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→ Transformational Experiences.
The Role of Immersive Arts and Media
in Individual and Societal Change

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and Katrin Heimann

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# Contents

Introduction

# Transformational Experiences. The Role of Immersive Arts and Media in Individual and Societal Change

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## Introduction

We live in times of humanitarian and environmental crises. The effects of climate change add to the economic, physical, and mental suffering caused by social discrimination (e.g. gender, class, and race inequalities), while starting to affect not only those lowest in the power structure. These crises are unlikely to be resolved with technology alone – as post-work society and similar frameworks encourage to think. Rather, a better future for all relies on systemic changes with unknown consequences for each of our individual lives and society as a whole.

Such uncertainty and related fear of loss can create reactions of fragility, additionally contributing to the difficulties at hand: rather than building new teams across old borders, sharing resources to create new solutions to old problems, we tend to isolate and cling to what we know and have. At the same time, the vastness and complexity

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of the issues we face can create paradoxical cognitive and emotional reactions. We refuse or genuinely fail to grasp the problems affecting our very environment or societies. We respond with shock and horror when their effects hit particularly "close to home," to just go back to be mindless about them shortly after – in seemingly paradoxical circles of blindness and surprise.

Encounters with and creation of arts have been suggested as a potential remedy,[1] offering safe spaces that allow to stay with the trouble[2] rather than running from it. Spaces that facilitate creative imaginations of a different future rather than manifesting the past. Spaces of transformational learning. Spaces of care. Spaces of change and collaboration.[3] But what are the concrete chances that all this really happens? What does (not) work, under which circumstances?

The same questions, once appropriately reframed, can be raised in relation to immersive media. The latter, and virtual reality more in particular, have long been associated with unprecedented possibilities of promoting attitude and behaviour change in relation to important societal issues. However, the enthusiasm for virtual reality as

1 R.L. Lawrence, "Knowledge Construction as Contested Terrain: Adult Learning through Artistic Expression," *New Directions for Adult and Continuing Education* 107 (2005): 3-11, https://doi.org/10.1002/ace.184; C. Hoggan, S. Simpson, H. Stuckey, *Creative Expression in Transformative Learning: Tools and Techniques for Educators of Adults* (Malabar: Krieger Publishing Company, 2009); T. Barrett, "Aesthetics, Conversation and Social Change," in T. Constantino, B. White, eds., *Essays on Aesthetic Education for the 21st Century* (Leiden: Brill, 2010): 123-142; A. Kokkos, "Transformative Learning Through Aesthetic Experience: Towards a Comprehensive Method," *Journal of Transformative Education* 8, no. 3 (2010): 155-177, https://doi.org/10.1177/1541344610397663; J. Blackburn Miller, "Transformative Learning and the Arts: A Literature Review," *Journal of Transformative Education* 18, no. 4 (2020): 338-355, https://doi.org/10.1177/1541344620932877.

2 D. Haraway, *Staying with the Trouble: Making Kin in the Chthulucene* (Durham: Duke University Press, 2016).

3 J. Gabrys, K. Yusoff, "Arts, Sciences and Climate Change: Practices and Politics at the Threshold," *Science as Culture* 21, no. 1 (2012): 1-24, https://doi.org/10.1080/09505431.2010.550139.

an "empathy machine"[4] has by now shown all its naivety.[5] More structured and rigorous proposals, such as those connected to the domain of "immersive journalism,"[6] are to date subject to continuous debate.[7] Among others, a key aspect to be discussed concerns the actual expression of what has often remained merely a *potential* of virtual reality and similar tools: what are the appropriate strategies to ensure their effectiveness?

With these and similar questions in mind, for this issue of *AN-ICON. Studies in Environmental Images*, we selected diverse contributions investigating the role of the arts and media in rethinking (and acting upon) societal and environmental problems, focussing on immersive experiences in particular.

As a result, we present a compelling collection of seven papers that delve into the realm of contemporary art through various theoretical and methodological approaches. The papers bring to the *AN-ICON* journal new methods and practices, ranging from audio visual discourse analysis to a form of operational philosophy, in which art is a means of intervention rather than an object of discussion.

Contributions stand out in today's scholarly landscape for their critical engagement with concrete art works and exhibitions far from mainstream, providing insightful case studies for scholars dedicated to research on contemporary art and immersive media. Each paper

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4 C. Milk, "How Virtual Reality Can Create the Ultimate Empathy Machine," filmed March 2015 at TED Talk, https://www.ted.com/talks/chris_milk_how_virtual_reality_can_create_the_ultimate_empathy_machine?language=de, accessed January 1, 2024.

5 A. Pinotti, "Autopsia in 360°: Il rigor mortis dell'empatia nel fuori-cornice del virtuale," *Fata Morgana* 13, no. 39 (2019): 17-31.

6 N. De la Peña *et al*., "Immersive Journalism: Immersive Virtual Reality for the First-Person Experience of News," *Presence* 19, no. 4 (2010): 291-301, https://doi.org/10.1162/PRES_a_00005.

7 A.L. Sánchez Laws, "Can Immersive Journalism Enhance Empathy?," *Digital Journalism* 8, no. 2 (2017): 213-228, https://doi.org/10.1080/21670811.2017.1389286; A. Sanchez-Acedo *et al.*, "Metaverse and Extended Realities in Immersive Journalism: A Systematic Literature Review," *Multimodal Technologies and Interaction* 7, no. 10 (2023): 96, https://doi.org/10.3390/mti7100096.

embodies a belief in the transformational potential of art while remaining critical of its actual realizations. They collectively underscore a significant gap in the art world's understanding of complex global issues such as climate change, social injustices, and conflicts. The authors highlight how traditional modes of representation are often entangled in systems of power, contributing to the very crises they depict. At the same time, they pay attention to how new representational solutions as well run the very same risk: technological innovation is not in itself sufficient to ensure a freer and more effective exchange with spectators and users, and thus social advancement.

In an issue dedicated to the transformational impact of immersive arts and media, the article by Philippe Bédard inaugurates the discussion with a cautionary tale. When speaking of "impact," he reminds us, we must never forget that a given art or media product is simply one cog in the much larger system of an overall communication project. By focusing on the VR documentary *On the Morning You Wake (to the End of the World)* (Mike Brett, Steve Jamison, Arnaud Colinart, and Pierre Zandrowicz, 2022), Bédard examines two of its recent public exhibits to discuss some of the key factors that need to be taken into account when considering the effectiveness of immersive experiences addressing social issues.

A first-hand visit to an artistic exhibition is the starting point of Silvia Lavanco Livreri's article as well. With this contribution, we start delving more precisely into the topic of the current environmental crisis. The author provides a critical report of the Helsinki Biennial 2023, exploring its specific intersection of art with social as well as ecological concerns. Lavanco Livreri also reflects on the particular immersive nature of the Biennial: a concentric form of immersivity, so to speak, expressed not only by the characteristics of the single artworks but also by the

wider frame of the exhibition's physical setting on Vallisaari Island – an ecosystem with unique features, both fragile and resilient.

Shannon Magri focuses on the problem of empathetic response – or rather the lack of it – in immersive experiences concerning global warming issues. The seemingly paradoxical difficulty in conceiving global warming as a concrete threat, which we should all try to actively contrast to avoid disastrous consequences in the near future, is explained by the author by referring to philosopher Timothy Morton's notion of "hyperobject:" objects or phenomena that, from a human perspective, are massively distributed in time and space. Keeping this in mind, Magri argues, it is essential to devise immersive storytelling strategies that increase more effectively ecological awareness.

Concluding this cluster of articles, Eleonora Stacchiotti introduces the notion of Green Media, i.e. media conceived to persuade people to adopt more sustainable lifestyles, and more specifically Green Immersive Virtual Reality. Stacchiotti proposes to think of the latter as an instrument that works on the imagination of users, providing them tangible visions and experiences of speculative scenarios of the future. By adopting the methodological framework of Critical Discourse Analysis, the author analyses a case study – *Of Hybrids and Strings* (Lauren Moffat, 2021) – to provide support for her argument.

The next contribution, by Mariaenrica Giannuzzi, blends the topic of the environmental crisis with (de) colonial concerns. The author discusses a case study with both a didactic and a political purpose, i.e. the VR documentaries series *Biosphere VR*, supposedly taking the users on a virtual journey around the world through the eyes of local narrators, and broadcasting at international institutional summits on climate change. Giannuzzi takes a critical stance commenting how similar forms of communication

run the risk of prioritizing simplistic moralizing over nuanced engagement with complex socio-environmental issues, to the point that can create a feeling of *cringe* at the disproportion between their moral claims and actual results.

The encounter with *otherness* is at the core of the article by Manischa Eichwalder. To overturn the mainstream idea of VR as a straightforward "empathy machine," promoting an unproblematic fusion between the users and the other, the author relies on the "strange encounter" afforded by Morehshin Allahyari's *She Who Sees the Unknown: Kabous, the Right Witness, and the Left Witness* (2019). In this work, the others are not humans, onto which we can easily project ourselves, but monstrous beings characterized precisely by their deviation from human dominant norms, including colonialist and patriarchal structures. Interacting with these entities, Eichwalder claims, becomes an exercise in resisting our urge to reducing the other to something usual and familiar.

The figure of the monster is to be found as well in Antonio Ianniello's paper, which concludes on the subject of the transformational role of immersive arts and media by circling back to climate issues. This article constitutes an original instance of "unorthodox philosophy," not necessarily tied to abstract theory and discursive practices, but instead embracing the concrete activity characteristic of artistic practices. More specifically, Ianniello's contribution describes *Infinity pool*, an artistic proposal that summons situated climatic monsters to encourage a specific education of attention. Articulated through heterogeneous media means and unfolding along the river Tiber, *Infinity pool* tries to invite a specific community to become more watchful with regard to their surroundings and act concretely to improve them.

Therefore, while the general tone is more critical than prescriptive, this issue does not end on a note of

despair. Rather, it is a call to action for deeper reflection and more refined critique, fostering hope that through such rigorous examination, new pathways for artistic and societal transformation might emerge. We hope you will enjoy.

# You Are Not Alone: The Role of VR and Immersive Content in Social Impact Campaigns

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Abstract

This article focuses on the use of virtual reality (VR) in the context of "impact campaigns." Distinct in many ways from publishing a project on a digital storefront, impact campaigns assume a more carefully designed experience, starting with the exhibit itself. Rather than considering VR as an end in itself, my goal is to situate this unique type of mediated experience within a larger network of social activism. Key to this project is an understanding of the role documentary films have played within societal movements. By learning from the larger history of impact production, this article seeks to highlight some of the shortcomings with VR as it has been used until now in socially minded projects. By extension, my goal is also to emphasize the things VR creators can learn from impact producers to make sure their projects reach the right audiences and affect them accordingly.

Keywords Virtual reality Impact production Documentary Social change Empathy

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## Introduction

As is common with technological developments in the field of media and technology, virtual reality (VR) has been the topic of dystopian critiques and utopian promises alike. In either extreme, the technology's power to create strong and lasting emotional impact has been a major point of discussion. Invested in the idea that media in general might be used for societal change, this article is focused on understanding why VR has so often been discussed in terms of a transformational tool, namely as an empathy machine.[1] More importantly, in what follows I want to go beyond the usual critique of the empathy machine discourse by focusing on elements beyond the VR experience itself: the way a VR project is exhibited, how it is experienced, and everything that happens before or after that might affect or make use of VR.

To better highlight the role VR experiences play in fostering positive transformational effects, this article considers their inclusion within the larger context of "impact campaigns." This means that rather than considering VR as an end in itself, my goal is to situate this unique type of mediated experience within a larger network of social activism.[2] Key to this project is an understanding of the role

1 On the issue of empathy in VR, see G. Bollmer, "Empathy Machines," *Media International Australia* 165, no. 1 (2017), 63-76, https://doi.org/10.1177/1329878X17726794; J.A. Fisher, "Empathic Actualities: Toward a Taxonomy of Empathy in Virtual Reality," in *Interactive Storytelling: 10th International Conference on Interactive Digital Storytelling* (Cham, Switzerland: Springer International Publishing, 2017), 233-244; E. Ramirez, "Empathy and the Limits of Thought Experiments," *Metaphilosophy* 48, no. (2017), 504-526, https://doi.org/10.1111/meta.12249 H. Farmer, "A Broken Empathy Machine," *Immerse* (2019), https://immerse.news/a-broken-empathy-machine-can-virtual-reality-increase-pro-social-behaviour-and-reduce-prejudice-cbcefb30525b; L. Nakamura, "Feeling Good About Feeling Bad: Virtuous Virtual Reality and the Automation of Racial Empathy," *Journal of Visual Culture* 19, no. 1 (2020), 47-64, https://doi.org/10.1177/1470412920906259; G. Raz, "Rage Against the Empathy Machine Revisited: The Ethics of Empathy-Related Affordances of Virtual Reality," *Convergence* 28, no. 5 (2022): 1457-1475, https://doi.org/10.1177/13548565221086406; P. Bédard, "Closing the Gap: Storytelling in Nonfiction Virtual Reality," *Canadian Journal of Film Studies* 32, no. 1 (2023), 87-105; P. Bédard, "Making Room for Empathy in Contemporary Virtual Reality Cinema," *Studies in Documentary Film* 18, no. 1 (2023), 34-52.

2 While some might argue that VR and other immersive media seek to remove traces of their mediation by aiming towards transparency and perceptual immediacy, this issue is not relevant to the present discussion on impact campaigns. It is, however, relevant within the larger context of using immersive media for non-fiction storytelling. See K. Nash, "Virtual Reality Witness: Exploring the Ethics of Mediated Presence," *Studies in Documentary Film* 12, no. 2 (2018): 119-131, 124, https://doi.org/10.1080/17503280.2017.1340796.

documentary films have played within societal movements. Specifically, when considering the notion of impact, it is crucial to appreciate the role pieces of media should play as "just one element (albeit a central one) in a strategic communication project."[3]

Making suggestions as to the proper way of designing an impact campaign is beyond the scope of this essay. Rather, my goal is to highlight the broad field of considerations within which immersive experiences geared toward social issues need to be thought. Starting with an overview of VR's oft-cited emotional impact, this article continues by highlighting aspects of that discussion that are not as often considered. This includes examples of negative emotional consequences VR is capable of fostering, as well as critiques of the necessity and merit of emotional effects alone. This is where the notion of "impact" comes in, as a process dependant on channelling raw emotions into meaningful action. Looking at the historical development of documentary as a component of activist movements, it becomes clear that a more thoughtful understanding of what VR can *do* is needed to fully appreciate the role it can play in more robust transformational projects.

A single piece of VR content serves as a through line in this article. *On the Morning You Wake (to the End of the World)* (Mike Brett, Steve Jamison, Arnaud Colinart, and Pierre Zandrowicz, 2022) is a 38-minute experience which deals with the morning of January 13th, 2018, when the 1.4 million inhabitants of Hawai'i received an alert warning them that a ballistic missile was inbound. Published for free on the Meta Quest digital storefront, the project was also part of two recent exhibits: an immersive exhibit in Montreal and an impact campaign with a stop in New York.[4] Analyses of the lone VR experience and both exhibits punctuate

3 K. Nash, J. Corner, "Strategic Impact Documentary: Contexts of Production and Social Intervention," *European Journal of Communication* 31, no. 3 (2016), 227-242, 231, https://doi.org/10.1177/0267323116635831.

4 Considering the project was also the subject of a whitepaper on the power of VR in impact design, this makes it a vital example. See J. Plass, "*Deepening Engagement and Learning Impact Through Virtual Reality Activations,*" *Games for Change* (2023), https://www.gamesforchange.org/xr4c/

this article. They serve to give concrete examples of VR's emotional impact and of the steps impact campaigns can take to channel this energy. In parallel, the solitary nature of VR is contrasted to the communal experience offered by these larger exhibits, highlighting the fact that impact is best achieved together, rather than alone.

## Emotion

The inciting incident behind *On the Morning You Wake (OTMYW)* is summarized thusly on the project's website:

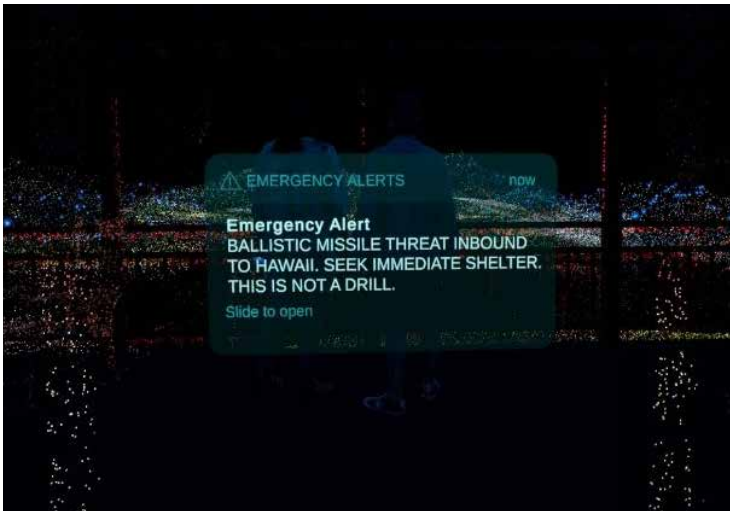
On the morning of January 13th, 2018, an alert was issued to every citizen of Hawai'i:

BALLISTIC MISSILE THREAT INBOUND TO HAWAII.

SEEK IMMEDIATE SHELTER. THIS IS NOT A DRILL.[5]

5 https://www.onthemorningyouwake.com/#story

What emotions do you feel reading those lines? Now imagine that you saw a picture of what that alert looked like on a phone that morning (Fig. 1), or that you heard it from a stranger (Fig. 2), or perhaps loved one who received it. What if you experienced a simulation of the event (Fig. 3)? Would each experience foster different emotions? Otherwise, would they simply evoke different degrees of intensity of the same emotional reaction?





Figg. 1-3 – Screenshots for the Meta Quest store release of On the Morning You Wake (to the End of the World). Clockwise: Fig. 1 shows the reproduction of the alert alone. Fig. 2 shows a character receiving the alert at a point in the story where its contents are not known yet. Finally, Fig. 3 simulates the experience by having the user's right-hand controller vibrate to show the same alert on "their phone," all while characters are telling us about their experience.

If studies on the psychological impact of VR are to be believed, the more immersive and interactive experiences enabled by this technology result in more intensely felt emotions. This is summarized by Plass *et al*. in their case study of *OTMYW*, where they write that research shows "content screened in a VR headset has a greater emotional impact on participants than when screened on

a 2D interface."[6] In some cases, empathy is invoked as the reason why VR is such a potent vehicle for emotional impact.[7] Often, the perspective switching power that VR affords its users is highlighted as a source of this empathy.[8] In other cases, the simulative aspect of VR is put forth as a key factor, since putting users in a fictional context and allowing them to experience events "first-hand" can evoke the same reactions as if the experience were genuine. This is also why some studies have focused on VR for use in exposure therapy.[9]

Another hypothesis might be that emotional valence is tied to the higher degree of sensory stimulation – perhaps we could even say the verisimilitude – that VR offers over previous forms of media that were tied to the written or spoken word (e.g. press, biographies, memoirs, testimonies, oral histories, etc.), to audiovisual stimuli (i.e. cinema, etc.), or to interaction (i.e. video games). VR currently builds on all of these by including elements of text, sounds, images and interactivity. It goes one step further still by also integrating a convincing sense of presence,[10] which gives users the illusion that they are witnessing – or even experiencing – events themselves. This is in contrast

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6 J. Plass *et al.*, *Deepening Engagement and Learning Impact Through Virtual Reality Activations* (Games for Change, 2023), 6, https://www.gamesforchange.org/xr4c/

7 On empathy, see C.D. Batson, "These Things Called Empathy: Eight Related but Distinct Phenomena," in J. Decety, W. Ickes, eds., *The Social Neuroscience of Empathy* (Cambridge MA: The MIT Press, 2009), 3-16.

8 A. Avenanti, A. Sirigu, S.M. Aglioti, "Racial Bias Reduces Empathic Sensorimotor Resonance with Other-Race Pain," *Current Biology* 20, no. 11 (2010), 1018-1022, https://doi.org/10.1016/j.cub.2010.03.071; D. Banakou, P.D Hanumanthu, M. Slater, "Virtual Embodiment of White People in a Black Virtual Body Leads to a Sustained Reduction in Their Implicit Racial Bias," *Frontiers in Human Neuroscience* 10, no. 601 (2016), https://doi.org/10.3389/fnhum.2016.00601; P. Bertrand *et al*., "Learning Empathy Through Virtual Reality: Multiple Strategies for Training Empathy-Related Abilities Using Body Ownership Illusions in Embodied Virtual Reality," *Frontiers in Robotics and AI* 5, no. 26 (2018), https://doi.org/10.3389/frobt.2018.00026.

9 See T.D. Parsons, A.A. Rizzo, "Affective Outcomes of Virtual Reality Exposure Therapy for Anxiety and Specific Phobias: A Meta-Analysis," *Journal of Behavior Therapy and Experimental Psychiatry* 39, no. 3 (2008), 250-261, https://doi.org/10.1016/j.jbtep.2007.07.007; K. Meyerbröker, P.M.G. Emmelkamp, "Virtual Reality Exposure Therapy in Anxiety Disorders: A Systematic Review of Process-and-Outcome Studies," *Depression and Anxiety* 27, no. 10 (2010), 933-944, https://doi.org/10.1002/da.20734; D. Opris *et al. "*Virtual Reality Exposure Therapy in Anxiety Disorders: A Quantitative Meta-Analysis," *Depression and Anxiety* 29, no. 2 (2012), 85-93, https://doi.org/10.1002/da.20910.

10 On presence, see M. Lombard, T. Ditton, "At the Heart of It All: The Concept of Presence," *Journal of Computer-Mediated Communication 3*, no. 2 (1997), https://doi.org/10.1111/j.1083-6101.1997.tb00072.x.

to other forms of non-fiction media which make the mediation process more apparent.[11]

Whatever the case may be for VR's psychological or emotional impact, the results of such studies are brandished by creators and stakeholders in the VR industry as proof of VR's capacity to evoke powerful emotional reactions and, by extension, to encourage positive social change. This is what the idea of VR as an empathy machine embodies. Of course, this is not the first time media has been touted for its ability to emotionally impacts audiences. Caty Borum Chattoo makes a similar argument in relation to documentary film, for instance, describing emotion as "perhaps the most potent mechanism by which humans respond to the world. […] When contemplating documentary's ability to spark motivated political action from an audience, for example, *emotional response lies at the fore*."[12] Although other forms of non-fiction media have been recognized for their ability to evoke powerful emotions, VR differs in the sheer number of research papers that have been published on its (usually) positive effects, the results of which have been taken up by those invested in using VR for positive social change.

With all due respect to those conducting studies on the psychological impact of VR, certain caveats must be pointed out before we can apply their findings to artistic experiences designed by well-meaning but often ill-equipped artists and which are experienced "in the wild," rather than in the controlled environment of a laboratory. How well does the emotional impact demonstrated in a psychological study translate to the real world? This challenge was taken up by the team behind *OTMYW*, who conducted a study on visitors who viewed the project in a variety of contexts. Using a series of surveys before and after viewing the experience (including a control group that watched on a tablet and a proportional sample that experienced it in

11 This appearance of non-mediation has been criticized in K. Nash, "Virtual Reality Witness: Exploring the Ethics of Mediated Presence," *Studies in Documentary Film* 12, no. 2 (2018): 119-131, 124, https://doi.org/10.1080/17503280.2017.1340796.

12 C.B. Chattoo, *Story Movements: How Documentaries Empower People and Inspire Social Change*. (Oxford: Oxford University Press, 2020), 8. Emphasis added.

VR), the team aimed to demonstrate how VR could be used to "deepen engagement and learning impact." As they share in the report: "VR participants self-reported that they experienced emotions more intensely than participants in the 2D group by over 20%."[13] Elsewhere, the intensity of the emotions experiences is qualified as also relating to "positive and activating emotions (inspired and energized)."

These positive reactions should be taken with a grain of salt, however, and not extrapolated to VR as a whole. Readers should also be wary of taking this positive conclusion as the only possible result of viewing such an experience in VR. Indeed, there is much more that VR can foster than just these positive emotions. As Carles Sora-Domenjó demonstrates in a recent review of the psychological effects of VR, there are also plenty of negative effects that VR can produce, whether intentionally or not. Of particular interest for this paper is the notion of "empathic stress," which can occur when users are asked to empathize with individuals in negative or potentially traumatic situations:

> When empathetic distress is strong, it can lead to personal distress, creating anxiety, fatigue and other adverse feelings that act as a barrier to empathetic attitudes toward others. The focus of attention is shifted from the other to the self. It can even create a backlash effect in which the user may blame the other for creating such empathic feelings.[14]

The selective focus of the VR industry – choosing to flaunt the positive psychological effects of its technology while ignoring the negative ones – should not be discounted.

To illustrate the need for this broader appreciation of VR's effect, consider the breadth of emotions

13 J. Plass *et al.*, *Deepening Engagement and Learning Impact Through Virtual Reality Activations*: 23.

14 C. Sora-Domenjó. "Disrupting the 'Empathy Machine': The Power and Perils of Virtual Reality in Addressing Social Issues," *Frontiers in Psychology* 13, no. 814565 (2022), https://doi.org/10.3389/fpsyg.2022.814565. See also M.L. Hoffman, "The Contribution of Empathy to Justice and Moral Judgment," in N. Eisenberg, J. Strayer, eds., *Empathy and its Development. Cambridge studies in social and emotional development* (New York, NY: Cambridge University Press, 1987), 47-80; P. Bloom, *Against Empathy: The Case for Rational Compassion* (New York: Ecco Press, 2016).

that can be triggered when experiencing *OTMYW*. Sitting at home with my Quest 2 headset on, I launch the project and start the first chapter. After a poetic introduction by Dr. Jamaica Heolimeleikalani Osorio, I am immediately immersed in representations of Hawai'i's stunning landscape, as individuals start to recount how the morning of January 13th, 2018 started: waking up, taking pictures of the sunrise, getting ready to go to work, etc. Each character vignette stops when they get an alert on their phone, the contents of which are not shared with me yet. It is only a few minutes later that my right controller vibrates to let me know that I have received that notification too: A missile is coming toward us and we have fifteen minutes to seek shelter. At this point in the VR experience, the story shares the reactions of each character: panic, anxiety, distress, horror, resentment. Panic over the impending attack. Anxiety over what one should be doing in such a situation. Distress when realizing there is nothing to be done, or when faced with one's inevitable death. Horror at the thought that the rest of the planet too might be facing nuclear annihilation. And finally, once it is discovered that this alert was a mistake, resentment at those in power that made the end of the world a very real possibility by continuing to stockpile weapons of mass destruction. These emotions are seen in character's faces and heard in their voices as they recount their experience. More importantly, I feel them viscerally when empathy allows me to feel for what these characters are going through. For instance, I feel a horrible sense of dread wash over me when hearing an eleven-year-old girl say: "I started sobbing because I didn't want to die." I start sobbing myself when another character – reminded of the aftermath of the bombings in Hiroshima and Nagasaki – wonders what the shadow she leaves behind after the blast will look like. The mere memory of her words is enough to send chills running down my spine. The effect is made worse by the fact that I could see a shadow of ash where I stood as she said those words (Fig. 4). The horror continues when a woman who survived the 1945 bombing describes seeing the flesh melting off people. Later, she

also tells me that after getting this alert, she would rather not be among the survivors.

By focusing on these negative emotions, my goal is not to suggest that *OTMYW* is entirely negative. In the project's third and final chapter, these emotions are re-directed toward the issue of denuclearization and to related concerns: military imperialism, colonialism, environmental concerns etc.

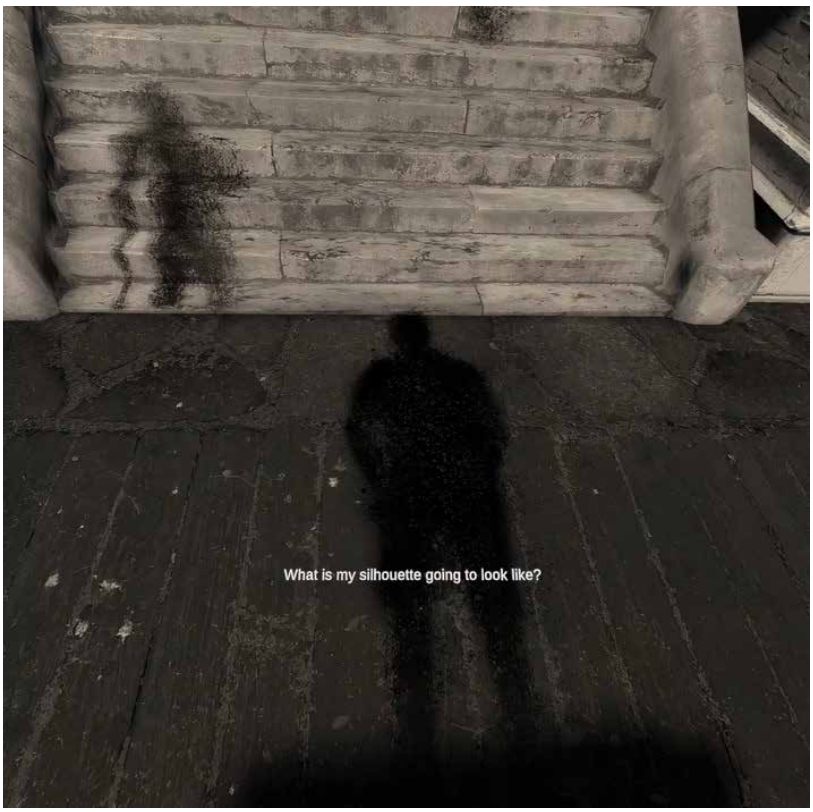


Fig. 4 – Screenshot: A character imagines what the shadow of ashes she leaves behind after being disintegrated by a nuclear blast will look like in *On the Morning You Wake (to the End of the World)*

More importantly, the title concludes with a morsel of hope and a call to action: "On the Morning You Wake to the end of the world," the poem that introduced and punctuated the experience concludes, "your vision will be 20-20, so use it […] And maybe, just maybe, the world might not have to end again, tomorrow."

As this analysis aims to show, VR's powerful emotional impacts should not be understood only in positive terms. Conversely, these negative emotions do not necessarily take away from the project's potential impact. However, it should also be made clear that powerful emotions alone are not sufficient for bringing along social

change. Achieving this goal requires more structured efforts. This is where the notion of "impact" comes in.

## Impact

To avoid the kind of historical blindness of which the field of VR is often guilty, let us consider the larger context and history of activist media. Specifically, scholarship has highlighted a long and rich history of documentary film being used to complement existing activist movement and grassroots community action. In the report they produced for the Documentary Organization of Canada, Maria De Rosa and Marilyn Burgess point to the *Challenge for Change* program as a pivotal moment in making video technology a viable tool for fostering social transformation in Canada, identifying the initiative as "directly connected to the creation of community-based video art movements."[15] Elsewhere, the historical link between media and activist movements is made evident in the various ways this relationship has been named, from Tom Waugh's "committed documentary," to what Chattoo calls films using a "coalition-based approach," by way of Jessica Clark and Barbara Abrash's "social justice documentary" and Elizabeth Miller's notion of "outreach partnerships."[16] Meanwhile, borrowing from Beth Karlin and John Johnson's description of "film-based social action campaigns" and Patricia Finneran's report on "documentary impact," Kate Nash and John Corner come to the conclusion that in such initiatives, "the documentary text is re-imagined as just one element (albeit

15 M. De Rosa, M. Burgess, *Charting a Course for Impact Producing in Canada: Trends, Best Practices and Future Directions* (Toronto: The Documentary Organization of Canada, 2016), 13.

