

Mirrored Dwellers: Reflections on Plural Perspectives through XR Performance.

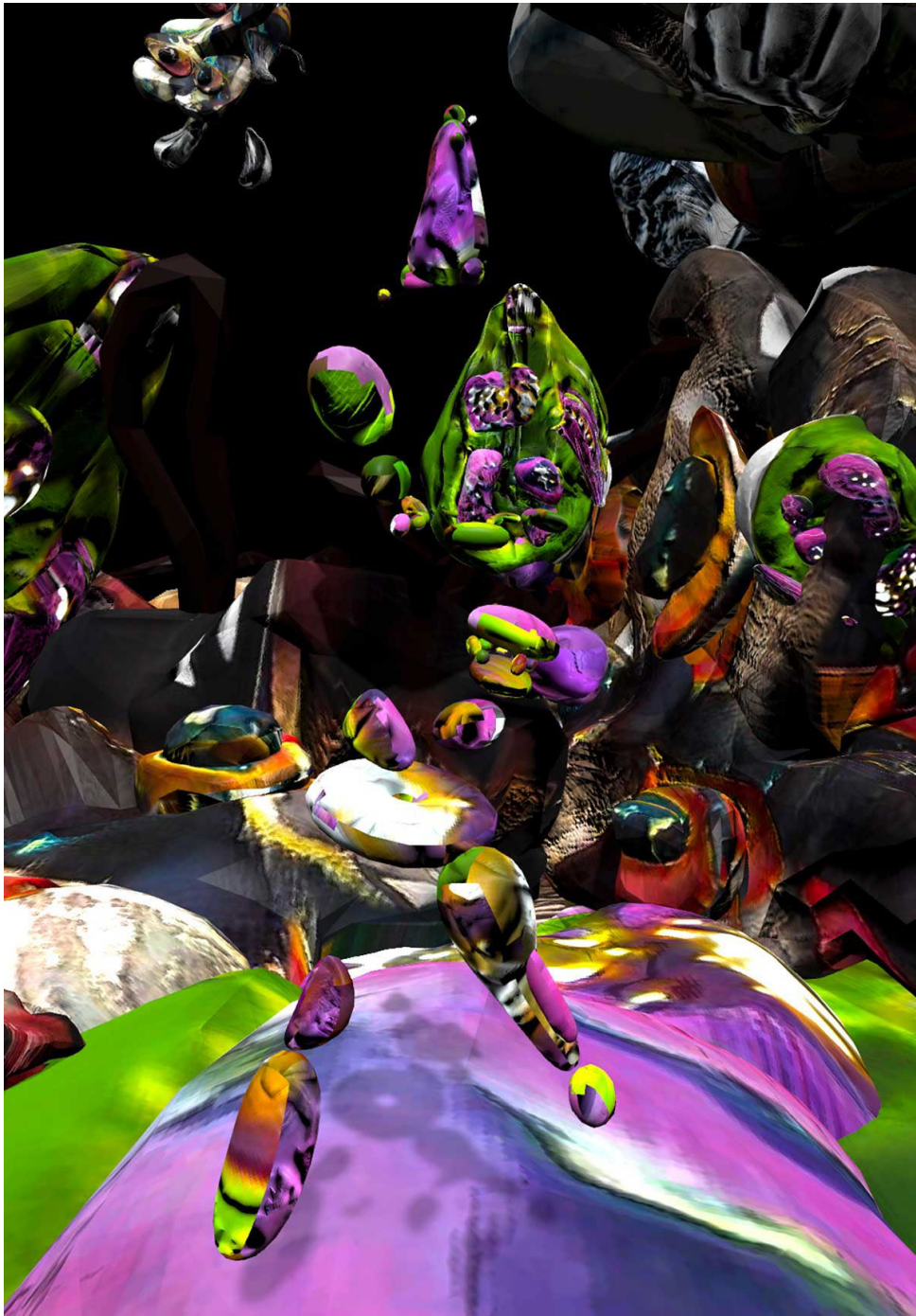
Peer-reviewed author version

SWILLEN, Anneleen & VANDEWEERD, Guus (2025) Mirrored Dwellers: Reflections on Plural Perspectives through XR Performance.. In: Collateral – Online Journal for Cross-Cultural Close Reading, 2024 (40).

Handle: <http://hdl.handle.net/1942/45534>

Mirrored Dwellers: Reflections on Plural Perspectives through XR Performance

Anneleen Swillen / Guus Vandeweerd



Artificial Intelligems, *Mirrored Dwellers* (2023). Avatar, world and image design by Guus Vandeweerd in collaboration with Artificial Intelligems.

