Chapter Title: Symbiosis, or How to Make Kin in the Chthulucene
Chapter Author(s): Joost Raessens

Book Title: Ecogames
Book Subtitle: Playful Perspectives on the Climate Crisis
Book Editor(s): Laura op de Beke, Joost Raessens, Stefan Werning, Gerald Farca
Published by: Amsterdam University Press. (2024)
Stable URL: https://www.jstor.org/stable/jj.10819591.20

17.   *Symbiosis*, or How to Make Kin in the Chthulucene

Joost Raessens

Abstract

The virtual reality installation *Symbiosis* (Polymorf 2020) is a performative, multisensory, multiuser, multispecies, and interpassive storytelling experience inspired by Donna Haraway's book *Staying with the Trouble* (2016). It offers a speculative world set somewhere 200 years in the future, after a human-caused climate disaster has changed the Earth beyond recognition. The world's population consists of so-called "children of compost" or "symbionts." The installation allows six participants to simultaneously embody one of six symbiotic life forms. Each experience comes with a uniquely designed soft robotic wearable enabling participants not only to see, hear, and feel but also to smell and taste their symbiotic experiences. In this way, *Symbiosis* becomes a passionate imagining of how to make kin in the Chthulucene.

Keywords: virtual reality, Anthropocene, Capitalocene, Symbiocene, climate disaster, refraction

> *Our task is to make trouble, to stir up potent response to devastating events, as well as to settle troubled waters and rebuild quiet places.*
> —Donna Haraway, *Staying with the Trouble: Making Kin in the Chthulucene* (2016, 1)

We live in a critical moment, both in the planet's history and in human history. The 2023 Intergovernmental Panel on Climate Change (IPCC) report warns us that the world will reach global warming of 1.5°C above preindustrial levels within the next two decades and that we need to drastically cut our carbon emissions to prevent environmental disaster.

According to environmental activist Greta Thunberg's *The Climate Book* (2022), the climate crisis is the biggest threat to humankind, an existential crisis we can only cope with if we combine small individual measures with worldwide system changes. Multispecies feminist and theorist Haraway tells us that we are living in catastrophic times, in an unending global ecological disaster (2016, 2017).

The impasse we face is that existing sociotechnical imaginaries and practices—here defined as "collectively held, institutionally stabilized, and publicly performed visions of desirable futures" (Jasanoff 2015, 4)—no longer produce the outcomes they once did, while new imaginaries and practices are hardly available yet. To overcome this impasse, we need to avoid two responses to the disasters of the Anthropocene and the Capitalocene: "a comic faith in technofixes" and "an explicit 'game over' attitude that can and does discourage others" (Haraway 2016, 3). But, as we will see in this chapter, we can still "embrace situated technical projects [VR] and their people [Polymorf]. They are not the enemy; they can do many important things for ... making generative oddkin" (2016, 3). What we as humankind need to do is what Haraway calls to think with, live with, be with other planetary organisms; we need to come up with new ways of reconfiguring our relationship with the Earth and all its inhabitants. She states that "a common livable world must be composed, bit by bit, or not at all." We must be "searching for compositionist practices capable of building effective new collectives" (2016, 40).

As a green media scholar interested in transformative ecoplay, I focus in this chapter on *Symbiosis* (2020), a virtual reality installation designed and produced by Polymorf in collaboration with Studio Biarritz. Polymorf is an interdisciplinary Dutch experience design collective that creates, as they formulate it themselves on their website, "speculative design and multi-sensory experiences using cutting-edge technologies" (2021). Based on Haraway's "speculative fabulations" (2016, 10), *Symbiosis* incorporates the kind of new imaginary or practice Haraway is looking for. It is an example of what she calls a "science art worlding ... in which scientists, artists, ordinary members of communities, and nonhuman beings become enfolded in each other's projects, in each other's lives; they come to need each other in diverse, passionate, corporeal, meaningful ways" (2016, 71–72).

At first sight, it might seem strange to analyze *Symbiosis* in the context of "transformative ecoplay." But play is not limited to a narrow category of activities we normally associate with rule-based games; it also extends to what are termed "ludic activities": "all of the non-game behaviors we also think of as 'playing'" (Salen and Zimmerman 2003, 303). And play

can be transformative: "it can overflow and overwhelm the more rigid structure in which it is taking place" (305). Combining these notions of play and transformation with Roger Caillois' (2001) classification of games that distinguishes between *agõn* (competition), *alea* (chance), *ilinx* (vertigo), and mimicry (simulation, often with masks as an instrument for metamorphosis), I define *Symbiosis* as follows. It is a form of transformative play characterized primarily by mimicry (simulation), where participants step into the shoes of a symbiotic life form, or "play at being symbionts," wearing VR headsets and suits as their costumes or role-playing attributes, in the imagined setting of the Chthulucene.