16 T. Waugh, *Show Us Life: Toward a History and Aesthetics of the Committed Documentary* (Metuchen, NJ - London: The Scarecrow Press, 1984); C.B. Chattoo, *Story Movements: How Documentaries Empower People and Inspire Social Change*: 3; J. Clark, B. Abrash, "Social Justice Documentary: Designing for Impact," *Center for Media and Social Impact* (2011), http://www.cmsimpact.org/tags/impact/designing-impact; E. Miller, "Building Participation in the Outreach for the Documentary *The Water Front*," *Journal of Canadian Studies* 43, no. 1 (2009), 59-86, 75, https://doi.org/10.3138/jcs.43.1.59. See also D. Whiteman, "Out of the Theatres and into the Streets: A Coalition Model of the Political Impact of Documentary Film and Video," *Political Communication* 21, no. 1 (2004), 56-69, https://doi.org/10.1080/10584600490273263-1585.

a central one) in a strategic communication project."[17] In other words, a key conceit of this relationship is that the film – or other non-fiction piece of media – should be designed in such a way as to serve "as a catalyst for change and dialogue"[18] by existing activist networks.

Two important considerations emerge from these definitions. First is the idea that, "social impact is something that the project team works to produce, through the processes of strategic communication, rather than something that just happens (or not) when audiences encounter a documentary film."[19] Secondly, rather than considering the documentary film as an end in itself, the notion of impact asks that creators consider the concrete and measurable outcomes their projects may have on an individual, community, or societal level. Although they differ on specifics, various definitions of impact in the field of activist media agree on the range of possible impacts different projects might strive for: from simply raising awareness to influencing policy makers and changing laws.[20] Of course, there are major differences between producing a documentary film and creating demonstrable and measurable impact. Hence the rise of specialists – indeed an entire industry – focused on producing impact. This is where impact "campaigns" and the work of "impact producers" come into play.

According to De Rosa and Burgess, "[t]he term 'impact producing' describes a new space in documentary filmmaking that combines distribution, community outreach and audience engagement into a formalized coordinated

17 B. Karlin, J. Johnson, "Measuring Impact: The Importance of Evaluation for Documentary Film Campaigns," *M/C Journal* 14, no. 6 (2011), http://journal.media-culture.org.au/index.php/mcjournal/article/viewArticle/444; P. Finneran, *Documentary Impact: Social Change Through Storytelling*, (Toronto: StoryMatters and HotDocs), http://www.inspiritfoundation.org/files/5114/0932/8738/Hot_Docs_2014_Documentary_Impact_Report.pdf; K. Nash, J. Corner, "Strategic Impact Documentary: Contexts of Production and Social Intervention:" 231.

18 E. Miller, "Building Participation in the Outreach for the Documentary *The Water Front*:" 75.

19 K. Nash, J. Corner, "Strategic Impact Documentary: Contexts of Production and Social Intervention:" 230. Emphasis added.

20 See E. Verellen, "From Distribution to Audience Engagement: Change through Film," *The Fledgling Fund* (2010), http://www.thefledglingfund.org/resources/distribution-to-audience-engagement; M. De Rosa, M. Burgess, *Charting a Course for Impact Producing in Canada: Trends, Best Practices and Future Directions*; BRITDOC, *Impact Field Guide and Toolkit* (2015), http://impactguide.org.

'impact campaign.'"[21] Further, their report also defines impact producing as "a new space in documentary filmmaking that leverages marketing and distribution strategies to engage audiences and create social change."[22] Finally, De Rosa and Burgess borrow from Tanya Notley and Sam Gregory to describe the practice as "a hybrid of activism, movement building, community organising, grass roots event management, marketing and distribution."[23]

This constellation of practices is summarized in *OTMYW* impact producer Michaela Ternasky-Holland's framing of impact campaigns as a "*mobilization strategy*," rather than as a mere distribution strategy.[24] As the press materials for the project also explain:

> *On the Morning You Wake (to the End of the World)* is at the center of a long-term impact campaign that aims to inspire people around the world to take action to shape the future of nuclear weapons policy, and provides a number of pathways for people to get involved and work together toward the abolition of nuclear weapons. [...] The experience invites audiences to reflect on how the presence of nuclear weapons impacts their concepts of home, safety, and security. From completing the experience, the audience will be provided with *tangible steps to take in nuclear disarmament*.[25]

In consulting existing resources on best practices in impact production, several elements come to the fore which can be of use for those interested in using VR for this purpose. Among these is the importance of using documentary storytelling to generate powerful emotions, and the need for impact producers to channel these to the appropriate avenues. This is visible when Emily Verellen frames the notion of "audience engagement" in terms of,

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21 M. De Rosa, M. Burgess, *Charting a Course for Impact Producing in Canada: Trends, Best Practices and Future Directions*: 6.
22 Ibid.: 9.
23 Ibid. See also T. Notley, S. Gregory, *Video for Change: Creating and Measuring Social Impact: A Working Paper by the Video 4 Change Network* (June 2015), https://video4change.org/wp-content/uploads/2015/07/video4change-impact-working-paper-2015_final.pdf
24 J. Plass *et al*., *Deepening Engagement and Learning Impact Through Virtual Reality Activations*.
25 The a copy of the source document has been made accessible here: https://bit.ly/OTMYW_PRESS. Emphasis added.

"moving a film's audience from passive viewing to active involvement with the issue represented. It is what happens after audiences see the film and want to use their energy, resources, ideas, connections, or time to make a difference."[26] More important still is Verellen's insistence on the fleeting and precious nature of the emotions these experiences can foster in audiences:

> when a film ends and audience emotions are tangible, the filmmaking team, with the support of its partners, has a real opportunity to move the audience from passive to active. That small but critical window of opportunity—high emotions, a captive audience, a pressing social issue and collaborative partners—are the right ingredients for inspiring audiences to begin or strengthen their engagement with the social issue.[27]

Nash and Corner make a similar argument when they write that "the emotion generated by viewing the film alongside others needs to be harnessed and converted into forms of immediate action, something that audiences can do 'in the moment.'"[28] The authors lay bare the responsibility impact producers face in this key juncture:

> In this window of opportunity, the filmmakers and their outreach partners need to be able to provide audiences with immediate actions that will address their fundamental question – "what can I do?" In answering this question, impact producers and partners seek to generate various "asks," specific actions that audience members can take that support the social change campaign.[29]

As this statement makes clear, one of the ways impact campaigns can move from audience engagement to involvement is by designing different calls to action. From clicking a link for more information on a given topic to participating in demonstrations, the range of possible actions will

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26 E. Verellen, "From Distribution to Audience Engagement: Change through Film:" 9.
27 Ibid.: 7.
28 K. Nash, J. Corner, "Strategic Impact Documentary: Contexts of Production and Social Intervention:" 236.
29 Ibid.

differ according to the context in which a film is screened, as well as to who the intended audience is.

In *OTMYW*, for example, before the credits roll after the third and final chapter of the 38-minute VR experience, an end slate invites users to "join the movement" by visiting the project's website, where they can find resources on a variety of topics, to use if they so choose (Fig. 5).[30] While the friction caused by needing to take off the VR headset to navigate to a website should not be discounted, *OTMYW* serves as a good example of the kind of "asks" an impact-focused project should consider. For example, in order to meet its audience members where they are on their journey to action, the statements it presents offer different levels of engagement: from being ready to learn more about the issue, to supporting organizations working on solutions, to joining existing activist movements. More meaningful still – in the context of the transformational power of VR – are the following statements:

I recognize that:

I have the power to create change

I can ban the presence of nuclear weapons in my neighborhood

*I don't have to do this on my own* (Emphasis added)

In calling attention to the presence of existing networks, *OTMYW* avoids some of the oft-repeated criticism directed at VR, namely its solitary, self-centred – perhaps even solipsistic – nature. In other words, the barrier to positive social change is lowered when the user is given the necessary tools to take the energy generated by a project and channel it toward meaningful change. Even if participants are not yet ready to act, the website gives them an

30 https://www.onthemorningyouwake.com/#get-involved

outlet to express their emotions and to find solace in the fact that they are not alone (Fig. 6).

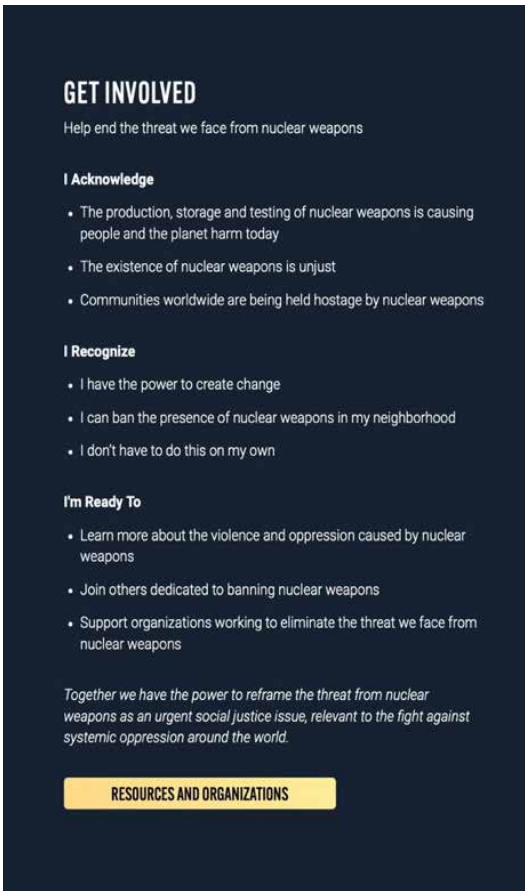



Fig. 5 - Screenshot from the project website for *On the Morning You Wake (to the End of the World)*, inviting viewers to get involved after going through the experience.

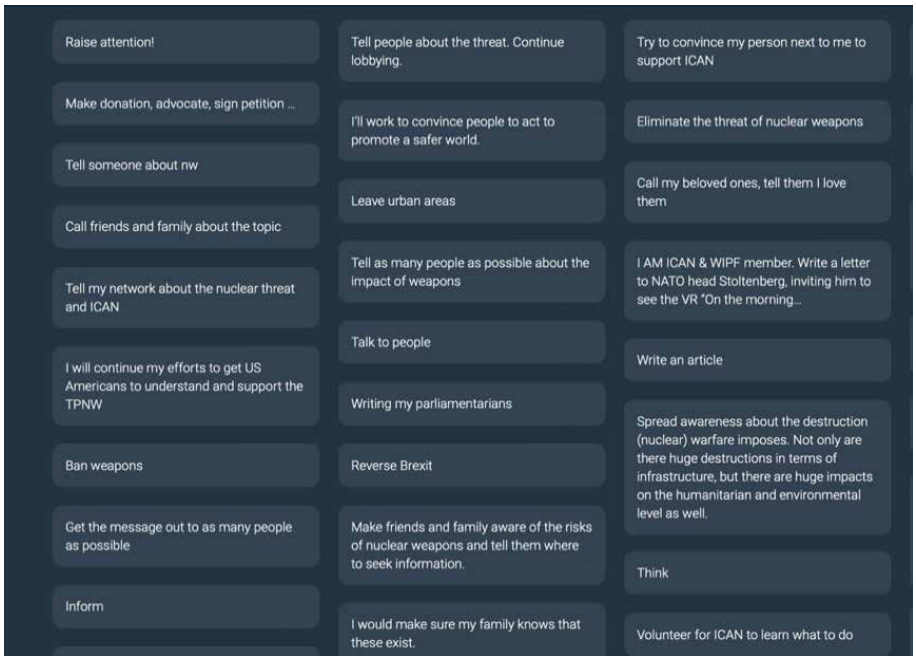



Fig. 6 – Screenshot from the *OTMYW* website, where participants are invited to share how they would use their last 38 minutes on Earth.

Each piece of activist media should be directed at a particular audience according to the impact it hopes to achieve. Moreover, each audience requires different approaches and asks. For instance, the various field guides published on the topic make it clear that a film screened for a group of parents or students will likely not ask them the same level of involvement as might be needed of a group of policy-makers. Nor will the same materials be presented to both audiences, for that matter. Indeed, the fact that different audiences require different asks is an important lesson socially minded VR can take away from impact producing. Perhaps more important still is the idea that not everyone needs to see a given project for impact to happen. What is vital is having the *right* people see it. As De Rosa and Burgess put it, "[w]hereas the film industry

typically measures audience reach and sales, impact measurement examines the extent to which the right audiences are reached in strategic ways to promote social change."[31] Toni Bell echoes this distinction, noting that, "when we think about audiences and distribution, the goal is to get as many people as possible to see the film. When an 'impact' approach is used, one tries to be strategic about who should see the film to bring about a given change."[32] Finally, Friesen puts it most emphatically when she says: "Reach is not engagement, and engagement is not impact. […] to claim you've made an impact, *those actions need to result in measurable change*."[33]

While a film might serve as the inception or catalyst for change, it is important to remember that the work of transforming oneself, one's community, or society at large must be done outside the film itself. Moreover, against overarching claims about the transformational potential of VR, the notion of impact asks that we reconsider whom might a given project be designed for. It also asks that we acknowledge that simply having made a VR experience is not enough if the right people don't get to see it. In other words, it puts into question the appropriateness of publishing such a project on a commercial storefront such as the Meta Quest store. Considering the potential negative effects that VR holds, the idea of letting audiences up to their own devices to deal with challenging topics in the comfort of their own home becomes more absurd. Hence why VR seems best suited for use in larger impact campaigns.

This is precisely what the teams behind *OTMYW* did. In addition to being published for free on the Meta Quest storefront, the project was brought to classrooms and university campuses, to public spaces and to forums on nuclear

31 M. De Rosa, M. Burgess, *Charting a Course for Impact Producing in Canada: Trends, Best Practices and Future Direction*: 7.
32 T. Bell, quoted in P.J. Poirier, "For Docs Promoting Social Change, Impact Strategies are Essential," *Now & Next* (February 10, 2020), https://cmf-fmc.ca/now-next/articles/documentaries-social-change-impact-strategy/.
33 T. Friesen, *Story Money Impact: Funding Media for Social Change*. (New York: Routledge, 2016), 152. Emphasis added.

disarmament.[34] It was also shown as part of dedicated exhibits at the Nobel Peace Center in Oslo and at the Museum of the Moving Image (MOMI), in Queens, New York.

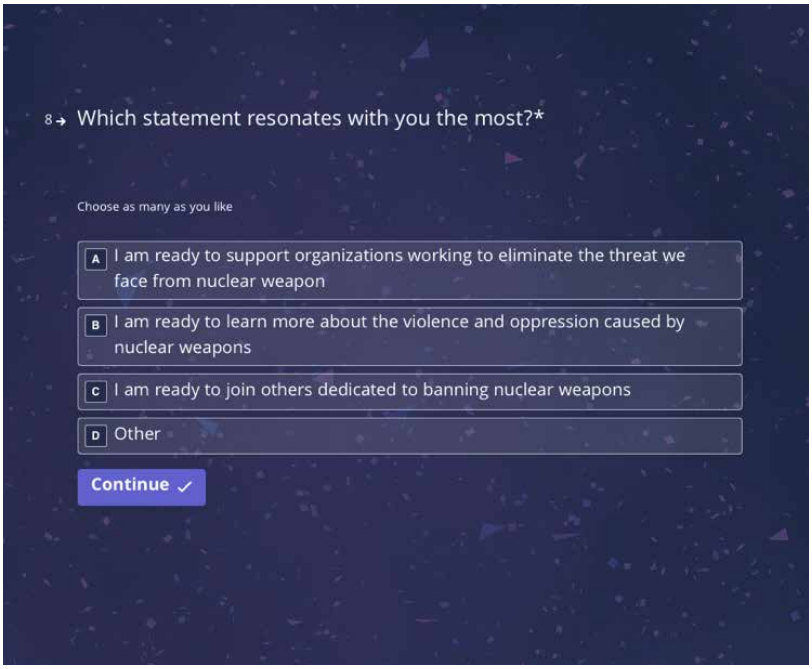
Although the three-chapter VR experience remains the central part of the exhibit, MOMI visitors were treated to a whole slew of bonus material that framed the immersive experience (Fig. 7). Behind-the-scenes footage, written materials and additional unpublished interviews could be accessed before putting on the VR headset. This onboarding phase can be seen as preparing most users for their upcoming experience, but there is also the possibility that some visitors – perhaps people who stumbled into the exhibit from elsewhere in the MOMI – could reasonably stop after only ingesting this ancillary material. Once visitors were ready to view the project, they were greeted with the aforementioned introductory survey, used to gauge audience's interest and readiness before going in. The VR experience itself was identical to the version published online, the only exception being that visitors were not necessarily alone. While the experience of being in a VR headset remains a solitary one, other audience members are present, as are the docents that help participants into and out of the experience.

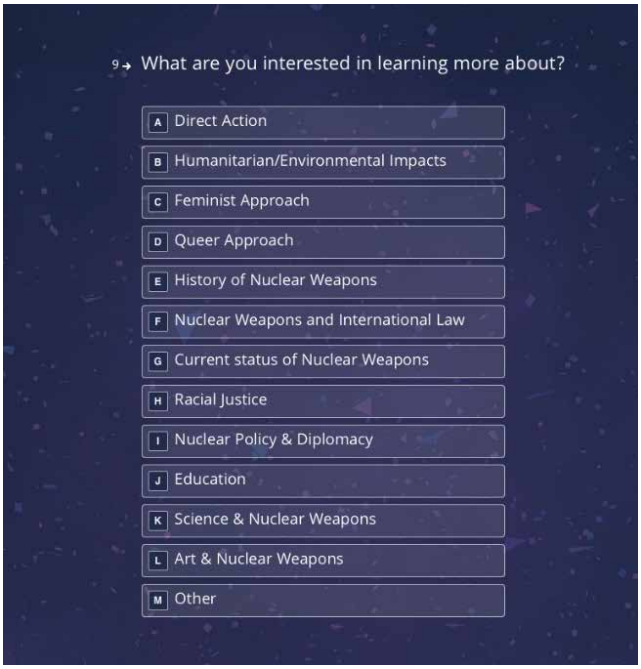

Fig. 7 - *OTMYW* Exhibit at the Museum of the Moving Image. Credit: Thanassi Karageorgiou

Likely the most important component of the *OTMYW* exhibit at MOMI was the so-called "aftercare survey,"

34 A full list can be found in J. Plass *et al.*, *Deepening Engagement and Learning Impact Through Virtual Reality Activations*.

which visitors were invited to fill out on a set of tablets next to the VR viewing stations. These surveys play two key roles related to impact. On a superficial level, they aim to measure the impact of the VR experience by gauging audience reactions to the piece. This serves to document audience engagement and demonstrate the project's own impact (as reported in Plass et al.35); an ever-growing necessity when seeking funds for documentary projects. The second and most important role of these aftercare surveys is in orienting participants toward the right resources for them at that moment. If they responded that they were looking for more information, or for existing groups with which they might get involved, the survey might offer different tools (Fig. 8). The same can be said of whether they answered being interested in the feminist, postcolonial, environmental, or artistic aspects of the issue (Fig. 9).




Figg. 8-9 – Screenshots of the "after-care survey" visitors of the *OTMYW* exhibit at MOMI could fill out. The survey is also available on the project's website.

In an interview with the author, *OTMYW* impact producer Michaela Ternasky-Holland makes explicit the role of these surveys, specifically as tools for channelling the energy created during a VR experience:

35 Ibid.

There were ways we let audience members release some of the energy pent up from what they were exposed to and that feeling of "What can I do right now? How can I use that energy." We call it a decompression moment. Very often in mainstream media we see these images that make us feel a certain way (this is terrible, amazing, awful, incredible, etc.), but we don't have anywhere to put that energy. So, we just absorb the energy and we become a little callused to it. And since VR is a newer technology, that feeling can be heightened even more.

Because VR's appeal as a tool for social change does not seem to be depreciating, it is becoming more apparent as time goes on that the industry still has much to learn from the field of impact producing. A project like *OTMYW* did many things right, many of which are documented in the case study published by XR for Change. With that said, there is still plenty that can go wrong when a project such as *OTMYW* is not presented in the context of a carefully designed exhibit purpose built for impact.

## Being Alone, Together

By way of conclusion, I wish to discuss another exhibit in which *OTMYW* was presented. Throughout 2023, the *transformé* experience was presented at OASIS immersion, an immersive projection venue in Montreal. The show featured eight experiences previously created for VR headsets which were converted into large scale projections onto the walls of the exhibition space, making it a communal experience. *OTMYW* was one of two projects screened in the first room of the exhibit.[36] Reworked for the format, *OTMYW* was also heavily edited, both in terms of length and so as to be suitable for a larger audience. For example, the portion with the Hiroshima survivor revealing the horrors she witnessed was cut. Perhaps it was deemed unsuitable for the children under thirteen whom health and safety regulation typically bar from using VR headsets. Meanwhile,

36 The other being a piece on grief titled *Vestige* (Aaron Bradbury, 2018).

other heart-wrenching moments were left intact. To this day, I shudder at the memory of hearing a woman imagine what her shadow would look like after being incinerated by the nuclear blast.


Fig. 10 – Picture of *OTMYW* as part of the *transformé* exhibit at OASIS Immersion. Credit: Philippe Bédard.


Fig. 11 – Picture of the infamous alert at the inception of *OTMYW*, as seen in the *transformé* exhibit. Credit: Philippe Bédard.

Several problems emerge from the way the project was presented, however. For one, the new format means elements of décor and other exhibit visitors are interposed between my body and the projected shadows (Fig. 10), thereby lessening the impact created when the VR

experience pushed me to see it as *my* shadow. The same criticism also applies to other visual elements, such as the crucial alert which serves as the project's inciting incident, and which can also easily be occluded (Fig. 11). Of course, the impact of empathizing with what the characters say remains. However, this speaks to the power of storytelling alone and not to anything the immersive exhibit did better – or differently – than its VR counterpart. The same conclusion applies to the emotional impact of Dr. Jamaica Heolimeleikalani Osorio's poetry, which remains a dominant fixture of the project in this incarnation as well. In other words, it is not the immersive or interactive nature of VR or this new format that is the main source of the project's emotional valence. Words and music play a much greater role in fact.

Secondly, there is also the fact that, despite a starting time being indicated on the entry ticket, audiences are allowed to enter as they arrive, regardless of whether the projection has started already. This means on more than one occasion upon visiting the exhibit, I entered after the story had started. While I was familiar with the narrative and context, other visitors could have entered just before, during or after some of the project's most crucial story beats.[37] This speaks to a larger issue with the exhibit, namely a shift in focus from the project's original design as a component in a larger impact campaign to a mere piece of entertainment. This is evident in the way *transformé* was publicized. For instance, in one of the placards guests could read before going into the show, one could read:

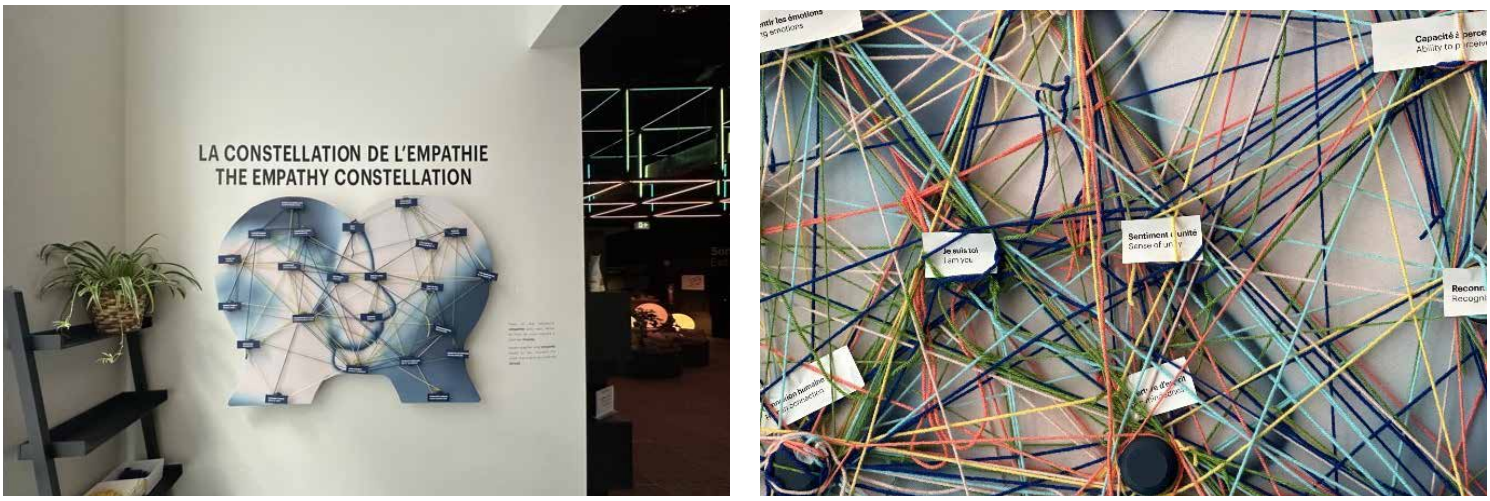
*OASIS* Immersion offers an exhibition that thrusts us into the heart of the human experience by addressing contemporary issues. These creative adaptations, inspired by real–life events, *bring to light the strength of courage and the possibilities of freedom that can emerge from our personal trials and tribulations.* After all, sharing each other's experiences has always opened our perspectives by creating

37 The same realization also stands for *Vestige*, since users can enter at an inopportune time and either be sideswiped by the heart-wrenching monologue or left wondering what the project is about, should they have entered too late.

connections between realities and emotions, in an increasingly com–
plex world. (Emphasis added).

Further in the text, the creators of the exhibit express, "a desire to share a message, an inspiration and a humanistic vision that will allow us to emerge transformed." Rather than trying to equip audiences with knowledge or moving them to act on a key issue such as denuclearization, *transformé* seems content with a saccharine and superficial inspirational message. In so doing, it embodies Nakamura's description of VR pieces intended to make users "feel good about feeling bad."[38] So much is also made clear in the fact that the question of "what can I do?" – key component of impact production – is left unanswered in this incarnation of the project. Instead of capitalizing on the "window of opportunity" so many impact campaigns hope for, the end of the *OTMYW* screening in this exhibit only signals that audience members are encouraged to move on in their journey through the venue, at which point they will be exposed to other stories with different messages. Whatever impact might have been produced by *OTMYW* – or any other piece in the show – is potentially neutralized after walking around for eighty minutes and seeing seven other projects that each have different goals and potentially different target audiences. Finally, in lieu of aftercare materials that might guide users toward the right form of action for them to take at that moment, *transformé* simply included a piece of wall art symbolizing empathy and inviting users to connect words related to the concept: "I am you," "sense of unity," "human connection," etc.

38 L. Nakamura, "Feeling Good About Feeling Bad: Virtuous Virtual Reality and the Automation of Racial Empathy."




Figg. 12-13 – After exiting the transformé experience, visitors have a chance of encountering this structure which invites them to think about what "empathy" means. Credit: Philippe Bédard.

Although I have focused here on some of the shortcomings of this version of *OTMYW* in comparison to the singular VR version or the larger and more focused impact campaign at MOMI, there are elements I wish to highlight that we can yet learn from. Specifically, when compared to the solitary experience VR offers, this immersive exhibit format is communal by nature. This was in fact one of the aims of the project, as expressed in one of the introductory placards which contrasts the "individual and nested experience" of VR with the collective experience of this format. Indeed, just as I remember the chilling sensation evoked by some of *OTMYW*'s more gut-wrenching moments, I also recall being able to turn to friends or loved ones in the room with me and sharing a compassionate look or reassuring gesture.

Another, perhaps more crucial lesson we can learn from *transformé* is its use of a designated physical venue instead of headsets owned by individuals in their own homes. At the time of writing, VR still faces major issues with distribution. The problem is exacerbated by the relative sparsity of VR headsets when compared to other types of viewing platforms. Are the ecological costs of constructing millions of headsets for individual users to buy really worth the emotional impact that some VR experiences can produce? The question is particularly important when venues exist that can more adequately equip users for their experience, not only in terms of the necessary VR

hardware, but also in terms of the emotional and pedagogical resources that might be necessary to make the most out of an impact-driven experience. Although VR is a very powerful tool, it is also one that is seldom used effectively. To put it differently, it is a tool best used by professionals in specific contexts. These include the laboratory settings which have generated so many proofs as to VR's transformational potential. More importantly, these also include impact campaigns specifically designed to make the most of VR: for the right people, in the right conditions, and for the appropriate results.

In either case, the presence of other human beings – scientists, artists, activists, other audience members – merits further attention. If VR might help people grow on a personal level by going through simulated experiences and hearing characters tell their story, larger change on community or societal levels requires cooperation with other individuals and with existing activist organizations. Transformation of this kind can only happen when you are not alone.

# Immersive Encounters: A Journey Through the Helsinki Biennial 2023

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Abstract

This article provides a comprehensive analysis of the Helsinki Biennial 2023, focusing on its thematic exploration of contemporary environmental issues, artistic mediation, and the intersection of art with ecological and social concerns. Drawing from a range of artworks exhibited at the biennial, including installations, sculptures, and video presentations, the analysis explores themes of contamination, regeneration, and agency within the context of contemporary environmental discourse. The article highlights the immersive nature of the biennial, both in its physical setting on Vallisaari Island and in its conceptual framework, which encourages visitors to engage deeply with the environment and the artworks. Through a nuanced examination of selected artworks, the article elucidates how artists employ various media and methodologies to convey complex narratives about the interplay between human-nature relationships, environmental justice, and the urgent need for collective action in the face of global environmental challenges.

Keywords

Environmental art
Artistic mediation
Environmental justice
Immersive experience
Ecological narratives

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## Introduction

Donna Haraway, in her essay *Staying with the Trouble: Making Kin in the Chthulucene,*[1] draws attention to what she terms "string figures," compositions emerging from string games: the interlacing of a simple and continuous element, akin to a thread, taking form through the concerted effort and collaboration of two or more subjects engaged in play. String figures, when reconsidered in their origin and outcome, serve as a potent metaphor in our planet's present historical moment. Although arriving late to Europe, string figures already featured in other cultures, such as the Navajo, where they assumed the guise of continuous weaving, a practice for narrating the tales of the Diné people's genesis.[2] The cogitation and execution invested in the delineation of such games become significant when juxtaposed with reflections on the representation of contemporary environmental issues.

The precarious current environmental crisis and the imperative for a paradigm shift in the world's socio-economic model are widely acknowledged, albeit not universally embraced or perceived with equal urgency. Often foregrounded in discussions concerning the new planetary epoch – what was used to be called "Anthropocene"[3] – is the hegemonic narrative, for example based on the idea that technological progress itself will solve the crisis, maintaining a status quo. This narrative, by its very nature, operates on multiple levels. It is crafted by the Western world for a Western audience and frequently espouses unyielding

1 D. Haraway, *Staying with the Trouble: Making Kin in the Chthulucene* (Durham: Duke University Press, 2016).
2 Ibid.: 14.
3 It is important to note that in March 2024 the President and Secretary General of the IUGS and the International Commission on Stratigraphy approved the proposal of the Commission on Quaternary Stratigraphy to reject the proposal of the recognition of an "anthropocentric epoch" as a unit of the Geologic Time Scale (http://quaternary.stratigraphy.org/working-groups/anthropocene/). Beyond this decision it should nevertheless be acknowledged that we have been using, for some twenty years, a term with conceptual implications that have gone far beyond the boundaries of geology.

faith in conventional scientific progress, conjuring optimistic imaginaries of sustainability through the advancement of present-day technologies, fostering hope in humanity's capacity to rectify this crisis. However, climatology and other fields continue to acknowledge the profound shortcomings of present efforts, prompting widespread skepticism of their credibility .This has been scrutinized by Amitav Ghosh, who presents an alternative viewpoint: while positivist sentiments may appear trite in the context of the Enlightenment era, the pivot toward catastrophism veers towards realism, particularly when confronting phenomena like climate change, marked by gradual emergence and long-term ramifications.

