork as well. I don't know. I just think there's several sort of, cultural bits of resistance. Especially from a really ancient art institution such as Tate.

Patricia Falcao: Yeah. And that has a parallel with internet-based art where, you know, it was meant to be looked at on a desktop at home. The ones we worked on were up to 2008, so that's pretty much what you'd expect people would be doing rather than their phones. So, when you move it to the gallery, you either change the artwork, which can be done quite successfully, but it is a different experience altogether. Or you have to sort of set up a table with your laptop and the keyboard so that people can use it. Which is also really awkward because it's like, okay, we're limiting the experience to one person. Which at Tate Modern is a nightmare. You won't have the queues because people just don't want to queue to do that necessarily. I don't think unless someone becomes really famous at some point or there's some scandal around an Internet based artwork, that's what we need.

Jack McConchie: Do you think we could just drum that up like we could just create a scandal? I think so.

Patricia Falcao: I'm sure there's something from heavy industries that could be sort of scandalous. So, people want to come. I agree with you fully that the museum context has its own, especially on a scale like Tate. I don't know, post-pandemic, but pre-pandemic, we had 7 million visitors a year, which Claudia, who was a Swiss colleague, was like, 'it's like the whole of Switzerland came to visit'. And I was like, Yeah, a lot of people.

Jack McConchie: It's so interesting thinking about the times that I have heard internet art being discussed about being shown in a gallery. Because like what you were talking about, emulation. And one of the ways that we hope that immersive media will survive is through emulation. But when you talk about emulating web art and showing it in a gallery often the

old browser is emulated because that's more like what the experience would have been. Then if you show it in a gallery, would you have it in a computer that would look like it's sort of from that time and you almost get this feeling? Which I think will be very applicable. Thinking about virtual experiences, how far back do you go in terms of context? I think that kind of relates to that idea of taking something out of its network. How different is that artwork or what does it mean for that artwork to take it out of its initial context? I always think of that beautiful piece of net art, what's it called, a perfect summer day or something where she's swinging.

Patricia Falcao: It's summer. Yeah.

Jack McConchie: Is it called Summer? Yeah. And it's a gif of her on a swing. Really lovely bit of early internet animation. And each frame of the gif is hosted on a friend of hers' server. And so, when you click on the website, it would take you through this kind of redirect loop and everybody would have to be committed to showing that artwork. And everyone would have to maintain their own server. And it's the most perfect example of something, which is of course, bound to break and doesn't work anymore, right?

Patricia Falcao: I looked at it last year and it was working, but I was talking to somebody about it yesterday and it wasn't. I mean, the way Peter talked about it, it sounded like it wasn't. But I'm surprised.

Jack McConchie: Anyway, that's a divergence. But yeah, I think that's an interesting example. I mean, it's just a gif in one sense. But then actually the artwork is the fact that everybody has to be working together to host frames of this gif. And so, I think that is something that makes thinking about artworks in combination with immersive media, quite unique because they can be engaging with the kind of technology in a way which makes moving on or emulation quite complex or something.

Patricia Falcao: I mean, unless you can capture the whole server, which is crazy for anything bigger than, you know, the Lawrence piece that you worked, that one was on one server, wasn't it? It wasn't. Or is it online on a bigger network of servers? Is it contained in a way?

Jack McConchie: Yeah, it's contained. But even if you contained all of those servers an element of the artwork would be lost, that it's about all of her friends, you know, each host.

Patricia Falcao: Oh, you mean for Summer? Sorry. No, I wasn't thinking of Summer anymore. I was thinking of Lawrence. For something that requires distributed infrastructure, what can you do then? Because I don't think there's an answer. There was that report on Virtual Worlds, but that's about ten years old now. So, I'm guessing other things are on. I mean, there's ways of faking all of these things and it's easy. Do you know Claudia Roeck?

Lieve Baetens: I actually interviewed her last week.

Patricia Falcao: Okay. Yeah, because she did some work on how to use emulation to fake things that are meant to be online and are no longer online. Which artists themselves are doing. But not at this scale of an immersive experience.

Jack McConchie: What's the work? Is it the one which was initially on the that early pre-internet network? What was that called again?

Patricia Falcao: Minitel. I don't know if you had it in the Netherlands. In France it was quite common. It worked on the TV, but it was early internet. It ran with the TV signal.

Jack McConchie: Like Ceefax or something?

Patricia Falcao: So I thought.

Jack McConchie: It was slightly different.

Patricia Falcao: No, I think you're right. It has its own terminals, which is why we have the works. But there was a connection. No, you're right. It has their own terminals. But you could go to pages. I think he worked with Pamela in Leon somewhere in France to sort of capture that. I don't know if they managed to rebuild the network on a smaller scale.

Jack McConchie: To use the same network protocol or something?

Patricia Falcao: Yeah. I mean, there's a really nice report by Morgan Stricot with a couple of other people about that if you're interested. But they managed to fake the network so they could see the work. But I think Morgan did a lot of work to map what they were doing on the screen with the original and what it would look like on the digital frame. And then we just got QuickTime files.

Jack McConchie: Yeah, so it's just a video now. It's lost all of that use of an interactive network, I guess. But it's interesting because I guess there's the tendency to think of the internet as we know it now being the first example of that idea of...

Patricia Falcao: I'm sorry. Now I'm still kind of going like, what was the network?

Jack McConchie: It is called Minitel, isn't it? Yeah, it is. But I think it was for finance and stuff. Originally it was like post offices, wasn't it?

Patricia Falcao: That's where you accessed it.

Jack McConchie: Right. Okay.

Patricia Falcao: But in France they were giving people those to access it. Right. Which is why Eduardo could get the little they've got these little cute monitors. In Brazil they had it in public spaces. Right? There's this lovely design of one. I don't know if they were ever in use, but they were meant to be in public spaces. In Brazil for phones, they have something they call the Orelhão, which is this design of a big ear almost that covers you if you're trying to make a phone call on public phones. And so, they had the same for the Minitel. I'm not sure if it ran properly. But anyway, in that case, you're literally obstructed the whole network of it. The interesting thing there as well is that we wanted to acknowledge this big change in medium on the medium line. Eduardo was like, "no, it's on the Minitel" because they have to be shown in these specific pieces of equipment that have been thoroughly changed. So, they actually have a normal flat screen on the casing. So, you know, it's all very sustainable now because it was all changed to be sustainable. But it's a massive change into the medium that he doesn't want to see acknowledged.

Jack McConchie: Faked in a way.

Patricia Falcao: I mean, he's right that he's still showing them on the Minitel. But yeah, I would feel that all the work that went into making that move would be worth bringing up. But Mike Whelan and I and him, had a long discussion about this with no success. I mean he's happy, I think, and in the end it is, right. I guess it's his work as well.

Lieve Baetens: Your answers are really great. I'm just going to move to subjects now and not specific questions. I think that would be better. The next part is about immersive media in your institution. And the questions are, how do you define it? What's the collection like in Tate? What is the history and why are you collecting it? And I think you sort of explained

that, you know, if I understand it correctly, you don't necessarily have immersive media in your collection, but you are looking into it.

Patricia Falcao: I would say we don't have VR or work that uses VR headsets. Depending on how you want to interpret immersive media. Ed Atkins and Ian Cheng of course. That's the other work, Ian Cheng has this world that you can't interact with.

Jack McConchie: I'd say that on a institutional level, I think that Tate's collecting policy is probably like technology agnostic. It's looking at them as artworks. It's not looking underneath the layers that make the artwork work technically. And if anything, the fact that if it was immersive media, it's likely to be quite complex to preserve, therefore quite expensive. I would say that in these quite difficult financial times, Tate is probably, whilst not having that as a direction, not looking to preserve immersive media by accident. Not intentionally. Just because it's really hard to do, I think. Maybe a big difference from, say, Sound and Vision is that Sound and Vision partly operates as a museum of technology, as I understand it. Which Tate doesn't. It's not a museum of technology. It's a museum of artworks. So, I don't think we would ever say "we're out to collect a particular type of technology".

Lieve Baetens: It's actually really interesting that you're saying that, because I have noticed that I sort of have a tunnel vision right now because I was looking into the metaverse and then I was looking into immersive media. So, when I started this research and my other research, I sort of thought, well, institutions should be collecting immersive media. And that was why I wrote my thesis. I was thinking, well, if you want to collect this type of art, how are you going to do it? And then now hearing actually the perspective of the institutions, you're not collecting immersive media, you're collecting whatever fits your collection policy. And if it happens to be immersive media, then you have to look into how you're going to manage that. But you're not collecting immersive media, you're just collecting art.

Jack McConchie: Yeah, it's really interesting because I think that the collecting strategy from Tate is partly shaped by gaps as they perceive it. Tate currently sees itself to have a very Western bias of its art collection and it's on a bit of a mad spree at the moment to try and fill in the gaps with lots of other artworks from around the world. Is that kind of fair to say? Yeah.

Patricia Falcao: And I mean, this goes down to the funding committees. So, you've got committees for North America, South America, Middle East, North Africa, East Asia, Eastern Europe, sub-Saharan Africa. And then the Australia and New Zealand. Which means people are looking at "how does the art world look like this?" And of course, it's based on the

contemporary art world, which is slightly different from the media art world. There's still this massive gap between. You've got artists that move between the two of them, but it's still artists that show at the Transmediale or Sonar in Spain and all of those places and are not necessarily showing at Cabinet Gallery. They're different contexts. And we don't have a curator that moves in those circles necessarily. I think some of them are probably quite knowledgeable, but it's not their focus. They're looking at regional field area, communities and practices.