“The alienness within myself opens paths to the alienness of the Other.”

(Waldenfels 53)

“Mirrored Dwellers”, a project by Artificial Intelligems,¹ explores performance and spectatorship in Extended Reality (XR)² through experimenting with phygital embodiment and music composition. Founded in 2020 by Anneleen Swillen and Greg Scheirlinckx, Artificial Intelligems is an experimental, fluid, and interdisciplinary collective focused on more-than-human³ co-creation in a post-digital⁴ culture. Through human-machine collaboration, it encourages critical reflection on topics such as (more-than-)human-centric design, agency, (digital) materiality, and authorship.

In 2021, Artificial Intelligems launched its first participatory project, inviting jewellery makers to share images of their work. A total of 124 artists and designers from around the world responded to this open call, contributing nearly 1,000 photos. These visuals fueled the training of a machine-learning algorithm,⁵ which learned from the input to envision continuously transforming and multi-dimensional speculative adornment. Artificial Intelligems called these co-creations “Ornamutations”.⁶

Developed within a contemporary jewellery context, a next step of this ongoing project involved exploring the interactions between these screen-based Ornamutations and a human body. The question arose: how can these Ornamutations be embodied? To explore this idea, Guus Vandeweerd translated a selection of Ornamutations into various avatars⁷ and a virtual world. Transforming two-dimensional images into three-dimensional objects and environments posed an interesting artistic challenge, particularly concerning textures, movement, volume, and surfaces. Vandeweerd approached this experiment in translation with an open mind, playfully sculpting the digital avatar. He started from an image of a green and purple amorphous Ornamutation and, through personal visual associations, became fascinated by the idea of “a humanoid figure composed of an arrangement of stones”. This exploration led him to adopt the persona of a pile of stones:

My visual appearance and sense of self became interconnected, altering my thought process. I pondered the nature of a stone’s movements and their origins. My prior experiences with stones informed how I perceived myself in the avatar, as I subconsciously embodied the sense of a pile of stones through my movements. [...] Inspired by the pile of stones, I crafted various avatars to explore alternate realities. [...] several questions emerged: What is our connection to the avatar? Do we control it or become it? Can multiple people connect to the same avatar? (Vandeweerd 6)

Phygital Compositions

For the XR performance “Mirrored Dwellers,” Ine Vanoeveren embodies one of the “Ornavatars”.⁸ Equipped with a VR headset, controllers, and full-body trackers, she stands live before an audience. As she plays the flute, she watches her avatar’s reflection in a mirror within the virtual world. The avatar serves as a musical score for Vanoeveren’s composition as she responds to and interprets the avatar’s visual appearance through sound experiments. The audience, immersed in a mixed-reality experience, can see Vanoeveren wearing the VR headset while viewing a screen that displays her virtual avatar. Simultaneously, a second projector overlays an experimental text on the screen. This text features a poem co-authored with LLM ChatGPT 3.5,⁹ along with scientific reflections on themes such as virtual immersion and the agency of more-than-human others in artistic creation.

The audience perceives Vanoeveren seemingly multiplied: her physical self, her avatar, the reflection of her avatar in the virtual mirror, and her shadow casting a dark silhouette on the screen. In social VR settings (such as the online virtual world platform VRChat), an avatar enables users to express themselves while maintaining anonymity and privacy (Fu and Chen et al.). In “Mirrored Dwellers”, the person IRL and the avatar are watched simultaneously. Phygital embodiments breathed into being. As an experiment in XR music composition, multiple versions and expressions (of self, of the performance) engage in a dialogue. Imagery plays a crucial role here. The virtual avatar and environment impact the performer’s emotions and expressions, affecting the musical composition. This dynamic can foster a more intuitive and sensory connection to the music-making process, where digital technology can heighten or disrupt attention and may ultimately lead to a deeper awareness of the experience.

As an XR performer, Vanoeveren navigates between physical and digital realms, as she’s observing the self-avatar (Fu and Chen et al.) while being unable to see the audience in the physical space. Aware of the audience watching her, she maintains a sense of vulnerability. Through the virtual mirror, Vanoeveren sees herself as an avatar, moving along with her gestures. This experience fosters a sense of self-presence, a feeling of identification with the (virtual) self, which can arise from embodied, physiological, emotional, or cognitive connections (Lee 27-50). While the headset deprives her of the ability to view the audience, it allows her to *become with*¹⁰ the avatar and the virtual world. More-than-human practices require us to *practise with* and *become with* various entities in ways that, as Ron Wakkary points out, are fundamentally expansive and relational to broader realities (4-5). Reflecting on the notion that design is a solely human endeavour, Wakkary emphasises the importance of recognising ‘the vitality of things’:

This vitality, a distributed agency, is a good starting point for seeing designing-with or the sharing of the foreground with nonhumans that, so to speak, are as equally creative or agentic in the designing of things. The designer of things is the bringing together of agentic capacities across humans and nonhumans in ways that create things. (173)

Fluid reflections

As Kate Wright points out: “Becomings are neither imitation, nor literal transformation, but the proliferation of multiple identities and ways of being in the world” (279). While the Ornavatar has a humanoid shape and Vanoeveren’s physical movements are in sync with the virtual mirror image — both contributing to a sense of self-presence and identification —, the avatar’s design differs significantly from that of a human figure. Vanoeveren *knows* she perceives herself, yet she also sees another being — herself as another, or another as herself. During the performance, her physical and digital selves play along, engaging in a harmonious interaction, reflecting one another. This act reminds of two types of mirror-mediated learning. Firstly, body imitation is the earliest behavioural tool infants use to explore self-other correspondence, a process involving both copying and being copied. Responding to the question by what mechanisms children can connect the felt but unseen movements of the self with the seen but unfelt movements of the other, classical psychological theories suggest that this connection develops through experiences such as seeing their reflection in mirrors and exploring both their own body and the bodies of others, which helps them translate these experiences into visual terms (Meltzoff and Moore 48-49).

Furthermore, reacting to oneself in a mirror may be reminiscent of the mirror test, a behavioural method created in 1970 by psychologist Gordon Gallup Jr. to determine if an animal can recognise itself visually and, consequently, displays physiological and cognitive self-awareness (Gallup 86-87). This test quickly established itself as the primary measure of self-awareness, and over time, numerous species have been subjected to it. James Bridle highlights that this test is highly debated today, as its primary effect is to reinforce the sense of a distinction between ‘higher’ animals and others rather than promoting a sense of shared kinship: we determine who meets the criteria of the test and can, therefore, assert the privileged status of subjecthood, and who does not (37-38).

Interestingly, learning through simulation applies to humans, other animals, and AI, especially with self-learning algorithms like the one we, as Artificial Intelligems, work with to co-create the Ornamutations. However, in the context of AI, simulation should not be understood as copying images but rather as a way of generating appearances based on the training data. In the “Mirrored

Dwellers” performance, learning seems to occur between states and beings; virtual entities mirror our actions, reflecting our every move, and, in turn, we often find ourselves emulating them. We learn from our virtual counterparts just as they learn from us (if a distinction between ‘we’ and ‘them’ still holds meaning when exploring learning and connection within an increasingly intertwined phygital landscape).

In his essay on agency and self-world dualism, James Russell argues that monitoring self-generated movements provides a sense of agency and is a crucial step toward distinguishing oneself from the environment (Bermudez et al. 10). Rather than separating oneself from the environment, “Mirrored Dwellers” presents an opportunity to experience and re-learn a *merging with* the environment. As the performer’s body blends with its environment to form a hybrid and permeable assemblage within a larger network of interactions, it prompts the question of whether selfhood can be redefined as being co-created in relation to one’s surroundings. By embodying the virtual avatar and world, one can explore the fluidity between ‘the self’ and ‘the world’, thereby challenging the notion of an isolated individual identity.

A more-than-human perspective

In the “Mirrored Dwellers” performance, the audience takes on the role of witnesses, embodying numerous perspectives that observe how the performer’s various layers and expressions split and merge. While many viewpoints come from those present in the audience, additional voices and ideas are incorporated through the text displayed on the screen, which features quotes from a variety of scientific sources as well as AI-generated content. Even more than the text’s content, the performance highlights *how* this text may play a role in the experience. The sentences scroll by too fast to comprehend, reminiscent of a post-digital viewing culture characterised by an endless stream of information. The audience, all eyes/I’s on the flow of gestures, sound, imagery and text, seems mesmerised as well as confused.

Seated in a relatively traditional setup, where the audience and performer(s) are positioned face to face, viewers engage in a dual experience that offers both a bird’s-eye perspective and a profound sense of immersion. This setup prompts questions surrounding power dynamics and agency. Is the audience in a unique position able to see ‘the whole’? Is their role as observers one of empowerment – transforming the act of watching into a participatory gesture –, in which they engage through being present at and experiencing the performance? Or does this role primarily reveal the limitations and illusions of promised participation? While enveloped in the dim light of the theatre, with eyes riveted on the screen and entranced by the otherworldly sounds emanating from the performance, the audience is encouraged to consider their role and level of

participation. By extension, this multi-layered enactment invites contemplation on the broader implications of XR technologies in shaping both the perception and creation of performances.