This has led to the contemporary milieu seeking novelty, which encompasses not only the exploration of new subjects or plots but also the investigation of new media and methodologies. The notion of "newness" here does not entail creation ex nihilo but rather the repurposing of existing elements, recontextualizing them within the broader tapestry of significance and content communication. This notion of recontextualization and resignification advocates for the inversion of established norms,[4] regarding the "old" as a reservoir of knowledge and resources to navigate the environmental crisis and forge a sustainable future.

This process necessitates a shift in our modes of imagining, which inevitably intersects with a crisis of representation itself. Indeed, representation may be construed as a mediated – and performative – appearance of a subject or object: if our representation of the world's history can no longer be confined solely to human history, what narratives can we construct? It is not merely the content of a story that matters but rather the manner in which it is narrated. This shift in perspective, from content to

4 J. Singh, *Unthinking the Mastery: Dehumanism and Decolonial Entanglements* (Durham: Duke University Press, 2018): 2.

method, constitutes the crux of this discourse. The artists under consideration within the context of the Biennial can be situated within a novel conception of "artmaking" that intertwines artistic practice with themes emerging from the latest developments in visual culture within the ecological and ecocritical sphere, all while incorporating practical innovations stemming from the peculiarities of the context itself.

## Diving into Immersion: A First Glimpse of the Exhibition

The Helsinki Biennial 2023: *New Directions May Emerge* was co-hosted between the city of Helsinki and Vallisaari Island between June 12 and September 17. Curated by Joasia Krysa, this edition, as hinted by its title, draws inspiration from Anna Lowenhaupt Tsing's philosophy, urging us to observe our surroundings rather than fixating solely on the future.[5] Encouraging a shift in perspective towards our environment, Tsing prompts reflection on the stance we adopt: one that must inevitably be receptive to and immersed within the environment.

In this vein, the Biennial offers an immersive experience both within the confines of the HAM (Helsinki Art Museum) and on Vallisaari Island, just a short twenty-minute ferry ride from each other. At the HAM, each artwork is situated within a unique, evocative, and fully immersive environment. Some installations, such as *Ciguetera* by D. Policarpo, invite visitors to traverse through them, while others, like *Kratt* by B. Razavi, necessitate visitor interaction with the artwork itself. Additionally, certain displays,

5 A.L. Tsing, *The Mushroom at the End of the World: On the Possibility of Life in Capitalist Ruins* (Princeton: Princeton University Press, 2015): 28.

such as video installations, aim to envelop the viewer in an all-encompassing experience.

On Vallisaari island, the immersive experience intensifies as visitors encounter the potent force of the non-human elements. The island's ecosystem is both unique and precious, simultaneously fragile and resilient. Serving as a habitat for numerous bat and butterfly species, as well as endemic plants, the island's history is marked by periods of contamination and subsequent decontamination efforts. Initially utilized by seafarers for drinking water, Vallisaari gradually transformed into a military supply site, with the fortifications seen today dating to the early 19th century Russian-Swedish conflict with Russia. Despite Finnish independence in 1917, Vallisaari remained a repository for armaments and explosives until recent decades, when a project was initiated to open the island to visitors.[6]

Vallisaari's history of contamination and decontamination becomes very fitting when considering the theme for the Biennial. Through traversing the island's landscapes – replete with trees, fortresses, and ponds – visitors are invited to engage with the integration of art and environment. The artworks themselves serve as narratives within a larger story, facilitating an experiential journey through climate and environmental change, fostering immersion in diverse perspectives and outlooks.

## Background of This Inquiry: Methodological Insights

In discussing a shift in our way to think about the environment and the relationship within it, we primarily refer to the paradigm shift in media studies that links media inquiry to the ecological domain, a notion referred as

6 "History of Vallisaari," Nationalparks.fi, https://www.nationalparks.fi/vallisaari/history, accessed December 6, 2023.

ecomedia. Within this article, the concepts explored in the whole Helsinki exhibition and some of its artworks could be contextualized within the scope of the new ecological turn, intertwining with it both conceptually and formally, although these levels are not distinctly polarized. This can be explained by the growing interest in understanding how media operate inside an environment and shape interactions between its components, while also considering the presence of materials essential to the creation of our devices.[7] Addressing these issues by linking them to the artistic sphere proves fruitful, especially when attending an exhibition that seems to advocate for certain elements characterizing the broadening of perspective in recent years and presents what it exhibits both as a work in the environment, and a work about the environment. The manifesto of the exhibition, in my opinion, lends itself to such a reading already by presenting "conceptual threads" that also guided the selection of artists: regeneration, contamination and agency.

The story of Vallisaari Island already appears connected to the concept of adaptation as an interdisciplinary concept crucial in environmental studies. The thought behind the Helsinki Biennial extended this concept through of the theme of contamination; one of the three intersectional vectors, as explicitly named by the curatorship,[8] intended to illustrate the ways in which artistic and political research practices connect rather than fixating on certain static positions. The Biennial catalogue explicitly acknowledges this, linking the idea of contamination to the elevated pollution levels of the Baltic Sea, which bathes the Finnish coast, as a result of discarded war materials, urban waste, and agricultural chemical pollutants. Pollution from the sea

7 A. Lopez, A. Ivakhiv, *When Do Media Become Ecomedia?,* in A. Lopez et al., eds., *The Routledge Handbook of Ecomedia Studies* (London-New York: Routledge, 2024): 19-34.
8 J. Krysa, "New Directions May Emerge," in P. Grönroos, J. Krysa, eds., *Helsinki Biennial 2023* (Helsinki: Livonia Print, 2023): 15-27.

permeates bodies, affecting subjectivity, and necessitating the discovery of new strategies for self-regeneration and environmental restoration.[9]

Regeneration is the second conceptual thread emphasized by the intelligence behind the Biennial. The significance of contamination and regeneration becomes apparent when considering them in conjunction with one of the most prevalent concepts in art concerning the future of the planet: extinction. El Baroni and Costantin from ViCCA @ Aalto Arts, one of the curatorial collaborators, explicitly highlight that extinction is not merely a word but an open field, a phenomenon both known and elusive.10 It has transitioned from being the subject of historical narratives to becoming central to contemporary environmental discourse, stirring uncertainty about the future and shaping today's artistic practices. By starting with contamination and regeneration emphasis is placed on two processes that inherently involve multiple actors, who do not necessarily polarize into active and passive positions, but rather operate within Haraway's sympoietic system,11 collectively producing solutions beyond mere technological adjustments. These are also the less mainstream narratives that the Biennial's intelligence has chosen to highlight.

Finally, the concept underscored by the curatorial manifesto is agency. A nuanced examination of the manifesto reveals that agency operates across multiple levels. Firstly, it is inherent within the artworks themselves, which unfold their narratives before the attentive gazes of visitors. Secondly, agency is inherent within the spaces where the artworks and visitors converge, facilitating dynamic interplays and interpretations. Finally, a supra-agency is

9 Ibid.: 17.
10 B. El Baroni, P. Costantin, "New Direction May Emerge: Extinction and the Open Future," in P. Grönroos, J. Krysa, eds., *Helsinki Biennial 2023: New Directions May Emerge* (Helsinki: Livonia Print, 2023): 45.
11 D. Haraway, *Staying with the Trouble*: 58.

discernible, arising from the intra- and inter- species interactions among the various participants of the Biennial. As articulated by the curatorial team, the emphasis on agency is intended "to explore how human life, the environment, and technologies can evolve together to produce new and unforeseen results."[12] Notably, the inclusion of artificial intelligence as an integral component of the exhibition underscores the multifaceted nature of agency in contemporary artistic practice.[13]

## Materiality of Mediation

The strategies implemented from the conception of the exhibition, including the selection of artworks, are also linked to recent studies in ecomedia – as mentioned before – both conceptually and formally. There is, in my opinion, a problematization of the concept of the medium on at least two fronts. Firstly, we reflect upon the unconventional use of certain materials or those which delved deeply into the concept of media itself. Secondly, perhaps the most significant manifestation of such problematization in the ecological realm was the mediation provided by the environment in which the Biennial was situated.

In accordance with one of the curatorial collaborators, Jussi Parikka's[14] seminal work, *The Anthroboscene*, the modern discourse on media, also in visual culture field, has progressively relegated the significance of the terrestrial realm, which paradoxically stands as the quintessential medium. Nevertheless, the arts persistently recall its role as

12 J. Krysa, "New Directions May Emerge:" 21.

13 It is about AI Entity: Artist Yehwan Song and the Digital Visual Studies project at the University of Zurich have created a website that combines the collection of HAM Helsinki Art Museum and multimodal machine learning technology, as you can read on the page https://helsinkibiennaali.fi/en/collaborators/, accessed December 5, 2023. For further information: "Newly Formed City. AI Curation @ Helsinki Biennial," *Digital Visual Studies*, Max Planck Society, University of Zurich, https://dvstudies.net/2023/06/13/newly-formed-city-ai-curation-helsinki-biennial/, accessed December 5, 2023.

14 He is among the curatorial collaborators of May Ee Wong and Paolo Patelli, with whom he leads the *Critical Environmental Project* at Aarhus University.

a medium, reinstating terrestrial elements into figuration.[15] Elizabeth Grosz has previously underscored the intersection of art and land within the domain of the organic, a notion that garnered acclaim within the frameworks of Deleuze, Guattari, and Irigaray's theories. Grosz endeavors to elucidate how the impetus of terrestrial forces, in conjunction with vitalistic impulses, could catalyze an artistic outburst. Echoing Deleuze, Grosz posits that the aim of art lies in engendering intensity, thereby impacting our nervous system and fostering deeper sensations.[16]

The emphasis on the affective aspect of art, rather than its representational facets, is tethered to a territorial instinct that continually molds our rapport with the Earth.17 Thus, the soil may assume the dual role of concept and medium, giving rise to novel narrative paradigms that illuminate our connection to the land. A poignant example can be found in the inaugural artwork encountered upon reaching Helsinki's quaint harbor, Kauppatori, the departure points for the island of Vallisaari. Positioned facing the sea, just behind the prominent "Helsinki Biennial" signage, stands a towering monolith of earth, a featured piece at the Biennial. Nearby, adjacent to the Helsinki Biennial information hub, lies I *Re-member Mama* (2023), an installation crafted by Dineo Seshee Bopape.

15 J. Parikka, *The Anthroboscene* (Minneapolis: University of Minnesota Press, 2015).
16 E. Grosz, *Chaos, Territory, Art: Deleuze and the Framing of the Earth* (New York: Columbia University Press, 2008): 3.
17 Ibid.: 10; J. Parikka, *The Anthroboscene*: 13.

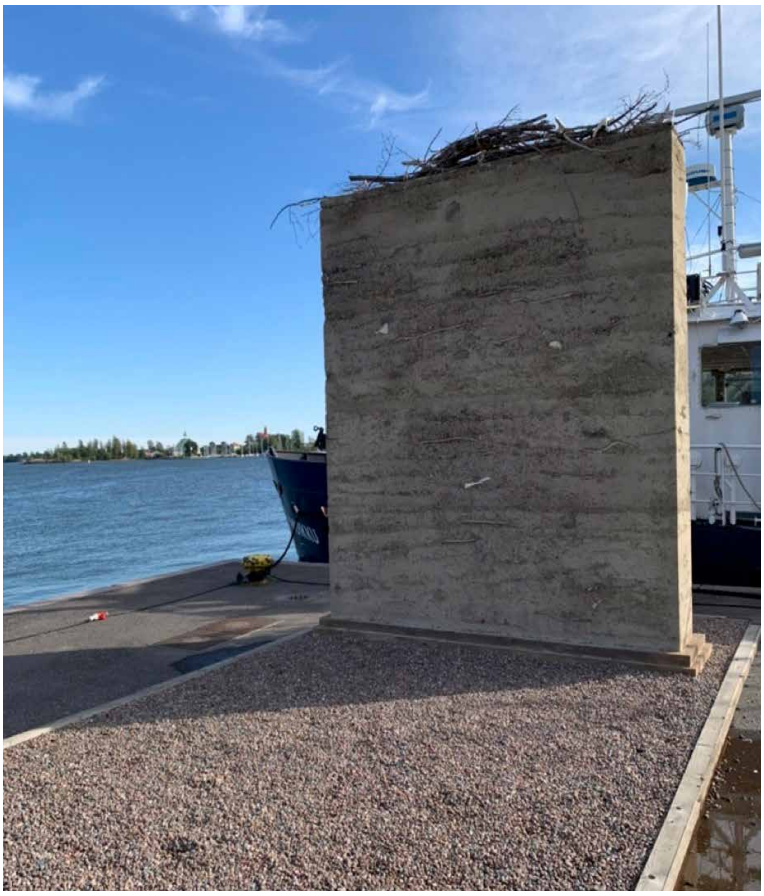

Fig. 1: D.S. Bopape, *I Re-member Mama*, 2023, installation view at "Helsinki Biennial," Helsinki, 2023, photograph by the author.

Comprising a substantial mound of soil intermingled with organic matter and assorted rocks (Fig. 1), the installation endeavors to commemorate and reconstruct the nexus between land and ancestral narratives. It amalgamates personal and collective dimensions, human and non-human entities, past and future chronicles, converging within the imperative – still within our grasp – to uphold the spatial and temporal integrity of our surroundings. This exemplifies Parikka's contention in his quasi-anti-McLuhanian scrutiny of technology, positing it as an "aggregate composed of the same raw material that constitutes the earth."[18]

The primordial matrix lies deep within the soil, while the inner realm serves as the conduit in artworks seeking to articulate this shared essence, or, if one prefers, this rhizomatic structure, remaining in close proximity to the philosophical underpinnings of Deleuze and Guattari.

18 J. Parikka, *The Anthroboscene*: 14; R. Smithson, "A Sedimentation of the Mind: Earth Projects," in J. Flam, ed., *Robert Smithson: The Collected Writings* (1968) (Berkeley: University of California Press, 1996): 101.

This underscores the relevance, within this context, of their rhizomatic ideology, a notion that scholars have lauded for its ecological resonance. This accentuates the dimension of rootedness, while remaining mindful of the disparity between a root and a rhizome: the former imposes order and fixity, while the latter is characterized by multiplicity, stemming from its origins, connections, and the relationships between its constituent parts.[19]

The discourse surrounding materiality has become intricately entwined with the ongoing dialogue that connects ecology to the study of media, particularly within the realm of art. While the previous case underscored the centrality of matter in artistic composition, serving as a catalyst for broader contemplation, the subsequent work presents a converse trajectory. Displayed at the Museum of Modern Art in Helsinki (HAM), Tabita Rezaire's artwork *Deep Down Tidal* (2017) serves as a reflective exploration of the interplay between materiality and immateriality of media, plunging viewers – both figuratively and, to a certain extent, literally – into the complexities of global interconnectedness.

Figure 2 illustrates the immersive nature of the video installation, which envelops viewers almost entirely, with moving elements seeming to breach the boundaries of the screen at times. Positioned before this screen, visitors are encouraged to recline on comfortable lounge seating, facing a large display. The expansive size of the installation not only enhances visibility but also aligns with the thematic content of the video, which seeks to illuminate how contemporary communication systems serve as conduits for electronic colonialism. As conveyed by the narrative voice within the artwork, cyberspace has emerged as a *locus* for a new form of Western colonization, wherein search engines and social networks – far from being neutral – are rife with

19 G. Deleuze, F. Guattari, *A Thousand Plateaus: Capitalism and Schizophrenia* (1980) (London-New York-Oxford: Bloomsbury Academic, 2020).

racist, homophobic, and fatphobic practices. Collectively, they reflect an inhospitable environment, mirroring the colonialist underpinnings of industrial society, which is justified in the name of Western progress while simultaneously marginalizing the "other."

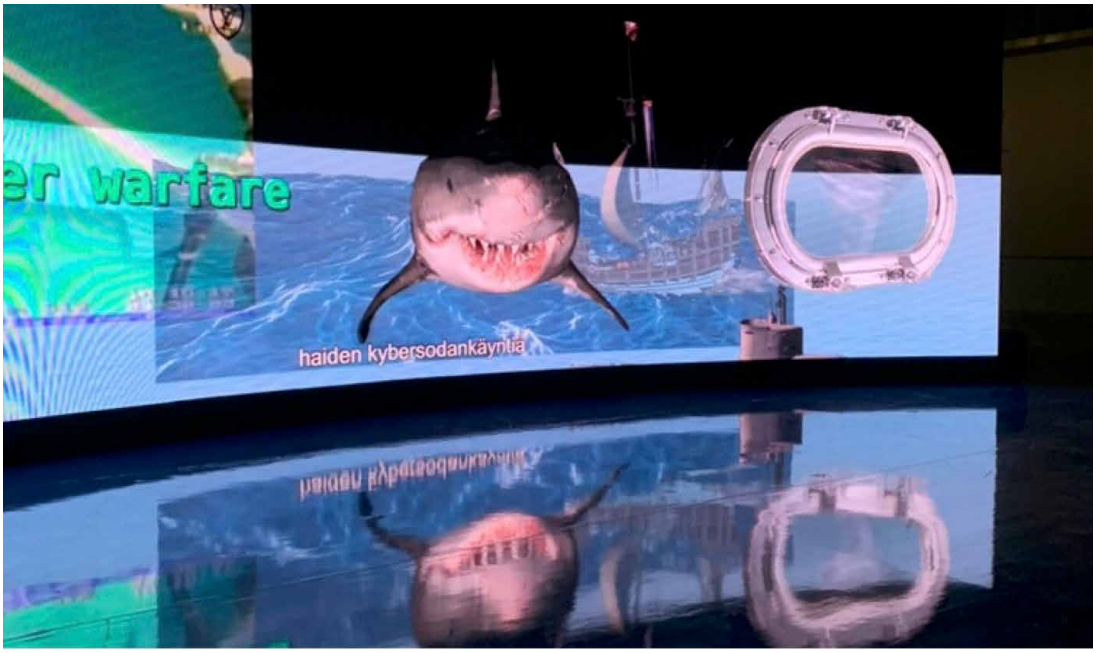


Fig. 2: T. Rezaire, *Deep Down Tidal*, 2017, view of the exhibition at "Helsinki Biennial," Helsinki, 2023, photograph by the author.

Amidst the darkness, viewers observe as a map gradually materializes on the screen, illustrating the overlap between historical slave trades of the 15th century and the modern-day electric cable infrastructure that traverses the ocean depths, facilitating global information dissemination. This juxtaposition disrupts prevailing narratives, revealing that the internet – and in turn "the cloud" – is, in reality, submerged beneath the sea. As the accompanying voiceover elucidates, this submerged network represents a genocidal root, or "genocidal routers," positioning viewers to confront the reality of their own complicity, whether passive or active, in perpetuating hate and injustice within online spaces.

The juxtaposition of narrative, political, and spiritual motifs, culminates in a poignant finale, wherein a female voice emerges amidst the display, woven together with a melodic refrain underscores the urgent need to acknowledge and heal

the trauma inflicted upon the waters. Through this multi-layered presentation, Rezaire's artwork prompts viewers to confront uncomfortable truths, urging them to reckon with the consequences of their digital actions and consider alternative narratives that prioritize empathy and collective healing.

This artwork, both in its conceptual framework and structural design, resonates with what Val Plumwood referred to as "intentional recognition,"[20] a concept that invites us to reconsider the non-human element not merely as an object, but also as a potential communication partner:[21] "Being able to conceive others in intentional terms is important to being open to them as possible communicative, narrative and ethical subjects."[22] Plumwood emphasizes the significance of conceiving of others in intentional terms, highlighting its importance in fostering openness towards them as potential communicative, narrative, and ethical subjects. This notion aligns with the immersive nature of Rezaire's installation, which prompts viewers to engage with the materiality of the environment and acknowledge its agency in shaping global interconnectedness. By embracing the concept of intentional recognition, viewers are encouraged to transcend anthropocentric perspectives and recognize the inherent value and agency of the non-human world, thereby fostering a deeper understanding of our interconnectedness and shared responsibility towards environmental stewardship.

## Encountering Multiple Agencies

The attitude of receptivity and recognition of agency was similarly exemplified in the exploration of the island environment. It constituted an immersive encounter wherein visitors were encouraged to delve deeply,

20 V. Plumwood, *Environmental Culture: The Ecological Crisis of Reason* (London-New York: Routledge Taylor&Francis, 2002): 177.
21 Ibid.
22 Ibid.

observing not only the overt manifestations but also the details of the surroundings. From the vibrant hues of untamed mushrooms to the discreet bat nests nestled within tree bark crevices – revealed only upon attentive scrutiny – each detail invited exploration. One of the Biennial's featured artists, Adrián Villar Rojas, presented a participatory element that initially appeared as a playful challenge: to locate fifteen sculptures concealed among the trees and foliage, perfectly integrated with their natural surroundings to the point of near invisibility without deliberate scrutiny. From the series *The End of Imagination* (2023), the sculptures by the Argentinian artist engage in a dialogue with the island environment and its inhabitants (Fig. 3). Rooted in his larger project, *Brick Farm*, inspired by the Hornero, an Argentinian bird known for its adaptive nest-building practices within human environments, Villar Rojas's Helsinki installation represents a departure towards a more artificial materiality while maintaining its intrinsic connection to the more-than-human realm.[23] Employing a bespoke software suite dubbed the "time engine," the artist simulated diverse worlds with varying environmental, social, and economic conditions, embedding sculptures within them. Observing the morphological transformations of these sculptures in response to simulated events and catastrophes, Villar Rojas remarked, "the artist created the world and the world created the sculptures,"[24] thus delineating a cause-and-effect dynamic that illustrates the effects of climatic and social upheaval, as well as the nuanced interactions between human and non-human, organic and inorganic, and human-made and natural materials. This dialectical synthesis of only seemingly dichotomous elements finds expression in material artworks fully integrated within their environmental context.

23 D. Negueruela del Castillo *et al*., "Adrián Villar Rojas: From the series *The End of Imagination*," in P. Grönroos, J. Krysa, eds., *Helsinki Biennial 2023*.
24 Ibid.

Fig. 3: One of the seventeen sculptures, hanging on a tree. A. Villar Rojas, From the series *The End of the Imagination*, 2023, at "Helsinki Biennial," Helsinki, 2023, photograph by the author.

Although Villar Rojas's artwork is a fruitful example of this thematic narrative, he is by no means the only bearer of such message. As I continued my immersive exploration of the environment, trying to keep a vigilant gaze upon my surroundings to avoid stumbling, my attention was captivated by the treetops, where sculpture and other unexpected elements could hide. Pausing from time to time to admire the panoramic view of the sea and surrounding islands, I finally encountered *Coadapted with* (2023), an artwork by Alma Heikkilä, situated amidst the verdant environs of Vallisaari Island. It stands as a sculptural piece encircled by four canvases, creating an immersive enclave within the forest. Within this installation, the concepts of contamination and coexistence manifest across multiple layers of interaction. The initial layer manifests when rainfall permeates the canvases, subsequently wetting the sculpture imbued with botanical dyes sourced from the island and its vicinity, thus causing it to undergo

chromatic transformations. Subsequently, a deeper stratum of contamination and coexistence emerges within the canvas layer itself (Fig. 4), where imperceptible microbes and bacteria reside, engendering phenomena that transcend human comprehension. Within this framework, the notion of co-adaptation is evident in the artwork's generative and compositional processes, conceived by the artist as a "collaboration with materials and other phenomena."[25]

Fig. 4: A. Heikkilä, *Coadapted with*, 2023, detail of the canvas, "Helsinki Biennial," Helsinki, 2023, photograph by the author.

*Coadapted with* serves as an exemplary manifestation of artistic mediation: it encompasses a series of agencies within a spatial configuration that aims to establish a symbiotic relationship between the materiality of the artwork and its meaning. Returning to the discourse on materiality introduced earlier, Heikkilä's creation epitomizes

25 A. Heikkilä, "A. Heikkilä: *Coadapted with*," in P. Grönroos, J. Krysa, eds., *Helsinki Biennial 2023*: 70.

a process of artistic mediation expressed through various actions. The primary mediation occurs through the sculpture itself, crafted by the artist, and subsequently through the installation, which reconfigures the surrounding space and creates a novel environment within the confines of the canvases. Furthermore, the natural environment itself becomes a participant, with atmospheric agents such as rainfall perpetually reshaping the artwork. These processes of artistic mediation unfold within a specific spatial domain delineated by the canvases, where multiple agencies converge, culminating not only in the formation of the installation but also in establishing a symbiotic relationship with the surrounding environment. Ultimately, this interplay renders visible the artist's intended message: that of co-adaptation.

Besides the theme of co-adaptation, there is also something more in the work discussed above: the concept of agency. Despite the Biennial, in its text, presents the artworks to us by dividing them among the three conceptual cores we saw at the beginning, it is evident that while certain artworks may exemplify one aspect more prominently, each then collectively embodies these core conceptual threads. Agency, particularly that which extends beyond the human sphere, permeates all the artworks showcased, as well as the outdoor setting of the Biennial itself.

For example, the relationship between humans and artificial intelligence, as exemplified in Rojas's artwork genesis, is further accentuated in *Pond Brain*, by Jenna Sutela. Hailing from Berlin, Sutela challenges anthropocentric hierarchies in favor of new forms of intelligence and organization. Her artwork, *Pond Brain*, features a bronze bowl filled with rainwater that emits melodic sounds upon tactile stimulation, courtesy of an AI system responsive to haptic stimuli. As the artist herself explains:

Sounds from the pond resonate with an artificial neural network trained to respond to environmental

and interplanetary sounds. The network tunes into sonic frequencies from the bowl and plays back an array of alien resonations. As sound flows around in homeostatic loops through the air and through different machine learning models, which exude an air of alternative dimensions, it is constantly transforming and thus exhibiting a life cycle of its own.[26]

## Conclusions: From the Soil to New Directions

The last segment of this analysis delves into two artworks wherein the environment is regarded not only as the subject of the artwork itself. Instead, within these works, the environment can be assumed as the starting point for a broader reflection on environmental justice and the global connections and contradictions that the artistic medium has the capacity to stage.

The first exemplar is the installation *Songs to Earth, Songs to Seeds* (2023) by Sepideh Rahaa, situated in a repurposed warehouse on Vallisaari Island. It comprises a video installation and a handcrafted ceramic pot containing rice plants cultivated within. The narrative unfolds the story of rice production in Mazandaran, located in the northern region of Iran. Through its visual storytelling, the installation unveils a typically unseen narrative involving women, rice fields, hands, and local songs. These elements serve as essential components of the narrative, intertwining with the imagery and interrupting the linear history of rice production by introducing other anecdotal narratives passed down through generations, in the form of songs, from mothers to daughters, and sung by their voices during the harvest. Within the confined space of the artwork's setting – an old ammunition depot – the melody resonates,

26 J. Sutela, "Pond Brain," in P. Grönroos, J. Krysa, eds., *Helsinki Biennial 2023*: 114.

enveloping and captivating viewers. The resultant effect is a multi-narrative mirroring the multi-spatiality of rice cultivation, the world's second-largest staple food, linking the lives of Iranian farmers to rice consumers worldwide, and ultimately to our own. Next to the video presentation, in the far end of the room, lies the ceramic pot, illuminated to underscore the importance of traditional cultivation and conservation practices, which represent truly sustainable processes and, above all, reconnect us to the materiality of the process, transforming it from a mere sequence of images on a screen into tangible reality.

Fig. 5: S. Rahaa, *Songs to Earth, Songs to Seeds,* 2023, installation view of the ceramic pot with rice plants, "Helsinki Biennial," Helsinki, 2023, photograph by the author.

The deliberate choice to render visible a typically invisible process and to elevate typically marginalized protagonists to the forefront is not merely an artistic gesture but a political one as well. It underscores the notion of the "partition of the sensible" articulated by Rancière, which is

based on a division of spaces, times, and activities that determines what is visible and what is invisible, as well as the degree of participation each can afford in the common realm. The threshold between visibility and invisibility resonates with Deleuze's conception of art as a generator of visibility. By manipulating light and shadow, the artwork challenges the prevailing system of representation, positioning figurative art as the quintessential medium for catalyzing a new way of thinking. Artists seize the opportunity to dismantle dominant paradigms and advocate for environmental causes, beginning with the exhibition environment itself. The core idea underpinning the installations of the Biennial, along with their presentation and arrangement in relation to each other within the island context, appears to embody this aesthetic revolution. Firstly, the anonymous subject assumes the role of the art object, effecting a shift in the partition of the sensible from invisibility to visibility. Secondly, pivotal to this transformation is the acknowledgment of the common regime of meaning from which both poetic and historical realities emerge. Consequently, past occurrences and potential future scenarios become intertwined, both rooted in the shared imaginative possibilities entangled with the present moment.

Also beginning with the soil as its starting point, another noteworthy installation situated on Vallisaari Island is *PHOSfate* (2023), a collaborative effort between Mohamed Sleiman Labat and Pekka Niskanen. The installation, named after the collaboration, is founded upon a reflection regarding interaction and regeneration. By appropriating sand-growing techniques utilized in the Saharawi refugee camp in Algeria, the work aligns with the broader project's aim of connecting the repercussions of phosphorous mining in the desert, which has also contributed to the cessation of nomadic life in the region, to its impact on the Baltic Sea, afflicted by eutrophication, alongside numerous other

marine areas globally. The sandoponic gardens on Vallisaari Island symbolize the Saharawi's endeavor to reconceptualize and reformulate their relationship with sand, now recognized as a viable "medium for growing food."[27] In delving into this narrative, we confront a segment of the world's populace typically unseen, bearing the most extreme consequences of what, since the early 2000s, we have called "the Anthropocene Epoch," to emphasize *our* impact on the Planet. So, while the term "Anthropocene" underscores the anthropogenic origins of environmental disruptions, it is imperative to acknowledge that "Anthropos" encompasses a diverse spectrum of humanity, as emphasized by Steve Mentz's call to "pluralize the Anthropocene."[28] The notion of a unified humanity is inherently flawed and unjust.

The collaboration between Labat and Niskanen, alongside numerous other works showcased during the Biennial, catalyzes a broader discourse centered on the so-called Anthropocene – and even just on the choice of such a name. This demands democratization, shifting from specialized discourse to one focused on the potential of planetary connections.[29] Art provides a platform for this discourse, as exemplified by the Helsinki Biennial, which highlights the pivotal role of performance art as a medium. Art has the capacity, as articulated by Carolyn Merchant, to challenge the conventional narrative of human dominance over nature,[30] thus propelling artistic activism geared towards cultivating a new visuality wherein the emphasis lies not solely on representation but on the entire visual experience.[31] This notion aligns with the contemporary

27 M.S. Labat, P. Niskanen, "PHOSfate," in P. Grönroos, J. Krysa, eds., *Helsinki Biennial 2023*: 92.
28 S. Mentz, *Break Up the Anthropocene* (Minneapolis: University of Minnesota Press, 2019).
29 T.J. Demos, *Against the Anthropocene: Visual Culture and Environment Today* (London: Sternberg Press, 2017).
30 C. Merchant, *The Anthropocene and the Humanities: From Climate Change to a New Age of Sustainability* (New Haven: Yale University Press, 2020).
31 I had the opportunity to explore the link between this exhibition and visual activism practices at Pompeu Fabra University in Barcelona, with a paper entitled *The Visuality of the Environmental Crisis*, now undergoing publication.

imperative outlined by Demos, who notes that "numerous artistic-activist practices are already providing proposals that insist on embedding experimental visual culture within social engagements and collaborative social movements."[32]

In contemplating alternative modes of storytelling through artistic practices, we endeavor to subvert what Nicolas Mirzoeff terms the "aesthetic of the Anthropocene," as the integration of "the theory and practice of the conquest of nature,"[33] reflecting an imperialist impulse inherent in Western modernity, which of course had repercussions on the visuality and visualization of the contemporaneity.

Demos underscores the necessity for art to transcend what Haraway calls the deadly discontinuities introduced by the logic of the Anthropocene,[34] fostering creative life, multi-species compositions, and practices intrinsically linked to environmental justice. The immersive and enveloping exhibition presented at the Helsinki Biennial 2023 exemplifies significant strides towards this goal.