Within the Green Media Studies initiative, we are convinced that popular media culture, such as VR imaginaries and practices, is the place where meanings around the interconnectedness of humans and the environment are constructed (Werning and Raessens 2023). To be able to understand how *Symbiosis* constructs such an interconnectedness, I will start with Haraway's reading of the Anthropocene and Capitalocene, a reading that enables us to better understand exactly what is "at play" with her concept of the Chthulucene. Then I will introduce *Symbiosis*, the symbiotic characters and stories it enables us to experience and give an overview of its main characteristics. On the basis of the theory of framing and refraction as proposed by George Lakoff (2010) and Roy Bendor (2018), I will present my reading of *Symbiosis*. Finally, I will characterize *Symbiosis* as a "transformative player community" or, as Haraway describes it, as a "Community of Compost" (2016).

Anthropocene, Capitalocene, and Chthulucene

In the year 2000, the Dutch meteorologist Paul Crutzen and American biologist Eugene Stoermer popularized the Anthropocene, the "Age of *Anthropos* (Human)," as a geological term that reflected the idea that recent human impact on the Earth was of such a kind and magnitude that it introduced a new, geologically distinct epoch, marked by long-lasting geophysical changes such as climate change. They proposed an origin for the epoch in the second part of the eighteenth century, when the demand for coal to power steam engines exploded, a development that was the start of a dramatic increase in greenhouse gasses, especially carbon dioxide.

According to Haraway however, this new geological term is misleading for at least two reasons (2016, 2017). The first reason is that she considers the dates to be all wrong: to understand the human impact on the planet, one

must take into consideration colonialist practices going back to the sixteenth century at least (for example, the sugar plantations in the Caribbean in the eighteenth century and the palm oil plantations in twenty-first-century Indonesia). These practices established enduring racial hierarchies, marking a period she refers to as the Plantationocene, the "Age of Plantations" (Ghosh 2021). A second reason why the Anthropocene as a concept is all wrong is that *anthropos*, as a general term for humanity, cannot be held responsible for climate disaster. Hydro-fracking, for example, a relatively new technique for recovering gas and oil from shale rock, was developed by the oil and gas industry, not by humanity: "the Anthropos did not do this fracking thing" (Haraway 2016, 47) and should therefore not give its name to this epoch. The epoch should be named the Capitalocene (the "Age of Capital"), expressing the opinion that Capitalocene globalizations since the twelfth century in general, and neoliberal capitalism, in particular, are a fundamental cause of climate disaster.

What we urgently need is to "make trouble" and formulate responses to and alternatives for these two devastating concepts—Anthropocene and Capitalocene—which we can interpret as expressions of a "conservative" moral system (see below): "Revolt needs other forms of action and other stories for solace, inspiration, and effectiveness" (Haraway 2016, 49). Haraway calls this "progressive" alternative the Chthulucene (the "Age of the Earthbound," 53; "Chthonic ones are beings of the Earth," 2). For Haraway, this is an epoch that breaks with human exceptionalism and favors multispecies stories like *Symbiosis*, told and lived by collaborations between human and nonhuman players.

Symbiosis: Introduction

The VR installation *Symbiosis* is a performative, multisensory, multiuser, multispecies, and interpassive storytelling experience, inspired by Haraway's book *Staying with the Trouble* (2016, particularly Chapter 8, "The Camille Stories: Children of Compost"). It offers a speculative world set some 200 years in the future after a human-caused climate disaster has changed the planet beyond recognition. The world's population consists of so-called "children of compost"—all subject to the process of decomposition—or "symbionts," organisms composed of different combinations of biological and nonbiological life forms. Here, the biological interaction called "symbiosis" is mainly facultative or optional, in the sense that it is a self-conscious political act: "As a political answer to environmental destruction, human overpopulation
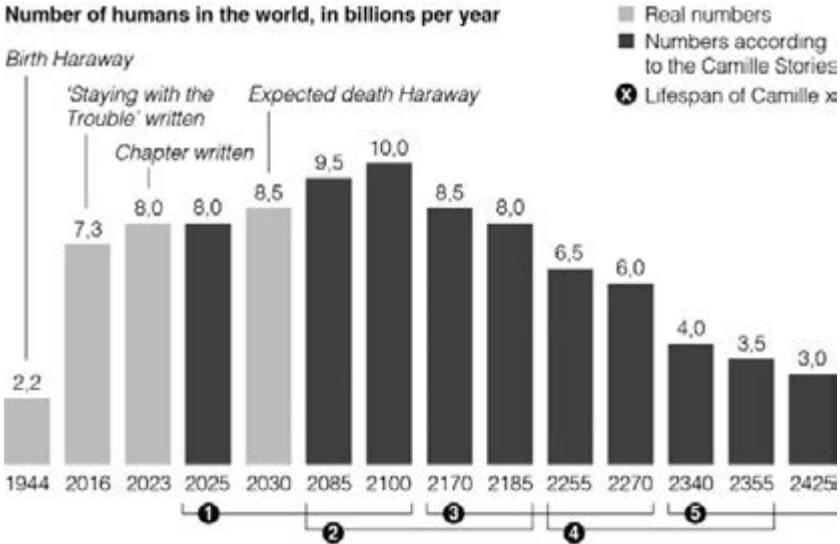
Figure 17.1: World population in "The Camille Stories."