Jack McConchie: But it's interesting, because in a way, a lot of internet art or immersive art is happening in a culturally different sphere from contemporary art. Just does the art that Tate is collecting at the moment is happening in a culturally different sphere, but geographically. And so, it's addressing that geographical difference, but it's not addressing the cultural difference of digital artwork so much. Maybe it will at some point. It'll be interesting to see how that changes. I guess maybe there's resistance on both sides. We spoke about the stigma of artworks in an institution such as Tate and purely digital artworks in the way that it doesn't fit their model. But also, maybe for a lot of artworks that are utilizing this technology, the idea of the institution doesn't fit for the artwork as well. Maybe the institution has traditionally been a closed place for some of the people that are making these artworks or maybe these artworks are in response to the fact that there needs to be communities outside of these big monolithic institutions, you know? So, I think you have to also acknowledge the legacy of some of these histories. In the kind of UK for instance, Tate doesn't exactly have a great reputation at the moment. Its history is being examined and some of its actions have been suspect and some of Britain's behavior globally has been suspect and stuff. Perhaps this is very abstract, but the idea of collecting it in an institution maybe isn't the answer for some artworks as well. It's very easy to think "let's grab it and that will be it safe", but maybe it doesn't want to be grabbed. Who are you preserving it for? If you look at the idea of conservation, some of our practices, value the future over now. If you look at traditional conservation of objects. The future version of the person that's seeing the artwork will be of a similar economic status to the current person that's viewing the artwork. That's part of how a museum operates on scarcity. You also have to examine the idea of preserving, and say "well, who's it for?" What's so important about the future person, that means that people maybe now can't experience it? To remove it from circulation and to put it in a museum, you're valuing a certain kind of person over maybe another kind of person.

Patricia Falcao: I wish I'd been in the discussions you had about this, because in my experience, artists still want the recognition. There are projects that you could never capture entirely or extract completely into the museum if you want to use. I feel that we can have that discussion and we were doing a lot of that for the internet-based artworks. Which of course

are completely different because by collecting them and keeping them online, which would be the prerequisite to acquiring these works, they would be kept online. Or at least a form of them if nothing else worked. There we're not limiting anybody from accessing it. We're just literally keeping it accessible. Which is different from.

Jack McConchie: Which is different to how we behave, to an object which is putting it behind a paywall or something.

Patricia Falcao: Yeah. And even digital, even anything that is installed, of course then becomes a bit different. But I guess that I don't have any experience in those communities that might not even be interested in being collected, which is I think is a little bit where you're heading with your thoughts.

Jack McConchie: I think both can exist. And I think there is huge value in collecting objects and making them accessible in the way that museums do. But I think it's just useful to address that impulse that an institution has, which is that to collect something is the right thing for everything. Where I'm just saying, "make sure what the intention is there". Why is that the right thing for this thing? I share exactly the same sort of feeling as you that I can just recognize that all of this cultural heritage is definitely being lost 100%. But is an institution the best place for that to end up? Is an institution the best placed to grab all of that stuff? I don't know. I'm not sure.

Lieve Baetens: I have to sleep on this for a little bit because there are so many thoughts in my head right now. Those are great answer, I never looked at it that way. I don't think I've ever had someone ask me the question, should museums be preserving this? Because I've always thought, of course it should, because otherwise it gets lost.

Jack McConchie: Definitely advocating for it not getting lost. I do think that it's a value. I think it's just looking at like, what is the best way to preserve what's valuable about it? And if you consider that a museum might make it inaccessible, then maybe you're losing some of its value.

Patricia Falcao: I can tell you what I would be worried about if we were acquiring one of these works. I think we would be worried about the headsets and the dependency on the headsets because again, we're not a technology museum. So, I think this is probably all the headsets we have. So that would be for me the key aspect. And I think you looked into the possibilities of moving on between software and between hardware. And then the other thing I would be really worried about is any dependencies on external servers to be able to run

things. So far for the work that we have that are contained, the ones that did have keys, we could ask the artist for a workaround, which was quite nice. I mean it was in their interest of course, to give us that. At one point Chang needed us to log in every time we installed the work. That's not a good idea. Well, and that again, is making this assumption that we can run whatever it is that we have on emulation. Which with GPUs is a big question and there's work being done on that field now. But I don't know how far in the future it is.

Jack McConchie: I think what Tom and I did in that report as well was just look at what existing strategies we have for media in our collection and look at how that applies. And actually, the strategies are very similar in a way. But what discovered is that everything is amplified or accelerated. In video works you have a reliance on the hardware, and we can, in theory, preserve a file forever. We can migrate it and we know we can keep it. But its relationship to how it plays back is the thing that's precarious. And with video files that feels quite under control. We feel confident that, if we ever need to, we can migrate it. They change relatively slowly. We're in control of it. It feels manageable. The acceleration of technology is manageable, we understand one screen to the next or one projector to the next. But with VR, for instance, that rate of obsolescence for the hardware is so quick. And the amount of commercial interest in the video formats and the software layers is so hotly contested that things are changing really, really quickly. In a presentation that we gave recently, we made a comparison between the Sony CRT Cube, that's not a Sony one, but very similar to that. And that stayed in production for 28 years or something, unchanged. The standards didn't change, its inputs and outputs were the same. Nothing changed about it for 28 years. There was a headset that Oculus made recently and after 18 months the next headset was different. And not everything about the subsequent one was backwards compatible. So, I think in the space of 40 years you're seeing 20 times increase in the rate of obsolescence. So, everything in that way feels amplified. Another aspect of that is the move towards subscription software. So, it used to be that if we owned a video file, we owned the video file with some of the software based artworks. If we own the software, we own the software, we can maintain the software. But increasingly for VR artworks to play it or to maintain the artwork, you have to have a subscription service. Often the subscription service will deprecate earlier versions of the software. Meaning you're forced against your will to get into this cycle of upgrading or migrating the artwork. So that's another aspect that you're seeing. Like a lot of these things, we're kind of familiar with, but it's all very, very quick. We interviewed artists that were making work in VR and literally their best preservation strategy was to get it working on a computer. And whatever you do, never connect that computer to the Internet because the moment it connects to the Internet, it starts updating itself and everything is broken.

Patricia Falcao: I saw a parallel to that in the work by Ben Grosser, which is not in the collection. He creates browser extensions to interact with things like Facebook or Twitter. And so, one of his works that I discussed with him interferes with your emotions on Facebook. So, it randomizes them. So instead of saying, oh, I like this or I didn't like this or I'm sad, it will just do something random. So, Facebook can't really use that information because at the end it's an average of all of them. But what happens with that, of course, is dependent on the interface with Facebook. In three months, it would stop working. Some things are pretty simple to adjust and sometimes there's this big change. He showed it at Arebyte, the gallery here in London. In five years, he'd done, I don't know, 4 or 5 small updates. And then it had stopped working and he hadn't had the chance to update it until it was on show. What he did have was a lot of documentation of the work. He described all the changes he'd done to the code. It's all on GitHub. He's got really good videos of how things work. The way that the emoticons change, he's got that as a gif. I don't remember if you had the chance to interact with it at his show at Arebyte. I think you could, but it was a lot about everything else around it and explaining the problem with Facebook and the use of the emoticon. He had to figure out a way of: "I'm transmitting this concept. I can't really be sure that I'll have this work running in six months or even during the period of the exhibition. It's going to possibly fail. So, I just need to figure out the other things." If artists figure out that their work is interesting and there might be a chance for it to be collected and to be preserved in some way, they will do that work because they know it's going to die. It's the obvious fragility of something. The positive side of it might be that then there's better documentation. It also depends a lot on the artists because, some of them are more keen on documentation than others.

Jack McConchie: We're talking about artworks and it's so broad because they can engage with something. It sounds like the artist was really up for engaging with the technology and consequently it's also this amazing document of the way that Facebook is changing its technology. I guess it depends on how an artist is engaging with the technology or how the artwork is engaging with the technology. That's an interpretation layer on Facebook. So, you could feasibly recreate that in some way in the future and it would change. But maybe if the concept of the artwork is to create a scrambling layer on Facebook's use of emoji, then that kind of concept and maybe the artwork is the of surrounding information about why that's problematic or why that needs to be tackled. Then that idea can live on or can be reinterpreted technically. Whereas some artworks feel very pinned to the technology that they use, and to move on from the technology would be to lose something of the artwork. So, it's really variable. I was thinking what makes the artwork, the artwork? What is it about it? What is the stuff that you could lose, and you would still have the artwork? Or if you did lose it, would that mean that you had lost the artwork?

Lieve Baetens: We talked about why you maybe shouldn't collect it. Why would Tate collect immersive media?

Jack McConchie: How Tate collects, as Patricia was saying, is that there's committees in various parts of the world. Gaps are being identified by curators and the committees and artworks are being chosen to try and get a more even representation of artworks across the world. Currently part of that remit isn't looking at technology. It's looking at our concept, I guess.

Lieve Baetens: I would like to have a look into your collection policy because at Sound and Vision for example, we don't collect technology, but we collect the story that the technology brings. So, for selection selection criteria, we say that it has to do something with Dutch media. And if there's a VR work that has to do with that, then we collect it. But that's just us. So, for this research, we are curious to know how other collection policies from other institutions are working.

Jack McConchie: I think there is probably a collection policy that I could dig out for you, and I'd be interested to see it. It definitely won't be technology focused. I think at the moment, Tate is really examining its colonial history and it's really examining the UK's role in that. I recently worked on a research project where we were looking at artworks that resisted museum practices in some way. It challenged the ideas of ownership or the ideas of knowing what the artwork is. And tried to be a little bit more slippery in the way that they functioned or maybe leveraged the power that Tate gave them. And I think this is maybe some of the things that immersive media can do as well. They can maybe challenge what an institution is or how it operates. This is really interesting. Writer Fernando Dominguez Rubio says that the way that institutions behave internally, all of our processes and stuff, are shaped by the artworks that we collect. So, at Tate, we're used to collecting paintings and sculptures. It's been quite hard to move on from some of these processes that are based around the idea of the singular object, the singular idea of authenticity. So, the registrar's, the department that are tasked with knowing where things are, they're like: "so where is the digital file at the moment?". The digital file is in loads of places at the moment. And they're like: "No, it needs to be in a place, where is the object?" And some of the legacy that we're dealing with, is the idea that there can only be one authentic object. Fernando Dominguez Rubio says that we organize objects into these singular ideas. But the objects are organizing the museum as well. They are shaping our processes. We've started to collect more and more video works and digital works, our processes have start to be shaped and we're more comfortable with the idea of multiple things that can be authentic. If you look at immersive media artworks,

they will challenge in various ways museum collecting policies. Just as these couple of artworks that I've worked on recently have challenged our collecting policies and they will shape them in some way. They will mold the museum a little bit more towards them. If you were to look at what's happening there, then I think slowly the museum will in a hundred years from now will turn into an immersive artwork.