32 T.J. Demos, *Against the Anthropocene*: 98.
33 N. Mirzoeff, "Visualizing the Anthropocene," *Public Culture* 26, no. 2 (2014): 219.
34 T.J. Demos, *Against the Anthropocene*: 98; D. Haraway, *Staying with the Trouble*: 137.

# The Problem of Empathy in Immersive Experiences on Global Warming. A Matter of Empathy, Embodiment, and Hyperobjects

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Abstract

My paper focuses on the problem of empathetic response in immersive experiences concerning global warming issues. Following a rich scientific production, which points out the idea of virtual reality as both "the ultimate empathy machine" – as firstly stated by filmmaker Chris Milk – and a promising tool to promote ecological awareness, my essay presents, in the first place, the main characteristics of immersive experiences concerning the issue, showing how viewers interact with the environment from the perspective of presence, and body ownership. As describing potentials and limits of empathetic response in virtual environments, I draw attention to the fact that now it is impossible to build virtual reality experiences that fully embody the essence of global warming, as it is intrinsically an hyperobject – a term I take from Timothy Morton's philosophical approach towards environmental issues. In this framework, the purpose of my essay is to uncover the impossibility to represent global warming faithfully if we keep on conceive immersive experiences in the way we are doing now. What I propose is a radical change in our idea of virtual reality when it comes to represent global warming.

Keywords 360° VR film Anthropocene Empathy Global warming Hyperobjects

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> The worry is not whether the world will end, as in the old model of the *dis–astron*, but whether the end of the world is already happening, or whether perhaps it might already have taken place.[1]

## Introduction

At the edge of the XXI century, Paul Crutzen and Eugene Stoermer had no doubt that the term Holocene ("Recent Whole") had become ineffective. Rather, considering major and growing impacts of human activities ecosystems, Crutzen and Stoermer vigorously asserted that the term"anthropocene"[2] would be more appropriate to define the geological era coming after the Holocene: indeed, "the impacts of current human activities will continue over long periods."[3]

Nowadays, the awareness of the Anthropocene in different scientific fields cohabits with the urgency of climate change issues. From literature to film studies, from hard sciences to engineering, global warming is an emergency that can no longer be ignored. Apparently, the degradation of ecosystems has already been perceived in the last centuries, notably in the field of fine arts. According to Anna Lea Albright and Peter Huybers,[4] Claude Monet's *Impression: Sun Rising* (1873) and J.M.W. Turner's *Rain, Steam, and Speed - The Great Western Railway* (1844) are peculiar examples of how art, at that time, could be a valuable mean of representing the effects of the industrial revolution on the environment: the Impressionism of Turner and Monet contained elements of the so-called "polluted realism."[5]

Across the centuries, the sensitivity towards ecological issues changed as fast as the balance of

1 T. Morton, *Hyperobjects*: Philosophy and *Ecology After the End of the World* (Minneapolis-London: University of Minnesota Press, 2013): 16.
2 I use the lowercase letter with due regard to the original text written by Paul Crutzen and Eugene Stoermer.
3 P.J. Crutzen, E.F. Stoermer, "The 'anthropocene'," IGPB *Newsletter*, no. 41 (2000): 17.
4 A.L. Albright, P. Huybers, "Painting by Turner and Monet Depict Trends in the 19th Century Air Pollution," *PNAS* 120, no. 6 (2023), https://doi.org/10.1073/pnas.2219118120.
5 Ibid.: 8.

ecosystems. A perceptible turning point has been marked by the theory of *Umwelt*, as theorized by Jakob Johann von Uexküll,[6] who introduced the idea of different sensorial attunement owned by animals, pointing out the fact that the very meaning of "world" differs from one creature to another, as highlighted by Philippe Bédard.[7] The unraveling of a novel, non-anthropocentric vision of the world, within the anti-specism philosophical movement, evolved side-by-side with the consciousness of the irreversible effects of human activities on Earth. The impactful results of scientific research conducted by the Anthropocene Working Group – in which a group of scientists agree to identify the world's first nuclear bomb explosion on July 16th in 1945 at Alamogordo, New Mexico, as the starting point of the Anthropocene Era[8] – acknowledge human beings to be a geological force. Considering these and the disturbing prospect of a future disrupted by global warming, scholars from different scientific fields have been struggling to find an impactful way to promote ecological awareness. In my essay, I will focus on the path taken by some scholars and filmmakers who consider virtual reality technology as the ultimate machine for the purpose of inducing ecological awareness. I will take this path – first analyzing immersive experiences concerning global warming produced so far, and then the mechanisms of incorporation, presence, and empathy that rush to a systematic treatment of virtual reality – with the primary aim of reversing the whole picture. As I will underline in the following paragraphs, global warming is intrinsically inaccessible to anyone, making any attempt to establish an empathetic response totally futile. Global

6 J. von Uexküll, *A Foray into the Worlds of Animals and Humans*. *With a Theory of Meaning* (1934), trans. J.D. O'Neil (Minneapolis: University of Minnesota Press, 2010).
7 P. Bédard, "Adventures beyond Anthropocentrism in Virtual Reality Art," *AN-ICON. Studies in Environmental Images* 2 (2022): 97, https://doi.org/10.54103/ai/18458.
8 J. Zalasiewicz et al., "When Did the Anthropocene Begin? A Mid-Twentieth Century Boundary Level Is Stratigraphically Optimal," *Quaternary International* 383: 196-203, https://doi.org/10.1016/j.quaint.2014.11.045; See also: C.N. Waters et al., "Can Nuclear Weapons Fallout Mark the Beginning of the Anthropocene Epoch?," *Bulletin of the Atomic Scientists* 71, no. 3 (2015): 46-57, https://doi.org/10.1177/009634021558135.

warming stays unreachable because it is, in fact, a hyper-object.

## Being There: Immersive Storytelling at the Edge of Global Warming

The original narrative medium was the body and the spoken word, not a display nor joystick used to interact with virtual characters in a virtual world: the very first immersive environments were simulated by the body and the word.[9] However, in the age of Head-Mounted Displays (HDMs) and virtual experiences, we can now access to virtual worlds through our body, and leave the physical, familiar world behind us: we experience the virtual world, while we are aware that the physical world, whose proprieties we have come to know well through long familiarity,[10] will remain the same.

However, scientific data show that the world will not be as familiar as it used to be sooner than we expected. At the end of July 2023, the hottest month ever registered by scientists, the UN Secretary General, António Guterres, declared: "The era of global warming has ended, the era of global boiling has arrived."[11] The rise of global average temperatures, driven by pollution that traps sunlight and acts like a greenhouse around the Earth, has generated massive effects on ecosystems. The Sixth Assessment Report produced by the Intergovernmental Panel on Climate Change[12] shown during the Panel's 58th Session held in Interlaken, Switzerland, from 13th to 19th March 2023, claims urgent massive action for a livable future. Previously,

9 F. Biocca, "The Evolution of Interactive Media: Toward 'Being There' in Nonlinear Narrative Worlds," in M.C. Green, J.J. Strange, T.C. Brock, eds., *Narrative Impact: Social and Cognitive Foundations* (Mahwah NJ-London: Lawrence Erlbaum Associates Publishers, 2002): 97-130, 97.

10 I. E. Sutherland, "The Ultimate Display," in R. Packer, K. Jordan, eds., Multimedia: *From Wagner to Virtual Reality* (New York, NY: W. W. Norton & Company, Inc.), 506.

11 UN News Global Perspective Human Stories, "Hottest July Ever Signals 'Era of Global Boiling Has Arrived' Says UN Chief," (July 7, 2023), https://news.un.org/en/story/2023/07/1139162, accessed December 9, 2023.

12 Intergovernmental Panel on Climate Change, *Sixth Assessment Report* (March 20, 2023), https://www.ipcc.ch/report/ar6/wg2/, accessed December 14, 2023.

the "Great Acceleration" graphs,[13] originally published in 2004 to demonstrate socio-economic trends from 1750 to 2000, had a consistent impact on the common vision of human activities and their effects on ecosystems. These show, indeed, that long familiarity tells us very little in fact about the world we currently live in.

However, it seems that scientific warnings concerning global warming are not enough, still. As Lorenzoni, Nicholson-Cole and Whitmarsh affirm from a sociological perspective,[14] people tend to think about climate change as something distant in both time and space that will not impact the self in the short period. From a certain point of view, this state of mind could be understandable: even if data report that, sooner or later, the Earth as we know it will change radically and irreversibly, only a small percentage of both people and countries are already affected by global warming directly. To overcome this issue, scholars have been confronting with potentials and limits of technologies to identify the most effective medium to promote global warming awareness. Among these, virtual reality has been considered "a promising tool"[15] to stimulate ecological awareness, and to make people "environmentally literate,"[16] whether corroborated by cinematic narrative, aesthetic constructions, or designed from the perspective of being employed in laboratory experiments only. A common intent of immersive experiences concerning global warming is to make certain parts of the world plagued by environmental issues accessible to people who do not live in those places. This purpose is strengthened by the fact that HMDs aim to provide immersive experiences in which

13 W. Steffen *et al.*, "The Trajectory of the Anthropocene: The Great Acceleration," *The Anthropocene Review* 2, no. 1 (2015): 81-98, 82, https://doi.org/10.1016/j.quaint.2014.11.045.
14 I. Lorenzoni, S. Nicholson-Cole, L. Whitmarsh, "Barriers Perceived to Engaging with Climate Change among the UK Public and their Policy Implications," *Global Environmental Change* 17, no. 3-4 (2007): 445-459, https://doi.org/10.1016/j.gloenvcha.2007.01.004.
15 The idea of virtual reality as promising tool to promote climate change awareness comes from the title of this article: G. Fauville, A.C. Muller Queiroz, J.N. Bailenson, "Virtual Reality as a Promising Tool to Promote Climate Change Awareness," in H.Y. Song, J. Kim, eds., *Technology and Health. Promoting Attitude and Behaviour Change* (London-San Diego-Cambridge MA-Oxford: Academic Press, 2020): 91-108, https://doi.org/10.1016/B978-0-12-816958-2.00005-8.
16 G. Fauville, A.C. Muller Queiroz, J.N. Bailenson, "Virtual Reality as a Promising Tool to Promote Climate Change Awareness:" 91.

the audience member is transformed into an interactor, a term which suggests a sense of agency, activity, and "being there" feeling.[17]

Apart from immersive experiences created for scientific experiments only, there are few examples of VR documentaries which aim to promote climate change awareness: here I consider just live-action VR documentaries, as they are not mediated by animation or computer graphics but represent the world as it is using 360° cameras. This is climate change is a four-part series of short 360° VR films titled *Fire, Famine, Feast*, and *Melting Ice*.[18] The purpose of the experience is to give viewers a vivid look at the effects of human activities on Earth: *Fire* concerns wildfires that affected California back in 2017; *Famine* takes viewers to the arid desert in Somalia, in which inhabitants are enduring drought; *Feast* is settled in the Amazonian rainforest in Brazil mortified by deforestation; *Melting Ice* concerns the problem of melting icebergs in Greenland and its catastrophic consequences. A similar structure is adopted by *The Anthropocene Project*,[19] a multidisciplinary body of work which combines feature documentary, photography, scientific research, and, of course, virtual reality. Conceived as a complement to the nonfiction film *Anthropocene – The Human Epoch* (Jennifer Baichwal, Nicolas de Pencier, Edward Burtynsky, 2018), the VR documentary is divided in three short films, each of them settled in three different parts of the world – the caves of Carrara, the Dandora Landfill, and the Ivory Burn in Nairobi National Park – where human activity has been impactful in shaping nature. As well as *This is climate change*, three short VR documentaries aim to provide a unique gaze into three different locations in the world which would be inaccessible to viewers. Another powerful representation of the result of human activities on Earth is the 21-22 series (Thierry

17 F. Biocca, "The Evolution of Interactive Media:" 98.
18 For further information: "This is Climate Change," Docubase MIT Documentary Lab, https://docubase.mit.edu/project/this-is-climate-change/, accessed December 10, 2023.
19 Program and purposes of the project are available at the following website: "Anthropocene VR," *The Anthropocene Project*, https://theanthropocene.org/interactive/360-vr/, accessed December 10, 2023.

Loah, 2024 - ongoing),[20] a series of VR films which offer a planetary journey and reveal the state of the Anthropocene epoch. Each film provides a beyond-human-scale perspective on the planet, with the purpose to provide the spectator an experience of the entropic and negentropic states in the Anthropocene.

These projects share the common idea of taking people far from their "safe place" and giving them the possibility to see how human activities are modifying the Earth from a distance. Another aspect we may consider is the design of these 360° VR short films, which aim to make the viewer witness[21] a particular urgency, even without being asked by other virtual characters or induced to interact.

This purpose corroborates scientific research that supports the concept of virtual reality as a promising tool to promote climate change awareness, which is argued by studies which employ psychological tools to analyze data collected during experiments regarding virtual reality technology as "a machine for learning."[22] In fact, various experiments concern brand-new immersive experiences that are designed to make viewers learn more about global warming. Another frontier of study reflects on how virtual reality could effectively have an impact on fears and beliefs related to global warming, and allegedly behavior change towards the issue. Ahn, Bailenson and Park, for instance, conducted two different experiments in order to prove that immersive virtual environments could lead participants to consume 20% less paper than participants who just read a print description of tree cutting.[23] Another experiment conducted by Meijers, Torfadóttir, Wonneberger

20 For further information: "21-22," https://21-22.earth/en/, accessed December 11, 2023.
21 K. Nash, "Virtual Reality Witness: Exploring the Ethics of Mediated Presence," *Studies in Documentary Film* 12, no. 2 (2018): 119-131, 124, https://doi.org/10.1080/17503280.2017.1340796 .
22 D.M. Markowitz *et al.*, "Immersive Virtual Reality Field Trips Facilitate Learning about Climate Change," *Frontiers in Psychology* 9, no. 2364 (2018): 1-20, https://doi.org/10.3389/fpsyg.2018.02364.
23 S.J. Ahn, J.N. Bailenson, D. Park, "Short- and Long-Term Effects of Embodied Experiences in Immersive Virtual Environments on Environmental Locus of Control and Behavior," *Computers in Human Behavior*, no. 39 (2014): 235-245, https://doi.org/10.1016/j.chb.2014.07.025.

and Maslowska[24] demonstrated that Immersive Virtual Environments (IVEs) could make people rethink about their meat-based diet and switch to a largely plant-based diet, as being aware of how consuming less diary and meat could have a significant impact on an individual's carbon footprint. However, side effects are not that rare. In 2016, Ahn and colleagues[25] conducted three experiments in which viewers could embody animals: even if they demonstrated that virtual reality could increase environmental involvement by allowing users to embody animals in IVEs, rather than simply watching a bidimensional video, the effects of the heightened interconnection with nature persisted for one week, and then vanished. This result shows clearly how there is still much work to do to understand whether virtual reality could be a valuable tool to make people aware about climate change.

## Feeling It, Living It: Empathy and Immersive Storytelling

In 2015, filmmaker Chris Milk had no doubt when declaring that virtual reality could be "the ultimate empathy machine." As VR filmmakers began to explore the cinematic potential of immersive technologies, VR scholars, on the other side, had to face new ethical problems within virtual reality. In the last part of his speech, Milk stated:

> We can change minds with this machine. [...] It connects humans to other humans in a profound way that I've never seen before in any other form of media, and it can change people's perception of each other. And that's why I think Virtual Reality has the potential to actually change the world. So, it's a machine, but through this machine we become more compassionate, we become more

24 M.H.C. Meijers *et al.*, "Experiencing Climate Change Virtually: The Effects of Virtual Reality on Climate Change Related Cognitions, Emotions, and Behavior," *Environmental Communication* 17, no. 6 (2023): 581-601, https://doi.org/10.1080/17524032.2023.2229043.
25 S.J. Ahn, *et al.*, "Experiencing Nature: Embodying Animals in Immersive Virtual Environments Increases Inclusion of Nature in Self and Involvement with Nature," *Journal of Computer-Mediated Communication* 21, no. 6 (2016): 399-419, https://doi.org/10.1111/jcc4.12173.

empathetic, and we become more connected. And, ultimately, we become more human.[26]

In this sense, virtual reality is strongly associated with empathy, especially when discussing about immersive storytelling and immersive journalism recording the horror of wars, poverty, mental and physical diseases, or climate change issues.[27] At the time I am writing this essay, HMDs are the most common – and most affordable – devices: when the user puts on the HMD, they are immersed in the virtual scenario; joystick, hands, the voice and eventually eyes are implied to interact with the virtual world. What differs from other devices, according to Slater and Sanchez-Vives,[28] is essentially the consistent "grade of immersiveness" provided by HMDs, that is the consciousness of the virtual scenario, which coexist, however, with the participant's knowledge of its fallacious nature.

Indeed, the perceptual immediacy and the illusion of presence in a virtual environment appear to be the essential consequence of "the solicitation (and perturbation) of the spectator's vestibular system and emotions,"[29] which shows how VR can stimulate the perceptual, cognitive, and emotional immersion, which aim to solicit the user's engagement. In this perspective, viewers are stimulated by virtual (or haptic) feedback, which appear to be more impactful as viewers embody a virtual presence.[30] Immersive VR solicit a strong sense of presence, providing an immediate and pre-reflexive empathic comprehension. In this sense, the "empathy machine" is involved to

26 C. Milk, "How Virtual Reality Can Create the Ultimate Empathy Machine," filmed 2015 at TED Talk, https://www.ted.com/talks/chris_milk_how_virtual_reality_can_create_the_ultimate_empathy_machine, accessed December 9, 2023.
27 H. Kool, "The Ethics of Immersive Journalism: A Rhetorical Analysis of News Storytelling with Virtual Reality Technologies," *Intersect 9*, no. 3 (2016): 1.
28 M. Slater, M.V. Sanchez-Vives, "Enhancing Our Lives with Immersive Virtual Reality," *Frontiers in Robotics and AI* 3, no. 74 (2016): 3-4, 10.3389/frobt.2016.00074.
29 A. D'Aloia, "Virtually Present, Physically Invisible: Virtual Reality Immersion and Emersion in Alejandro González Iñárritu's *Carne y Arena*," *Senses of Cinema* (2018), https://www.sensesofcinema.com/2018/feature-articles/virtually-present-physically-invisible-virtual-reality-immersion-and-emersion-in-alejandro-gonzalez-inarritus-carne-y-arena/, accessed December 14, 2023.
30 A. Ijsselsteijn et al., "Presence: Concept, Determinants and Measurement," *Proceedings of SPIE, Human Vision and Electronic Imaging* (San Jose CA: 2000).

describe how VR can make the viewer see through another's eyes, embodying their experiences, and "empathizing" with them.[31]

In this framework, as Chris Milk stated, empathy plays a relevant role in immersive experiences dealing with urgent contemporary issues, being the main interest of a certain body of work in scientific literature.[32] Scholars like Jon Rueda and Francisco Lara[33] consider "Virtual Reality Embodied Perspective-Taking" as the most promising form of VR empathy enhancement. In fact, "[t]he potential of VREPT for the reduction of some biases and discriminatory attitudes, along with the increase of prosocial and altruistic motivation, is empirically well-supported." However, authors point out that, beyond promising results, it remains controversial if cognitive empathy, and empathy in general, could be the only factor to induce such psychological mechanisms.

The criticism regarding empathy in immersive experiences has led to different scientific approaches towards the topic, which point out the moral affordances of VR. The risk of putting the viewer at an "improper distance", to a sensitive topic and to conflate attention and learning with "slacktivism"[34] (to support a social cause through social media or online petitions, with very little commitment) or "identity tourism"[35] (putting oneself in the other's shoes as a leisure activity) and thus fetishizes the other. Through such non-mediation, according to Chouliaraki,[36] VR technology aspires to eliminate distance while mediating a false proximity. When analyzing Chris Milk's well-known 360° VR documentary *Clouds over Sidra* (Gabo Arora, Chris Milk,

31 G. Bollmer, "Empathy Machines," Media International Australia 165 (2017): 63-76, 63, https://doi.org/10.1177/1329878X17726794.
32 F. Herrera *et al.*, "Building Long-Term Empathy: A Large-Scale Comparison of Traditional and Virtual Reality Perspective-Taking," *PLoS ONE* 13, no. 10 (2018): 1-37, https://doi.org/10.1371/journal.pone.0204494.
33 J. Rueda, F. Lara, "Virtual Reality and Empathy Enhancement: Ethical Aspects," *Frontiers in Robotics and AI* 7, no. 506984 (2020): 1-18, 10.3389/frobt.2020.506984.
34 E. Morozov, *The Net Delusion: How Not to Liberate the World* (London: Penguin, 2011).
35 L. Nakamura, "Feeling Good about Feeling Bad: Virtuous Virtual Reality and the Automation of Racial Empathy," *Journal of Visual Culture* 19, no. 1 (2020): 47-65, 54, https://doi.org/10.1177/1470412920906259.
36 L. Chouliaraki, *The Spectatorship of Suffering* (London: Sage, 2006): 202.

2015), Rainoldi affirms that VR engenders an occasion of emotional contagion, "which is the quite literal infection of the character's feeling to the VR user."[37] This is far from a valid moral and decision-making guide: in fact, as Bloom states,[38] VR can be dangerously misleading. In this sense, empathy could be a double-edged sword when dealing with VR documentaries and immersive journalism, as well as during experiments.

## How Can We Empathize with a Hyperobject?

After having discussed the main issues concerning global warming narratives and empathetic response in immersive experiences, it seems that Chris Milk's statement concerning the "ultimate empathy machine" and the idea of VR as a promising tool to promote climate change awareness may be both problematic as well. Moreover, as I am going to argue in this part, the nature of global warming itself concerns not only the problem of empathetic response, but also the impossibility to represent it through virtual reality technology.

Within the term "global warming," I propose the term "hyperobject" as coined and conceived by philosopher Timothy Morton in *The Ecological Thought*, which refers to "things that are massively distributed in time and space relative to humans:"[39] a black hole, the biosphere, the Solar System, the total sum of all the nuclear materials on Earth, or the very long-lasting product of human activities.[40] As Morton states, hyperobjects have some proprieties in common: they are viscous, as they are capable "to stick" to beings involved with them; they are nonlocal, consequentially human beings cannot perceive them, but only their "local manifestations;" they have Gaussian temporality,

37 G. Rainoldi, "Face-to-Face, or Face-to-Visor: Is Cinematic Virtual Reality the 'Ultimate Empathy Machine'?," *Bollettino Filosofico* 37 (2022): 163.
38 P. Bloom, "It's Ridiculous to Use Virtual Reality to Empathize with Refugees," *The Atlantic* (2017): https://www.theatlantic.com/technology/archive/2017/02/virtual-reality-wont-make-you-more-empathetic/515511/, accessed March 2, 2024.
39 T. Morton, *The Ecological Thought* (Cambridge MA: Harvard University Press, 2010): 130-135.
40 T. Morton, *Hyperobjects:* 1.

as they generate spacetime vortices; they are invisible to humans as they occupy a high-dimensional phase space, and they are visible just in the interrelationships between aesthetic proprieties of objects. Global warming – a term which Morton finds more impactful than climate change, as it supposes the idea of mere changing from a state to another – is, in fact, a hyperobject. "Every decision we make is in some sense related to hyperobjects," Morton states; "these decisions are not limited to sentences in texts about hyperobjects. When I turn the key in the ignition of my car, I am relating to global warming."[41] From this perspective, hyperobjects do not come into conflict with the profound materiality of global warming, as it exhibits its effects interobjectively,[42] even if they are inaccessible intrinsically. Moreover, Timothy Morton supports the idea that hyperobjects are "what have brought about the end of the world,"[43] which does not mean that the world is about to end: instead, Morton declares that the concept of world is no longer operational and cannot cohabit with hyperobjects, in a way that should not scare people, rather inducing them to act. This is, indeed, another key point which corroborates the issue of representing the hyperobjective nature of global warming.

The incapability of current narratives to deal with the essence of global warming dialogues with its inaccessibility, in a way that is not so far from the issue put forward by Carlos Santana with the "problematic" point of view of the "geologist of the future." The problem occurs within immersive experiences and VR documentaries as well. Potential viewers wearing an HMD and deciding to watch any sort of immersive experience concerning global warming may find themselves constrained into a narrow gaze into the issue. Talking about This is climate change VR series, or 21-22 series, e.g., we have the possibility to investigate environmental issues only from their "local manifestations:" consequentially, the hyperobject-global

41 Ibid.: 20.
42 Ibid.: 1.
43 Ibid.: 6.

warming remains inaccessible. In this sense, experiences that aim to represent the evolution of global warming in a few minutes and showing its effects from a human perspective may negatively affect the perception of the global warming itself.

The second problem concerns embodiment and perspective-taking in immersive virtual environments. As I stated in the previous paragraph, the peculiarity of virtual reality technology lays in the possibility to be immersed in a virtual environment. When considering immersive experiences about global warming, the hyperobjective essence may be perceived as a critical point. The main question may be formulated as follows: from which perspective one could experience a hyperobject like global warming? Brand-new experiences from laboratories working on VR generally choose "the witness" model:[44] viewers are immersed in a virtual environment, and they experience how climate change affects a precise environment from a human-scale perspective. However, viewers are just capable to observe it and eventually to learn more about physical and geological proprieties of specific environments – in this sense, we may call these "immersive lectures." Indeed, these are valuable experiments which clearly show the benefits of VR in facilitating learning about global warming issues. Nonetheless, I believe we should make a further step into the storytelling design of these kind of immersive experiences, according to the fact that VR filmmakers have been working on the cinematic potentials of VR. In this framework, further critical issues rush in when dealing with perspective-taking in VR films about global warming. On one hand, the embodiment of someone living on their skin the effects of global warming may put the viewer at an improper distance, appropriating the experience of others momentarily, as assumed by Kate Nash[45] and previously underlined in this essay. Co-presence or "co-witnessing" does not guarantee a deeper understanding of traumatic

44 K. Nash, "Virtual Reality Witness:" 124.
45 Ibid.: 125.

events: as argued by Chouliaraki, "the spectacle of human pain […] may be manipulative for spectators. Unless accompanied by practical action or compassionate care, the spectators' pity vis-à-vis distant sufferers may become part of a persuasive machine."[46]

On the other hand, we may consider the possibility of embodying non-human presence, e.g. animals, stones, insects, and they perception of global warming. However, even if this second proposal may be a groundbreaking point for anti-specism, it is impossible to ignore the fact that human gaze persists underneath the question "what it is like to be" [47] something other than human, as stated by Philippe Bédard.[48] According to the elements pointed out in this paragraph, the problem of empathetic response in immersive experiences concerning global warming is grounded in the intrinsic nature of global warming itself, as well as in the problem of identifying which perspective one should take. Pointing out the nonlocal and fluid essence of hyperobjects, including the impossibility to experience it totally, and the narrow gaze which determines immersive experiences concerning environmental issues, it is intrinsically impossible to elaborate a long-term, effective, and realistic empathetic response towards the representation of global warming through virtual reality technology. However, this is supposed to be, without any doubt, the most sincere and respectful starting point to build impactful immersive experiences on global warming. In this framework, I find Grant Bollmer's rejection of empathy and his move towards radical compassion[49] a valuable starting point in the discussion concerning VR experiences on global warming. As Bollmer affirms, compassion concerns the potentials of not understanding another, in a way that does not negate

46 L. Chouliaraki, *The Spectatorship of Suffering: 203.*
47 A. Pinotti, "What Is It Like to Be a Hawk?: Inter-Specific Empathy in the Age of Immersive Virtual Environments," in Y. Hadjinicolaou, ed., *Image Practices and Falconry* (Berlin-Boston: De Gruyter, 2020): 31-47. See also: R. Grusin, *The Nonhuman Turn* (Minneapolis: University of Minnesota Press, 2015).
48 P. Bédard, "Adventures beyond Anthropocentrism in Virtual Reality Art:" 96.
49 G. Bollmer, "Empathy Machines:" 63-76.

or ignore the experience of another, but rather is open to it, even though compassion can never fully grasp it.[50]

## Conclusion: Do Not Expect Too Much from the End of the World

"The end of the world has already occurred," states Timothy Morton in the first chapter of his reflection on hyperobjects and global warming: "We can be uncannily precise about the date on which the world ended. Convenience is not readily associated with historiography, nor indeed with geological time. But in this case, it is uncannily clear."[51] The provocation roots into environmental activism struggling to make people aware of the issue, the denial of global warming as perceived as something distant, and the incapability to perceive the hyperobjective essence of it in an immediate glance. Indeed, the struggle laying in the conflict among the terms corroborates the fact that we should perceive a hyperobject just through its material effects on our everyday life: this idea is not far from the objectification of global warming into the allegorical comet running towards the Earth as depicted in feature film *Don't Look Up.*[52]

The empathetic response following any immersive experiences concerning global warming could not be anything but limited to local and interobjective manifestation of the hyperobject. Indeed, this assumption may be perceived as provocative: however, considering the urgent issues concerning global warming and disastrous effects on ecosystems, I strongly believe that we as part of human community should reckon on the effectiveness of our actions and awareness towards the problem. Indeed, we should rethink about how we can employ virtual reality technology to foster an effective ecological awareness,[53] not only from

50 Ibid.: 72.
51 T. Morton, *Hyperobjects:* 7.
52 B. Goldfarb, "How Do You Make a Movie about a Hyperobject?," *High Country News* (December 31, 2021), https://www.hcn.org/issues/54.2/climate-change-how-do-you-make-a-movie-about-a-hyperobject, accessed December 14, 2023.
53 T. Morton, *The Ecological Thought*.

the perspective of the content, but also from the ecological impact of VR front.[54] We are overwhelmed by data concerning the evolution of global warming in a short and long period: we need to put into dialogue experiments conducted in laboratories and immersive experiences accessible to anyone, leaving empathy-related concerns behind. Even if the problem of empathy affects fully impactful and attitude-changing in viewers, I strongly support the idea that we should start from this limitation to better identify specific immersive storytelling which need to be designed for a truthful experience of global warming. Even though the essence of the hyperobject remains inaccessible, still we can use virtual reality to design immersive experiences – while keeping in mind the limits of representation and empathetic response intrinsic to global warming.

54 The CEPIR Project determines the ecological impact of VR: “Cas d'Étude Pour un Immersif Responsible,” CEPIR, https://www.cepir.info.

# Imagining Sustainable Futures: The Transformative Potential of Green Immersive Virtual Reality Experiences

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Abstract

This essay examines the transformative impact of Green Immersive Virtual Reality (IVR) experiences designed by artists to spread environmental literacy and societal change. Through methodologies like Critical Discourse Analysis (CDA) and Lars Elleström's framework, it analyzes the immersive artwork *Of Hybrids and Strings* (2021) by Lauren Moffatt to investigate if and how Green IVR challenges existing structures of thought while fostering alternative modes of being. By immersing users in multisensory virtual environments and incorporating intermedial connections with tangible artifacts, experiences prompt participants to reimagine their relationship with the natural world and envision more sustainable futures. Ultimately, the study highlights Green IVR as one of the catalysts for environmental literacy and societal change, emphasizing its role in shaping collective imagination and inspiring meaningful engagement with ecological issues.

Keywords Immersive experience Virtual reality Green media Interactive media Environmental literacy

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## Introduction

The Intergovernmental Panel on Climate Change (IPCC, 2021) – the United Nations' body for the assessment of knowledge and science related to climate change – warned that we must make rapid, extensive, and unprecedented changes in all aspects of our society to limit global warning to 1.5°C. The extent and the success of adaptation strategies will of course vary deeply across regions and will strongly be influenced by levels of governance, wealth, technology, and infrastructures available. Accordingly, there will be disparities in how human health will be influenced by the health of our planet. As a matter of fact, societies that benefit the most from climate change-causing activities are not the ones that are suffering from their consequences the most. To avoid the exacerbation of these inequalities, it is necessary to understand on a collective level that we are all connected. It is undeniable that – as argued by Naomi Klein – no single career or lifestyle choice would suffice to slow down the effect of climate change and that we can do it only as part of massive local and global multi-issue, multi-generational and multi-identity movements.[1] Nonetheless, individuals must understand the potential to address and influence the environmental crisis. This means that people must be environmentally literate.