and human-centric power structures, they [children of compost] commit themselves to a strategy that favours decreasing human population, increasing biodiversity, and restoring ecosystems" (Polymorf 2021, 25).

Human overpopulation is one of the many concerns of Haraway, as we can see in "The Camille Stories" (2016, 144–168). Haraway describes her story as "an invitation to a collective speculative fabulation [that] follows five generations of a symbiogenetic join of a human child and monarch butterflies" (8). Her story "tracks the five Camilles ... between the birth of Camille 1 in 2025 and the death of Camille 5 in 2425" (2016, 8, 143). When we have a look at the human population numbers between the birth of Camille 1 and death of Camille 5, we see the following pattern. The world population was 7.3 billion when *Staying with the Trouble* was written in 2016, and 8.0 billion in 2023, the year the present chapter was written; in the course of "The Camille Stories" (see Figure 17.1), the world population starts at eight billion people in 2025, reaches its peak in 2100 (ten billion) and then falls to three billion in 2425, with many humans living as "syms [symbionts] with extinct partners" (166). Given the fact that in her lifetime (Haraway was born in 1944, and according to life insurance tables she will probably die in 2030, see Haraway 2017) the world population has already increased by more than six billion, Haraway concludes that this is something that really matters. "Make kin not babies" is therefore her slogan (2017). If we were to follow the Camille stories, the idea of surviving by deliberate mutation

Figure 17.2: From left to right: Slime Mold, Toad, AI entity in the rack, Head/Body, and Camilla.

Figure 17.3: *Symbiosis*.

(addressed also by Colin Milburn's chapter in this book), and to be more selective with having and raising children, humankind could become more resilient and address the problem of human overpopulation.

Symbiosis fulfills, I would say, the hope expressed by Haraway: "I hope readers change parts of the story and take them elsewhere, enlarge, object,

flesh out, and reimage the lifeways of the Camilles," 2016, 144). The installation allows six participants to each embody a different artificial or enhanced biochemical symbiotic life form for fifteen minutes. By choosing one of the stories, the visitor selects a character and role in the overall story world. Each experience comes with a uniquely designed soft robotic wearable enabling various haptic bodily manipulations. My analysis of *Symbiosis* is based on the fourteen times I experienced this work—at least twice per character—in Amsterdam, Breda, and Utrecht, respectively, in November 2021 at the Eye Film Museum (Amsterdam), in July 2022 at the Polymorf Studio (Breda), and in September 2022 at the Dutch Film Festival (Utrecht).

The installation consists of a performative space (see Figures 17.2 and 17.3) where participants put on a full-body VR haptic suit enabling them—once immersed in this future world—to take on the role of one of six symbiotic life forms: Camilla, a Colorado River Toad, a Slime Mold, or a three-part Multibody creature consisting of a Head, a Body, and an AI entity. The bodysuit enables participants not only to see, hear, and feel, but also to smell and taste their symbiotic experiences.

Symbiosis: Six experiences, three main storylines

The story world of *Symbiosis* consists of the following elements (see Figure 17.4). The Toad and the Slime Mold on its back are two of the six main characters. They start their story within a cave and follow a dog (a supporting character) towards the central meeting place, the home of the Sisters of Symbiosis. Camilla starts her story in a ruined city landscape and follows a human-butterfly, again towards the central meeting place. The Multibody (consisting of a Head, a Body and an AI entity, all stuck together) is the only oceanic creature. It follows an octopus towards the beach near the central meeting place. The characters meet at, or on the edge of, the central meeting place, where the overall story ends with a shared eating ritual.