This “schouwspel” (spectacle) is, therefore, a literal manifestation of the term: a play centred on beholding. It explores the interaction between physical and digital expressions while primarily engaging in a dialogue between seeing and being seen in a visual culture captivated by digital media. It suggests that looking is far from a passive act; it actively energises the performance, enabling the performer(s) as well as the audience to collaboratively shape what might be a more-than-human perspective.

Empathy with ‘the other’ can be a crucial step towards more just, sustainable,¹¹ futures. However, as humans, we often find it challenging to escape our projections and interpretations. According to Bridle, digital technologies can help with this, as they can be utilised for purposes beyond their original intent, extending rather than limiting our capacity for attention and care (120). Embodying the avatar and virtual world of “Mirrored Dwellers” offers an opportunity to gain a different perspective. It allows us to slip into another skin and explore otherwise inaccessible experiences, encouraging contemplation on notions of diversity, interconnectedness, and otherness. Rather than being a multilayered high-tech spectacle, “Mirrored Dwellers” proposes to be *spectacles* mediating various perspectives.

Rethinking boundaries and hierarchies between the ‘self’ and the ‘other’ remains urgent in an era of rapid climate change, global polarisation, and technocentrism. By emphasising entanglement rather than division, “Mirrored Dwellers” encourages us to reconsider our interconnectedness in an increasingly fragmented world.

“Mirrored Dwellers” is a collaborative project by Anneleen Swillen, Guus Vandeweerd, Ine Vanoeveren, Senneke Van de Wyngaert, and Esther Verstreken. It was created for Conditions of Spectatorship, a one-day symposium on artistic research at RITCS School of Arts in Brussels. This project explores the expansive possibilities of XR performances, with each contributor offering insights from their respective practices in jewellery, graphic design, music, and fine arts. To date, “Mirrored Dwellers” has been performed at RITCS in Brussels (March 23, 2023), De Singel in Antwerp (April 19, 2023), and PXL University of Applied Sciences and Arts in Hasselt (December 11, 2023).

Bibliography

- —“Avatar.” *Merriam-Webster.com Dictionary*, n. d., Merriam-Webster, <https://www.merriam-webster.com/dictionary/avatar>. Accessed 6 Nov. 2024.
- —Bermudez, José Luis; Marcel, Anthony, and Eilan, Naomi. *The Body and The Self*. Cambridge: The MIT Press, 1998.
- —Bridle, James. *Ways of Being*. Penguin, 2022.

- —de la Bellacasa, Maria Puig. *Matters of Care - Speculative Ethics in More Than Human Worlds*. University of Minnesota Press, 2017.
- —Haraway, Donna. *When Species Meet*. Minneapolis and London: University of Minnesota Press, 2008.
- —Fu, Kexue; Chen, Yixin; Cao, Jiaxun; Tong, Xin and LC, RAY. 2023. "I Am a Mirror Dweller: Probing the Unique Strategies Users Take to Communicate in the Context of Mirrors in Social Virtual Reality". In *Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems (CHI '23)*, April 23–28, 2023, Hamburg, Germany. ACM, New York, NY, USA, p. 1 - 19.
DOI: <https://doi.org/10.1145/3544548.3581464>.
- —Gallup, Gordon G. "Chimpanzees: Self-Recognition." *Science*, vol. 167, no. 3914, 1970, pp. 86–87. *JSTOR*, <http://www.jstor.org/stable/1728199>. Accessed 6 Nov. 2024.
- —Lee, Kwan Min. "Presence, Explicated." *Communication Theory*, vol. 14, Issue 1, 1 February 2004, p. 27–50, <https://doi.org/10.1111/j.1468-2885.2004.tb00302.x>
- —Meltzoff, Andrew N. and Moore, M. Keith. "Infant's Understanding of People and Things: From Body Imitation to Folk Psychology." *The Body and The Self*, edited by José Luis Bermúdez, Anthony Marcel, and Naomi Eilan, The MIT Press, 1998, p. 43-69.
- —Paul, Christiane. *Digital Art*. Thames & Hudson, 2023.
- —Tsing, L. A. *The Mushroom at the End of the World: On the Possibility of Life in Capitalist Ruins*. Princeton University Press, 2021.
- —Vandeweerd, Guus. *The Avatar and the Self. Phenomenology of my Digital Double*. 2023. PXL-MAD School of Arts Hasselt. Master's Thesis.
- —Waldenfels, Bernhard. *Phenomenology of the Alien. Basic Concepts*. Northwestern University Press, 2011.
- —Wakkary, Ron. *Things We Could Design For More Than Human-Centered Worlds*. The MIT Press, 2021.
- —Weinstein, David. 2022. "What is Extended Reality?" *Nvidia*, <https://blogs.nvidia.com/blog/what-is-extended-reality/>. Accessed 6 Nov. 2024.
- —Wright, Kate. "Becoming-With." *Environmental Humanities*, vol. 5, May 2014, p. 277-281, <https://doi.org/10.1215/22011919-3615514>

