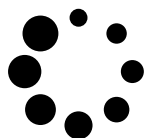


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by Mariaenrica Giannuzzi

Educational VR

Empathy machine

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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 2021¹⁰ 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 reinforces 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, Umbekka 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-Yusoff²⁶ 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 experienter'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*.

AN-ICONOLOGY

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