After having put on your bodysuit, the staff help you to put on the VR gear. The first image you see is that of a room in which the six characters, including their names, are made visible: Camilla, Toad, Slime Mold, and Multibody (consisting of a Head, a Body, and an AI entity). Then the image turns black while you hear the following text: "You leave the body, to transcend into a new one. Breathe in, breathe out, breathe your new body into existence. Feel it change shape and reorganize itself into a new becoming-with." The next moment, you embody one of these six characters in a first-person perspective.

Figure 17.4: *Symbiosis* story world.

Camilla is a symbiotic entanglement between a human, a flowering orchid, and a monarch caterpillar (see Figure 17.5). In her storyline, you follow a human-butterfly symbiont (see Figure 17.6) through a forest, the remnants of a ruined city, and a desert landscape filled with a diversity of "children of compost": flocks of butterflies, insects with air bubbles, walking squids and so on. Finally, you arrive at the central meeting place where all the characters and stories converge (see Figure 17.7). That place is the home of the Sisters of Symbiosis, who offer their bodies as a food source to others (see Figure 17.8). They live in small communities in igloo-like houses (the word "igloo" means "house" in the language of the Inuit), using meditation to prepare their bodies for cycles of cannibalistic eating and physical regeneration.

The story of the Colorado River Toad—a symbiosis between a human and a toad—and the Slime Mold (see Figures 17.9 and 17.10) starts in a cave where all kinds of plants are respiring (see Figure 17.11). The Slime Mold

Figure 17.5: Camilla.

Figure 17.6: Human-butterfly symbiont.

Figure 17.7: Central meeting place.

Figure 17.8: Sisters of Symbiosis.
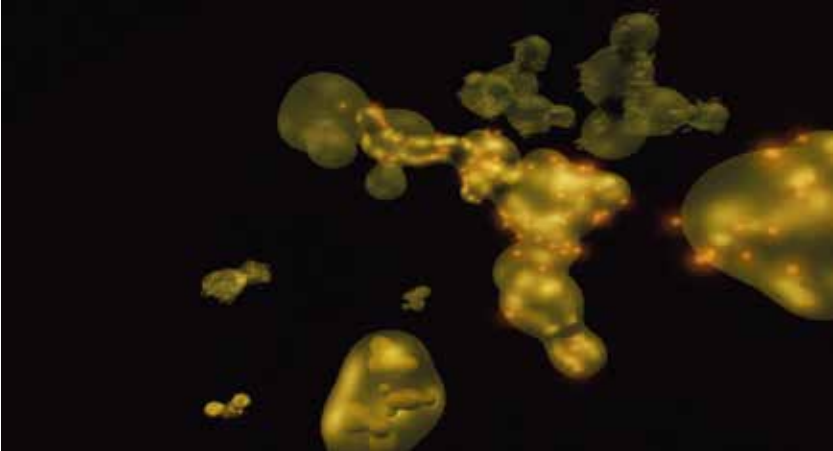

Figure 17.9: Toad.

Figure 17.10: Slime Mold.

Figure 17.11: Cave.

falls from the ceiling of the cave onto the back of the Toad, who welcomes the Slime Mold: "Let my body be a new home to you." Once outside the cave, the Toad—with the Slime Mold on its back—follows a barking dog through a misty landscape where it meets other toads and the Sisters of Symbiosis. One striking experience is the moment that you as a Toad meet a Sister of Symbiosis who picks up another toad's egg and feeds it to you. Only when you hear the voice of the Toad saying "So I ate my brother" do you realize that the other toad was your mother toad and what you just did was a form of cannibalism. Just before arriving at the central meeting place, the Slime Mold falls off the Toad's back and, unable to move of its own accord, stays on the ground. When you are playing the Slime Mold,
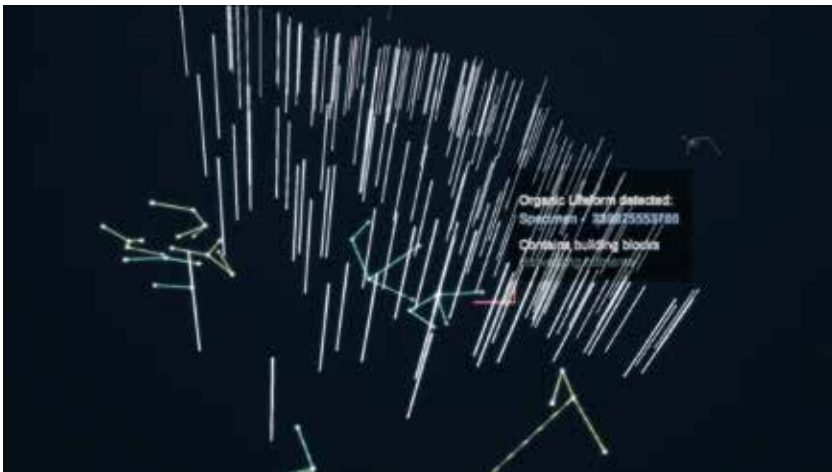
Figure 17.12: Multibody.