Lieve Baetens: Well, that's a great thing to think about. How do you manage the intellectual property rights around these works? Do you have a legal deposit, or do you have to ask every artist individually?

Jack McConchie: We have a legal person who works with us, Bernard, and he is very helpful. When we acquire an artwork, we discuss it with the artist. What the kind of ownership legalities would be, whether it's an addition, whether there's aspects of the artwork that lives outside of the artwork. That is refined and there will ultimately be a legal contract.

Lieve Baetens: Okay. So, a specific contract for every artist or artwork?

Jack McConchie: I think there's a general contract, but the specifics of the artwork would be checked and then made sure that it fits that contract. There are instances where we have a specific legal requirement for various artworks. That's different for each one. Some where we're able to show films as part of an artwork and we have a legal license to show that film when it's shown. So, there's various periphery things. Then there's the Christian Marclay "The Clock", which is 24 hours of excerpts from films. That features 500 bits of material of other people's works. That has its own legal implications. The museum attempts to fit artworks to a generic thing and then if the artwork resists that a little bit, you have to modify your practices a little bit.

Lieve Baetens: What information do you want to know from the artist when you acquire an immersive media work? How are you collaborating with them?

Jack McConchie: In an early part of the project, we were working what the collaborating with an artist would look like. Maybe it's not helpful to split them up. You're basically looking at conceptual questions around the artwork and also technical questions around the artwork. You're trying to figure out how they fit together and how much one can be extracted from the other. I think everything about that is in our report and the acquisition template. But crucially, I think again with artworks, you're trying to understand that relationship. Therefore, every kind of case is a little bit different because that entanglement is not always clear.

Lieve Baetens: Do you only work with them during the acquisition part, or do you also work with them later on?

Jack McConchie: We would often re-engage with an artist at the point of display. It's funny how that happens. I was thinking about that recently. An artwork in a collection, it's laying there, and the world is changing in this fashion around it. If you imagine the artwork, it's poking its head up every ten years or something into a new world. And everything is new for the artwork at that moment. It's often that we would re-engage with an artwork. That process of re-engaging is an opportunity to understand how the artwork does change over time. We welcome that revisiting of an artwork because that helps. You build up this picture of how it emerges and changes. I think it's worth saying that museums are slightly rooted in this idea of the historical object. Tate has tended to favor artworks that stay the same. Artists who are working with technology quite often like to revise their artworks. They like to be like using the newest stuff. So, they might have an artwork in the Tate collection and when it comes to be displayed again, they're like: "I've seen you can do this now, let's revise it". The Tate is often like: "Can we not just show it?" You've got that tension there, or not a tension, but a divergence between the idea of it as a historical object and the idea of a concept that can constantly be revisited and revised. And engaging with the artist is an opportunity to explore that, I think.

Lieve Baetens: What is the process when you acquire a work and then how do you decide how you're going to preserve the work? Where do you start? Do you have a standard procedure, or do you look at the artwork and decide, this is what we're going to try?

Jack McConchie: We have a lot of standard procedures. They have been built upon years and years of refining and working with similar artworks. And then artworks will come along that will cause us to question part of the procedure. And then the procedure will be adapted to be more open to different types of artworks. Number one is you're trying to understand what the artwork is, what its parameters for display are, what makes the artwork the artwork and what its reliance on technology is. If it has any reliance on technology. As a time-based media department, we also we deal with the performance artworks. So, we preserve artworks that don't have anything. They're just an idea of how the artwork is activated. And so, for those, your work is entirely conceptual, and you're entirely trying to figure out those parameters of what makes the performance, the performance. And in that instance, you're preserving the ability for that to happen again. You're preserving the ability to create that fertile soil for the artwork to grow in the future. And that might just be maintaining some relationships, or it might be maintaining a network or something. If it does have a reliance on

technology, then you've got to look at what that technology is, how precarious it is, how likely it is to be obsolete. If it's likely to be obsolete, then you have to immediately starting to think about a treatment. We call them treatments where it's like conservation treatments. It comes from the idea of treating a painting or something. It's like touching it up, but it's slightly sort of a funny word, I guess. You might immediately be thinking, well, we need to actually update this straight away. And that's quite a nice opportunity sometimes. We talked about the acquisition process and the display process. These are points in the institution where there is resources at that moment. At the point of acquisition or the point of display, quite often there's money flowing about, the people are engaged with it. You can engage with the artist in between. It gets forgotten about, you know. So, it's a nice opportunity at the point of acquisition to really engage with the artist and discuss what this work is and think about how it's going to work in the future. So you might do a treatment straight away. If it's kind of in between, you might just discuss with the artist. You might say: "we're worried that this isn't going to work in the future for these reasons. Is there a way that you imagine it working in the future? You can ask that question. Some artists are way more prepared to be asked that question. Some artists just don't think about the way it's going to exist in the future, and others really do. Some have really considered the way that technology will change and the way that that will influence the artwork, and some don't. So, you also have to be aware that for some artists, this idea of the museum thinking about the work on an extended timeline, might be new to them. There's that opportunity to discuss that and explore that. Basically, we'd be looking at, what is it? Does it have any equipment that it is tied to? Is that equipment unique in some way? Do we have the necessary skills to maintain it? To understand how to operate it? And then media, what is the media? Is it analog? Is it digital? Can we store it safely? Can we migrate it safely? Sounds simple when you put it like that, but it's always so hard.

Lieve Baetens: If you write a preservation policy as an institution, what would the preservation policy need? What would you write? How do you start?

Jack McConchie: I think a preservation policy is a broad subject because preservation policies for artworks incorporate a lot of things. There's a digital preservation aspect to the preservation policy. And there is also a conceptual aspect to the preservation policy. The conceptual part is harder, to say what it is. It aligns with Tate's mission statement, which is to make artworks accessible from a digital preservation policy. There are international guidelines to make sure that you adhere. I always think they're kind of amazingly fundamental, preservation policies. It's like, don't only have one copy of something, have multiple copies, have copies on different formats, make sure that those copies aren't in the same geographical space so that if there's a geographical disaster, you're safe at the

moment. As Patricia and I were saying, we're working on a system. I'm sure Sound and Vision has this system up and running already. But it's an automated system that we can feed in an artwork file, it asks us some questions about it and it goes into what we're calling the high value digital asset storage. It automatically backs that up to three server locations, which is across London. The plans are to either have one of those locations moved to the cloud or maybe moved up to Tate Liverpool, which is like hundreds of miles away from here. So that is basically just saying: get these things geographically apart, make sure that they're all backed up. We can look at those from an artwork level. We can say: "Yep, this is complete". We can check the artwork remotely. The server technologies can also look at that on a bit level and say: "Oh, you've lost a bit here. Let me replace this bit for you" and it will call one of the other servers and it'll make a replacement. The underlying technologies for those servers are different so that if there's a malware attack or something, then one should hopefully be safe if one of them goes down. You obviously have to be able to describe what you've got in archives. Metadata is as important as the object itself. If you've got a photograph and you don't know who it's of, it's useless. So, you also need to have a very clear metadata octology, which helps you describe what you know, what artwork it belongs to, what component it is of the artwork. We have multiple artworks that have multiple different types of components. They have a master copy, and they have exhibition formats. Then we describe the metadata of that artwork file really verbosely to make sure that we've got all the details. And that means that if there's a particular file type that's under threat, especially as we move towards this new system, we can search for all of the files that have that particular type and we can perform a migration on them en masse. So, there's loads of different aspects to a preservation policy. There are some guidelines out there which I can put your way, if you like, that have helped us shape our preservation policy. I think the guidelines would help you to start from scratch. But I'm lucky that I never had to do that. I only had to come in and start to think about how we changed them, how they evolved.

Lieve Baetens: If you can send them, that would be really great. Um. Are you working with third parties for the preservation of immersive media, or, in your case, time-based media?

Jack McConchie: What we have to do is engage with specialists outside of the museum. I think that's increasingly the case with time-based media. I think it will be the case for the kind of preservation of the metaverse as well. Software now is so specialist and it moves on so quickly. Your job as a conservator is almost to work with a specialist to identify the risks or to identify the particular kind of specialist that you're going to need for your particular risk. And this is something that we're familiar with. Even with old technology, like those 16-millimeter projectors, we have to really think about the people that can maintain them. There aren’t very many people that remain anymore. They're not getting any younger. We really have to

think about making sure that we keep them, that we stay connected to that network of people and give them work wherever possible. Because we know that we need them, to be able to show our artworks. It's that, but really accelerated with digital artworks. It's saying: "we recognize that there's no way that we could hold all of this expertise in house". Part of what you do when you look at an artwork is you say, what was the support network around that artwork coming together? Who were the specialists that the artist engaged? Can we continue to be engaged with them as part of the life of the artwork? That's always the best position, to stay super connected to that network.

Lieve Baetens: What are your goals in the future for preserving immersive media in Tate?

Jack McConchie: I spoke to a couple of artists that would be really interested to engage with imagining a sort of portal to an artwork on the Tate website. We kind of touched on accessibility before and this idea of how Tate artworks and the Tate net artworks are kind of in the in the gallery walls or something. I would be really interested to engage with an artist who was interested in thinking about how immersive media can exist out of these walls and how we could use that as a case study to examine our own practices. And say, how could this potentially change us? How could the access of this potentially change? What would a museum based around that look like? It has this potential to really make the museum ask some questions about itself. And I think that's a nice ambition. I think museums should always be asking questions about themselves. That's my ambition for immersive media at Tate. Make us look at ourselves.

I. Transcription interview Whitney with Savannah Campbell and David Neary

Lieve Baetens: Please introduce yourself.