Bios

- —**Greg Scheirlinckx** is a composer, sound designer and computer artist. He creates music and sound for film, installation and performance.
- —**Anneleen Swillen** is a postdoctoral researcher and lecturer at PXL-MAD School of Arts and Hasselt University, Belgium. Her work explores jewellery within a post-digital culture through research in the arts, education, curation, and writing.
- —**Guus Vandeweerd** earned his master's degree in graphic design at PXL-MAD School of Arts in 2023, where he focused on digital identity and avatars. He is pursuing a master's in research in design at BAU College of Arts & Design Barcelona while continuing his research on digital identity through collaborative projects at PXL-MAD and Corda Campus.

- —**Senneke Van de Wygaert** is (not) a jewellery artist.
- —**Ine Vanoeveren** obtained her doctoral degree in Contemporary Music Performance in 2016 at the University of California, San Diego. She specialises in XR performances, using the latest live entertainment technologies. She is Lead Technology & Innovation of Europe's pioneering digital event venue, Corda Arena.
- —**Esther Verstreken** graduated in 2024 with a master's in Image Thinking at PXL-MAD School of Arts. For two years, she has been deeply engaged in research that brings art and tactility as close together as possible - a project she continues to refine and expand.

Notes

- **1**For more info, see <https://artificialintelligems.com/>
- **2**Extended reality (XR) comprises immersive technologies such as virtual reality (VR), augmented reality (AR), and mixed reality (MR). VR fully immerses users in a virtual environment through headsets. AR superimposes digital images onto the real world, whereas MR integrates both real and digital elements, enabling interaction with both (Weinstein 2022).
- **3**The concept of the more-than-human refers to a holistic perspective that encompasses non-humans and other-than-humans, such as things, objects, other animals, living beings, organisms, physical and geological forces, spiritual entities, and humans (de la Bellacasa 1).
- **4**The term “post-digital” can be misleading. Instead of indicating a period *following* the digital era, it stresses the interwovenness of physical and digital. Curator Christiane Paul states that post-digital art “finds its artistic expression in works that are both deeply informed by and shaped by digital technologies, while also crossing boundaries between media in their final form. Post-digital art can take various forms, including sculpture, photography, and painting” (Paul 7). In our research, we explore the post-digital as a perspective, a form of expression, and a domain.
- **5**Nvidia's StyleGAN
- **6**The entire database of photos submitted for this project, as well as a selection of Ornamutations, can be accessed via <https://artificialintelligems.com/ornamutations-since-2021/> (slide down the text window by clicking “X” at the top right corner to discover the image collection).
- **7**The word “avatar” can signify multiple concepts, such as “an electronic image (as in a video game) that represents and may be manipulated by a computer user”, “the incarnation of a Hindu deity (such as Vishnu)”, or “an embodiment (of a concept or philosophy) often in a person” (“Avatar”). In this text, “avatar” pertains specifically to a digital representation of a person in the online realm, free from any limitations on the quantity or variety of those representations.
- **8**Vanoeveren makes this decision based on her feeling of connection with an avatar. Through experimenting with different Ornavatars, she

tests whether they inspire or impact her musical compositions. So far, she has performed with two different Ornavatars.

- **9**While questioning how to embody the Ornamutations, Vandeweerd, Verstreken, Van de Wygaert, and Swillen engaged in some thought experiments, in which they attributed tactile properties to the Ornamutations. Amongst others, they imagined how an Ornamutation might smell, sound, feel, and move. As part of their experiment to connect with virtual more-than-human others, they fed their ideas to LLM ChatGPT 3.5, asking to turn their responses into a poem.
- **10**Donna Haraway argues “to be one is always to become with many” (4) and “[i]f we appreciate the foolishness of human exceptionalism then we know that becoming is always becoming *with*, in a contact zone where the outcome, where who is in the world, is at stake.” (244) Anna Tsing extends this view as she states that “we engage in processes of thinking-with, making-with, and becoming-with our other-than-human colleagues” (22).
- **11**It’s important to note that digital technologies, such as AI, have a significant ecological footprint. Although digital technologies often appear to operate invisibly, they are not without material roots or impact. While this discussion is crucial, exploring it in depth goes beyond the scope of this essay.