Figure 17.13: AI entity.

a unicellular organism, you can only experience the world in an abstract way. Even so, the makers of *Symbiosis* are cheating a bit because even as a Slime Mold you can see the contours of the dog, a Sister of Symbiosis, and some of the other toads.

The Multibody, finally, is a symbiotic entanglement between an angler fish, an octopus, and an artificial intelligence entity (see Figure 17.12). Swimming in the ocean, it follows an octopus—encountering other sea animals en route—up to the beach where it meets other multibodies. As part of the Multibody, a participant has three options: being the Head, which means that you can move your head and determine the Multibody's

viewing direction; being the Body, which sees what the Head is seeing; and being the AI entity, seeing fish, plants, and other hybrid multibodies in the form of data visualizations supported by small messages explaining what it is that you are seeing: "Gathering data; organic/plant-based/hybrid life form detected" (see Figure 17.13).

These six experiences show that kinship can take on multiple forms. The six main characters are symbionts that maintain relations with each other, with other "children of compost," such as dogs, octopuses, and human-butterflies, and with the Sisters of Symbiosis.

Symbiosis: Characteristics

As I already mentioned above, *Symbiosis* is an example of a performative, multisensory, multiuser, multispecies, and interpassive storytelling experience. Here I explain in more detail what is meant by these five characteristics. First, the experience of *Symbiosis* is achieved through the enactment, the putting into practice, of the six different roles you as a participant can play; the VR experience is a "doing" experience: without the participation of its users, *Symbiosis* would only consist of six empty suits (see Figure 17.14). At the same time, *Symbiosis* is a form of staging, an act of presenting your character, not only to the other characters in the story space—they can see each other at the central meeting place at the end of each experience—but also to the audience in the public space where *Symbiosis* is performed. This audience normally consists of casual passers-by, or people who are queuing for the next VR session.

Second, *Symbiosis* is a multisensory immersive experience combining the five main senses: hearing (audition), sight (vision), smell (olfaction), taste (gustation), and touch (taction). While VR eliminates the sense of looking at a screen, it shares the modalities of hearing and sight with other audiovisual media such as cinema and games (Elleström 2018). The use of the other three senses, however, is specific to VR experiences such as *Symbiosis*. Participants smell specific aromas (see Figure 17.15), taste specific drinks and food items (see Figure 17.16)—designed by Karpendonkse Hoeve, a Michelin star restaurant in Eindhoven—and are constantly "in touch with" their bodysuits. A striking example of how the bodysuit strengthens the experience is that when playing the Toad (part human, part toad), sections of the bodysuit can be inflated to mimic the toad more realistically (see Figure 17.17). It is important to note that all the specific aromas, food items, and drinks that your character experiences are related to, and key to being

Figure 17.14: Six empty suits.

Figure 17.15: Smelling aromas.

immersed in, your character's storyline. When playing Camilla (which is part orchid), for example, you get to eat sugared orchid leaves; and when playing the oceanic Multibody, you eat a mix of algae, boiled-down seawater, and sea snail. Before *Symbiosis* starts, all participants are informed about what they are going to smell and taste and are given the opportunity to refuse these elements of the VR experience.

Figure 17.16: Tasting food items.

Figure 17.17: Toad (part human, part toad).

Third, *Symbiosis* is a limited multiuser experience in the sense that all six participants share the same story space but are only able to see each other at the central meeting place at the end of each storyline. Polymorf's original plan to turn *Symbiosis* into a real interactive experience, where the six characters would genuinely interact with each other, was dropped because of technical limitations.

Fourth, *Symbiosis* is an example of multispecies storytelling that consists of six different perspectives and three linear storylines that all take place within the same context and location; those of Camilla, the Toad/Slime Mold, and the Multibody. The participants in this VR installation can only follow these linear storylines; they cannot alter them. You are literally led through the different story spaces by following a human-butterfly symbiont (Camilla), a dog (Toad/Slime Mold), and an octopus (the Multibody). The only thing you can do is to move your head around to see what happens, and the Body in the Multibody cannot even do that. The interaction is limited to moving your body parts to chase away the butterflies and open some plants when looking at them (as Camilla can do, for example).