David Neary: Sure. So, my name is David Neary, and I have been at the Whitney for about four and a half years. My title has not changed. I've been project manager of the media preservation team, which has gone through two iterations while I've been there. Savannah and myself have been project staff for the last four and a half to five years. We're about to be made full time, but our job titles have not been changed. So, if you come back to us in like a month, we will have new job titles that might just help your thesis look more up to date. We're both graduates of the Moving Image Archiving and Preservation Project program at NYU. I'm a 2015 graduate. Savannah's 2017. My background is in film and film history. And then I got into, I like to refer to it as practical film history, but kind of a love for complex projection. That got me back into the museum field. Then I joined the Whitney team in 2018. I'll let Savannah introduce herself and then we can introduce the project we've been working on. So, Savannah, over to you.

Savannah Campbell: I'm Savannah Campbell. As David said, I went through the moving image archiving and preservation program. I also came from a cinema studies background and thought that I was going to be restoring old movies for like Paramount or Criterion Collection or something. But then when I got in the program, it turns out I actually like video and weird digital stuff more and felt more comfortable working with it. So, my skill set and learning trajectory veered more towards working with analog and digital video and software. And then I did my thesis on virtual reality. I ended up at the Whitney as part of this media preservation project in 2018. And I've been here since.

David Neary: I think it's kind of helpful to know, that the Whitney's media collection is for a museum of its size, insanely large. It is at this stage nearing 900 works out of a collection of about 27,000. A good comparison is the Met which is not famous for its time-based media collection, but is one of the largest collecting institutions in the world, which has about 270 works. So, we are, I think, second only to MoMA in the United States and one of the largest in the world. And we are not one of the largest art museums in the world. Of course, when you're collecting that much, that means you've been collecting for a long time, or at a very rapid rate. And honestly, it's a little bit of both. But most of those 900 artworks has been collected since the early 90s. There were maybe about five works in the collection before then. So, the rate's been enormous, about 30 a year for a long time and it's closer to 50 a year since the pandemic. We were brought in because they'd collected so much without

collecting the necessary documentation and the necessary understanding and proper cataloging conditions for what tapes we had. In certain cases, we had films, but no digital files. In some cases, we had videotapes and no digital files or sometimes we had digital files. The digital files didn't work anymore because the formats or because the carriers. One of the first rules we had when we came in the door was no more flash drives. The Media Preservation Initiative started in 2018 and there were five of us on the team, including a cataloger, a film specialist and a researcher in addition to ourselves. We built a digital preservation system. We didn't design the infrastructure, but we set it up and then developed the workflows for that as well, as new workflows for cataloging and research documentation. Savannah and Nicholas went through all the components and did component checks. Savannah basically checked every single file we have in the entire museum and made sure they were bagged and put through our archive system and so forth. So that project lasted for three years. By the time that project ended it was clear that there was a full-time staff needed, but it was still deep in the pandemic and there was just no finance for that. So, they actually just set up a second project called the Media Preservation Network, which was us, taking what we had applied to the legacy collection and using that for incoming acquisitions. Which, as I said, spiked during the pandemic. As well as sharing our documentation with other institutions. I can talk more about that if needed, but a little relevant to what we're talking about. But when we started, the big exhibition was called Programmed, which was mostly permanent collection. The key work that's relevant to our conversation here was a piece called Unexpected Growth, which is an AR work that is geo locked to the Whitney and imagines a kind of a post climate change world where the Whitney and New York has been flooded. So, you look through your phone or your iPad and the building appears to be submerged in water. And then there are coral growths. And over the course of the day, the coral loses color because of the poisons in the world what we have made. That really got us into conversations about how to preserve works like this. And that's an ongoing one because we are still trying to work out exactly what we should have. I'm probably getting ahead of myself a little bit here, but questions like, do you save a copy of the app, you have to therefore preserve a copy. That's how we got into these questions about preserving, kind of what you're calling immersive media. We don't actually use the term immersive media. Maybe it's one we could consider adopting.

Savannah Campbell: It's a small part of the collection. We have about three works that could be considered virtual reality, two 360 videos and one software, real time generated VR work. And then the one AR work that David just mentioned. So, it's really just those four. If we had more, maybe we would use immersive media more. But all of those works come in through our digital art curator, Christiane Paul, who is interested in getting a little bit of every kind of software and digital art possible and getting a sampling of everything there is.

Lieve Baetens: Okay. Well, it sounds really impressive so far. And congratulations on your new job titles that sound exciting as well. You already talked about this, but just in case you want to add something, what staff do you have in Whitney for the acquisition and preservation of immersive media? And if you don't have a lot of staff, what kind of staff would you want? What kind of skills do you need?

David Neary: I mean, so there's myself and Savannah. Savannah would probably be more involved. But I would have a consultant side. We have Richard Bloes, who is now retired but still working as a consultant for us. Richard Bloes was the head of AV at the Whitney from 1979. To over 40 years. So, an enormous amount of institutional knowledge, an enormous amount of change as I've seen. But he is very good at helping. Whether it's just like set up a computer or, he had Savannah worked on the Claudia Hart together.

Savannah Campbell: Yeah. Because we had to buy a specific gaming PC that required a lot of setups and it was nice to have an extra pair of hands with that one.

David Neary: Beyond that there's the curator of digital media, Christiane Paul. She'll always have a curatorial assistant. Currently, a guy named David Lisbon. The curatorial assistants tend to change over every 3 to 4 years. There is also the curator of film and video, who's Chrissie Iles. She is less involved particularly, the more digital side is not her specialty, but she often works with artists. So I would not be surprised if Chrissie was involved in an acquisition. Other than like the obvious registrars who would work for all acquisitions, whether media or painting, we would have the AV team who we would consult particularly for installs. But otherwise, it's kind of just going to be the two of us and Christiane and her CCA. Would we like more? Specifically for immersive art? I don't think it's currently called for. But we could always use more staff. At this point having gone from no media conservators to essentially two on staff, we're pretty happy with how things are right now.

Savannah Campbell: I'm content. This isn't specific to immersive media, but Christiane Paul also does web-based art through artport. And for some of those older artport works, we've worked with NYU students to do a code analysis of them. So, this isn't necessarily like permanent staff, but I think it'd be really cool if maybe students could one day do a code analysis of our VR work. That'd be very helpful.

Lieve Baetens: I believe this question was actually inspired by your email, because in your first email you asked us how we defined immersive media. That got us talking because initially, how naive, we thought that there was only one definition possible. And then we

figured out that that's definitely not the case. So, we would love to hear how you define immersive media.

David Neary: As I said, it's not really a term that we use. I think we're really looking at kind of VR, AR and 360 videos essentially. I don't know beyond that. It's not a term that's in our glossaries. We wouldn't use it particularly in board meetings, et cetera. We would describe a piece by its specific AR or VR. But as Savannah says, if we start collecting enough of it, it might become a very useful umbrella term for that part. Like right now we refer to film, video and digital art. And I always have to put parentheses that says VR-, AR-software, AI, STL files, web-based art and NFT's now. I think it will really be a question for when we collect enough.

Savannah Campbell: That's just internally at the Whitney. I think if we use that term to someone in another department, they'd be like, what are you talking about? And then we would just default to more specifically or call it digital art. But out in the broader field, I feel like immersive media is more accepted as an umbrella for virtual reality, augmented reality, mixed reality.

David Neary: We still really struggle to get colleagues to say time-based media.

Savannah Campbell: We struggle getting people to use time-based media art still or digital art still, some say new media. We're trying to get new media out of here. It's not new anymore. It's been around since, you know, many decades at this point.

Lieve Baetens: What is the history of the immersive media collection within Whitney?

Savannah Campbell: Of the four works that we've mentioned so far, the first one that was collected was a 360 video. It's Ben Coonley Trading Futures, which is from 2016, I believe, and collected in 2017. And then we got through the Programmed show that David mentioned, the AR-work by Tamiko Thiel called Unexpected Growth. Then in the past two years, we got the Claudia Hart, a realtime generated VR piece. And we also have one more 360 video by Rachel Rossin called Man Mask. It's short history, but a good one.

David Neary: I think the only other thing that's kind of might be worth mentioning, this is before our time, but there was a very controversial installation in the 2017 Biennial.

Savannah Campbell: Yes. That's not in the permanent collection. I saw it. It's Jordan Wolfson's Real Violence. It's like a 90 second long VR piece that's just a scene of a very brutal violence guy beating up another guy.

David Neary: That was a very controversial year for the Biennial. That was a very controversial piece in it. It might be worth reading up on in terms of discussing the history of VR at the Whitney. Not a collection work, but a work that was prominently displayed at the Whitney. The Ben Coonley piece that Savannah mentioned was installed in Dreamlands, which was a big show in 2016 and was actually projected instead rather than using headsets. It was projected with 3D projectors inside of a dome. So you actually went into this dome space with 3D glasses and lay down on the ground and watch the work projected entirely around you.

Savannah Campbell: It can alternatively be shown on a it. Also, in the dome.

Lieve Baetens: As a follow up question, why is Whitney collecting immersive media?

Savannah Campbell: I think, just as I was saying before, our curator of digital art, Christiane Paul, is really interested in the overall history of digital art and she wants anything representative of it. So, we have a couple immersive media works. We have a few artificial intelligence pieces. We have a couple NFT's coming in now. Basically, anything that captures certain moments and technological developments, she wants all of that represented at the Whitney.

Lieve Baetens: Okay. So, if I understand it correctly, there are selection criteria based on the technical part of the work?

Savannah Campbell: Yeah, David and I are not curators. It's not our choice of what comes into the collection or not. We're just here to hopefully keep them functional in the long term.

David Neary: If you did want to know that I'm sure we could put you in touch with Christiane and she could answer that quickly. But I think the key thing is that there is a desire for the arts to be of a certain quality, but also that it represents and that we are drawing from all the different elements. It is the Whitney Museum of American Art. The artists either need to be American born or American based. The Rachel Rossin work, Man Mask, is interesting because the concept behind it is that the artist used to play Call of Duty when they were kind of a lonely, angsty teenager. They would pretend to be a man to feel a part of the community of people online playing this game so that the game itself became this masculine mask. And

of course, it's a war game. It's good art, aside from the fact that it is also immersive and so on and so forth.