Doing and promoting environmental literacy is an arduous task. First, many factors causing climate change are invisible like, for instance, greenhouse gases. This implies that it is more difficult for people to understand the damaging aspect of their behaviour on the environment. Secondly, much of the environmental degradation takes place in areas that are far away, causing a psychological disconnect which leads to the unawareness of the severity of environmental issues.[2] This is also connected

1 N. Klein, *On Fire. The (burning) case for a Green New Deal* (New York: Simon & Schuster, 2019).
2 Y. Trope, N. Liberman, "Construal-Level Theory of Psychological Distance," *Psychological Review* 117, no. 2 (2010): 440-463, https://doi.org/10.1037/a0018963.

to the third problematic aspect of doing environmental education, that is the relevance of experiencing nature first-hand. This is fundamental to establish a sense of connectedness, crucial to develop environmentally friendly behaviours.[3]

Over the last decades, digital technologies have provided a growing accessibility to information, knowledge, and experience. A key feature of digital technology is its multimediality – which is the ability of including texts, images, animations, sounds and haptic feedback to create engaging and interactive experiences.[4] Through multimediality, digital technology enables the users to visualize things that would be otherwise be invisible. Therefore, it has been shown that digital technologies make it possible to engage with the environmental issues in more specific and engaging ways[5] and allow people to visit places that are inaccessible, not easy to reach, do not exist anymore or even have never existed.[6] For these and other reasons, contemporary media are increasingly used to persuade people to adopt more sustainable lifestyles. Such objects have recently earned the attention of scholars, that started to name them Green Media.[7] In this paper, an example of Green Media will be analysed. More specifically, I will focus on a piece of Green Immersive

3 C.M. Bruni, R.C. Chance, P.W. Schultz, J.M. Nolan, "Natural Connections: Bees Sting and Snakes Bite, but They Are Still Nature," *Environment and Behavior* 44, no. 2 (2012): 197-215, https://doi.org/10.1177/0013916511402062.

4 C. Kattenbelt, "Intermediality in Theatre and Performance: Definitions, Perceptions and Medial Relationships," *Culture, Language and Representation* 6 (2008): 19-29.

5 S.J. Ahn *et al.*, "Experiencing Nature: Embodying Animals in Immersive Virtual Environments Increases Inclusion of Nature in Self and Involvement with Nature," *Journal of Computer-Mediated Communication* 21*, no.* 6 (2016): 399-419, https://doi.org/10.1111/jcc4.12173; G. Fauville, *Digital Technologies as Support for Learning About the Marine Environment: Steps Toward Ocean Literacy*. Doctoral thesis. Sweden: University of Gothenburg, 2017; G. Fauville *et al*., "The Carbon Footprint as A Mediating Tool in Students' Online Reasoning About Climate Change," in O. Erstad *et al*., eds., *Learning Across Contexts in the Knowledge Society* (Rotterdam: Sense Publishers, 2016): 39-60, https://doi.org/10.1007/978-94-6300-414-5_10.

6 A.R. Jacobson, R. Militello, P.C. Baveye, "Development of Computer-Assisted Virtual Field Trips to Support Multidisciplinary Learning," *Computers and Education* 52, no. 3 (2009): 571-580, https://doi.org/10.1016/j.compedu.2008.11.007; W. Tarng *et al*., "The Development of a Virtual Marine Museum for Educational Applications," *Journal of Educational Technology Systems* 37, no. 1 (2008): 39-59, https://doi.org/10.2190/ET.37.1.d; W. Tarng *et al.*, "An Instructional Design Using the Virtual Ecological Pond for Science Education in Elementary Schools," *Journal of Educational Technology Systems* 38, no. 4 (2010): 385-406, https://doi.org/10.2190/ET.38.4.b.

7 https://greenmedia.sites.uu.nl/

Virtual Reality (Green IVR). Research demonstrated that experiences in IVR can produce a change in attitude and in behaviour in users.[8] Specifically, in the context of this research, Green IVR are thought of as instruments that work on the imagination of users. As supported by Roy Bendor, contemporary forms of media have the potential to influence social imaginaries, which are the modalities people imagine their social existence, how they fit together with others, how things go on between them and their fellows, the expectations that are normally met, and the deeper normative notions and images that underlie such expectations.[9] Such values, as stated by Charles Taylor, are currently in a complete crisis, as what we are witnessing is not exclusively related to climate, but has to do with crises of our economic, social, and political imaginaries.[10] This paper supports the idea that Green IVR provides users with tangible visions and experiences of speculative scenarios that build on our imagination for the future to come.

In the following paragraphs, I will firstly introduce the main features of Green IVR with the aim to show its potential transformational role. Since imagination cannot be considered as a fixed concept but is always shifting throughout the history of human thought – probably also according to major changes in technological tools available – the current configuration of imagination will be introduced. Posthuman imagination is the conceptual frame through which the case study is analysed and interpreted. In the third section, I will introduce the methodology employed to analyse the case study - that is a combination of Critical Discourse Analysis as theorised by Norman Fairclough and Lars Elleström framework for the analysis of intermedial relations, which will be used to analyse the case study in part four.

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8 G. Fauville, A. C. Muller Queiroz, J. N. Bailenson, "Virtual Reality as a Promising Tool to Promote Climate Change Awareness," in J.K., Hayeon Song, ed., *Technology and Health* (Cambridge: Academic Press, 2020): 91-108, https://doi.org/10.1016/B978-0-12-816958-2.00005-8.

9 R. Bendor, *Interactive Media for Sustainability* (Leicester: Palgrave Macmillan, 2018).

10 C. Taylor, *Modern Social Imaginaries* (Durham: Duke University Press, 2004).

Using a head-mounted display, hand controllers, stereoscopic sound and haptic feedback, Immersive Virtual Reality (IVR) provides a first-person experience in a three-dimensional virtual environment augmented with multisensory feedback. IVR enables users to perceive with multiple senses as if they were in the real world. IVR is characterised by three specific features – dissected and taken into analysis for a long time – that are psychological presence, immersivity, and embodiment. As easily inferable, they are complementary, and their combination generates the possibility of empathy and perspective taking, which are two other key factors of immersive experiences For what concerns psychological presence, it is described as the very sense of being there.[11] By means of the invocation of the sense of presence, IVR supports intensive feelings that make a user think, feel, and behave as if they are really living the experience in the place represented by the computer-generated virtual space.[12] This is strictly imbricated with the second key feature of IVR, that is immersivity. In 1998, researchers Witmer and Singer defined immersion as a psychological state of perception of oneself as enveloped by, included in, and interacting with an environment that provides a continuous stream of stimuli and experiences.[13] For instance, highly immersive IVR tracks bodies' movements and renders them so precisely that the users feel like their arms and legs are easily moving in the virtual world, enacting in this way a

11 C. Heeter, "Being There: The Subjective Experience of Presence," *Presence: Teleoperators and Virtual Environments* 1 (1992): 262-271, https://doi.org/10.1162/pres.1992.1.2.262; M. Slater, S. Wilbur, "A Framework for Immersive Virtual Environments (FIVE): Speculations on the Role of Presence in Virtual Environments," *Presence* 6*, no.* 6 (1997): 603-616, https://doi.org/10.1162/pres.1997.6.6.603.

12 A. Felnhofer *et al.*, "Is Virtual Reality Emotionally Arousing? Investigating Five Emotion Inducing Virtual Park Scenarios," *International Journal of Human-Computer Studies* 82 (2015): 48-56, https://doi.org/10.1016/j.ijhcs.2015.05.004

13 B.G. Witmer, M. J. Singer, "Measuring Presence in Virtual Environments: A Presence Questionnaire," *Presence* 7, no. 3 (1998): 225-240, 227, https://dx.doi.org/10.1162/105474698565686.

stronger sense of presence.[14] This connects to embodied cognition, the third feature of IVR. In IVR, users interact, communicate, and learn through movements, gestures, and physical activities.[15] Research supports that designing learning activities that encourage actions stimulate the formation of memories, prepare users for future education, and help people connect visible and invisible phenomena.[16] As mentioned above, these three characteristics work together and generate another relevant aspect of IVR, that is the possibility of empathy and perspective taking. This refers to the ability of taking the perspective of another entity, so that the possibility of becoming someone of a different gender, ethnicity, age, or species is immediate in IVR, and it has proven to support positive prosocial behaviours such as the activation of a helping behaviour,[17] decreasing the racial bias,[18] and decreasing the ageist bias.[19] A recent analysis revealed that presence and immersion are related:[20] when users feel part of the virtual world, the technology enables the replication of their movements well enough, so that they can embody a range of characters. The combination of all affordances of IVR has the potential to create impactful experiences.

In this paper, the investigation is looking at the transformational role of forms of IVR as used to educate people as regards the climate crisis, an object of research I refer to with the term Green IVR. This draws inspiration from Joost Raessens and Stefan Werning's work on

14 W. Wirth *et al*., "A Process Model of The Formation of Spatial Presence Experiences," *Media Psychology* 9 (2007): 493-525, https://doi.org/10.1080/15213260701283079.
15 M. Wilson, "Six Views on Embodied Cognition," *Psychonomic Bulletin & Review* 9 (2002): 625-636.
16 R. Lindgren, M. Johnson-Glenberg, "Emboldened by Embodiment: Six Precepts for Research on Embodied Learning and Mixed reality," *Educational Researcher* 42 (2013): 445-452, https://doi.org/10.3102/0013189X13511661
17 S.J. Ahn, A.M.T. Le, J.N. Bailenson, "The Effect of Embodied Experiences on Self-Other Merging, Attitude, and Helping Behavior," *Media Psychology*16 (2013): 7-38, https://doi.org/10.1080/15213269.2012.755877.
18 B.S. Hasler, B. Spanlang, M. Slater, "Virtual Race Transformation Reverses Racial Ingroup Bias," *PLoS One* 12, no. 4 (2017): 1-20, https://doi.org/10.1371/journal.pone.0174965.
19 S.Y.Oh, J.N. Bailenson, E. Weisz, J. Zaki, "Virtually Old: Embodied Perspective Taking and the Reduction of Ageism Under Threat," *Computers in Human Behavior* 60 (2016): 398-410, https://doi.org/10.1016/j.chb.2016.02.007
20 J.J. Cummings, J.N. Bailenson, "How Immersive Is Enough? A Meta-Analysis of the Effect of Immersive Technology on User Presence," *Media Psychology* 19 (2016): 272-309, https://doi.org/10.1080/15213269.2015.1015740.

Green Media, which are described as persuasive media productions that aim at raising awareness and changing attitudes towards the ecological crisis. Green Media Studies – a research group created by the two media theorists – attempts to contribute to the understanding of the interconnectedness of media representations, media use, media impact, and media technologies addressing the climate crisis and imagining sustainable futures. Among other things, they investigate the way Green Media impact ecological identities and forms of civic engagement on an individual and collective level, and they do so by analysing the representation of environmental issues like narratives and imaginaries in media of all kinds from a media-comparative perspective.[21] Therefore, the object of this research concerns Immersive Virtual Experiences that make use of a head-mounted display, hand controllers, stereoscopic sound, and haptic feedback, enabling a multimedial first-person experience in a three-dimensional virtual environment which is augmented with a collection of multisensorial stimuli. The adjective Green specifies content and aim of these specific types of Virtual Reality, which are created to boost the degree of environmental literacy of users.

## The Configuration of 21st Century's Posthuman Imagination

Imagination is not a fixed concept. Hundreds of philosophers, thinkers, intellectuals, but also artists and creatives have been pondering about the notion of imagination and have produced a lot of different definitions and ways of employment of this word.[22] Basing her research on the awareness that imagination is not a fixed category and that is probably deeply influenced by the technical means available in a given moment of history, philosopher

21 As one can read on their website's homepage https://greenmedia.sites.uu.nl/.
22 For an understanding of the evolution of the concept of imagination, one can read, among others, F. Cavaletti, "Immaginazione," in A. Pinotti, ed., *Il primo libro di estetica* (Turin: Einaudi, 2022): 134-145; M. Ferraris, *L'Immaginazione*, (Bologna: Il Mulino, 1996); G. Currie, I. Ravenscroft, *Recreative Minds* (Oxford: Oxford University Press, 2002).

of technology and media scholar Galit Wellner has firstly introduced posthuman imagination in the paper "Posthuman Imagination: From Modernity to Augmented Reality" (2018), a work that enquiries digital technologies with the theoretical tools of philosophy of technology, especially post-phenomenology. She describes posthuman imagination as the contemporary development of imagination, and grounds it on Don Ihde's evolution of multistability theory[23] and post-humanist notion of the cognitive unconscious as theorised by Katherine Hayles.[24] In my understanding of the concept, I add to the discourse Donna Haraway's signifier SF[25], as it enables the recognition of imagination as a faculty shared by humans, machines, and other species. In this paper, I will not go into detail with the theories developed by Hayles, Ihde and Haraway, as it suffices to state that the kind of imagination that Green IVR is presumably training can be described as it follows:

Taking as an assumption the fact that imagination shapes our worldview, posthuman imagination is a speculative form of imaginative activity devised to question or criticize our vision of and behaviour toward the world, other species, and ourselves by adding layers to reality. This type of imagination is posthuman because it is co-shaped, mediated and exercised also by digital technology, which is then inextricably involved in the processes of modification of our worldview.

23 D. Ihde, *Experimental Phenomenology: An Introduction* (Albany: SUNY Press, 1986); D. Ihde, *Postphenomenology and the Technoscience. The Peking University Lectures.* (New York: State University of New York Press, 2009).

24 K. Hayles, "Cognition Everywhere: The Rise of the Cognitive Nonconscious and the Costs of Consciousness," *New Literary History* 45, no. 2 (2014): 199-220, https://www.jstor.org/stable/24542553.

25 D.J. Haraway, *Staying with the Trouble: Making Kin in the Chthulucene* (Durham: Duke University Press, 2016). SF stands for, among others, Speculative Fabulation. Speculative Fabulation is a "mode of attention, a theory of history and a practice of worlding" (213) and is a type of narration that enables the unfolding of alternative realities by arousing a genuine curiosity for what is possible. Unlike Science Fiction, Speculative Fabulation requires a type of imagination that is grounded on what is already there. Differing from the excitement of the creation of a totally new world with no reference to the actual, Speculative Fabulation is about enlarging the spectrum of what is possible through new narrations. Haraway exemplifies the methodology of SF by proposing the practice of multispecies storytelling. This practice allows the emergence of knowledge in the meeting with other species, so that all elements taking part to the relational act are at the same time both subjects and objects of environmental justice.

This definition originates from the assumption that imagination has an impact and modifies our gaze on the world. Before doing anything, human beings project their creations and ideas into their head by making use of imagination. Supposing that all men have the capability to imagine, the question is about what elements influence their ability to imagine certain things at a certain moment. For example, why are not contemporary architects erecting monuments and buildings in the vein of Renaissance's architects? One could argue that the differences in their imaginative skills might be attributed to the available means, that can be assumed to be technologic. For example, erecting a building today requires a series of actions enabled by technical objects: the range of operations [...] of possibilities architects can potentially choose from in order to build their own creation. Erecting monuments and building in the vein of Renaissance's style nowadays would entail the combination of designs and operations that are not "implied" by the current set of technologies at our disposal, resulting in the further research and study of techniques and materials apt to reconstruct the way Renaissance architects would do. Therefore, it is possible to affirm that technology influences our imagination. As highlighted by Wellner, the layered interconnection between technology and reality alters our worldview – and the way we look at it –, "imagination included".[26] Accordingly, different technologies mediate our worldview, so that different technologies mediate different worldviews. For this reason, shifts and evolutions in available technologies generate alterations in worldviews, just as much as in imagination, which varies according to evolutions in technology.

Looking at the current set of available technologies is fundamental to understand why our imagination is posthuman. The first reason is related to the position given to the humans within the (media) environment. If

26 G. Wellner, "Posthuman Imagination: From Modernity to Augmented Reality," *Journal of Posthuman Studies* 2, no.1 (2018): 45-66, 46, https://doi.org/10.5325/jpoststud.2.1.0045.

modern imagination – which dates back to the 20th century – puts the human behind the camera giving us the role to choose a point of view on reality –, posthuman imagination is situated in environments drenched in digital technologies operating at rhythms incomprehensible to humans,[27] making the human one among the several elements inhabiting real and digital spaces. Another aspect that makes the current configuration of imagination posthuman is associated to the experiences enabled by technologies and media. For example, artefacts like digital interactive media such as Virtual Reality enable users to experience the world embodying any kind of entity through the use of computer-generated environments and wearable devices. This is to say that technologies make the possibility of being in someone (or in something else)'s shoes tangible, making space for interpretations of reality from non-human perspectives. Human users in immersive virtual reality experiences can break out of their specific position in the world and gain information from (simulated) circumstances that differ from their everyday life. This happens thanks to the mediation of technologies, which are confirmed to be unavoidably entangled in the act of interpretation of any given input – may it be visual, kinaesthetic, or sonic. Posthuman imagination seems to have the potential to question and criticise our vision of and behaviour towards the world, other species, and ourselves by enabling a systematic manipulation of the real through a reasoned layering of elements put on top of the real, as supported by Galit Wellner.[28] She visualises posthuman imagination as an extensive application of Augmented Reality: the digital overlaps and mixes with the plane of existence of the real, organising into different layers, which do not support any hierarchy, can carry real and imaginary information indiscriminately and can influence reality as much as they can just add an aesthetic

27 M. Hansen, *Feed Forward: On the Future of Twenty-First Century Media* (University of Chicago Press, 2015): X.
28 G. Wellner, "Posthuman Imagination:" 49.

value to it.[29] Also through a spontaneous and disorganised way of distributing knowledge and information, posthuman imagination can nurture our critical conscience and yearns for our position in the world to change, as it enables the coexistence of elements from different sources without imposing any kind of order, forcing us to be in the middle of the "disorder" and the overlap of several elements. Therefore, the posthuman here emerges because such layers are created by combinations of both human and nonhuman elements, in a networked system that co-shapes and participates in the activity of imagination.

Posthuman imagination is the concept through which the case study is framed and interpreted: the Green IVR experience analysed in the last section is considered as a tool to train our ability to imagine posthuman relationalities. Considering the stratified layers of signifiers and meanings as introduced by the posthuman account, I am introducing a methodology of analysis that examines various levels of meaning-making.

## Methodology: Critical Discourse Analysis

Similar to other kinds of media, Green IVR emerges in a precise social and historical context, meaning that it relates to a specific configuration of meanings. Therefore, here it will be put into use a methodology that can look at the material and media specificities of the case studies while putting them into relation with the contexts they originated from. To take into analysis Green IVR as a material media object and, more broadly, as a cultural object, I use Norman Fairclough's approach to Critical Discourse Analysis. In his work, Fairclough proposed a methodology that enables the analysis of the relation between language and meaning, with a focus on the power relations inherent to all acts of communication and knowledge production. A Critical Discourse Analysis (CDA) approach "wants to [put into contact] systematically

29 G. Wellner, "Posthuman Imagination:" 47.

often opaque relationships of causality and determination between (a) discursive practices, events, and texts, and (b) wider social and cultural structures, relations, and processes" to explore how these practices, events, and texts result from relations of power and struggles over it. [30] CDA, then, does not consider discourses of any kind in isolation from the context they are generated, since they inform and are informed by wider processes within society. CDA requires an onion-like structure which takes into analysis all layers of meaning – going from the textual to the way it is perceived on a social level.

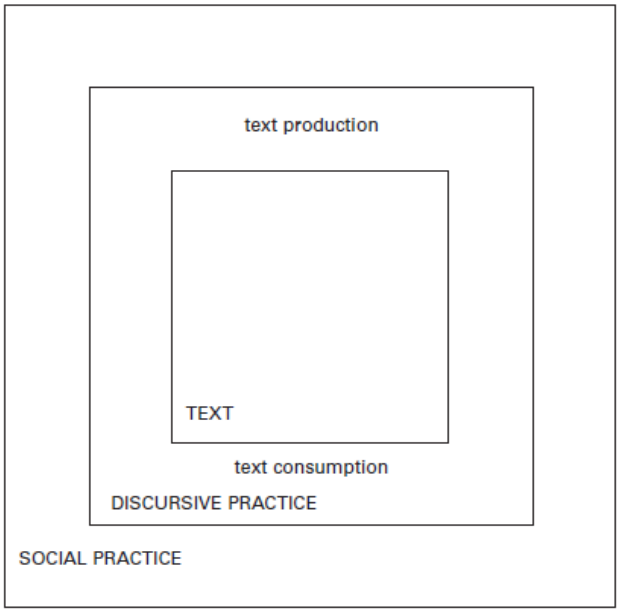


Fig. 1. Norman Fairclough's model for a Critical Discourse Analysis (CDA).

The first level of analysis in Fairclough's CDA is constituted by a written or spoken text, which is later contextualised into discursive practices and social practices. The analysis of the discursive practices is based on the analysis of opinions, interviews, reviews and, more generally, on what has been said or written on the case study. This is functional to scrutinize into the social practices, which is the wider social context within which the object is framed. For example, in the case of a movie, the discursive practice will read into declarations of the directors, of the reviewers and of the general public, if possible. The social practice's analysis would take into

30 N. Fairclough, *Critical Discourse Analysis* (London: Longman, 1995): 132.

consideration other movies released in the same period, or movies of the same genre. These three steps – especially the second and the third – need to be made with a critical inquiry focused on the power relations, the dynamics of production and the implicit political discourses.

Since my object of analysis does not consist of a written or a spoken text, I will implement CDA with the theoretical frame by Lars Elleström. He proposed a very detail-oriented analytical tool that allows to look at media and art production both from a pre-semiotic and a semiotic point of view. Departing from the reinterpretation of intermediality – which is considered as the primary feature of all media objects necessary to be perceivable rather than a relation between different media objects, Elleström starts off with the awareness that all media are material interfaces situated in social, historical, communicative, and aesthetic circumstances that are originated as the complex blend of the material, the perceptual, and the social contexts where communication takes place. For this reason, his method looks at media production from several perspectives, while working towards a general depiction that considers all its aspects.[31] His framework of analysis departs from the definition of the basic categories of which a media object is composed, which are called media modalities. Media modalities are four and consist of the most visible and tangible characteristics of the media object, which go from the material it is built with, to the semiotic signs it carries. Since a media object without media modalities cannot be perceived, media are necessarily realised in the form of all four modalities, implying all media products can be analysed in terms of four kinds of basic traits. The first three are pre-semiotic and refer to the material aspects of the media objects: they are the material modality, the sensorial modality, and the spatiotemporal modality; the fourth modality is semiotic

31 L. Elleström, *Media Borders, Multimodality and Intermediality* (London: Palgrave Macmilian UK, 2010); L. Elleström, "Identifying, Construing, and Bridging over Media Borders," *Scripta Uniandrade* 16, no. 3 (2018): 15-30, https://doi.org/10.18305/scripta%20uniandra.v16i3.1162

and concerns signifiers and their related meaning generated in the social context.

Before moving to the analysis of the case study, it follows a short description of media modalities that will be useful to understand the table in the next page. The material modality concerns the corporeal interface of media, in the sense that they can be, for instance, solid or non-solid, organic, or inorganic. For instance, the material modality of a book is paper, or ink. The spatiotemporal modality considers the spatiotemporal traits, which means that media products have at least one spatial or temporal extension, consisting of modes like temporality, stasis, and spatiality. For instance, temporality is an aspect of songs, gestures, and dance. Instead, a photograph has two dimensions, that are width and height, while a sculpture has three different spatial dimensions (width, height, and depth). A mobile sculpture has all four dimensions – that are width, height, depth, and time. As "all media products […] are necessarily perceived in time and space before they create cognitive import,"[32] all media have at least one spatiotemporal aspect. The sensorial modality concerns sensorial media modes. All media products have sensorial properties, in the sense that their materiality – existing in time and space – must be perceived by one or more of our senses in order to reach semiosis, that is the process of meaning making that occurs in the human mind. The five senses correspond to the five main modes of sensorial modality: seeing, hearing, feeling, tasting, and smelling. The visible is a mode of films, websites, images, signboards, tattoos. The audible is the mode of instrumental music, spoken word, movies, radio. The surface of a gift can communicate something, as much as the smell of a flower. For what concerns the semiotic modality, the main media traits are iconicity, indexicality, and symbolicity. Icons represent their object based on similarity;

32 L. Elleström, *Media Borders, Multimodality and Intermediality* (London: Palgrave Macmilian UK, 2010): 48.

indexes do so based on contiguity; and symbols rely on habits or conventions.

The combination of the Cultural Discourse Analysis framework of investigation and the analysis of media modalities approaches the case study with a complete set of lenses through which it is possible to inspect into the media object's material and semiotic features while establishing a connection with the context it appeared in and it speaks to.

## *Of Hybrids and Strings*: The Transformational Role of Green IVR Analysed

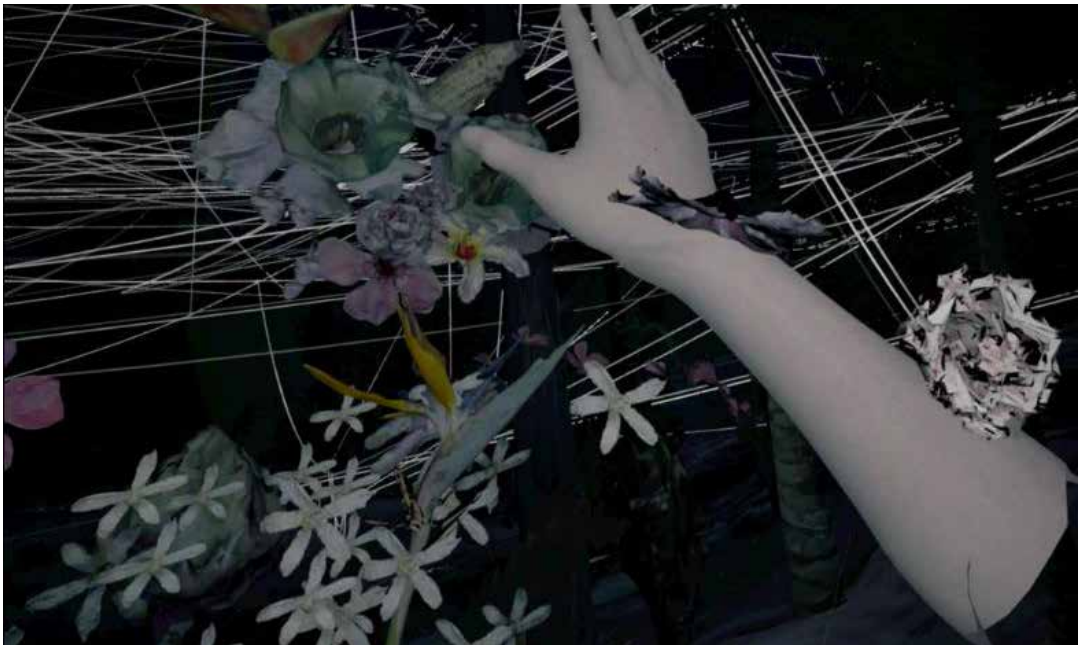

Fig. 2. Screenshot from the experience by Lauren Moffat, Of Hybrids and Strings (2021)

As you step into *Of Hybrids and Strings* (2021) – an immersive virtual reality experience designed and directed by artist Lauren Moffatt – you enter a forest bathed in moonlight, a vibrant pastel-coloured forest. You are surrounded by swishy branches, leafy bushes, floating flowers, animals, and the roar of the cicadas. After some seconds, you realise that you have your own avatar into the virtual world and start using your hands to interact with all species. All creatures – comprising you – are connected to each other by thin white strings, which weave together throughout the forest. While interacting with the forest, your avatar starts to slow down, and you start

slowing down your rhythm of exploration likewise. After nine minutes of various encounters with creatures of all kinds – including a flower hybrid avatar, whose movements mirror yours – the forest starts turning into a quiet crystal world and all living creatures melt together in irregular solid shapes. In the end, you sink into the darkness and find yourself at the start of the experience again.

*Text Analysis: Media Modalities*

| **Media Modalities** | ***Of Hybrids and Strings*** |
|---|---|
| Material | VR headset or procedural cinema.<br>360° immersive world, with 3D objects, nature sounds, background music; bidimensional print book covers in exhibitions. |
| Spatial and Temporal | The space is freely explorable but there are fixed meetings with various entities. Semi-fixed sequentiality. |
| Sensorial | Sight, touch, hearing, haptic stimulation. |
| Semiotic | Iconicity: single elements are reproduced with photogrammetry and digital painting. |

The original design for the exhibition of this piece provides a VR headset and controllers which allow the visitor to interact with the environment. An alternative version has been developed in parallel which works as a piece of procedural cinema. The descriptions above and below are based on the immersive experience enabled by the Twitch livestream[33] by Fabbula, a curatorial team working with cultural practices around the idea of "worlding with" (that is, to create worlds by use of) digital media. In fact, *Of Hybrids and Strings* has been commissioned

33 Fabbula, #8.2 Worlding with Lauren Moffatt – *Of Hybrids and strings*. https://fabbula.com/artists/of-hybrids-and-strings-by-lauren-moffatt/

by Fabbula, in their curatorial programme Worlding with the trouble.

The spectator is immersed into a 360° virtual world, which is inhabited by 3D flowers, animals, and all kinds of plants. Plus, there are nature sounds and background music. I experienced the piece on my flat screen in a desktop-based version of the Green IVR, but the original engages the spectator into a fully immersive experience. The human spectator is positioned into the forest as one of the many entities populating the woods. The high degree of immersivity into the 3D generated world is built by several elements, which contribute to the peculiar atmosphere of this experience. Among these, non-human entities slowly roam around, while the soundscape remind of the sounds one would hear when in a forest by night. It requires, then, a multisensory approach: sight, hearing, and touch are included in this piece. Moreover, as soon as your avatar slows down, the sense of embodiment grows, and your real body is affected by the deceleration of the whole environment. Therefore, it makes sense to say that also the haptic perception is stimulated here. Since the experience is structured on the exploration of the scenery, there is a semi-fixed sequentiality in terms of the internal narration, which is regulated by fixed encounters that allow the experience to proceed. From a semiotic perspective, objects in the experience are constructed on the base of similarity. The general meaning produced by the intersection of these media modalities is an intense feeling of entanglement with the surrounding environment, so much that the spectator gets influenced by the slowness of the scene and the deep connection of all species in the experience.

It is fundamental to add that – when physically exhibited – this art piece has an extra component, that is a series of painted book covers attributed to a fictitious author named Suzann B. Clair. This means that *Of Hybrids and Strings* is a multimedia experience that includes two-dimensional paintings reproducing the same objects that the users find into the virtual experience. Between

the virtual world and the material book-covers there is a relation of intermediality in a narrow sense, meaning that they are media with different media modalities. In fact, the book covers are bidimensional, flat objects without any spatiotemporal coordinates which express their meaning through drawings and sketches. However, the relation of similarity between the drawings on the book covers and the flowers into the experience create a sense of continuity between the inside and the outside, the tangible, and the imaginary. As said by the artist in the Twitch streaming held by Fabbula, the main technique used to create the virtual world is photogrammetry, which is based on the following steps. First, Moffatt takes – or collects from friends living in distant areas – hundreds of pictures of any kind of natural species. For each flower or plant, she meshes the photographic materials into 3D renderings of it. After this, she paints on the 3D object and combines her handcraft with the computer-generated three-dimensional design. When she reaches the desired result, she turns it into a version suitable for Immersive Virtual Reality. I will discuss this technique in the next paragraph, as it is fundamental to understand the role artistic creation has played in the making of this specific case of Green IVR.