Fifth, *Symbiosis* is an "interpassive" experience (Pfaller 2017), which refers to a phenomenon whereby a piece of technology acts on a user's behalf. In this sense, *Symbiosis* resembles a filmic experience more than an interactive gaming experience. But the limited amount of interaction is not necessarily a restrictive thing. In *Symbiosis*, the dominance of action and interaction (acting) gives way to the dominance of the intensity of experience (feeling), and potentially, as I will show below, to the reflexivity of thought (knowing) and the world-making power of the imagination (Kattenbelt and Raessens 2003).

Framing and refraction

To better understand what is at play in *Symbiosis*, it is productive to turn to the theory of framing and refraction as proposed by Lakoff (2010) and Bendor (2018). Lakoff differentiates between two moral systems, a conservative and a progressive one. The conservative moral system includes a number of ideas that oppose environmentalism (the advocacy of the preservation, restoration, and improvement of the natural environment) while the progressive moral system includes a number of ideas that support environmentalism. This dichotomy resembles Bruno Latour's political orientation, which enables us to "think the world politically" (Mouffe 2013), to decide "who is our friend and who is our enemy, with whom we make alliances and with whom we should fight" (Latour 2018a, 33; see also 2018b).

The differences between conservative and progressive moral systems can be summarized as follows: a conservative let-the-market-decide ideology versus the progressive idea of governmental environmental regulation; greed and growth seen as good as such versus generosity and degrowth; "climate change" as a neutral concept versus "climate crisis, global heating" as an alarming development (Carrington 2019). But the most important

difference in the context of this chapter is the conservative idea of human exceptionalism, "the idea that man is above nature in a moral hierarchy, that nature is there ... purely for human use and exploitation" (Lakoff 2010, 74) versus the progressive idea of seeing "inherent value in the natural world" (76). This includes the idea that humankind is part of nature, and that we have a duty to nurture empathy for both human and nonhuman beings, a duty that entails the solidarity of non-Indigenous people with Indigenous people, and of humankind with nonhuman beings (Morton 2017). These progressive ideas are in line with the aims of *Symbiosis*.

The limitation of Lakoff's framework is that it does not provide us with a toolkit to understand what it is exactly that *Symbiosis* wants to achieve and how it is trying to do that. For that, we have to switch to the refraction framework of Bendor. According to Bendor, the issue of sustainability is refracted in media in the same way as a glass prism refracts white light into a colored spectrum. In VR, for example, the problem of our environmental crisis is refracted in four different ways with four different solutions (in most VR productions, as we will see below, one of these refractions is dominant, although other refractions may be present as well).

1. Today's environmental crisis can be refracted as an outcome of our consumer culture; the solution then would be the greening of our individual behavior and lifestyle choices (acting, as one of the four basic dimensions of human experience). An example is *VirtuMart* (Nynke van der Laan 2015), a VR supermarket that encourages sustainable food choices.
2. The crisis can be refracted as a lack of system thinking, as the inability to understand our social, economic, ecological, and political systems; solution: a better understanding of these systems (knowing). An example is *SpaceBuzz* (Media.Monks 2018), a VR-enabled learning program that teaches children about our planetary society and the need to protect Planet Earth.
3. It can be refracted as a lack of felt urgency for individual and social action; solution: the unlocking of strong motivational forces via the experience of feelings and emotions (feeling). An example is *Tree* (Milica Zec 2017), a VR project that transforms you into a rainforest tree and let you experience its fate firsthand.
4. It can be refracted as the dominance of a fundamental set of values and beliefs, as our inability to think up alternatives for neoliberal globalization and capitalism, or—in line with this chapter—alternatives for the discourses of the Anthropocene and Capitalocene; solution: the imagining of new geological epochs such as the Chthulucene or

the Symbiocene (Albrecht and Van Horn 2016) (imagining). Examples are speculative fabulations such as *Symbiosis* and *Plastisapiens* (Miri Chekhanovich and Edith Jorisch 2022). The latter is a VR ecofiction that lets you imagine a new life form—the *Plastisapiens*—and a new epoch, the Plastisphere (Davis 2015).

Bendor's approach is in line with our Playful Identities project in which we examined the increasing role of digital media technologies in identity construction through play. We concluded that digital media practices, including but not limited to games and play, have the potential to impact human as well as cultural identity by "strengthening or changing the basic dimensions of human experience: knowing, feeling, and acting" (Raessens 2015). What Bendor adds to this tripartite structure of knowing (understanding, reason), feeling (experience), and acting (behavior) is "imagination." *Symbiosis* would be a powerful example of transformative play if it could more or less combine all four solutions. Whether that can be the case depends in large part, I would say, on the individual participant's knowledge of what has been called the "paratext," defined as the surrounding materials that help give meaning to and shape the actual experience (see Consalvo 2007, 9).