Lieve Baetens: It's actually really interesting because, you are the first institution that says that the technical part is also part of the reason why you collect it. I thought before I started interviewing people that more institutions would look at what kind of technology is used. But so far, you're the first one. So that's interesting for research.

David Neary: I'm a little surprised by that, but that's great to hear. I'm sure there are institutions that do have this philosophy collecting representative works and have collected some terrible works purely because they're representational of a certain technology.

Savannah Campbell: I would love to know through your research how many institutions actually have these kinds of works in the collection. Because at the time when I was doing my interviews, it was zero. At least in an art museum context no one was actually committed to buying them yet, because how do we preserve this? It's complicated. So that's interesting to see how much that's changed now.

Lieve Baetens: I think so far, to my knowledge, it has changed a little bit because we have found multiple institutions that do have immersive media in their collection. But I think we initially approached about 25 institutions and a lot of them said: "No, we don't have it". I think we have eight interviews planned right now. The numbers change a bit every day, but I think today we're on eight institutions. Which I'm very happy about. We are still in touch with some other institutions and talking about whether it's possible to interview them. Obviously more institutions could have immersive media, but we just haven't encountered them yet. But so far eight institutions that we can include in our research.

Savannah Campbell: That's fantastic.

Lieve Baetens: It's a bit more than zero.

Savannah Campbell: Yes.

Lieve Baetens: And also, funny to see, because 2017 isn't even that long ago. But it just changed so quickly. The questions that I'm going to ask now are a bit more about the collection policy. I understand that you're the conservator, so you might not know all the answers, but I'm just going to ask them in case you know a little bit about it. First of all, how does collecting immersive media fit in your collection policy?

David Neary: I think we've kind of already touched upon that, which is that as long as the artist is American or American working. And I think that Christiane is interested in good art, that also captures a range of technological movements. Beyond that, I think it's really just going to come down to the individual artwork and the individual artist.

Lieve Baetens: Okay. You already talked a bit about it, but what selection criteria are you using when collecting immersive media?

David Neary: That I couldn't really speak to because that would require a little bit more insight into Christiane's mind. Do you have Christiane's book, by the way? She has a book on digital art that, I believe it's called Digital Art.

Savannah Campbell: The new edition just came out.

David Neary: You might find some insights buried in that if you're not able to get in touch with her.

Savannah Campbell: The cover of the new edition is actually our Claudia Hart VR piece. I'm pretty sure there's going to be a bit about immersive media in there and what she feels is important about it.

Lieve Baetens: That's great. How do you manage the intellectual property around these works? Do you have a legal deposit, or do you make appointments with all the artists to discuss everything?

David Neary: That's a licensing issue. We have a non-exclusive license that gets signed as part of the acquisition process. Those can be debated over. We send a draft to them, they scratch out something, write something else in and send it back. We have an in-house lawyer. They usually have some kind of representation through their gallery. In general, we would not acquire anything that we did not have a certain degree of rights to show, rights to copy for preservation purposes, et cetera. We had a work, that was not AR or VR, that came in recently. It was a video piece. The artist didn't want clips from it being made available. So, they sent us like ten stills from the work. They change the legal description so that we're not allowed to use a clip from it in our marketing. But otherwise, it'll come down to a licensing agreement that's usually pretty standard and we can put extracts on our website or on our Instagram page. Anything to advertise the collection, advertise the work and, get people interested in the art.

Lieve Baetens: Do you only make these license arrangements with the artist, or do you also have to get in touch with the software platforms?

David Neary: That's an excellent question. I mean, most of these are are made in unity, right?

Savannah Campbell: Most of them, yeah.

David Neary: Or in the case of, Tamiko Thiel, she creates her usually creates her own platform.

Savannah Campbell: On our end of things, we don't have any contact with the software developers. It's interesting, though, because like the Rachel Rossin piece, it does use actual assets from Call of Duty. That would probably be considered under fair use in the US. But if for some reason the game developers of Call of Duty got really mad, I don't know if they'd come after us or not. But you know, we have no contact with them.

Lieve Baetens: Then the next part is about the collaboration with artists. What information do you want to know from the artists when you acquire an immersive media work from them?

David Neary: I am going to share a document with you. Savannah, if you could talk about the questionnaire while I find the questionnaire and send the questionnaire.

Savannah Campbell: Yes. So, one of the most important parts of doing conservation assessments of new and coming acquisitions as they arrive, is in addition to looking at the work itself we do also have the artist fill out a pretty extensive questionnaire where they can tell us all about the production environment. It was made in all the file formats used, any conservation concerns and things we should be aware of. We have separate ones for video, for film, for installations, and the one David is sharing with you now is our general one for digital art. It's not immersive media specific. It's supposed to be kind of a catch all for all kinds of visual art. But there are a couple of questions on there that I think would be very relevant towards immersive media. Like particularly like if they used a game engine to build it and which one, if they did any 3D-modeling, things like that.

Lieve Baetens: Are any of the answers that you received so far remarkable or interesting?

Savannah Campbell: I think if we just get thorough answers at all, we're happy. I'm trying to think of anything particularly, like, quirky. Not really, no.

Lieve Baetens: Okay, well, maybe that's a good sign. When it comes to collaborating with artists, how are you collaborating with them? Is it only at the acquisition part or is it after the acquisition?

David Neary: I mean, obviously the two main periods are acquisition and installation. For example, during the pandemic, we had a lengthy conversation with Tamiko Thiel who did our AR piece, and that was just because she was available to talk. There were a lot of questions that did not get asked during acquisition, because there were no set rules when that work was acquired. So sometimes for retroactive conservation understanding, we'll go back and try to track them down. But for the most part, acquisition is ideally the moment to acquire all the information. So that if the artist, who hopefully does not drop dead, drops dead immediately just after, we have the information that we need to know to understand it, know how to install it, how to replace it if technologies fail or fade and so on and so forth. I think, acquisition is key. We will always check in with an artist before an installation to make sure that they are at least happy, or to whatever degree is necessary sign off on the installation.

Lieve Baetens: How do you decide how you're going to preserve an immersive media work in your collection?

Savannah Campbell: The thing is, there aren't established best practices yet. It's still a very new thing and the technology is changing all the time. So, we do the best we can to thoroughly check them, that they're functioning now and buy the equipment that we need to run them. For example, we have one piece that requires the HTC Vive headset and another where the artist prefers the Oculus. So, making sure we have those on hand. But in terms of the future, it's a big question mark. Especially because these big tech companies and their proprietary, very closed software environments might, update things on their end. Our pieces might not be compatible with that. And then we would have to maintain older versions of the unity, for example, to keep things running if the piece can't work in the most current version of unity anymore. It's a matter of tracking software versions and compatibility.

David Neary: If it is just a file, like a 360 video file, we preserve it the way we would any video file and hope that the technology to play it still exists. In terms of, as I mentioned with the timing, we're trying to get the actual software, the code for that. I don't know if we ever did purchase a laptop to put the app on. I'm not quite sure where that landed.

Savannah Campbell: That got derailed by the pandemic.

David Neary: Yeah, the pandemic. That was certainly the plan, to keep a backup of the app. One of the more interesting cases is that we had to get an Oculus recently because we had gotten the Vive for the Claudia Hart. Then we got the Rachel Rossin and the Rachel Rossin, we could only play on an Oculus. In order to use an Oculus, you have to have a Meta account. The Whitney is not an enormous institution, but it's a serious institution. And we take online security very, very seriously. So, an institution like that, having a kind of rogue Meta account without anyone looking after it, is messy and it's being attached to anyone. So, I had to set up an email user, just called oculus@whitney.org I think or something like that, just a dummy account, so that I could go in and create a Meta account just to use the dang thing. And it was like so many hoops to go through just to turn this machine on so that I could put the files on it. And literally we were just doing it to test them out because we needed to know whether the files worked outside of a computer. They do and that's great, but that becomes a preservation issue, a security issue. Right now, I'm really just complaining, using this to vent. Whatever the tech companies decide, we essentially have to go along with. And that's terrible for our business because what we are trying to do is keep these things alive no matter what, and they are the ones who control it. And very often without telling us. So, we do our best. We'll just make sure that we have equipment that works. And we'll upgrade that as needs be. If we were to do an install maybe with several headsets, we would just rent them or maybe do a purchase. A lot of it comes down to what departments have, what budgets, and who is willing to pay for what at any time. With media preservation, we've been we've been lucky on certain aspects, but we don't always get quite the funding that we would like. After July we might actually have a full departmental budget that we can work with.

Lieve Baetens: Well, I'm hoping for you that you receive your full department department budget. That would be great. So, if I understand you correctly, the preservation is partly dependent on each work because each platform software hardware is different.

David Neary: Yes. This might be helpful, Savannah, for the Claudia Hart, did we do a disk image?

Savannah Campbell: Not yet.

David Neary: Not yet. Okay.

Savannah Campbell: In general, we do disk images for artists provided computers. But for that work, we bought a brand-new computer. Yeah. It didn't come from her, so there wasn't really a reason to.

David Neary: So, what are the files that we back up on that one then?

Savannah Campbell: Well, they came to us on a hard drive.

David Neary: Got it.

Savannah Campbell: So, we have the two backups currently.

David Neary: Got it. It's complicated file structure. Well, eventually we're going to have to do a disk image in archive medica. Archive medica a digital preservation tool kit. You bag the files for preservation. Then it automatically runs the checksums, virus checks and various other things. Just to keep the works preserved. It does quarterly fixity checks. It's preservation steps that Savannah preps and then turns it on. It does the formerly human done tasks.

Savannah Campbell: It's better for simple files, videos, audio text. We don't have it configured to functionally do software based yet. That's on the horizon for the future hopefully.

Lieve Baetens: What would a preservation policy need for immersive media according to you?