*Discursive Practice Analysis*

As already mentioned, *Of Hybrids and Strings* has been commissioned and financed by Fabbula, a curatorial practice and journal focused on digital media and immersive technologies with the aim of "worlding" with game engines, XR, metaverse and livestreams.[34] Produced between Australia, France, and Spain, it premiered at SXSW 2021, a film festival dedicated to virtual cinema in Austin, Texas that was entirely online but not for free. In this discursive practice analysis, I am considering what the artist said in the video exploration of the Green IVR as streamed on Twitch by Fabbula, descriptions of the artwork as presented in the Fabbula's website by the curator

34 Fabbula, https://fabbula.com/about-us/.

and an interview of the artist released on the Fabbula's website. I could not find reviews of articles written online on the artwork. The absence of reviews of IVR experiences might be investigated in further research. *Of Hybrids and Strings* was presented by the artist as a trans-species experience in which the spectator slows down and becomes entangled with human and non-human intelligences. It is displayed as a virtual space to practice new ways of being-in-the-world and to acquire new modalities of action. In the interview, the artist declared that *Of Hybrids and Strings* is a real scale VR environment that does not reproduce a world, but *makes* a world, a world originated from the will to create something where the human spectator is affected by the environment, so that by the end of the experience you are modified by the surroundings. The pivotal idea for Moffatt was to reinterpret interactivity. If usually an IVR is interactive in the sense that it lets the users modify the virtual world, in this case the IVR is interactive because the virtual environment interacts and is meant to modify the spectator. This aims to change the way the spectator is positioned within the virtual experience: the need for the user to keep a correspondence of movement between the avatar s/he is embodying and his/her body – something that is needed in order not to incur into a dissociation between how the body is seen and how it is felt – makes it sure that the transformation of the user's rhythm of movement actually takes place. The original research question of her creative process was about the possibility of engaging with a medium that is currently mostly used for video games in the entertainment industry. In fact, she wondered how immersive technologies – an expression of all the acceleration of big tech and consumer electronic culture – can be exploited as "an engine for slowness and gentleness." She observed that VR is often seen as a tool to generate escapism and for "the expression of violent desires forbidden in civil life," responding to the same "hopelessness, cynicism, and blind anxiety" that makes us feel completely frustrated by the crisis menacing life on Earth. In opposition to the creation

of worlds where the cruellest instincts of human beings can find an outlet with violent gaming engines, Moffatt conceived a slow cosmos of peaceful exploration. Moffat added that she considers the whole experience as a path going from a point A to a point B, where point A consists of an environment that really looks like a realistic place, while point B corresponds to the end of the experience, where all creatures – including the spectator – melt with the environment, in a process of decreasing rhythm and broader interactions. Lauren declared that the choice to make the virtual world so slow that "it is difficult for the spectator to move without being calmer" was made to work with the idea of deceleration. "Deceleration is functional to take moments to think about the environment that we cross everyday, so that the human users can realise about the deep entanglement of all beings with human and non-human entities." In open contrast with the Accelerationist movement, Moffat maintained that the only way to find new ways of living faced with the climate crisis is to freeze ourselves in the moment where we are now so to imagine our future. Therefore, she used deceleration as an instrument to pay homage to "the invisible forces of the world" and to give herself space to create beyond what we are used to because of the game engines. Put in this way, the medium becomes more than just a game engine and is used to create narratives that engage with "mind and body in a simultaneous rhythm" in a process of mediation. Moffatt said that immersive digital artistic creation "allows [her] to create dreams for the audience to experience wide awake." [35] Moreover, on the Fabbula website, the curator wrote that the project creates an absence, a void of meaning as a strategy to stimulate the imaginary potential lying inside the human spectator. Such hidden imaginative potential lies below "the physiological and psychological defences" that slowly taught us how to survive only by avoiding collective systemic problems and

35 Fabbula, "#8.2 Worlding with Lauren Moffatt — 'Of Hybrids and Strings'," https://www.twitch.tv/videos/955347028

escaping our potential capability to face them. *Of Hybrids and Strings* proposes a space of "stillness and absence," that the human spectators can infuse with curiosity, inventiveness, and imagination to achieve desirable futures.[36]

As hinted above, the book covers – the analogue component of the whole Green IVR experience – are attributed to Suzanne B. Clair, a fictitious author living in a parallel version of our world. As declared by the artist in the Twitch presentation of her artwork, Suzanne Clair was borrowed from James G. Ballard's book *The Crystal World*,[37] a novel in which she is a secondary character. Suzanne, considered as an eccentric woman belonging to the literary topos of the crazy woman, is instead a prolific author of science fiction. Moffatt reported that she fed on her curiosity to look at the world from the perspective of the secondary character, who, in this way, turns into the main protagonist and author of a whole reality. Moffatt calls attention on the substantial difference between her world and ours. If in our world Suzanne Clair's work has never been published and her existence is tied to just one book written by a white male author, in Clair's parallel reality, speculative fiction written by authors that are not white heterosexual males has been prolifically published throughout the 20th century. Since the 1970s Suzanne B. Clair writes "science fiction projecting desirable outcomes for our kind" by promoting radical association between human and non-human species, "the atonement of the body to its environment and the cultivation of and reverence for human creativity and imagination."[38]

*Social Practice Analysis*

*Of Hybrids and Strings* materializes the theories at the ground of this research. In the first place, this Green IVR uses a language and symbolisms that place it among works produced as an answer to Donna Haraway's

36 Fabbula, "Of Hybrids and Strings by Lauren Moffatt." https://fabbula.com/artists/of-hybrids-and-strings-by-lauren-moffatt/
37 J.G. Ballard, *The Crystal World* (London: Jonathan Cape, 1966).
38 Fabbula, "Of Hybrids and Strings by Lauren Moffatt." https://fabbula.com/artists/of-hybrids-and-strings-by-lauren-moffatt/

call for the need to experiment modes of living and of being that are in close contact with the trouble.[39] Lauren Moffatt openly wanted to work through Speculative Fabulation, one of the many practices that Haraway describes as worlding. Worlding is a particular blending of the material and the semiotic that removes the boundaries between subject and environment, to create the opportunity for the cessation of habitual temporalities and ways of being.[40] Moreover, speculation is a practice in which real elements are used to create new theories and conjectures that have no clear evidence but that can easily be imagined as if they were real. In this sense, this Green IVR experience works with what is already on Earth and creates the space the spectator needs to learn how to establish new connections with entities surrounding us in the real world, while facing the threat of climate crisis. This emerges also in the technique used to create the virtual world. As described above, Lauren Moffatt departs from pictures of flowers, combines them with her digital painting, and achieves the glitched virtual artefact by blending photos and artistic production. In addition, she asserted that she wanted to focus on the fragments rather than "on the whole" so to focus on connections, interactions, and horizontal exchanges among the parts. As a matter of fact, while being outside the virtual world thanks to their material existence, the human user engages in interactions with the virtual creatures and participates to the crystallisation of the forest, that is to say that the human user takes part to the group of digital creatures and contribute to "make something happen." The process of speculative creation is also visible at the level of the collaborative aspect lying behind the accumulation of photographs, which is the result of the effort of multiple people taking photos all over the world. In this sense, the technique used by Moffatt falls into the category of sympoiesis, the activity

39 D. Haraway, *Staying with the Trouble*: Introduction.
40 H. Palmer, V. Hunter. "Worlding," *New Materialism How Matter Comes to Matter*, March 16, 2018. https://newmaterialism.eu/almanac/w/worlding.html

of making-with other people, other species, and alterities of any kind – going from the flower in the rainforest to the devices used to design the VR objects. Seen from this perspective, *Of Hybrids and Strings* is an artistic creation that announces – and performs – new forms of making, so to give space to other human beings to stop for some minutes and reflect on alternative possibilities for the present and the future to come. Seen from this point of view, this case study is a piece where the transformation from a world of clear separations and hierarchies among species is deconstructed on more than one level (interactive, technical, performative). *Of Hybrids and Strings* welcomes the spectators, invites them to enter the virtual world, and to immerse themselves in the slowness of objects interacting: the main aim is to create a safe space for the elucubration of alternative ways of being on planet Earth. Such sense of "welcoming emptiness" is reached with a bodily relation with the technological instrument, that is IVR. In addition to being critical of the current way to enter in relation with nature, Moffatt gives humans the chance to isolate themselves from the rules of contemporary society and discover what is beyond the conventional positioning of humans above all things. Not only does it give the spectator the opportunity to engage with the world in a way that is removed from the ordinary – from the point of view of a "crazy" female author – but it also gives the spectator the effective possibility of experimenting new bonds in the immersive experience. *Of Hybrids and Strings* is an example of Green IVR that succeeds at creating a specific space to experiment and train our posthuman imagination, where the user is invited to criticise their usual position in the world while adding layers of experimentation of alternative worldmaking interactions. In this way, this artwork goes against the hegemonic order of things, and it does so mainly at two different levels. The first is related to the medium, which is employed in a way that goes against the hegemonic use of VR. In contrast to the traditional perception of the medium, Moffatt engaged with it by working in the opposite direction. She

tried to accomplish the creation of an alternative world where the power dynamics at the stemming core of the (re)production of a reality of distrust, competition, and discouragement are deprived from their traditional centrality and are substituted with slowness, calmness, and the emptiness necessary to build the abilities to produce desirable futures. The second one pertains the way the virtual environment encourages the deconstruction and the research for innovative interactions with all kinds of human and non-human intelligences. By using the escamotage of looking at the forest from the point of view of Suzanne B. Clair, she forces the spectators to put themselves in decentralised positions, and to live for some minutes into the shoes of a person that in the real world is just the "crazy woman" relegated to the secondary role in a science fiction novel. It is by entering this parallel world full of entangled entities that the spectator leaves for a moment the reality of individualist society and spends time with virtual entities so to train themselves "to become enfolded in each other's lives," "to need each other in diverse, passionate, corporeal, meaningful way"[41]. Surprisingly, it is by feeling a sense of embodiment, of presence and by taking perspectives different from their own – the three basic features identified by research reported in the first section of this paper – that the human user effectively makes experience of an entangled world and enters the realm of possible transformation in their everyday life.

## Conclusion

This paper reports some of the results of a two-year long research that aimed at understanding the transformational role of Green IVR experiences designed by artists within environmental literacy. Departing from the belief that Immersive Virtual Reality offers unprecedented levels of psychological presence, immersivity and interaction, this research wanted to understand in a speculative

41 D. Haraway, *Staying with the Trouble*: 72.

way what kind of individual or collective transformation Green IVR can ignite in users.

To do so, I proceeded as it follows. In the first part, I offered a view of the features and applications for Immersive Virtual Reality and provided a definition of Green Media. As a second step, I introduced the concept of posthuman imagination, a speculative form of imagining activity aimed at interrogating and challenging our perceptions and behaviours towards the world, other species, and ourselves by augmenting reality through layers of digital mediation. Based on the conviction that imagination cannot be considered as a fixed concept but that is an always shifting notion that might be influenced by technologies available, posthuman imagination is characterized by its co-shaping, mediation, and exercise by digital technologies, which play a central role in modifying our worldview. After this, I proposed an analytical methodology combining Norman Fairclough's Critical Discourse Analysis and Lars Elleström's framework for the analysis of media. With this analytical structure, I took into consideration Lauren Moffatt's Of Hybrid and Strings. Rooted in speculative fabulation and worlding practices, this immersive experience challenges traditional power dynamics and encourages alternative modes of being. By immersing users in multisensory environments that provoke imagination and reflection, this piece of Green IVR offers a space to envision a pathway towards more sustainable futures. Crucially, the peculiar choice to decelerate the virtual world serves as a counterpoint to contemporary agitated lifestyles, fostering contemplation and alternative narratives emerging within the collaboration between species and reverence for the natural world. Through intermedial connections and layered meanings, these experience challenges conventional modes of thought and invite participants to explore new perspectives. Green IVR experiences of this kind represent a convergence of technological innovation, educational imperatives, and artistic expression, offering a tangible and testable manifestation of posthuman imagination. As we confront the complexities of climate change and

ecological degradation, it is crucial that we harness the transformative potential of these immersive technologies to cultivate environmental literacy and inspire collective transformative action towards a more sustainable and equitable future for all species.

# *Cringe-watching*. How EduXperience's Moralizing Does (Not) Advance Social Change

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Abstract

This paper scrutinizes the deployment of immersive media, particularly, virtual reality (VR) in the context of climate change education, focusing on the case study of *EduXperience Biosphere VR* (2021). The analysis challenges the assumption that such technologies inherently promote desired social transformations, arguing that they can also perpetuate colonialist narratives and fail to provoke meaningful action. By examining the visual strategies, sound, scripts and para-texts employed in *Biosphere VR*'s documentaries, the paper shows how these elements can reinforce problematic tropes of the so-called Global South as "the frontier." While VR holds promise for experiential learning (especially with glitches and similar unintentional effects that break down the point of view), specific forms of communication tend to prioritize simplistic moralizing over nuanced albeit critical engagement with complex socio-environmental issues. Drawing on critical theory in visual and spatial studies, the paper calls for further approaches to the representation of climate change, globality, space, communities, places and sites that could better prioritize social justice and models of terrestrial, reciprocal interdependence.

Keywords Educational VR · Empathy machine · Gaze from above · Völkerschau · Ways of seeing

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This paper explores the feeling of *cringe* (the discomfort, awkwardness, second-hand embarrassment), or unease at the appalling disproportion between moral claims and aesthetic results of educational virtual reality on climate change. In the *Introduction*, the paper begins by questioning the transformative potential of virtual reality in addressing complex socio-environmental issues like climate change and introduces the concept of *visual ideology* to seize the medium's political aspiration. In the paragraph *Case Study and Self-Assessment,* the paper presents the case study of *EduXperience Biosphere VR* (2021) to examine the potential pitfalls and limitations of using VR for climate change education, highlighting the supposed-to-be immersive qualities of documentaries filmed in various locations around the world, while discussing *Biosphere VR*'s self-assessment claims, including its effectiveness in promoting collaboration, knowledge transfer and "empathy" among students. Against the backdrop of other educational and institutionally-subsidized projects, the paragraph *Comparative Analysis* examines the narrative devices employed in these projects and how they contribute to shaping perceptions of climate change and the Global South, before raveling into the visual and acoustic aspects of the VR experience in the *section Aesthetic Analysis: Image and Sound*, which examines the *cartographic gaze* of this VR experience as well as the problematic nature of dubbing and its impact on representation. At last, the paper offers, in a dedicated paragraph, theoretical reflections that engage with existing frameworks to discuss the relationship between humans and their environment, for instance, the concept of *terrestrial* that is helpful to reflect on the transformative potential of immersive technologies as they pursuit alternative and often unintentional forms of embodiment, above all, through the frequent glitches, while the paragraph

*Conclusion* calls for a less prosaic and more experimental approach to representing climate change.

## Introduction

*Cringe-watching* examines the *cringe* of immersive tools for climate change education. The choice of a specific case study that is *Biosphere VR* is pivotal, because the work is the result of institutional engagement with the subject-matter and, hence, it can better exemplify the political assumptions of educational VR. The documentaries of *Biosphere VR* are part of an EU-funded innovative teaching initiative, showcased at important climate summits such as COP26 and open-access content on the Google repository on climate change (see section 2). Thus, the case is relevant to determine the educational politics of climactivist virtual reality.

Questioning the role of immersive media in the process of complex social transformation needed to mitigate the climate opens up the terrain of what John Berger long ago called visual ideology or *Ways of Seeing* (1972): far from being an individual act, the way one sees, especially, the way one sees something as exorbitant as the climate reveals a field of forces in which the good intentions are more of a burden than a ballast.

For more than a decade, arts-sciences discourses have been a promising area in which a growing number of practitioners and researchers have explored the shifting thresholds of environmentalism: "sites of encounter, transformations, uncertainties, future scenarios, material conditions, and political practices related to climate change."[1] The reorganization of natural history museums from collection of extinct species to archive of global warming, such as the

1 J. Gabrys, K. Yusoff, "Climate Change and the Imagination," *Wiley Interdisciplinary Reviews*: *Climate Change* 2, no. 4 (2011): 516-534, 516.

American Natural History Museum in New York City and the permanent exhibition *After Nature* (2022) at the Humboldt Forum in Berlin through immersive installations and mixed media, especially, video and documentary film, are central examples of a productive interaction between art and science. Contrary to the practical and theoretical hopes of the decade, however, new immersive visual practices have also run an old risk: the risk of becoming stereotypical in their well-intentioned, vaguely universalist claims to social justice, as exemplified by the Copenhagen-based director Robert Fox's *Biosphere VR* (2021), which is at the center of my analysis. As I argue, educational VR content in the context of climate change discourse can face multiple pitfalls: it can raise the frenzied ghosts of the so-called individual consciousness all in service of The Planet, resulting in these features being more attuned to neoliberal educational practices than to the provocations of art.[2]

## Case Study and Self-Assessment

*Biosphere VR* is a Danish start-up and film project that, according to its own self-description, employs virtual reality to teach human geography, math, and English, while raising awareness about the devastating effects of climate change in various parts of the world.[3] The eduXperience consists of short 6-10 minute documentaries filmed in Jordan, Kiribati, Beijing, Ethiopia, Sweden, and Morocco. It focuses on the local impacts of climate change through the lives of diverse characters, including the president of Kiribati Island, Taneti Maamau (who is raising funds to purchase new land and relocate his community from the drowning

2 For a definition of art as a range of possible semantic and ontological shifts across a spectrum that ranges from "tool" to "work" and hence to object of aesthetic contemplation and "experience," see A. Pinotti, "Arte" in A. Pinotti, ed., *Il primo libro di estetica* (Turin: Einaudi, 2022): 17-30, 22.

3 "Biosphere VR," The hub, https://thehub.io/startups/biosphere-vr, accessed May 29, 2024.

island state). The goal of these experiences is to immerse viewers in the climate change crisis by featuring interviews with local individuals at different latitudes around the globe.[4]

The self-assessment of the product is very important: on the one hand, the producers of *Biosphere VR* claim that this technology works as a creation of new learning spaces that have so far increased collaboration and knowledge transfer among the students. Reports of students' experience collected by the company – which are not public – would show an academic boost with new knowledge and engagement in problem-based learning in the sciences. VR as a learning space is also supposed to facilitate "empathy," which (must) make "a striking positive difference in gendered learning, with a spike of girls' interest and retention in STEM education and climate issues."[5] On the other hand, as Lisa Nakamura has argued, the claim of VR as an empathy-machine is highly problematic: VR's "newly virtuous identity" as "the ultimate empathy machine"[6] arrives during an overtly xenophobic, racist, misogynist, and Islamophobic moment in the US and abroad; its rise also overlaps with the digital industries' attempts to defend themselves against increasingly vocal critique.[7] It overlaps, one may add, with an increasing urgency of environmental measures boycotted by the same tech industry that

4 The eduXperience exists in various formats. As the pilot streamline for schools advertises: "In Biosphere, you critically and creatively search for answers to the climate issues presented in the VR journey to either Jordan, Kiribati, Beijing, China, Ethiopia, Morocco or Sweden." Users take part in a journey of the mind where they meet experts and/or witnesses on issues defined by a long span of time. Coordinated by "facilitators" like teachers trained with a "100-page educational manual that guides the user through landscapes of STEM and exploration," users are first introduced and later helped to discuss *Biosphere VR EduXperience*. This is a role-playing format for elementary and high school students. The material includes travel experiences in 360-degree 3D 8K virtual reality and educational game scenarios that are supposed to be interdisciplinary, for they integrate geography, biology, physics, and chemistry with the possibility of working within the natural sciences in English. "VR Experiences," Biosphere VR, https://www.biospherevr.com/vr-experiences, accessed May 29, 2024.

5 Ibid.

6 See also A. Pinotti, *Alla soglia dell'immagine: Da Narciso alla realtà virtuale* (Turin: Einaudi, 2021): 177-208.

7 L. Nakamura, "Feeling Good about Feeling Bad: Virtuous Virtual Reality and the Automation of Racial Empathy," *Journal of Visual Culture 19*, no. 1 (2020): 47-64, 47, https://doi.org/10.1177/1470412920906259.

produced "environmental" educational content.[8] Some years ago, "VR's new identity as an anti-racist and anti-sexist technology that engineers the right kind of feeling has emerged to counter and manage the image of the digital industries as unfeeling and rapacious."[9] Instead of aiming at organizing political action, the narrative of virtuous VR has become a powerful illusion that replaces action with game, and solidarity with educational technology.

Beside the strictly didactic format, *Biosphere VR* also exists in an eminent political fashion. The experience *Biosphere VR* was broadcast at the COP26 in Glasgow 2021[10] and acquired by Google as part of the Digital Green Zone, the COP26 public repository. In this context, the VR experience must show how "women and young people in the Global South are already being hardest hit by the climate crisis. Extreme weather patterns, caused by rising global temperatures, are destroying lives and livelihoods, and displacing millions of people from their homes."[11] Whereas the initial claim of *Biosphere VR* was to be an educational role-playing game for elementary and high school students supported by facilitators trained by a "100-page educational manual that guides the user through

8 See "Carbon Bombs under the Spotlight," Carbon bombs website, https://www.carbonbombs.org/, accessed May 29, 2024. Besides the connections between the tech- and the fossil industries, while I revise this paper in February 2024, during a hearing at the US Senate, Meta CEO Mark Zuckerberg's social media technology is accused of causing exposure to teenagers' sexual exploitation, worse mental health conditions and related chains of suicide. See K. McQue, "'It was forced': grieving parents unfazed by sorry tech CEOs at US Senate hearing," *The Guardian* (February 1, 2024), https://www.theguardian.com/media/2024/feb/01/parents-tech-ceos-us-senate-hearing, accessed May 29, 2024. For the re-branding of Zuckerberg's "cruel" social media into the "empathic" VR Metaverse, see K. Chayka, "Facebook Wants Us to Live in the Metaverse: What Does That Even Mean?," *The New Yorker* (August 5, 2021), https://www.newyorker.com/culture/infinite-scroll/facebook-wants-us-to-live-in-the-metaverse, accessed May 29, 2024.

9 L. Nakamura, "Feeling Good about Feeling Bad:" 48.

10 This is not an isolated case. VR experiences at international summits on climate change are frequent and include at least Fox's documentary "Our Village" presented at the same event in Glasgow, cf. "COP26: The United Nations Climate Change Conference," Google Arts and Culture, https://artsandculture.google.com/project/cop26-digital-green-zone, accessed May 29, 2024. See also the Google repository of COP26: "COP26: The United Nations Climate Change Conference: The Digital Green Zone," Google Arts and Culture, https://artsandculture.google.com/project/cop26-digital-green-zone, accessed May 29, 2024, i.e. section "Creatives."

11 "The Frontlines," Google Arts and Culture, https://artsandculture.google.com/story/SgXRgvwg1-oWcg, accessed May 29, 2024.

landscapes of STEM and exploration,"[12] exposure to the international political stage and, not secondarily, marketing in the context of the Summit have shifted the focus of an educational narrative toward the endangered "frontiers" of the Global South, "to the frontlines of the climate crisis," "showcasing underrepresented perspectives and the devastating reality of climate change."[13] As this paper argues, the vague call to intervene that follows the hasty identification of climate change with individual responsibility to be taken by those who are aware – presumably, the Westernized students – opens up the terrain of "visual ideology" or codification of a way of seeing: the problem of how the act of seeing "the frontier" (the boundaries between the self and the other), can reinforce minority privilege, that of the West, rather than be socially neutral or progressive, despite the moral claims of the VR artifact itself.

## Comparative Analysis

*Biosphere EduXperience* recalls similar educational and institutionally promoted eduXperiences. Among them, it is worth to remember more historically situated versions of public engagement: *Immersed* (2016), for instance, is a famous AR training about flooding and resilience funded by the UN agency FEMA (Federal Emergency Management Agency's). In it, the action evoked is self-rescue at school in case of flood; *Life is strange* (2015) is an open-ended serious game and episodic video-game in which the user can change the course of events by changing his or her behavior at certain moments of the game; at last, *Vajont* (2022), a VR costume drama/documentary on the catastrophic Vajont dam landslide in Northern Italy in 1963, by Iolanda Di

12 "Biosphere VR Homepage," *Biosphere VR*, https://www.biospherevr.com/, accessed May 29, 2024.
13 "The Frontlines," Google Arts and Culture, https://artsandculture.google.com/story/SgXRgvwg1-oWcg, accessed May 29, 2024.

Bonaventura, is meant to historicize the every-day life of the workers involved as well as their memories by presenting interactive paths inside the virtual space. Taken together, these interactive and multi-sensory works can be seen as thought experiments: a literary and speculative genre of scientific writing that helps to configure future scenarios.

Ever since Vincent Ialenti and Marcia Bjornerud explored geological long-term thinking through techniques for simulating possible futures of Finnish nuclear waste repository, thought experiments have been a crucial form of time literacy.[14] Geological thought experiments make it possible to predict distant glaciations, earthquakes, and so on, over the next tens of thousands, or even hundreds of thousands, or millions of years. As Ialenti analyzes the relationship between quantitative models for constructing scenarios in the distant future and the narratives that support them (mainly speculative storytelling) qualitatively, he has drawn attention on how temporal perspectives are instantiated by available VR educational experiences that overtly claim to represent climate change: i.e. how do they imagine humanity both in the present and in hundreds of generations, and according to which assumptions, methods, choices, and representational practices? Through the choice of specific narrative devices, the six documentaries of *Biosphere VR* in fact propose a visual alphabet that has nothing to do with non-human temporality. They perform a space travel, not so much a time travel.

The teleportation of the camera-eye reenforces the cartographic gaze. The camera moves across the global space with striking freedom, when the fixity of the interviewees is considered. The locals inhabit the frame as in a *Völkerschau* (or *Menschenzoo*, the human exhibition of colonial memory, typical of the Victorian ethnographic

14 V. Ialenti, *Deep Time Reckoning: How Future Thinking Can Help Earth Now* (Cambridge MA: MIT Press, 2020). See also D. Wallace-Wells, *The Uninhabitable Earth: Life after Warming* (New York: Penguin, 2019).

collection analyzed, for instance, by Mieke Bal in her 1996 book *Double-Exposures*). They can neither leave nor repair the land to which they are uniquely subjected. Fostering and reproducing this kind of imagery, the VR documentaries construct a reality at once remote in space and brutally affected by the poverty of natural resources, without thematizing the presence – or rather, the omnipresence – of the camera, and thus our own desire to see the others as receivers of a salvific morality, and, why not, technological gift, as in the ethics of *The White Man's Burden*. The interviewees and their homes are often approached by aerial photography, through a gaze from above that conveys a sense of domination over the characters inscribed in a frame (this is the case of our 360° image too, which presents a liminal form of the frame). This choice enforces the sense of "containment" of one's physical environment, favored by the isolation of a single body in and with the landscape.

## Aesthetic Analysis: Image and Sound

In recent years, environmental studies have continued to explore the aesthetic, ideological, and sociological factors that shape the representation of nature and are layered into the geographical or cultural description of a landscape, with or without humans.[15] Although *Biosphere VR* offers case studies that transport the viewer suddenly and without intermediate representation into foreign territory, thus tending towards a "post-representational view of geographical space"[16] marked by the emergence of GIS (Geographical Information Systems) and 360° camera shots, the immersive quality it achieves does not challenge

15 S. Iovino, *Filosofie dell'ambiente: Natura, etica, società* (Rome: Carocci, 2004).
16 M. Chen, C. Zhang, Y. Shu, "GIS and Virtual Reality," *Oxford Bibliographies*, 2023, https://www.oxfordbibliographies.com/display/document/obo-9780199874002/obo-9780199874002-0266.xml?print.

traditional means of representation derived from the map.[17] But the godlike point of view, both moral and telescopic, sometimes indulges in small details: an improvised passageway, a mosquito or many mosquitoes, leaves, a close-up of a local tree. Sometimes this indulgence becomes interesting, for example when it shows a "glitch." It is in the glitch, in the technical failures of the godlike POV, that immersive practices seem to fulfill their promises. When we land in Kiribati, we land oddly inside a tree, amid the branches and leaves, swaying, our lower bodies swallowed by the 360° image we are wearing. Beside the viewer, there is water. We land inside a flying tree with its roots in the sea: it is an aesthetic experience,[18] it stimulates the sensorium in unprecedented ways. I am not simply teleported into a realistic artificial world that I can wear on my head. I am altered, augmented, transformed. The glitch sets free immersive technology from the didactic overdetermination. Through the glitch technical possibilities sparkle for a second; the medium can be experienced, liberated from the duty of "efficient" communication.[19] But it is unintentional.

17 The spatial turn between the 20th and 21st centuries has linked geography to cinema, literature and other media in numerous ways, elaborating numerous hypotheses on space and place (de Certeau 1990, Soja 1989), spaces and geocriticism (Westphal 2007), geosemiotics (Vallega 2006), spaces and environments (Iovino 2004), and landscape (Jakob 2009). The "crisis of cartographic reason" (Farinelli 2009) has provoked reflections on the crisis of the taxonomic reason of cultural histories and narratives, leading to an increased focus on counter-mapping practices implemented by literary writing as well as documentary film, analyzing the map as an apparatus of power and ideological persuasion because of the dominant gaze from above that it adopts in order to abstract socio-cultural continuities and discontinuities under a flattening, indeed two-dimensional vision of space. The gaze from above that structures the map is a primary instrument with a pragmatic function of orientation that conveys visions of the territory and tends to make certain geopolitical arrangements appear natural. See M. de Certeau, *L'invention du quotidien* (Paris: Gallimard, 1990); E.W. Soja, *Postmodern Geographies: The Reassertion of Space in Critical Social Theory* (London: Verso, 1989); B. Westphal, *La géocritique: Réel, fiction, espace* (Paris: Minuit, 2007); A. Vallega, *La geografia del tempo* (Turin: Einaudi, 2006), S. Iovino, *Filosofie dell'ambiente: Natura, etica, società* (Rome: Carocci 2004); M. Jakob, *Il paesaggio* (Bologna: Il Mulino 2009); F. Farinelli, *La crisi della ragione cartografica* (Turin: Einaudi, 2009).

18 For an understanding of "aesthetic experience" as "intensification and clarification" of more ordinary experiences see F. Cavaletti, "Esperienza estetica," in A. Pinotti, ed., *Il primo libro di estetica*, 58-70, 65.

19 J. Kemper, "Glitch, the Post-digital Aesthetic of Failure and Twenty-First-Century Media," *European Journal of Cultural Studies* 26, no. 1 (2023): 47-63, https://doi.org/10.1177/13675494211060537.

It is an exception, "a ghost in the machine,"[20] or, perhaps more acutely, "the product of instabilities between human interpretations and autonomous machinic operations."[21] Biosphere's glitches show how the normative semiotics of the product can fail.

Rather, the normality (and normativity) of *Biosphere VR* is that it produces an objectifying gaze on the spots of the globe it seeks to dramatize. It does so not only in images, through visually codified means, such as the gaze from above generated by techniques of aerial photography and the coincidence of author-director-camera, with the result of a cartographic gaze in which the locals become elements of the landscape, but also (and outrageously so) in sound. Linguistically, it is ridiculous how this VR documentary-series manipulate the voices: the interviewees, met in all corners of the world, are dubbed in a broken, heavily accented English, even though they speak in their native language during the interview. The voices are dubbed according to a stereotypical image of the non-native immigrant that is at least embarrassing and at most offensive. Their own words are not heard but as background noise, and their testimony is replaced by an immigrant version of themselves, supposedly more suited to my Western taste than the sound of a foreign language. To echo Berger, a way of seeing is for sure also a way of hearing.