For a participant who enters *Symbiosis* unprepared, like I was myself the first time, it is an overwhelming experience that can best be described as the incitement of emotional responses, or as Chantal Mouffe formulates it, the ability "to reach human beings at the affective level (feeling). This is where art's great power lies—in its capacity to make us see things in a different way, to make us perceive new possibilities" (2013, 96–97). But for a participant to be able to conceptualize their experience (knowing) as a manifestation of Haraway's imagining of the Chthulucene (imagination), and thus to cognitively understand the meaning of *Symbiosis* and its behavioral implications (acting), they would not only need to repeat the VR experience several times, but also turn to what I just called *Symbiosis*' paratext.

For my analysis, I attended the symposium "DocLab Live: Beyond the Cyborg Manifesto" (2021). After the screening of the film *Camille & Ulysse* (Toucedo 2021)—in which Haraway and Vinciana Despret read the fables of Camille and Ulysse—Haraway (via a live stream) and the Polymorf team discussed the stories of Camille and *Symbiosis* and their interrelationship. As a second paratext, the little booklet that accompanies the experience—*Symbiosis: A Performative, Multi-Sensory and Multi-User VR Experience* (Polymorf 2021)—contextualizes the VR experience within Haraway's critical multispecies framework of the Chthulucene. Here we learn that *Symbiosis* informs us about today's ecological challenges and

looks for answers, and that it explores the relationship between humankind and the planet, in particular, the act of "making kin" and the creation of diverse kinships between human and nonhuman life forms. Without the booklet—that also contains the text that exactly corresponds with the voice over you hear during the VR experience—we could not fully comprehend the meaning and context of the experience. The symposium and booklet show that it is not only the text (the VR installation) but also the paratext that significantly shape the *Symbiosis* experience for each individual participant, and may lead to a more progressive ecological identity in the form of knowing, feeling, imagining and acting differently.

Afterword

Symbiosis can be considered a "transformative player community," or, as Haraway calls it, an example of the "Communities of Compost" (2016, 138, 140), in two different ways. As I explained earlier, we live in critical times where differentiations between, for example, humans and nonhumans continue to keep us apart. It is the goal of *Symbiosis* to imagine how to build effective new collectives bringing all these groups together. Additionally, on a more practical level, the project brings together a large group of artists, designers, scientists, activists, and participants to form a growing community of people with a shared interest in the challenges of sustainability.

The importance of play and player communities for culture in general can hardly be exaggerated. As we know from Johan Huizinga's *Homo Ludens* (1938), play creates communities and is responsible for the process of social grouping. However, as we have seen, there is not one player community but at least two opposing communities, our friends, as Latour would call them (progressives embracing *Symbiosis*' and Haraway's message of the communities of compost), and enemies (conservatives, human exceptionalists resisting this message). From this perspective, a specific playing field arises, characterized by *agõn* (competition): *Agõn* "bears all the formal characteristics of play.... In play, therefore, the antithetical and agonistic basis of civilization is given from the start" (Huizinga 1955, 31, 75). To play, including being in competition with others, is to perform a culture-creating act; it is indispensable for the well-being of a community "by reason of the *meaning* it contains, its significance, its expressive value, its spiritual and social connections, in short, as a culture function" (1955, 9). Play and culture are interdependent. On the one hand, play reflects a culture's identity, while, on the other, it educates and trains players how to feel, think, act, and imagine.

And this is exactly what we see in *Symbiosis*; this VR installation not only reflects our interest in the different forms multispecies kinship can take, but also brings such Communities of Compost into existence by its very operation.

Acknowledgments

I would like to thank the Polymorf team for taking the time to discuss *Symbiosis* on several occasions, and Ymke Pas for making the infographics. I especially thank Marcel van Brakel for letting me visit the Polymorf studio in Breda and providing me with the images of *Symbiosis* reproduced here.

Ludography

Plastisapiens. 2022. Miri Chekhanovich and Edith Jorisch. Dpt., National Film Board of Canada, Lalibela Productions. VR installation.
SpaceBuzz. 2018. Media.Monks. SpaceBuzz Foundation. VR installation.
Symbiosis. 2020. Polymorf. Studio Biarritz. VR installation.
Tree. 2017. Milica Zec. New Reality Company. VR installation.
VirtuMart. 2015. Nynke van der Laan. Tilburg University. VR installation.