David Neary: A good way to properly preserve disk images that is not just save and hope would be a large part of it, I think. Having regular technology checks, every 5 years, making sure that the Oculus you have works, is up to date and will survive another five years. If it isn't likely that you know what the replacement is and that you know what files this will work on. If Meta folds, that business still stays alive, but if Meta folds, would the Rachel Rossin piece no longer be visible? Would all of our Oculus's suddenly cease to work. That work can be viewed as a video file, non-360, the click and drag kind. So, there's always a version of it. But having check ins with artists about how they react to technology changing if there is a clear technology change on the horizon. Similar to the Oculus, for the AR works, an iPhone with a copy of the app that works on it. Savannah, anything I'm massively missing?

Savannah Campbell: I would just say that we preservationists and museums in general are not the target users of these products. Meta does not think one bit about us. Apple doesn't think one bit of us. We're not their concern. They're obviously very much on the planned obsolescence track, which is antithetical to preservation entirely. So the challenge is always trying to clean up after these big tech companies to keep these works alive.

Lieve Baetens: It's so sad.

Savannah Campbell: Truth.

Lieve Baetens: Is this something you discus with the artist beforehand? For example, during the questionnaire, that if the technology fails, or the hardware or software fails, what to do next?

Savannah Campbell: We have a very broad question. Like if something fails, are we allowed to conserve it? Can we migrate the files to a different and more currently sustained format? Can we emulate the work? Then we list things like that. Usually the artist just says: "Yeah, you can do whatever", but occasionally one will have something more specific like: "I don't think emulation is right for this work, do whatever you can to keep it running in the original format". Most of the time they just want it to function. Do what you got to do.

Lieve Baetens: Are you working with any third parties for the preservation of immersive media?

David Neary: For immersive media, no. For Artport we work with rhizome. Tamiko put us in touch with somebody when we were discussing Unexpected Growth, but I think that was just a software developer of hers. So currently, no, but we are very open to that conversation. It would be great to just have a sit down with Meta and Apple and maybe strangle them a little bit until they agree to help us out. But I don't know how we're going to get in the room with them. Otherwise, currently no. But I think we will as we collect more and as the ones that we have become older. Because, you know, Savannah's brilliant and I'm very good at sitting back and watching Savannah be brilliant, but there is only so much she can do if one of these things completely fails. We are specialists in that we are media conservators, but we are actually generalists. We just need to know a little bit of how to work with every media format. We need to be able to know when to call in the actual super specific experts. It happens all the time and it's a part of the process, particularly the more complicated work, the more work it requires.

Lieve Baetens: If you ever happen to get a talk with Meta and Apple, please invite me. I can assure you that everyone in this field wants to join.

Savannah Campbell: I think the whole community has some choice words for those companies.

Lieve Baetens: We're very much looking forward to finally speaking to them and telling them how horrible it is what they're doing. What are your goals in the future for preserving immersive media?

David Neary: Having to do exactly that to preserve them. To be successful at it. I think one of the things we've really realized over the last 4 or 5 years is that documentation is everything. Making sure that we have the correct documentation and making sure that we are keeping that documentation up to date. We have an intellectual understanding of what is required for the works to remain the works. Keep up with evolving technologies. On the Oculus side and so forth. But also, in terms of, as we said, if we can get disk images into our archive program that'll be a huge relief in terms of preserving a whole section of software-based art. That is certainly a long-term goal. Ideally a short-term goal, but we'll see what's allowed. Savannah, anything to add to that question?

Savannah Campbell: A goal is also just keeping in touch with our colleagues who are also dealing with these issues. You talked to the folks at the Tate earlier. They're fabulous and they started the Preserving Immersive Media Group. That doesn't have a ton of activity, but I hope that can continue to be a central place for folks to talk about issues around these kinds of artworks.

Lieve Baetens: Yes, I hope so too. Are you right now working on any initiatives, or do you know of any initiatives that are interesting that you keep an eye on and could also be helpful for this research?

David Neary: I mean, we are an initiative. There's a lot of media preservation projects going on, but so many of them are looking back at old, legacy acquisitions.

Savannah Campbell: Just the Preserving Immersive Media Group that I just mentioned. That's the biggest hub for it and maybe the only hub of it that I'm aware of currently.

David Neary: A lot of immersive media I feel is very corporate. I just don't know what those groups do. The art and science group out of DC have a gallery in Chelsea, Artechouse. An

immersive gallery and they're always science based. I've gone to their shows. I don't really care for them but that's another story. I have no idea what they do to actually preserve these works. It's still a museum art world adjacent thing but that's also kind of fed by other branches of technology that that might be worth investigating. But beyond that I'm not really aware of anything.

Lieve Baetens: Then one final question, do you have anything to add to this interview that I haven't mentioned already?

David Neary: Nothing massively comes to mind. I think it's interesting that this conversation will be so different in five years' time. Our collection will undoubtedly have doubled from 4 to 8. There was a talk already today about an artwork that has an AR element that we're going to be installing this summer. I think these conversations are going to evolve.

Savannah Campbell: I think that the fact that places are starting to feel comfortable collecting this stuff now, whereas they didn't seven years ago, says a lot. It says that this is a very new thing to have and a collecting in art museums context. It's great that people are taking on the responsibility now. You grow from here and our understanding will continue to improve.

David Neary: The only other thing I would add is that something that's taken off in the last ten years particularly, is video game preservation. And I do think that there is a lot of intersection that we're actually probably not discussing enough. Obviously, that's a whole separate question, but there's a lot of intersection there that I think both fields could heavily benefit from.

J. Transcription interview ZKM with Morgan Stricot

Lieve Baetens: Can you tell me a bit more about yourself and your role within ZKM?

Morgan Stricot: I'm Morgan. I'm French. I'm working at ZKM since 12 years. It's difficult to just say what I am because we defined ourselves in German. It's Medienrestaurator, so media art conservator. I'm not specialized in media art. I'm specialized in digital art and even more specialized in software based and computer-based art. So, it's difficult to define. Most of us are talking about time-based media conservation, but because I'm not specialized in video at all, I have nothing to do with video. So, it's hard for me to define myself as time-based media conservator. So, you've met my coworker. We are a team of two. We say we are digital and media art conservators. Because there are some media arts, we are taking care of. It's a bit complicated, but we did the same school. We did the Avignon School of Art, which was one of the only schools where you could learn media and digital art conservation. The school has now closed this department, and there's no school in France now to do this specialization. And we are not so much in France anyway, we are only with three. So, two of them are in Germany and one stayed in Paris. In France, the digital art environment and ecosystem is very little. So, there's no real big need now for conservatives. Because they are a bit slower than the rest of Europe, I would say. And the both of us, we are taking care of the collection. So, our collection is about 1000 media and digital artworks, and we particularly take care of 200 software-based artworks. It's the biggest collection in the world, so it's a full-time job. We work inside a bigger team. So, we are two conservators, but we are working with two departments. The Wissen department, it means knowledge in German and it's the collection archives and research where we have media and art historians, curators, archivists, we have a registrar specialized in the collection, a researcher and the technical team. Those are the electrotechnic people, we have engineers, building guys and logistics. So audiovisual technicians. Most of them are doing multiple stuff, but in total I think we are about 20 working on the collection and two only working full time on the collection. The other work also on the exhibitions.

Lieve Baetens: Okay, interesting. Also, interesting to know that this isn't a really big field in France, because we actually contacted Centre Pompidou because I thought they might have this within their collection, and they indeed said no. So, I didn't realize that this wasn't something that was happening in France.

Morgan Stricot: They are exhibiting immersive art or whatever immersive art is. But they are not collecting it. They have one time-based media conservator that we are teaching actually. She is French and it's a friend of us. She's coming one time per semester to learn

how to make acquisitions of such complex artworks. Because since there is no school in France, it's difficult also to find people to do it.

Lieve Baetens: Already talked about what staff you have within ZKM. Is there anything you want to expand over?

Morgan Stricot: The need now for us would be to have more people just dedicated to the collection. A big house like ZKM is making a lot of exhibitions and so most of the people are dedicated to the exhibitions. So, like I said, only two are working full time on the collection, and the dream would be to have one IT developer, one electromechanic engineer, one AV technician, one logistic just for the collection so that we can take care of it completely. It will be the dream. We have all the skills in house. It's just the time that is missing.

Lieve Baetens: Yes, I understand. I hear this from more institutions that time is the important part. Now, almost the most important question of this research, how do you define immersive media?

Morgan Stricot: So first, we are not using this word. So, it's the first time I'm thinking about it, because it's the first time the category is given to me. In our databases or even in our work every day, we are not talking about an artwork saying it's an immersive artwork. Sometimes I can talk about immersive interactive artworks or immersive environments when the whole space is involved and you are entering another world, but we are not using it as a category or a terminology what you can search in the database. You're not searching for immersive art. I looked at my collection and at the exhibitions and I made a selection. I will share my screen with you of artworks that I think are immersive and the diversity also. This one is an artwork from Ikeda. We had a full exhibition of Ikeda in in 2014 or 2015. Maybe you don't know how this is made, but we have very big atrium without a ceiling. So, it's very big. And both spaces were full of those projections. So, the exhibition was immersive in the way that you're entering a building which is completely dedicated to one artist with only projections where you can step in. So, the artwork was Micro Macro, and you could step on the projection. The projection was very fast. The sound was very high, very loud. You were losing all your senses, like view and your equilibrium. So, people were sitting on it because they couldn't have their orientation in the space. So, for me, it was one of the first times I was feeling really immersed in an artwork where you lose all your senses and and when you go out, you need some time to go back to the real world. So, this would have been the perfect definition for me of immersive art. Here the definition is video art. This one is a work of Saraceno. Here the category for me would be sound art. And with this one, you are able to touch the strings in a very closed environment and make music out of the nets that you see

here. I would say this one is also immersive, because you're entering a space which is outside the world. You're entering a protected area where you can connect with the work in a very intimate relation. This is something that came a lot with immersive media. For me, with the definition of immersive media is really this. An intimate relationship that you can create through the environment in which it is. As soon as you are in a black space or like a closed physical space, you are creating the condition in which the people are creating this environment to build a relationship with the artwork. And this will be part of the definition I give. This one is The Legible City by Jeffrey Shaw. It's like primitive virtual reality from the 90s where you just explore a city in 3D through the bike. So, you are a biking, and you can direct yourself inside this city of words where you can read sentences. It can be in an open space, or it can be in a closed space, but still, you are in this sensory again. An alteration of your sense where you are on the bike, and you are exploring a virtual world where you can lose the connection with the reality around you like you are completely inside this virtual reality city. Your body is engaged again, and you can create this relationship. The last one would be more modern, it's Skin 3.0 from Schultz. It's working with a Kinect. A lot of new acquisitions that we have, work with Unity and with Kinect. This is like a mirror where the people are mapped and then some artifacts are added on their body, like clothes. An addition to your body that you can move in real time and see the outfit on yourself in this condition. This can be projected. This can be on the screen. This is in an open space. But again, it creates a real relationship where you can lose the contact with reality around you. This will be the selection made for immersive media. Maybe there's more, I don't know. I just made this selection of things that was creating a definition for me. Relationship will be the core word for me. Creating a relationship with the work and the time and space to create this relationship.