It is from this vantage point that we can take up a critique of the social transformative potential of immersive technologies, insofar as they reproduce the lexicon of earlier humanitarian colonial rhetoric, as analyzed by Francesco Zucconi in *Displacing Caravaggio*,[22] a study

20 M. Hansen, *Feed-Forward: On the Future of Twenty-First-Century Media* (Chicago: University of Chicago Press, 2015).
21 M. Betancourt, *Glitch Theory: Art and Semiotics* (Savannah GE: I'm Press'd, 2023).
22 F. Zucconi, *Displacing Caravaggio: Art, Media, and Humanitarian Visual Culture* (Cham: Springer, 2018).

of racist visual ideologies in humanitarian communication about immigrants, informed by the vast legacy of classical painting that depicts Moors and non-Christians as iconic traitors and infidels. To draw this parallel further, without contextualizing the socio-political circumstances of a community's failure to adapt to climate change as portrayed in the documentaries, it is their fault, the series says, if they are drowning, starving, thirsty, poor.

The most evocative of all the shorts is "My Drying Land," an immersive VR film that transports viewers to the Jordan Valley, where they meet Umbekka, "a resilient 62-year-old farmer" (no surname or family name given). "Umbekka's life has been intertwined with the land since she began farming at the tender age of 12. However, climate change has brought unprecedented challenges to her doorsteps." The synopsis continues in apocalyptic tones, contrasting the natural destruction on the rise with the farmer's individual bravery when competing on a global market. To paraphrase: time is shorter and shorter, history is about to end, but the only thing we can do is finding new ways to stay on the market:

The story unfolds in a desolate landscape, where everything with water has withered away, including the once–majestic Dead Sea that looms nearby. Umbekka's farm, once teeming with life, now stands that have long been abandoned. Sinkholes, treacherous chasms that swallow the ground whole, pose an additional threat, often collapsing and devouring entire structures.

Compounding the struggles is the fact that the majority of the water supply is diverted to the nearby factories at the Dead Sea salt refinery. In the limited hours when water is available, Umbek–ka faces the arduous task of safeguarding the precious resource, sending her trusted friends to prevent unauthorized tapping into the pipes.

Resourcefulness becomes Umbekka's ally as she navigates the harsh realities of her environment. With water scarcity at an all-time high, she ingeniously reuses water up to four times, ensuring every precious drop serves multiple purposes. However, her efforts are further compounded by the dwindling demand and low prices in the market for her agricultural produce.

Umbekka's unwavering dedication to her late husband's memory adds another layer of determination to her journey. Following her husband's passing 11 years ago, she vowed never to sell their cherished farm, promising him a legacy that would endure. Despite the odds stacked against her, Umbekka has managed to uphold her promise, relying on her sheer will and determination.

Drawing from her years of experience and the wisdom gained through countless trials, Umbekka has devised a strategy that offers a glimmer of hope amidst the desolation. This resilient farmer has discovered innovative methods and techniques to adapt and survive, refusing to succumb to the harsh realities of her drying land.[23]

Together with a sometimes fair contextualization of individual lives, what "My Drying Land" shows is, once again, a dubious feature of *Biosphere VR*: to construct the interviewees as mediators between man and nature, subject and object, the West and the rest, these second terms being more natural and more connected to natural circumstances than the first. As a result, the series revives a conception of the South, Middle- and Far East —again, for whom? who is at the center of the map?— as the site

23 "VR Experiences," *Biosphere VR*, https://www.biospherevr.com/vr-experiences, accessed May 29, 2024.

that shows the Other: the primitive, the more vulnerable, the underdeveloped, the exposed, the resilient.

## Theoretical Reflections

Bruno Latour articulated the category of "the terrestrial" (2018) to include a creative, participatory relationship with the terrestrial world, problematizing the reciprocal action between the lives of species (including humans) and the environment.[24] The closest the short films in *Biosphere VR* come to this idea of terrestrial entanglement is "Hot Coffee," the VR experience set in Ethiopia. As described by the producers:

> "Hot Coffee" is an immersive VR film that takes viewers on a journey to Ethiopia, the birthplace of coffee. The story follows a group of small-scale farmers who are determined to revive fading coffee traditions in the face of a changing climate and the rise of a narcotic crop called khat.
>
> For centuries, coffee has been the pride of Ethiopia, particularly in the region of Jimma, known for producing some of the world's finest coffee. The film delves into the rich history of coffee cultivation, dating back to the 8th century, highlighting the region's small organic farms and the traditional practice of growing coffee under shade trees.
>
> However, the effects of global warming have taken a toll on the coffee plants, leading to the spread of cholera diseases that devastate the crops. Desperate to sustain their livelihoods, many farmers have resorted to growing khat, a leafy plant with narcotic properties that can be harvested twice a year. This shift has resulted in a

24 See also A.F Conty, "The Politics of Nature: New Materialist Responses to the Anthropocene," *Theory, Culture & Society* 35, no. 7-8 (2018): 73-96, https://doi.org/10.1177/0263276418802891.

societal problem, as people, including young children, spend their days in a state of khat–induced intoxication.

Amongst this backdrop, a small group of farmers, who also happen to be school teachers, cannot bear to witness the profound change in their community. Driven by their passion for preserving their cultural heritage, they embark on a mission to bring back the once–celebrated coffee traditions, no matter the cost.[25]

As the cameraman stands from head to toe in a field of khat – a field full of insects, which we hear, with people around him speaking in tongues – we feel for the first time the uncomfortable presence of the subject of vision. We also understand the stakes of protecting coffee, because we import it, we consume it, we have an everyday experience with it and can speculate about its supply chain, beyond the moralizing attitude of saving The Planet that would bring us to the middle of Umbekka's farm in My Drying Land.

This quality of uncomfortable presence, of uncomfortable being-there, is a quality to be salvaged as transformational. Perhaps unintentionally interesting, these two involuntary features (the glitch and the physical discomfort of the cameraman that inevitably shapes the Schauplatz, the designed position of the viewer/user/experiencer) reflect how recent advances in image-making techniques result in a significant blurring of the threshold between the real and the world of images without abolition or concealment of the medial threshold itself. The "new threshold" between art and science that Gabrys-Yusoff[26] and Andrea Pinotti have emphasized reveals the medium, for immersive virtual environments (VEs) create an unparalleled reality

25 "VR Experiences," *Biosphere VR*, https://www.biospherevr.com/vr-experiences, accessed May 29, 2024.
26 J. Gabrys, K. Yusoff, "Climate Change and the Imagination," *Wiley Interdisciplinary Reviews: Climate Change* 2, no. 4 (2011): 516-534, https://doi.org/10.1002/wcc.117.

effect through the illusion of full presence conveyed by the 360° image and through the contextual negation of full coincidence of the experiencer's body with the image. The perceiver feels that s/he is there, that is, "incorporated into a quasi-real world"[27] also by perceiving the actual impossibility of fully coinciding with the elsewhere, with both the world at large and the virtual world, trapped in the "quasi" of the virtual. In this, the "eXperience" that supposedly overcomes the simple watching, or viewing, of early visual technology in fact performs a disavowed embodiment, and hence a frustrated return to the watching, or better, to the cringe-watching: the watching too much space, the watching that I did not need to know, the watching of how the technology fails to deliver its all-too-ambitious, moral, transformational promises.

It is the apparent partiality of *Biosphere VR*'s exhaustive and moralizing claims through the image's technical insurrection that is its strength point. If an-icons are images of the virtual world that conceal their materiality, simulate immediacy, aim at unframedness, and emphasize presence despite the reference to the real outside them, these characteristics not only challenge their status of images as icons (mediated, separated, and framed).[28] They also introduce the experience of impossible "embodiment,"[29] for the image becomes environmental, surrounding and all-encompassing the individual body, but not enough to inscribe the environment as a proprioceptive order, as the perceptual order that belongs to me and co-constitutes the real world here and now. The partiality of the process of

27 "Abstract," ERC Advanced Grant An-Iconology: History, Theory, and Practices of Environmental Images, https://an-icon.unimi.it/, accessed May 29, 2024.
28 A. Pinotti, *Alla soglia dell'immagine*: 91-119.
29 For a wide definition of "embodiment" in cultural studies as the making of a site of (possible) perceptive order imposed by the environment outside the body, see A. Gell, *Art and Agency: An Anthropological Theory* (Oxford: Clarendon Press, 1998): 255-256, cfr. C. Cappelletto "Alfred Gell tra eccezionalismo umano e postumanesimo," in A. Gell, *Arte e agency: Una teoria antropologica*, ed. C. Cappelletto, trans. G. Policastro (Milan: Raffaello Cortina, 2021): XXII.

embodiment in the "quasi-real world" may be constitutive of the eduXperience, as my case study illustrates. It is the partiality of immersive media and not the efficiency of the immersive effect that makes the failure of *Biosphere VR* interesting, insofar as it challenges the ambitions of total vision and omnipresence of the medium.

## Conclusion

The rapid rise of VR has forced us to question the relationality of observer and observed, interspecies and commodity chain entanglements. Now, it is time to ask about the co-implication of this technology with the discovery of the dramatic urgency of global warming. To summarize through an equation: the image becomes environment = the environment becomes image. If we approach this equation critically, glitches and misidentifications that are *Biosphere VR*'s most fortunate moments tell us something about how we imagine the exorbitance of climatic phenomena without reductionism, through a multi-sensory unconscious that is partly visual, partly ideological, partly sudden, unexpected, and unknown like the glitch; or, better, like a natural emergency that unfolds "the unruly edges" of industrial production.[30] To answer my research question – which temporal perspectives are instantiated by available VR eduXperiences that overtly claim to represent climate change – I must conclude that the question of temporality cannot be interpreted in a fully presentist way, that is, separated from the question of history, that is, the afterlives of colonial pasts that explain both the particular vulnerability of the Global South to global warming and the persistence of colonial scopic regimes. And yet, when the VR as a medium reveals itself, the visual fabric of representation

30 A. Tsing, "Unruly Edges: Mushrooms as Companion Species," *Environmental Humanities* 1 (2012): 141-154.

breaks down. The camera-eye is not an abstraction but a body that shivers, hesitates, breaths. The technique is not a corporeal extension on which we exercise control. It revolts itself. It is creative against the odds, for the machine embodies a "semiotic field"[31] that captures and transforms the users and the used. It is crucial to ravel into the visual practices of "virtuous,"[32] moral VR to imagine humanity both in the present and in hundreds of generations to come, in terms of reciprocity of observer and observed, human and non-human, with good will in disarray.

Considered as an expression of institutional and educational commitment, *Biosphere VR* highlights the potential pitfalls and limitations of employing VR technologies in promoting environmental awareness and social transformation top-down. Contrary to the prevailing technophilic belief that such technologies inherently foster positive societal changes, this analysis demonstrated how they can inadvertently perpetuate, first, an afterlife of colonial scopic regimes, and second, an involution of temporality, that is, time all flattened on the present of the image being there, without trying to survey the expansion of our temporal perception beyond the span of a human life that is so necessary to tackle humanity both in the present and in hundreds of generations. Through a meticulous examination of visual strategies, sound, scripts, and para-texts, the paper has uncovered how traditionally colonial ways of seeing can reinforce problematic representations of the Global South as "the frontier." Despite the promise of VR for experiential learning, the paper argued that certain communication strategies within these immersive experiences tend to prioritize moral messages over critical engagement with the intricate socio-environmental issues at hand. Rooted

31 K. Barad, "Posthumanist Performativity: Toward an Understanding of How Matter Comes to Matter," *Signs: Journal of Women in Culture and Society* 28, no. 3 (2003): 801-831, https://doi.org/10.1086/345321.
32 L. Nakamura, "Feeling Good about Feeling Bad."

in critical theory in visual and spatial studies, the study advocated for alternative approaches to representing climate change as a new bodily appreciation of "the terrestrial" as it emerged, for instance, through the glitches of *Biosphere VR*.

# Embracing Otherness? A VR Body Hack by Morehshin Allahyari

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Abstract

"Embracing the otherness" is a phrase that is borrowed from Morehshin Allahyari's virtual reality artwork *She Who Sees the Unknown: Kabous, the Right Witness, and the Left Witness* (2019). In this article, I am using this phrase to question the figuration of self and other as staged by Allahyari in her work. By deploying an overwhelming effect of immersion specific to the technological features of VR, Allahyari establishes a physical as well as an emotional relationship to the other. But instead of encouraging a sense of closeness, which is likely to be connected to the idea of "embracing otherness" as well as to the vision of VR as "empathy machine," this immersive experience has the opposite effect. I argue that it weirdly plays with the appropriative mechanisms of othering, unsettles the viewer's sovereignty, and thus initiates a rather "strange encounter." In this sense, I will examine Allahyari's use of VR's immersiveness as a "body hack" and elaborate how I read her artwork as a critical commentary on the debate of the transformative potential of VR as "empathy machine."

Keywords Otherness Strange encounter Empathy machine Virtual reality Uncanny

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## Immersed in the Empathy Machine

The idea of VR as an "empathy machine" seems to be paramount to the discourse surrounding the transformational potential of virtual reality. The central controversy in this vital debate regards the evaluation of VR's characteristic effect: the experience of presence that can be evoked through the viewer's apparent full-body immersion in the computer-simulated media reality.[1] In line with developers, enthusiasts promote the promise of VR's immediacy as an inherently socially beneficial enhancement of the capacities of human perception. According to filmmaker and entrepreneur Chris Milk, probably the most prominent representative of this position: "through this machine we become more compassionate, we become more empathetic, and we become more connected. And ultimately, we become more human."[2] With this claim, he frames the presentation of his UN-funded VR project *Clouds Over Sidra* that stands in line with a whole range of globally successful VR projects with documentary aspiration, developed around 2015. These projects place the viewer in a situation of socio-political crisis, a "reality" supposedly different to that of the viewer: the everyday life of a 12-year-old Syrian girl in a Jordanian refugee camp, a violent encounter with the US Border Patrol during an illegal crossing of the Mexican-American border,[3] an Ebola hospital in Liberia.[4] As proof of the effectiveness of his VR, Milk shows a man in suits smiling emotionally from under his VR goggles at the Davos Economic Summit, where the film premiered in 2015: Milk interprets the visibly affective reaction (to whatever is experienced in VR

1 For the discussion from an art and media studies perspective see for example: G. Bollmer, K. Guinness, "Empathy and Nausea: Virtual Reality and Jordan Wolfson's *Real Violence*," *Journal of Visual Culture* 19, no. 1 (2020): 28-46, https://doi.org/10.1177/1470412920906261; A. Pinotti, "Staying here, Being there. Bilocation, Empathy and Self-Empathy in Virtual Reality," *Bollettino Filosofico* 37 (2022): 142-162, https://doi.org/10.6093/1593-7178/9657; C. Stiegler, *The 360° Gaze: Immersion in Media, Society, and Culture* (Cambridge MA: MIT Press, 2021): 35ff.

2 C. Milk, "How Virtual Reality Can Create the Ultimate Empathy Machine," filmed March 2015 at TED Talk, https://www.ted.com/talks/chris_milk_how_virtual_reality_can_create_the_ultimate_empathy_machine?subtitle=en&lng=de&geo=de, accessed January 1, 2024.

3 A. G. Iñárritu*, Carne y Arena. Virtually Present, Physically Invisible* (2017).

4 C. Milk, *Clouds over Sidra*, https://www.youtube.com/watch?v=mUosdCQsMkM, accessed February 5, 2024.

– presumably the flash of Sidra's unexpected humanity in the midst of her suffering) as a success in being able to "change people's minds."[5]

The criticism of these projects designed to evoke empathy through the assumed experience of other people's suffering in VR is complex and can probably be grasped most concisely in Lisa Nakamura's words:

> VR's vast claims to produce this compassion, to function as "empathy machines", frame racism and toxicity as a problem with a head-mounted solution, rather than as a set of structural relations that require structural solutions.[6]

In her seminal article *Feeling Good About Feeling Bad. Virtuous Virtual Reality and the Automation of Racial Empathy*, Nakamura elaborates on the ideological construction and historical continuities of appropriating other people's suffering via stigmatized medial representations of marginalized people. She criticizes that the supposed immediacy of our reactions in VR obscures the constructedness of the artifact. This leads to misunderstanding ones own affective experience of a standardized and one-dimensional representation as the reality of others. She unmasks the promise of a radical change of perspective in VR – to be put in another's shoes – as an automated "body hack" that "mistakes point of view for embodied experience."[7] In projects like *Clouds over Sidra*, the visceral modality of VR is used to direct our focus to a particular message and prevent unwanted distractions that could cast doubt on the authenticity of both what is being represented and our affective reaction to it. Nakamura describes this persuasive VR-strategy as a "body hack" that relieves us of the actual work of feeling and of being responsible for dealing with the (un-)availability of our emotions. As the other "is figured as an emotional resource for white viewers," these

5 C. Milk, "How Virtual Reality can create the Ultimate Empathy Machine".
6 L. Nakamura, "Feeling Good about Feeling Bad: Virtuous Virtual Reality and the Automation of Racial Empathy," *Journal of Visual Cultures* 19, no. 1 (2020): 47-64, 59, https://doi.org/10.1177/1470412920906259.
7 Ibid.: 56, 60.

"documentary" projects "reproduce racial violence in the name of reducing it."[8] Here, we are dealing with a classic (and yet very limitedly transformative) mechanism of othering. In her book *Strange Encounters. Embodied Others in Post-Coloniality*, Sara Ahmed describes this mechanism of othering as a "form of *eating* and digestion: the other is valued as that which one is with, but only insofar as it can be taken in by, and incorporated into, [...] the thinking of being."[9] In order to prevent this dynamic of "stranger fetishism," Ahmed calls for an understanding of strangeness as part of the self, rather than projecting it onto the construction of the other. She calls for encounters between self and other that "shift the boundaries of the familiar, of what is already recognisable or known" and are therefore "impossible to grasp in the present."[10]

## Allahyari's Strange Encounter

The artist and activist Morehshin Allahyari develops such "strange encounters" by relying on VR's capacities to fully immerse the viewer. She plays with the effectiveness of the "body hack" and turns it against VR's ideological appropriation as "empathy machine." In a series of works titled *She Who Sees the Unknown* (2016-21), Allahyari develops re-figurations of the other that initially show few parallels to the virtual documentary film projects mentioned above and even seem diametrically opposed to them. While the documentary projects are about experiencing the illusion of the supposed reality of other people in a most realistic way, and about nurturing a personal relationship of sympathy, Allahyari's re-figurations center mythological figures of female djinn. In Allahyari's work, the other is not human, but an "extraordinary and supernatural being"[11] known from

8 Ibid.: 51.
9 S. Ahmed, *Strange Encounters. Embodied Others in Post-Coloniality* (New York: Routledge 2000): 139. Ahmed borrows this food metaphor from bell hooks, which she develops in her "Eating the Other: Desire and Resistance," in *Black Looks: Race and Representation*, (Boston: South End Press, 1992): 21-39.
10 Ibid.: 39, 13.
11 See the website of this project, https://shewhoseestheunknown.com, accessed January 5, 2024.

(pre-)Islamic culture. It is a monstrous figure characterized precisely by its deviation from the phallogocentric norm of the human.[12] As a representation of our imagination of "the danger of the unknown,"[13] this figure can neither be located in a reality that is independent of its medial narration nor obviously in an empathetic relationship.[14] In the various parts of her series of works, Allahyari uses these figures to occupy stereotypical narratives of female lust, madness or destructive rage, which she interweaves with historical material about the djinn and fragments from her own diasporic and female-socialized experience. Basically, those works are less about creating an emotional connection with the characters or even about generating knowledge about the reality of others. Rather, they are about dealing with the violent mechanisms and motifs of the projection of otherness, to which both the figure of the djinn and Allahyari's experiences bear witness.[15] In their fragmentary aesthetics and non-linear narrative style – she works with 3D printing and modeling, video, archival material and her own texts – Allahyari's multimedia re-figurations can primarily be understood as a cognitive challenge to actively comprehend their ambivalence and to resist the reflex of reducing the other to something that can easily be grasped in its familiarity.[16] However, in one of the works from the series titled *She Who Sees the Unknown: Kabous, the*

12 See for example: T.T. Minh-ha, *Woman, Native, Other. Writing Postcoloniality and Feminism* (Bloomington: Indiana University Press, 2009): 236; R. Braidotti, "Mothers, Monsters and Machines," in R. Braidotti, ed., *Nomadic Subjects. Embodiment and Sexual Difference in Contemporary Feminist Theory* (New York: Columbia University Press, 1994): 75-94.

13 S. Ahmed, *Strange Encounters*: 2, 37, 138.

14 For a detailed analysis of how these supernatural beings are digitally figured in an appealing way see S. Seifee, "Rigging Demons," in J. Rocha, F. Snelting eds., *DATA browser 08. VOLUMETRIC REGIMES: Material Cultures of Quantified Presence* (Open Humanities Press, 2022): 31-55.

15 Allahyari's practice of re-figuration, of combining fictional as well as factional strands, stands in an intersectional feminist tradition that aims at uncovering the construction of how marginalized individuals become abstracted to figures by highlighting the situatedness of storytelling. See for example: R. Braidotti *Nomadic Subjects*; D. Haraway, "Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective," *Feminist Studies* 14, no. 3 (1988): 575-599, https://doi.org/10.2307/3178066; S. Hartman, "Venus in Two Acts," *Small axe* 12, no. 2 (2008): 1-14, https://doi.org/10.1215/-12-2-1.

16 Rosi Braidotti describes this dualistic reflex as the basic structure of our westernized social order, in which otherness must be understood as negativity in order to formulate a discursive norm. See R. Braidotti, "Mothers, Monsters and Machines:" in R. Braidotti, ed., *Nomadic Subjects. Embodiment and Sexual Difference in Contemporary Feminist Theory* (New York: Columbia University Press, 1994): 75-94: 80.

*Right Witness, and the Left Witness* (2019), Allahyari puts this reflex, so effectively at work in the criticized virtual documentary formats, center stage. Here, she develops her re-figuration in VR and sets up an encounter with the spectator that makes them experience the mechanisms of the "body hack" and the motifs of othering in an intrusive way. To do so, she uses the suggestive potential of VR's immersiveness, the presence-effect of virtual reality, to, just like in the documentary film projects, overwhelm the viewer, and establish a physical-emotional relationship with the other. In fact, this dominant experience imposes a one-dimensional reading of the figure of the other, which, however, obstructs the anticipated process of understanding the artwork.

### *Kabous, the Right Witness, and the Left Witness*

Besides being a computer-generated VR film and not a 360° video, the formal structure of the 12-minute artwork significantly resembles the equally short documentary projects. An essential parallel that explicitly controls the encounter between self and other is the fact that I cannot move independently in the virtual world. By providing 3DoF instead of 6DoF, I'm only able to look around.[17] Similar to *Clouds over Sidra*, for example, which Lisa Nakamura describes as "VR-as-empathy-machine's ur-text,"[18] Allahyari's narrative thus does not develop depending on my own interaction with the virtual world, but instead unfolds over various short scenes that are separated by blackouts.[19] In each scene, the recipient finds themself in a new place and also in a new situation with the protagonist of the virtual world. Just as in *Clouds over Sidra*, each change

17 The different Degrees of Freedom (DoF) indicate how many independent parameters are given for interacting within a digital 360° environment. 3DoF support rotational movement while 6DoF also include translational movement, that is spatial movement along the axis x, y, z. See for example, "Degrees of Freedom" in XR Wiki: https://www.xrhub-nue.de/technologie/xr-wiki/, accessed February 5, 2024.
18 L. Nakamura, "Feeling Good about feeling Bad:" 56.
19 A 2D version of this 360° documentary can be seen here: *Clouds over Sidra* https://www.youtube.com/watch?v=mUosdCQsMkM, accessed February 5, 2024.

of position in the artwork goes hand in hand with a new chapter in the story, which is narrated by the protagonist in a voiceover. Access to what is happening in the virtual world is thus decisively influenced by the framing of the relation between the allocation of a physical position of the viewer and the disembodied narration of the voiceover. The more homogeneous the sensomotoric interplay of these narrative elements, the more immersive the experience, the more striking the illusion of a real encounter,[20] and the more effective the "body hack". In *Clouds over Sidra*, this function is used to convey the impression of authenticity and to develop the greatest possible closeness between the recipient and the other person. The viewer is placed at eye level with the protagonist in the middle of various everyday situations in the Jordanian refugee camp, whereby the impression of spatial co-presence is created. Through Sidra's off-screen narration, this impression of physical closeness is enriched by emotional closeness. Her intimate thoughts, wishes, hopes, and fears in connection with the physical placement in her supposed reality create a seamless narrative that is perceived as a physically, emotionally, and cognitively affecting experience that "cannot be doubted once it is felt."[21] Allahyari, however, does not build a seamless narrative, but one that must be doubted in order to somehow make sense. This is because she creates a conflict between the experience of the spectator's own embodied affectedness and the disembodied off-screen narrative. She uses VR's effect of full-body immersion to keep the recipient away from these intimate insights into another lived reality and instead keeps them busy with a surprisingly allusive representation of the other.

20 See T. Fuchs, "Der Schein des Anderen. Empathie und Virtualität," in T. Breyer, ed., *Grenzen der Empathie. Philosophische, psychologische und Anthropologische Perspektiven* (Paderborn: Brill Fink, 2013): 261-281, 276.
21 L. Nakamura, "Feeling Good about Feeling Bad:" 53.

## (M)Other/Monster

Allahyari's VR film is embedded in a spatial installation in the exhibition space that is reminiscent of a sparsely furnished bedroom that creates the impression of being invited into a private situation. Here, the recipient is asked to lie down on the bed and put on the head mounted display. Lying in this position, the freedom of movement is severely restricted and the field of vision in VR is limited to a radius of 180°. Thus, Allahyari initially places the viewer physically in a precarious position and harnesses this passivity for the various scenic repositionings in the virtual world. In this restricted position, the encounter with an other at eye level does not seem very likely. This is being utilized dramatically right at the beginning of the VR. The VR starts with a blackout while the artist begins to speak in a slightly distorted voice off-screen:

She who saw all things in the broad-boned earth and beyond, and knew what was to be known. She who had seen what there was, and had embraced the "otherness".

This introduction is a recurring element in the series *She Who Sees the Unknown*, in which the supernatural features of the figuration are invoked. It is reminiscent of a popular English translation of the *Epic of Gilgamesh*, which locates me mentally in a mythological setting of symbolic imagery rather than in a literal context.[22] But this cognitive alignment to the story changes abruptly with my bodily immersion in the virtual world. A few seconds after the voiceover begins, a large room appears around me. I am lying in its center on the floor and I'm looking up into its high, vaulted ceiling. Before I am able to orient myself in the situation, a djinn appears above me at a distance of approximately five meters. Meanwhile, from off-screen:

22 See R. Temple, *He Who Saw Everything. A verse translation of Gilgamesh* (London: Rider, 1991).

Her name is Kabous. Made of smokeless fire, She is the jinn of horror and nightmare. Accompanied by the right and the left witness she enters, she enters to hold you down in your sleep.

Barely noticeable and within a few seconds, the stiff, human-sized figure approaches me until its glowing red eyes are only a few centimeters away from my face. Intuitively, I turn my head away to escape this sudden physical intrusion, until a few seconds later a next blackout relieves me from my helpless reaction to the terrifyingly awkward encounter with the djinn. In this subject-centered interplay of language and visual space, Allahyari conjures up the threatening monstrosity of the mythological figure. Through the physically, emotionally, and cognitively immersive experience of immediately being affected by this figure, its monstrosity appears as undeniable. This uncanny encounter with the djinn, the intense experience of her menace, triggers an effective uncertainty of my own sovereignity which initially makes me focus on clarifying the unsettling relationship between Kabous and myself. But in the following scene, the djinn above me has disappeared. I find myself in a narrow, dark niche and this time I directly try to orient myself to be prepared for my next encounter with the uncanny djinn. To my left, the niche opens up into a large, wide room. There I see Kabous, accompanied by two other djinn, the Right Witness and the Left Witness, who are hovering over a central pool of water motionless. Meanwhile, I hear the voice of an elderly woman, Allahyari's mother, reading from her diary in Persian. According to the English subtitles, it is an entry from 1984 in which she talks about her concern for her unborn child. Being completely absorbed by the aftermath of my disturbing experience with the djinn, whose overwhelming appearance involved me in my immediate surroundings in a quite literal sense, this short text escapes my attention. I only notice fragments of it, which seem to have nothing to do with my encounter with the djinn and therefore do not convey any meaning. After another blackout, I land on the edge of the pool and am once again in close proximity to the djinn, who are still

floating motionless in the steam of the water. This time, Allahyari speaks from off-screen about a memory of her grandmother in English. Due to the potentially threatening proximity to the djinn and my strange position lying on the edge of the pool, again I am mainly concerned with my bodily alignment. I intuitively try to establish a safe distance to the djinn. Once again, the majority of what is being said and its actual context escapes my awareness. However, an almost incidental remark from within the voiceover leaks through as an important information that helps me to contextualize my immediate surroundings. Allahyari recalls an encounter between her grandmother and a djinn in a hamam the evening before Iraqi troops bombed her hometown.

Absurdly, this genuinely disturbing information has an immediately calming effect on me, which helps to better orient myself in the virtual world: Finally, I realize that I am in a hamam and that the experience of Kabous' menacing character is not a mistake I somehow could have avoided but that it must be an integral part of the story. Since the djinn is described in Allahyari's voiceover as the vanguard of a deeply threatening situation, the relationship between me and Kabous, my experienced impression of her menace, is kept in suspense with her symbolic meaning. However, Kabous' uncanniness loses its potency through this cognitive access, which, in a Freudian sense, enables me to examine the confusion I experienced between my actual reality and the media reality and to redraw a distinction.[23] Relieve comes with this realization that Kabous as a symbol of threat "takes over the full functions of the thing it symbolizes,"[24] and I no longer need to keep her at bay. Thus, a diffuse feeling of connection to the djinn gradually develops – we are together in the here and now. In contrast,

23 Sigmund Freud's conception of the uncanny provides an illuminating framework to analyze the encounter between self and other in Allahyari's work. The experience, I'm describing as a "body hack" has the effect of a profound "ego-disturbance" (236), that is most effective in immersive fiction and is thus "not submitted to reality testing" (249). *S. Freud, "The Uncanny," in J. Strachey, ed., The Standard Edition of the Complete Psychological Works by Sigmund Freud, Vol. 17 (1917-1919), (London: The Hogarth Press, 1953-1974): 218-253*.

24 Ibid.: 244.

on an auditive level a figuration develops between mother, daughter and grandmother, whose relationship largely eludes my current perception, but intervenes in this sense of togetherness in a *weird* way. To grasp these nuances of the phenomenon of the uncanny with Mark Fisher, this dynamic can be described as if through the diary entries and Allahyari's memory, an outside that is inaccessible to me breaks into this world, allowing me to understand the inside as such – my presence with the djinn in the hamam. At the same time, I realize how my own focus on this inside has a limiting effect, which prevents me from grasping and understanding the outside.[25] So while I perceived Kabous as the threatening other at the moment of the uncanny encounter, the *eerie* absence of her uncanniness in the following brings me closer to the djinn and thus creates a precarious sense of "we." Against this sense of togetherness, the figuration around mother/daughter/grandmother appears as truly other, eluding my emotional and intellectual appropriation.