Lieve Baetens: I'm impressed by your presentation and how you prepared this. Thank you.

Morgan Stricot: Me and my colleagues ended up with the selection. You know, it's like the works where we all agree to say it's immersive. We were not agreeing between each other.

Lieve Baetens: I just wonder, why isn't immersive media a term that you work with within.

Morgan Stricot: I think it's because we are a more technically oriented institution in terms of exhibitions and conservation. We are defining artworks. For example, if it's based on a video. When we are doing research in our database, we are researching by type of computer or by type of player. So, I think it's because we are a house that dedicates itself since so long to the preservation and maintenance of those artworks that we focused on the technical side of

those works. To have a strategy and preservation strategy more focused on what it's made of instead of historically, conceptually what it is like.

Lieve Baetens: What is the history of immersive media in the collection within ZKM?

Morgan Stricot: So, like in the example I showed you, The Legible City from Jeffrey Shaw, it's from the 90s. So ZKM started collecting in the late 80s. So, in 89 exactly. We are also a house of production. So, most of the works were produced here at ZKM where we were providing the technical equipment and artists were coming to explore those technical equipment's and make artwork artworks out of it. So, this is the history of production at ZKM. And so, if immersive media is any artwork with an intimate interactive relationship to the public, I would say that we started with those artworks. The first artworks that entered our collection where those kinds of artworks, computer based, kind of immersive, even in contemporary and analog. It was always somehow immersive, because we had the space and the technical equipment to do it. So historically, the collection of ZKM is based on this type of artwork.

Lieve Baetens: Why is ZKM collecting immersive media?

Morgan Stricot: Because we are a house for media and technology. It wasn't meant as a museum at first, but just as an art institute where we were producing art. So, it came with time that we produced so much that we wanted also to preserve it and to have it in the collection. And we became then a collection. It just came from the goal of the institute. From the center. The productions were then acquired by the museum and became a collection. So, I think it was just in the scientific project of the ZKM from the very beginning.

Lieve Baetens: How does collecting immersive media fit in your collection policy?

Morgan Stricot: Like the policy is to acquire those kinds of artworks. I send you the acquisition workflow. It's only a pragmatic technological point of view, like an objective point of view. We have all the curators and the art historian in our teams that are making decisions not according to the technology it used or if it is immersive or not. It's more conceptually. We have different thematics in our collection, so the fact that it is immersive is not an argument in the acquisition of those artworks. It's more like the thematic, the concept behind it. So, I would say we have a whole part of our collection dedicated to poetry and generative poetry, for example. Part of it is dedicated to early artificial intelligence or speaking agents. Like the artworks where you can speak with someone with speech recognition. You have surveillance thematic, like a critical thematic about surveillance and censorship. So, this is a more

thematic oriented selection. Then it goes to us, so that we can give an overview of how much time, energy and money we're going to have to invest to preserve this work in the future. And this combined, we can say yes or no to an acquisition. So, it's very much both sides. I don't think any artworks were ever acquired because it's using a very hype technology or something. It's only about the topic of the work. And this is why we have such diverse artworks in our in our collection. We really don't care what it uses to convey an idea. We care in terms of preservation, but they don't care in terms of the collection concept.

Lieve Baetens: What selection criteria is ZKM using when collecting immersive media? So, from what I understand from you, it doesn't matter for the acquisition part that it is immersive media. It's about the concept. Are there any other selection criteria that you use?

Morgan Stricot: As conservators and the technical technical team, we are giving our point of view on the technical side of the work. So usually, when we acquire an artwork, it's because it's already here at ZKM in an exhibition. It's very rare that we are acquiring an artwork that we never exhibited. The technical team is going to have this experience of building the work, maintaining it during exhibition, and we can see how difficult it is or how easy it is to exhibit this work. This is the first part of our assessment. Then we can say, for example: "during the exhibition we had to start up the computer every day, because the software was freezing. This is like heavy maintenance. We have to find a solution so that we don't have to restart the computer every day or the software is very unstable". This is something we're going to say without judgment. We're just going to say: "During the three-month exhibition, we had to restart this computer 20 or 30 times. We think it's a heavy maintenance". We also make another assessment, which is of the technology it is using. Is it using third party software? Is it using very specific hardware that we can't find anymore or things like this? And I'm going to make an assessment of how long we can preserve this artwork and for how much money. Like how much time and money we're going to have to invest to have this artwork to function for the next 20 years max, because we can't make more predictions with digital arts in general. But this is kind of the criteria. So even if we are saying it's heavy maintenance, very hard to preserve, the hardware is going to break and we have no replacement, if conceptually the artwork is important for our collection or for art history in general, we can still collect it. They are just aware that if they say yes to this acquisition, we will have to find a solution for this artwork. This is just an equilibrium between this, is it worth it to invest that much money for our collection concept? It's a very basic questions and sometimes not a comfortable question. But I think it's the biggest question we have when we start an acquisition. Like this is hard to preserve, but is it worth it? In the same way, if it's easy to preserve, but it doesn't make sense to have it conceptually in the

collection, we are not going to acquire. It's not because it's easy that it's going in the collection immediately. You know, it's really not the case.

Lieve Baetens: How do you manage the intellectual property rights around these works?

Morgan Stricot: We have contracts. Usually, we acquire the rights for the work for the software when it's written by the artists. The biggest issue we have is with third parties, the OS, the hardware, all the rights for things that comes from companies. The intellectual property, I think they remain with the artists. We are just acquiring a version of their work. We have duties around this artwork to maintain it, to preserve it, to exhibit it. But they keep the rights. We never acquire a limited edition. We are always acquiring a version of the work. And if they want to make other versions, enhanced version or duplicates of the artworks, we are never against it. They can make exactly the same, as an artist version. And we have another version, and they know that we will maintain the version we have. Usually, the closest to the historical one. And they know that if they are making a new version of this artwork, an older version of the artwork is somewhere as a witness of the of the development of their own artworks. So no, they keep the intellectual property of their own work. I'm not sure about this because I'm not so much involved in the legal department. We are having one instance of the artworks of the artists production.

Lieve Baetens: The agreements that you make with the artists, are those the same for every artist or does that depend on each work?

Morgan Stricot: We have different contracts for each artwork. Like if it's using authoring programs, we can't have the same requirements then when the artist actually wrote the program. We also have video games where the rights are different. We have commercial software that were used for an artwork developed by the artist, but also used for commercial use on other stuff. Here we can't access the source code, for example. So, there's agreements that when they are not making money out of this software anymore, they can give us the source code. The complexity is increasing, with digital art. We have to adapt ourselves and create different types of contracts, especially for the rights for the software part and the artwork part. We have to adapt the rights and the use. Now in our contract we also stipulate that if we need the source code, we won't make any aesthetical change to the work. We are just using the source code to change it for a new operating system if needed for a new computer. If the computer is broken and we need to install it on another computer, we need the source code to recompile for this computer. With time we understood that it was very hard for the artists to give us the source code, because it's very private. It's something that they are having a very strong relationship with and that they don't want other people to

see. So, it's something we noticed with time. So now we say that it's going onto a secured server, and nobody is touching it until the moment we have to change the computer and recompile. And we won't make any aesthetical or behavioral changes to the software. We are just adapting it for new a computer environment. So, this is the thing we had to add to the contracts to build a good relationship with the artist's trust.

Lieve Baetens: What information do you want to know from the artist when you acquire an immersive media work?

Morgan Stricot: You have access to my guideline on the wiki. The collaboration with artists is something that with time became very important in the acquisition process. And actually, it's now also one of the pre-assessments before acquisition. I'm writing down in my assessment if the artist is easygoing. Like if the artist is willing to help, willing to answer my questions, that he/she/they is easily reachable, that he/she/they is answering emails. Does the relationship look good? If I can feel that I can have a good relationship with the artist. This is part of my assessment now because when the artist is not answering, not giving information, it's also jeopardizing the whole acquisition process after. Because I can't have the information, I need to preserve the work. With time we understood that it was very important. So, the first thing is not to ask for information. We are just building a relationship. So usually, we are asking the artist to come to the ZKM to do the dismantling of the artwork. Because like I said, we are usually acquiring artwork that are already in the house, already exhibited at ZKM. When we have the information that this artwork is going to be acquired, we ask the artist to come and do the dismantling with us so that I can build a relationship and ask informal questions, but also formal questions. Usually, I'm doing a recording when we are talking, but in a very informal way so that we are just talking about the work, the experience they have around this artwork and the difficulties they have. I think it's better to be transparent on this. We are dismantling and usually they are also with us for the next 2 to 3 setups. They are coming to set up the artworks with us, even though we have enough information to set it up by ourselves. It's important to have the experience of building it with them, because sometimes they had some information that they didn't thought of or we didn't thought to ask. I see in your interview questions that you are asking about the questionnaire for the artist. It's not working. At first, I was sending those kind of bullet lists where I was asking about the hardware specifications, the computer OS, what type of interface it's using and which kind of protocol. Like all the very technical questions. Usually, the answers came in very long after or were not complete. But if I'm here with them, with the artwork in front of us, and I'm just asking questions, they are explaining me stuff. Even without questions. Here we have much more detailed information about the work. So, this is why I'm not sending lists saying this is what you should expect from me. Like what I need to know to preserve your

work. But we can go through those questions when you are here, and we can actually just talk together in front of the work and gather everything you have in mind about this artwork before giving it to us. It's a transfer. The transfer of knowledge is better if it's made in real life, in front of the work and with multiple meetings. Like multiple times of setting up the work together, confronting ourselves to new exhibition conditions and making decisions together. This happens only with a long-time relationship with them. I noticed that it's only after three times building up the work with them for the more complex work. I'm not talking about projections or non-complex digital objects. I'm talking about very complex installations. And here it's only coming with time. We can never have a complete documentation because each exhibition is going to bring new challenges and new decision making. It's not one interview. When we acquire the artwork, it's multiple time, multiple emails, multiple exhibitions, and everything is gathered into the wiki. We have a wiki for documentation, and everything is gathered here. All the information they give me, all of them. We never know what we will need in the future. So, I'm usually writing down everything. So. no questionnaire, it's more building something.

Lieve Baetens: Interesting because a lot of institutions use questionnaires. I didn't think about how important it is to actually have the artwork in front of you as well. And also, that you make notes of how the communication is between you and the artist is really interesting.

Morgan Stricot: This is something we were working on since two years now because we noticed this. And we also had a researcher from Manchester University (Qinyue Liu) that was focusing on this, the relationship between conservators and artists. So, we started to think about our practice on this and making experiments. If we are just sending a questionnaire, if we are just talking, what is the best option? There are also artists that are very shy and don't want to talk with someone recording. We have to adapt to people. From my experience, a questionnaire is usually not the best option. It depends on how you present it. But usually, they are frustrated by the format of answering, by writing. They just want to talk about the work.

Lieve Baetens: That also answers my next question about how you're collaborating with artists, because that's not only during the acquisition part, but also after the acquisition, from what I understand from you.

Morgan Stricot: And even during the preservation strategy sometimes, because we even though we are trying to make a concept for the future concept of conservation, we are never ready to confront ourselves when an issue is coming. We can be proactive, we can have spares, we can have backups, but there are some technological discontinuities or

technological breaks in the history of technology that we are never ready for. Like the fact that we are less and less using mouses and the click, the way you put your mouse on something without clicking. This is a reaction that we are used to with mouse. But now with the tablet and every tactile surface, you don't have this going on top of something and something appears. You have to push your finger on the tablet to do something. So, this is a break that we were not expecting when we developed the concept with the artist. So usually, I'm contacting them when we have such issues coming up. Like, this feature of the artwork is not working anymore with the new display, so we have to find a solution. What will be the most comfortable solution for you? I can explain what is the most comfortable for me, but I would like your opinion on this. So usually, they are involved. Some of them ask to be involved. Some of them don't want to be involved. Like it's yours now, you take care of it. So, this is also something I'm writing in my documentation. Like, don't bother, the artist is not interested. It's important also to respect the wish.

Lieve Baetens: How do you decide how you're going to preserve an immersive work in your collection?

Morgan Stricot: Here, like the category, immersive media is very problematic for preservation questions because the artworks I showed you, they are for different types of artworks. They have different strategies with different problematics. So, this is why it's very difficult to have a general question about immersive media on preservation thematic. I saw you were asking about hardware and software. You don't need to make a distinction between hardware and software anymore. They are both one entity working together. The relationship is so strong now between hardware and software that we can't make two categories out of it. Like the smart phones, the software running on your smartphone is made for your smartphone type. So, you can't move your software from one. It's difficult now to change the software from one hardware to another if they are not exactly the same. I'm thinking a lot about VR glasses. You can have very big difficulties to change the environment from one VR glasses to another. The software and the glasses are very related together. They are stuck together. So, we tend to understand with time that we can't focus either on the hardware or the software. The strategies that are focusing on hardware and software would be hardware preservation, which is just repairing a piece of hardware to make it work again or buying spares to replace. This will be our strategies for artworks and for software the strategies we have is backup and imaging processing for preserving the software. But you have to document the relationship between the software and the hardware. You can't just make an image or a backup of a software without telling it's working on this type of computer or this type of hardware. At the end, even though you have two strategies for both sides, they are all together in the documentation so that you have all the elements to build

this software on this hardware and that it works together. So, it's all interrelated in an artwork usually. So, the strategy comes from the technology the artworks is using. There are no methods, there's no general strategy. Even for computer-based artworks, we can't have a guideline for those because each computer is different, each software is different. They are so diverse that we can't have a guideline for this. So usually, we need to understand which kind of software is using which kind of hardware and what options we will have, like migrating, rewriting or emulating. These are kind of the big strategies, but sometimes it's a mix of different strategies. Sometimes you have to just change something one thing and the rest of it is working. Sometimes you have to migrate the whole hardware and then emulate the software. It really depends on the artwork. It's very difficult, but usually we come up with a strategy, like I said, with a concept. And when we confront ourselves with the issue, we have to review our concept with the artist, with the other colleagues of the team, and come up with a plan. When it's possible, because sometimes it's not.

Lieve Baetens: It's so if I understand you correctly, it's a case by case situation and a lot of collaboration with all the different parties is necessary?

Morgan Stricot: Yes, exactly. Something you need to know about the ZKM is that we are trying as long as possible to maintain the artworks in their historical environment. So, we are trying not to change the environment of those works anymore as much as we can. So, we are keeping the historical hardware, keeping the historical software, keeping everything we can in the initial state, as original as possible. This is why I talked about backup and spares. This is our biggest strategy, and we are working on migration at the same time too, for the future. We are trying to show those artworks as long as possible as close to their historical version, so that people can appreciate the history of the use of technology in art and not having all the artworks running on a raspberry. Having an exhibition, talking about the artworks from the 90s with the same technology then today's artwork, can be very confusing for the public. So, this is why we try to make the ZKM the place where you can see historical computer working. This is something very special about ZKM. This is media archaeology concept and strategy. So, it's something very special. I don't think you can have this into a survey like you are doing because I think nobody else is doing this. So, it can't be a general thing.

Lieve Baetens: What would a preservation policy for immersive media need according to you?

Morgan Stricot: Like I said, it's difficult to make a generality in a preservation policy with very diverse types of media artworks. Now we are working on making a guideline for artists

and for people having to do with software-based artwork. I think most of the immersive media art is software-based art. Like all the artworks I showed you are based on software art or computer-based art. So, we are working on a guideline of Lozano-Hemmer. I don't know if you read his text. Rafael Lozano-hemmer made a guideline for artists for preserving their own work and having this in mind from the moment of creation to the moment they are selling it to a museum or a cultural institution. So, we are trying to translate this. We are translating it in German and in French. We are trying to gather some tools that artists can use. Our preservation policy would be just to give tips. Two artists, two conservators, two curators, because they are also very much involved in the exhibition and the acquisition process of those artworks. Making a white paper, the biggest thing you have to ask yourself is what you should think about. So, I would say that we need tips. We can't say a guideline because like I said, it's too difficult. With the acquisition guideline I sent you I'm always thinking about the questions I'm asking myself, the question I could ask the artist and the different steps I'm going to have to do during and after the acquisition. I try to find something common in all my acquisitions, which was not easy, and also give some of the specific cases you can have and how to deal with it.

Lieve Baetens: Are you working with third parties for the preservation of immersive media?

Morgan Stricot: Sometimes, but it's very specific. We are working sometimes with developers, or we are working with some companies that are preservation friendly to some very specific hardware. Usually, we have the help of those companies to adapt part of the hardware to a new system or something like this. But usually, we have all the people inside the ZKM. So, we are like a closed team, and we are trying to do it by ourselves, because the team is big, and we have all the knowledge in the skills in the team. For a long project sometimes, we like to give it to someone else so that they can focus on this for a couple of months, and we can do something else. It's like independent developers or independent conservators or people that are making constructions. We have them external for the conservation. We have two companies we work with so that we don't have someone permanent in to take care of the tube monitors. But that's it.

Lieve Baetens: Do you have any goals or wishes for the future in the preservation of immersive media, or is there just something you want to add to this interview?

Morgan Stricot: We are trying to make a guideline in French, in German and in English for European centric. And we are working with someone from Spain. So maybe we will also have a Spanish version of it. Those are the four big languages of Europe and will be helpful for having more people getting interested in this and also having the right tips to move on

with the preservation of this type of artworks. Workshops will be nice for students in art, in media art and in digital art. The root of this are the artists themselves. So, we have to target them at school and explain to them what is going to be expected from them, because this is something that is not in the curriculum in most art school. Like what to expect when you go out of the school, and you produce art, and you want to have your art coming into an institution. Usually, they are not prepared for what we are going to be asked from them. So, it's nice if we can do some kind of workshops. Knowledge transfer is important, like this part of the wiki, which is public, to have those guidelines public. Our documentation template is also public. At the time we are really in this mood of networking, sharing information, transferring knowledge. Since we are with not so many, we know each other. I think it's important that we can share this knowledge to other institutions that are smaller and that cannot hire a conservator for media art or for time-based media. So, they can still have the right process to start acquiring those kinds of artworks. Because if you don't know how to start, you are just never acquiring those kinds of artworks. And so, you never need a time-based media conservator. So usually, it starts by acquiring work and then you have a conservator to take care of them usually. When they don't have a conservator, they're not acquiring. So maybe they can start with those small tips that they can work with. We work a lot with South America, because they are starting to collect, and they can start from the right foot. I created the guideline actually for the Tertulia museum in Colombia. Sharing knowledge, making white papers, making guidelines and tips. Things like this will be the highest goal for conservation. Like you are doing.