During most of the VR film, which flashes by incredibly quickly, I cannot get hold of, nor can I make sense of these shifting dynamics caused by the play of closeness and distance. I am mainly preoccupied with my own dismay and with regaining self-confidence. This insecurity is repeatedly triggered by the various changes of my position and the constant reorientation towards the djinn. But now, that I finally get an idea of how to relate my bodily involvement to the off-screen narration, this constellation suddenly dissolves. Significantly, this is related to the increasing dissolution of spatial three-dimensionality at the end of the VR film and the vanishing impression of physical co-presence with the djinn. In this scene, I suddenly find myself at the ceiling above the central pool of water. For the first time I am placed in a position that is contradictory to my physical position of lying down and looking up. This inconsistency between my bodily orientation and my location within the visual world is reinforced by the appearance of

25 M. Fisher, *The Weird and The Eerie* (London: Repeater Books, 2017): 11 ff.

the three djinn, who are now also detached from their previous location and appear in front of me, one after another. This dissolution of the relation between me and the djinn provides and elusive insight into the off-screen figuration as well as into Allahyari's perspective on the djinn. From off-screen, Allahyari directly turns towards the djinn and, to my surprise, addresses them as figures of trust. She moans to the two witnesses about her mental suffering caused by the violence of war and describes how the relationship to her mother and grandmother is shaped by an "extreme form of separation anxiety." As her references to the djinn seem to have nothing to do with my previous understanding of them being an effective symbol of threat, but rather serve as a motif to address her own anxieties, I feel exposed in my own literal affectedness that distracted me from engaging with this multi-layered story. Moreover, she addresses Kabous as her unborn "beloved child," whom she will not give birth to "in blood and flesh": "to not be born in blood and flesh is to be protected. To not be born in blood and flesh is a form of becoming […]." As if this contrast between the characterization of Kabous as a bearer of hope and my own experience of her threatening character were not already great enough to demonstrate the incompatibility of my position within this re-figuration, Kabous herself appears as the "beloved child" at the end of the VR work. Just like in the introduction, an amorphic voice is audible and the visual space slowly changes from a simulation of spatial features to a bright void with a portal-like sphere in far distance.

to heal my mother, our mother's mothers … to become other, and alter our daughters … Birth justice: to choose when, where, how and what to birth, what to birth. The ultimate extent of power is this union. Only in the future you will know … the only future you will know.

With this abstract poetic outlook at the end of the VR, a completely new dimension is added to this re-figuration, which intensifies my dissatisfaction with my imposed

lack of independence. Why is otherness here associated with healing in such a remarkable clarity, when I have experienced this otherness at the beginning in an equally remarkable clarity, but on the contrary, as wounding? Why am I so occupied by Kabous' uncanniness and thus distracted from cognitively comprehending this multi-layered story, even though this would be the more appropriate way to understand Allahyari's ambivalent re-figuration of (m)other/monster in all its complexity?

By using the "body hack" to provoke feelings of insecurity and to thereby obstruct my access to the re-figuration of the other, I argue that Allahyari's message can be understood as a critical commentary on the debate about "empathy machine." She exposes the effectiveness of VR's immersive modality and at the same time prevents me from "embracing the otherness" within this simulated encounter. With this "body hack," Allahyari stages an encounter between self and other that initially conveys a very limited, one-dimensional, and at the same time medially enforced understanding of the other. In the moment of maximal immersion into the virtual world, the figure of the other explicitly appears as threatening. In the moment of minimal immersion into the virtual, while feeling completely disintegrated into the story, the figure of the other is given the opposite meaning. However, beyond this opposing attribution of those distinct but quite narrow characteristics of this figure, a re-figuration of the truly other develops around the traumatic reality of Allahyari, her mother and her grandmother. The way Allahyari uses the immersiveness of the medium and plays with the most obvious appearance of the djinn, she saves this real otherness from being incorporated into the viewer's own imaginary world. I thus understand the "body hack" in Allahyari's artwork as an effective strategy to expose the hegemonic violence of history and storytelling, that casts marginalized people as a figure of

the other and replaces their reality with our fantasy of it. In this way, Allahyari uses the presence-effect of VR to build a narrative that can be understood as a:

> "recombinant narrative," which "loops the strands" of incommensurate accounts and which weaves present, past, and future in retelling [the others] story.[26]

Allahyari provides contradictory readings of the other. Overtly present is the other as a figure of the danger of the unknown, as effective threat to one's own self-confidence. The other as a figure of hope points at a future, unimaginable for the viewer's reality. Looking at your affectedness by these figures of otherness, you realize that your very own insecurity has dominated the entire situation and has precluded engaging with the actual re-figuration of otherness. Therefore, I understand Allahyari's play with the "body hack" as the initiation of a "strange encounter." It shows how uncertainty about the self and the other not only needs to be acknowledged but to be realized to prevent the mode of othering and to deal with the impossibility of grasping the reality of others in the current moment of encounter.[27]

26 S. Hartman, "Venus in Two Acts,:" 12.
27 See S. Ahmed, *Strange Encounters:* 4-8, 13, 142 ff.

# Philosophy Through Unorthodox Means: Enacting a Monstrous Education of Attention to Face the Climate Crisis

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Abstract

An overwhelming scientific consensus confronts us with the need to radically transform our habits to cope with the climate crisis in which we are living.

The production of data – in addition to the related flow of information and images regarding the threat to our survival and ecosystems – is not enough to activate our pro-environment actions.

To set radical change in motion, it is necessary to design imaginative interventions based on the knowledge gained in embodied cognitive science so that interventions are directed not at disembodied minds but at situated individuals enacting within a rich landscape of affordances.

By way of experimenting with philosophy through unorthodox means, I will present a concrete artwork, *Infinity Pool*, whose purpose is to enact tangible invitations addressed to a situated community through a monstrous education of attention, that is, through an imaginative invitation that offers an opportunity to bring attention to aspects of the environment usually ignored.

Keywords Monsters | Radical embodied cognitive science | Climate crisis | Affordances | Attention

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## Climate Crisis and Philosophy Through Unorthodox Means

As the 2023 IPCC (Intergovernmental Panel on Climate Change) report shows, the last century has seen a global average temperature rise of 1.1°C compared to the pre-industrial period caused mainly by the use of fossil fuels, unsustainable energy practices, and soil exploitation. This has resulted in an intensified frequency of extreme weather events such as floods, droughts, storms, and fires that pose a risk to the survival of ourselves and of ecosystems.

Inevitably associated with these scenarios are sociopolitical events related to climate migration, social polarization, inequality, and exacerbated exposure to death of economically marginal populations. The actions taken so far to counter the climate crisis are not adequate. If global warming is to be limited so that it does not exceed 1.5°C above the pre-industrial level, action must be taken now so that greenhouse gas emissions in all sectors are halved by 2030.

The 2023 IPCC report calls for urgent and ambitious actions that can no longer be procrastinated.

In practice, in the face of the climate crisis, an overwhelming scientific consensus invites us to thoroughly reconsider our relationship with the environment to achieve sustainable modes of human existence on Earth.

As I will try to highlight, the data provided to us, while necessary, are not enough to invite us to act and thus enable us to deal with an invisible threat.

Fig. 1. Tiber River and mirror mask realized for Infinity pool i.c.w. David Habets, photograph by Valeria Scrilatti

To cope with the current crisis, in addition to producing scientific studies that provide data on reality and outline possible scenarios, there is an urgent need for an effort that involves knowledge, strategies, and modalities from different fields so as to develop imaginative interventions that can activate concrete change. My proposal works in this direction. I will try to do so through a philosophy that, from a radically embodied approach to cognition,[1] is enacted through unorthodox means; it is a "philosophy without text"[2] that is embodied in an artistic proposal, *Infinity Pool*, consisting of the sculptural realization of a mirror mask, three performance walks, and a video installation.

In the face of urgent calls to action, multiple proposals have been suggested by activists and researchers. Consider, for example, the one that comes from the side of radical activism outlined by Andreas Malm in his 2021 text-manifesto, *How to Blow Up a Pipeline*. Malm, considered one of the leading thinkers in climate radicalism, given the inadequate results to date by activists, suggests sabotage actions that do not exclude the use of violence against property.[3] My proposal, instead, is aimed at highlighting how one of the problems of the lack of effectiveness of the countermeasures implemented so far is related to considering humans on the basis of a misleading paradigm that tends to define them as rational beings characterized by cognition modeled after the computer. The point I will try to make is that in order to have more effective results there is a need not for more radical actions but for a radical rethinking of the human mind, imagination and the way these are treated in academic research.

Within the philosophy of embodied cognition, numerous attempts exist to experiment with non-discursive and therefore unorthodox approaches to philosophical practice. The widespread intention is to take philosophy

1 See E. Rietveld, J. Kiverstein, "A Rich Landscape of Affordances," *Ecological Psychology* 26, no. 4 (2014): 325-352, https://doi.org/10.1080/10407413.2014.958035; A. Chemero, *Radical Embodied Cognitive Science* (Cambridge MA: MIT Press, 2009).
2 E. Rietveld, "The Affordances of Art for making Technologies," *Adaptive Behavior* 30, no. 6 (2022): 489-503, 500, https://doi.org/10.1177/10597123221132898.
3 A. Malm, *How to Blow Up a Pipeline* (London-New York: Verso, 2021).

beyond the means of text-based thinking and argumentation, i.e., a philosophy that is not necessarily and exclusively tied to abstract theory, but can instead engage the concrete activity characteristic of artistic practices. In this way, such a philosophy would engage in the realization of imaginative objects or processes to trigger interactions between different fields of intervention such as science, engineering, design, sociology, etc., and question acquired practices in a way that could potentially transform our form of life.[4]

The work that philosopher Erik Rietveld conducts in parallel with his engagement with the Amsterdam-based RAAAF [Rietveld Architecture-Art-Affordance] interdisciplinary group – which operates at the intersection of architecture, visual arts, and philosophy – represents a paradigmatic example of a possible collaboration between artistic and philosophical practice. It is also paradigmatic of the development in embodied cognitive science as it considers embodiment not exclusively as a mere object of study but, taking it seriously, explores it at the practical level of our bodily engagement with the sociomaterial environment, as well as at the level of our activities including ones we enact as researchers and scholars in academia. Just think of the emblematic *The End of Sitting*, a sculptural investigation by RAAAF in collaboration with Barbara Visser, that is intended to question our addiction to sitting by designing a chair-free working environment. Rather than merely theorizing that people are embodied minds situated in a landscape of affordances, this artwork allows them to experience new possibilities through their active engagement with an unusual landscape. This constitutes a new way of doing philosophy, which is precisely a philosophy

4 See A. Noë, *Strange Tools. Art and Human Nature* (New York: Hill and Wang, 2015); E. Rietveld, "The Affordances of Art for making Technologies;" C. Hummels et al., "Non-discursive Philosophy by Imagining New Practices Through Design," *Adaptive Behavior* 30, n. 6 (2022): 537-540; T. E. Feiten, K. Holland, A. Chemero, "Doing Philosophy With a Water-Lance: Art And the Future Of Embodied Cognition," *Adaptive Behavior* 30, no. 6 (2022): 1-3, https://doi.org/10.1177/1059712320983041.

without text, a "show, don't tell philosophy,"[5] or a philosophy that is developed through unorthodox means.

Rietveld's proposal develops from the extension of the Gibsonian notion of affordance operated in collaboration with the philosopher Julian Kiverstein.[6] In its canonical version, an affordance is an invitation the environment provides the animal with in order to act.[7] To account for the "whole realm of social significance for human beings,"[8] Rietveld and Kiverstein propose to understand affordance as a relationship between an aspect of the sociomaterial environment and an ability available in a form of life – accounting in this way not only for the sensorimotor dimension related to the environmental invitation but for the rich landscape of opportunities that characterizes our niche too. We are able to pick up environmental invitations based on the abilities we have; these abilities are learned within practices into which we are introduced "by more experienced hands"[9] through a process of "education of attention."[10] Depending on the practice in which we are raised, we are solicited to respond by certain invitations rather than others. Being "selectively open"[11] to the sociomaterial environment leaves some invitations underutilized, which means that we fail to see some aspects of our surroundings.

This is where artistic interventions and philosophical practices come in, with their ability to bring out new possibilities for action and invisible aspects that we might not otherwise grasp. Installations, architectural interventions, or more generally artworks that rest on a radically embodied conception of the mind can be understood as

5 E. Rietveld, "The Affordances of Art for making Technologies:" 12.
6 E. Rietveld, J. Kiverstein, "A Rich Landscape of Affordances:"
7 See J. J. Gibson, *The Ecological Approach to Visual Perception* (1979) (Hillsdale NJ: Lawrence Erlbaum Associates, 1986).
8 J. J. Gibson, *The Ecological Approach to Visual Perception*: 128.
9 T. Ingold, *The Perception of the Environment: Essays on Livelihood, Dwelling and Skill* (2000) (London: Routledge, 2011): 37.
10 J. J. Gibson, *The Ecological Approach to Visual Perception*: 254.
11 J. Bruineberg, E. Rietveld, "Self-Organisation, Free Energy Minimisation and Optimal Grip on a Field of Affordances," *Frontiers in Human Neuroscience* 8, no. 599 (2014): 1-14, 4, https://doi.org/10.3389/fnhum.2014.00599.

real-life "thinking models,"[12] tangible invitations to think that address agents situated in a rich landscape of affordances. It is a matter of thinking about the interventions enacted by artistic practices in terms of unorthodox landscapes of affordances that offer invitations outside the norm capable of transforming acquired practices.

*Infinity pool*, the artistic proposal presented here as part of philosophy through unorthodox means – as it summons situated climatic monsters that enact a specific education of attention – stands within the framework of the research just outlined.

The monster I refer to is an imaginative being that constitutes a particularly powerful and ancient invitation to potentially reorganize our form of life. Addressing embodied minds that act in a particular sociomaterial context, *Infinity pool* is articulated through heterogeneous means – more specifically, a mirror mask, worn in three performances, and a video installation – whose purpose is to produce a change in coordination with the environment through an imaginative process. This change can take place on different planes and times by inviting different individual coordination, but also by producing a transformation of specific practices and thus of the very way in which the relationship with what usually remains distant – i.e., the environment and its/our crisis – is understood. This will be possible, as we shall see, as *Infinity Pool* tries to "put on display"[13] the concrete materials and related practices that literally give a face and a voice to our polluted environment.

12 E. Rietveld, "Situating the Embodied Mind in a Landscape of Standing Affordances for Living Without Chairs: Materializing a Philosophical Worldview," *Sports Medicine* 46 (2016): 927-932, 927, https://doi.org/10.1007/s40279-016-0520-2; E. Rietveld, R. Rietveld, J. Martens, "Trusted strangers: social affordances for social cohesion," *Phenomenology and the Cognitive Sciences* 18 (2019): 299-316, 308, https://doi.org/10.1007/s11097-017-9554-7.

13 A. Noë, *Strange Tools*: 11-18.

## Facing Invisible Threats Through Monstrous Education of Attention

As American scholar Jeffrey Cohen states, the monster "always escapes."[14] It is not easy to frame it in a discipline – the monster crosses disparate fields ranging from anthropology to religion, from ecocriticism to queer studies, from medieval studies to art – nor is it even possible to define it conceptually. The monster is a "breaker of category" that eludes all possible categorizations, and ridicules our attempts to define, which are always partial and incomplete, in fact, "it always rises from the dissection table as its secrets are about to be revealed and vanishes into the night."[15]

Different are the ways to try to frame it from heterogeneous disciplines. Philosopher Noël Carroll argues that the monster provokes curiosity that prompts us to try to figure out how we are going to deal with it, and in doing so it poses a cognitive threat;[16] for literature, film, and media scholar Jeffrey Weinstock, the monster embodies the "desire for other worlds,"[17] while for medieval studies scholar Asa Mittman it is an epistemological vertigo, through which established cognitive categories are questioned.[18] Instead, it is the "form of fear" for anthropologist Timothy Ingold[19] who considers the monster to be that construct through which an attempt is made to concretely articulate an otherwise elusive terror.

Here I consider the monster in reference to the artwork I will present below, Infinity pool. I thus understand the monster in terms of an imaginative artifact by which to

14 J.J. Cohen, ed., *Monster Theory* (Minneapolis: University of Minnesota Press, 1996): 4.
15 Ibid.
16 N. Carroll, *The Philosophy of Horror or Paradoxes of the Heart* (New York: Routledge, 1990): 34.
17 J. Weinstock, ed., *The Monster Theory Reader* (Minneapolis: University of Minnesota Press, 2020): 20.
18 A. S. Mittman, P. J. Dendle, eds., *The Ashgate Research Companion to Monsters and the Monstrous* (Abingdon Oxon: Ashgate Publishing, 2013): 1-14.
19 T. Ingold, "Dreaming of Dragons: On the Imagination of Real Life," *The Journal of the Royal Anthropological Institute 19*, no. 4 (2013): 734-752.

enact a monstrous education of attention that aims to illuminate usually marginal aspects of our environment.

I argue here that such a monster constitutes an extremely powerful resource for coping with the climate crisis.

The term "monster" comes from the Latin monstrum, which is related to the verbs monstrare – "to show" or "to reveal" – and monere – "to warn" or "to forewarn."[20] The monster is thus a kind of omen,[21] which warns by showing us something we had never seen.

Humans, as anticipated, being selectively open to the sociomaterial environment, are able to grasp only certain aspects relevant to the abilities they have acquired. Through a process of education of attention, the novice is introduced to a practice that invites him to pay attention to determined aspects of the world and to ignore others. Tim Ingold, to define this process, gives the example of a hunter who learns by being led into the woods by an experienced elder. The novice does not accumulate information in a supposed internal organ – the brain – but, through active exploration of the environment, is led to develop a sensitivity to the qualities of surface texture by which, simply by touch, they will be able to determine how long ago an animal left its footprint in the snow and even how fast it was traveling; in short, the young hunter, understood as an embodied mind situated in an extremely vast landscape of possibilities, is guided to notice aspects they would not otherwise have grasped, thus coming to develop a perceptual awareness of the properties of their surroundings and the possibilities for action they offer.

I propose, therefore, that the monster, understood as an artifact through which to produce a process of monstrous education of attention, constitutes for a specific community an invitation to pay attention to what is usually unseen, to aspects that are not soliciting, that fall

20 T K. Beal, *Religion and its Monsters* (New York: Routledge, 2002): 6-7.
21 S.T. Asma, *On Monsters: An Unnatural History of Our Worst Fears* (Oxford: Oxford University Press, 2009): 13.

outside established practices and thus remain invisible to a specific group of people.

What turns out to be dramatically invisible today – not in the sense of mere knowledge of data but relative to the collective navigation of our environment – is the climate crisis for which we fail to act effectively. How do we act about something we do not see?

The climate crisis is a threat that shows itself only when crimes have already been committed; storms, floods, fires, droughts, respiratory diseases, and cancers, are the misdeeds of something we have nurtured through our practices but that remains invisible to our eyes.

In an attempt to put a face to it and motivate our pro-environment action, the climate crisis is usually presented to us through disparate numbers or images that from time to time are brought to our attention. Such strategies, usually enacted by institutions, are based on the idea that it would be sufficient to send information toward the center of cognition – the brain – of the rational agent.[22] As it has been widely highlighted,[23] pro-environmental knowledge, values, or attitudes are not alone sufficient to make us act in the face of a threat that we do not see and that remains invisible, because the appeals are based on a misconception of human beings and their behavior,

22 See R.O. Kaaronen, "Affording Sustainability: Adopting a Theory of Affordances as a Guiding Heuristic for Environmental Policy," *Frontiers in Psychology* 8 (2017): 1-13, https://doi.org/10.3389/fpsyg.2017.01974; Q. Gausset, "Stronger Together: How Danish Environmental Communities Influence Behavioural and Societal Changes," in J. Hoff, Q. Gausset, S. Lex, eds., *The Role of Non-state Actors in the Green Transition: Building a Sustainable Future* (New York: Routledge, 2019): 52-70.

23 See on this respect J. Blake, "Overcoming the 'Value-action Gap' in Environmental Policy: Tensions Between National Policy and Local Experience," *Local Environment* 4, no. 3 (1999): 257-278, https://doi.org/10.1080/13549839908725599; A. Kollmuss, J. Agyeman, "Mind the Gap: Why Do People Act Environmentally and What Are the Barriers to Pro-Environmental Behavior?," *Environmental Education Research* 8, no. 3 (2002): 239-260, https://doi.org/10.1080/13504620220145401; W. Abrahamse *et al*., "A Review of Intervention Studies Aimed at Household Energy Conservation," *Journal of Environmental Psychology* 25, no. 3 (2005): 273-291, https://doi.org/10.1016/j.jenvp.2005.08.002; E.H. Kennedy *et al*., "Why We Don't 'Walk the Talk:' Understanding the Environmental Values/Behavior Gap in Canada," *Human Ecology Review* 16, no. 2 (2009): 151-160; L. Steg, C. Vlek, "Encouraging Pro-Environmental Behavior: An Integrative Review and Research Agenda," *Journal of Environmental Psychology* 29, no. 3 (2009): 309-317, https://doi.org/10.1016/j.jenvp.2008.10.004; R. O. Kaaronen, "Affording Sustainability: Adopting a Theory of Affordances as a Guiding Heuristic for Environmental Policy;" L. Steg, "Limiting Climate Change Requires Research on Climate Action," *Nature Climate Change* 8, (2018): 759-761, https://doi.org/10.1038/s41558-018-0269-8.

and also because the practices in which we are involved continue to invisibilize the threat itself.

My proposal aims to emphasize the need to develop imaginative invitations that are based on a less misleading idea of cognition understood simply as "mental gymnastics,"[24] and rather to take into account ourselves as situated embodied minds.

The disconnected data and images presented to us as brain food are unable to activate our action concerning something that appears to our eyes in a fragmentary, elusive, and suddenly violent way. We can only grasp the climate crisis as a collection of disjointed parts, pieces of a corpse that have not yet been sewn together and have not yet received the jolt that would bring them to life, galvanize them by putting them on their feet – as happened to the huge body of the Frankensteinian Creature – to truly terrorize us. In times of such urgent crisis, we are called upon to give a face to this monster by taking into account as possible its complexity and a renewed conception of the human being and its cognition; like novice, mad scientists, we have the responsibility to gather and stitch together pieces to produce an imaginative artifact that can offer concrete possibilities for action.

Thus, while science or the media provide us with numbers and images with respect to which it is difficult to take concrete action, the culture industry, which also seeks to shape our anxieties, very often presents us with hyper-simplifications before which we are equally unable to act – think for example of the highly successful 2021 film Don't look up produced by Netflix and directed by Adam McKay in which the climate crisis takes the form of a comet about to destroy our planet.

The purpose of the situated climate monsters of which Infinity Pool is a prototype is to provide a face to what threatens us and at the same time let some tangible

24 A. Chemero, *Radical Embodied Cognitive Science*: 134.

elements emerge against which a community can take concrete action.

Crucially, the face that will emerge addresses embodied minds, and it appears literally defined by the practices in which we are engaged.

## Infinity Pool: Setting Monstrous Social Change in Motion

Infinity Pool is an artistic project composed of a sculpture, a performance, and a video installation conceived in collaboration with landscape architect and researcher David Habets and with the visual support of photographer Valeria Scrilatti.

We have imagined developing the project along the course of the river Tiber, but we aim to develop Infinity Pool in disparate locations around the world to provide multiple faces of the transformed environment of human intervention.

Infinity Pool revolves around the design and creation of a reflective, chromed mask that will be worn as part of a three-act performance.

We have planned to enact Infinity Pool through three walks that will take place: 1) where the Tiber has its source, on the top of Monte Fumaiolo; 2) where the Tiber crosses Rome; 3) on the beach of Ostia where the Tiber flows into the sea.

Throughout each walk, every participant will collect what they encounter in their path as well as water samples of the river, which they will hand over to the masked performer.

Fig. 2. Antonio Ianniello, exploration Infinity Pool i.c.w. David Habets, photograph by Valeria Scrilatti.

With a video camera placed over the mask and pointing at it, we imagined recording its reflections. In a follow-up, these reflections will be projected in a museum space accompanied by words spoken by the individual masks. These voices will speak of objects and chemical components related to the water samples collected by the participants in the live performance. The specific materials of each location will thus define the faces of the environment.

Hypothetical dialogue that might develop between the three different projected masks is presented next. The succession of words should be read from left to right as if the faces are engaged in conversation. On the far left is the Source of the Tiber, which starts the dialogue, then the mask of the Tiber running through Rome, and finally the Tiber flowing into the sea.

| | | |
|---|---|---|
| | Polyurethane | Polyurethane |
| | *Gonyaulax fragilis* | *Gonyaulax fragilis* |
| *Barbus Tiberius* | dead *Barbus Tiberius* | dead *Barbus Tiberius* |
| | *Escherichia coli* | *Escherichia coli* |
| | stone | |
| Clothianidin | Clothianidin | Clothianidin |
| *Sorbus aria* | *Platanus* | *Juniperus oxycedrus* |
| Cypermethrin | Cypermethrin | Cypermethrin |
| *Boletus edulis* | Coke | |
| | cocaine | cocaine |
| pebbles | grit | sand |
| | | dead *Silurus glanis* |
| | | Polyurethane |
| | | Cypermethrin |
| | | *Escherichia coli* |
| | | *dead Barbus Tiberius* |

The monstrous face and voice of the environment offer the possibility of developing wide-ranging imaginative investigations with respect to the collected materials and the related heterogeneous practices – such as lack of purification of civil and industrial discharges, illegal fishing, spilling of pollutants and toxic substances, substandard hydraulic works, or the use of pesticides and fertilizers in intensive cultivation.

The purpose is certainly not to provide solutions but, more humbly, to inspire citizens, local communities, scientific researchers, and policymakers through processes of monstrous "education of attention" that can set in motion sustainable social change. Such faces can potentially invite – on multiple levels of activation – different imaginative coordination with the sociomaterial environment.

By imagining, here, we do not mean stepping back, daydreaming, fantasizing, immersing ourselves in an internal process, and engaging in solipsistic confabulations that detach us from reality. Imagination here means a radically situated process[25] in which the affordances available in the sociomaterial environment, determining themselves over time through the actions in which we engage, enable coordination in which the organism participates on different time scales.

If affordance is a relationship between an aspect of the sociomaterial environment and an ability available in a life form, then action is not to be understood exclusively as a determinate invitation to sit or walk but also as an "indeterminate"[26] one, that is articulated on different planes and in a more extended time, and that characterizes imaginative processes. Imagination in this sense has more to do with being open to a process that develops based on tangible invitations – although their development is indeterminate –, rather than with closing in on oneself.

*Infinity pool* constitutes an imaginative invitation aimed precisely at allowing the central role that

25 See L. Van Dijk, E. Rietveld, "Situated Imagination," *Phenomenology and the Cognitive Sciences* (2020): 1-23, https://doi.org/10.1007/s11097-020-09701-2.
26 Ibid.

practices – and the materials used in them – play in defining the face of the environment in crisis to emerge, and thus tries to emphasize how, to counter such a crisis, an appeal to individual intention is not sufficient.[27] In the face of the need for an unprecedented transformation of the way we live, rather than leveraging individual cognitions or motivations, a systemic perspective should be taken,[28] and thus emphasis should be placed on the complexity of social and contextual factors that promote or inhibit a given type of behavior.[29] In short, the magnitude of the crisis we are experiencing requires shifting the focus from individual spheres to collective processes,[30] which should enact not only low-cost behaviors – such as cheap individual consumption choices – but high-cost behavior change[31] and behaviors that can radically question and destroy established practices, which means giving up taking-for-granted habits and moving against social conventions and norms.[32]

In this sense in the context of such an urgent crisis, the collaboration between researchers and artists, invoked from several fronts to put in place effective

27 R.O. Kaaronen, N. Strelkovskii, "Cultural Evolution of Sustainable Behaviors: Pro-Environmental Tipping Points in an Agent-Based Model," *One Earth* 2, no. 1 (2020): 85-97, s; R.O. Kaaronen, E. Rietveld, "Practical Lessons for Creating Affordance-Based Interventions for Sustainable Behavior Change," *One Earth* 4, no. 10 (2021), https://doi.org/10.1016/j.oneear.2021.09.013.

28 R.O. Kaaronen, "Affording Sustainability: Adopting a Theory of Affordances as a Guiding Heuristic for Environmental Policy."

29 L. Steg, "Limiting Climate Change Requires Research on Climate Action," *Nature Climate Change* 8 (2018): 759-761, https://doi.org/10.1038/s41558-018-0269-8.

30 S. Bamberg, J. H. Rees, M. Schulte, "Environmental Protection Through Societal Change: What Psychology Knows About Collective Climate Action and What It Needs to Find Out," in S. Clayton, C. Manning, eds., *Psychology and Climate Change: Human Perceptions, Impacts, and Responses* (Amsterdam: Elsevier, 2018): 185-213; Q. Gausset, "Stronger Together: How Danish Environmental Communities Influence Behavioural and Societal Changes."

31 A. Kollmuss, J. Agyeman, "Mind the Gap: Why Do People Act Environmentally and What Are the Barriers to Pro-Environmental Behavior?;" W. Abrahamse *et al*., "A Review of Intervention Studies Aimed at Household Energy Conservation;" L. Steg, C. Vlek, "Encouraging Pro-Environmental Behavior: An Integrative Review and Research Agenda;" see R. O. Kaaronen, "Affording Sustainability: Adopting a Theory of Affordances as a Guiding Heuristic for Environmental Policy."

32 R.O. Kaaronen, E. Rietveld, "Practical Lessons for Creating Affordance-Based Interventions for Sustainable Behavior Change;" D. Centola, *How Behavior Spreads: The Science of Complex Contagions* (Princeton NJ: Princeton University Press, 2018); D. Centola, *Change: How to Make Big Things Happen* (Boston MA: Little, Brown and Company, 2021).

interventions to deal with the climate crisis,[33] is as necessary as ever, given that artists bring with them a long tradition of strategies designed to disrupt norms, rebel against the status quo, and unmask acquired conventions.

*Infinity pool* is an imaginative opportunity that tries to invite a specific community – in this case, the prototypical one that is situated around the Tiber River – to act concretely for tangible invitations within a given context. In this sense, Infinity pool pushes to go beyond the simple individualistic model, insofar as it addresses first and foremost embodied minds situated in a landscape of invitations – not by exclusively directing information toward individuals understood as passive receptors who in the depths of their cognition make decisions – and because it foregrounds, through a monstrous education of attention, that is, by intercepting reflections and whispers, the crucial role that practices play in the climate crisis we are experiencing.

Fig. 3. Tiber River and mirror mask realized for *Infinity pool* i.c.w. David Habets, photograph by Valeria Scrilatti

33 G. Caniglia *et al*., "A Pluralistic And Integrated Approach To Action-Oriented Knowledge For Sustainability," *Nature Sustainability* 4 (2019): 93-100; Report of the International Expert Panel on Behavioral Science for Design 2019; K.S. Nielsen *et al*., "How Psychology Can Help Limit Climate Change," *American Psychologist* 76, no. 1 (2020): 130-144, https://doi.org/10.1037/amp0000624; E. Rietveld, "The Affordances of Art for making Technologies."

*Infinity pool* not only questions non-sustainable practices for our planet but questions the very practice of academic philosophy.

The philosophy by unorthodox means enacted here invites us to explore how we coordinate with the sociomaterial environment, not in the sense of abstract intellectual reflection, but through the active perception of the environment itself made monstrous here by artistic intervention.

To transform our form of life, to question our practices, for change to be possible, and for a monstrous education of attention to have an impact beyond academia, we must enact a "bold departure from the confines of the ivory tower and into the shared social worlds of everyday life."[34]

A philosophy without text was used here for the specific purpose of "summoning" a monster with specific, radically situated characters, thus inviting an embodied mind to act through concrete actions. The goal was not to produce yet another sample of the "Mcglobal-Mcgothic"[35] monoculture that enacts an undifferentiated scare by not inviting any specific action. Yet the faces and words of *Infinity Pool*, as they emerge on the basis of explorations around the Tiber, could very likely be identical to countless other faces and words that could testify to further future explorations in different environments across the Earth. In this sense then, the multiple "globalgothic"[36] faces of *Infinity Pool*, could show us (*monstrare*) that the heterogeneous landscapes we find ourselves exploring are increasingly homogenized by anthropogenic intervention: they all look alike in some ways. We are therefore called upon to bring into play specific and situated actions that are able to stop an endless monologue of one everywhere identical face that talks only

34 T.E. Feiten, K. Holland, A. Chemero, "Doing Philosophy with A Water-Lance: Art and The Future of Embodied Cognition:" 2.
35 G. Byron, ed., *Globalgothic* (Manchester: Manchester University Press, 2013): 3.
36 Ibid.: 1-10.

about the same things over and over again, in order to prevent it from, inevitably, very soon going silent or unheard (*monere*).

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