References

Albrecht, Glenn, and Gavin Van Horn. 2016. "Exiting the Anthropocene and Entering the Symbiocene." *Humans and Nature*, May 24, 2016. https://humansandnature.org/exiting-the-anthropocene-and-entering-the-symbiocene.
Bendor, Roy. 2018. *Interactive Media for Sustainability*. Cham: Palgrave Macmillan.
Caillois, Roger. 2001. *Man, Play and Games*. Urbana and Chicago: University of Illinois Press.
Carrington, Damian. 2019. "Why *The Guardian* Is Changing the Language It Uses about the Environment." *The Guardian*, May 17, 2019. https://www.theguardian.com/environment/2019/may/17/why-the-guardian-is-changing-the-language-it-uses-about-the-environment.
Consalvo, Mia. 2007. *Cheating: Gaining Advantage in Videogames*. Cambridge, MA: The MIT Press.
Crutzen, Paul, and Eugene Stoermer. 2000. "The "Anthropocene."" *IGBP Newsletter* 41: 17–18. http://www.igbp.net/download/18.316f18321323470177580001401/1376383088452/NL41.pdf.

Davis, Heather. 2015. "Toxic Progeny: The Plastisphere and Other Queer Futures." *philoSOPHIA* 5 (4): 231–250.

Elleström, Lars. 2018. "Identifying, Construing, and Bridging over Media Borders." *Scripta Uniandrade* 16 (3): 15–30.

Ghosh, Amitav. 2021. *The Nutmeg's Curse: Parables for a Planet in Crisis*. London: John Murray.

Haraway, Donna. 2016. *Staying with the Trouble: Making Kin in the Chthulucene*. Durham and London: Duke University Press.

Haraway, Donna. 2017. "Staying with the Trouble: Making Kin in the Chthulucene (Donna Haraway lectures at the San Francisco Art Institute)." *YouTube*, April 25, 2017. https://www.youtube.com/watch?v=GrYA7sMQaBQ.

Huizinga, Johan. 1955 [originally published in Dutch in 1938]. *Homo Ludens: A Study of the Play Element of Culture*. Boston: Beacon Press.

IPPC. 2023. *AR6 Synthesis Report: Climate Change 2023*. Intergovernmental Panel on Climate Change. https://www.ipcc.ch/report/ar6/syr.

Jasanoff, Sheila. 2015. "Future Imperfect: Science, Technology, and the Imaginations of Modernity." In *Dreamscapes of Modernity: Sociotechnical Imaginaries and the Fabrication of Power*, edited by Sheila Jasanoff and Sang-Hyun Kim, 1–33. Chicago: University of Chicago Press.

Kattenbelt, Chiel, and Joost Raessens. 2003. "Computer Games and the Complexity of Experience." In *Level Up—Digital Games Research Conference*, edited by Marinka Copier and Joost Raessens, 420–425. Utrecht: Utrecht University. http://www.digra.org/digital-library/publications/computer-games-and-the-complexicity-of-experience.

Lakoff, George. 2010. "Why It Matters How We Frame the Environment." *Environmental Communication* 4 (1): 70–81.

Latour, Bruno. 2018a. *Down to Earth: Politics in the New Climate Regime*. Cambridge: Polity Press.

Latour, Bruno. 2018b. "Inside: A Lecture-Performance by Bruno Latour." *YouTube*, December 21, 2018. https://www.youtube.com/watch?v=yISs7KeiuMY.

Morton, Timothy. 2017. *Humankind: Solidarity with Nonhuman People*. London: Verso.

Mouffe, Chantal. 2013. *Agonistics: Thinking the World Politically*. London: Verso.

Pfaller, Robert. 2017. *Interpassivity: The Aesthetics of Delegated Enjoyment*. Edinburgh: Edinburgh University Press.

Polymorf. 2021. *Symbiosis: A Performative, Multi-Sensory and Multi-User VR Experience*. Breda: The Eriskay Connection.

Raessens, Joost. 2015. "Playful Identity Politics: How Refugee Games Affect the Player's Identity." In *Playful Identities: The Ludification of Digital Media Cultures*, edited by Valerie Frissen, Sybille Lammes, Michiel de Lange et al., 245–260. Amsterdam: Amsterdam University Press.

Salen, Katie, and Eric Zimmerman. 2003. *Rules of Play: Game Design Fundamentals*. Cambridge, MA: The MIT Press.

Thunberg, Greta. 2022. *The Climate Book*. Dublin: Penguin Books.

Werning, Stefan, and Joost Raessens. 2023. "Green Media Studies." Green Media Studies. http://www.greenmediastudies.nl.

About the author

Joost Raessens holds the Chair of Media Theory at Utrecht University, the Netherlands, and is the cofounder of the Green Media Studies initiative. His research focuses on the understanding of how green media—in the broadest sense, including digital media, theater, film, television, audio, art, and literature—contribute to ecological thought and facilitate different forms of civic engagement (global ecological citizenship) on a micro-, meso-, and macro-level. In general, his research interests include digital media and the "ludification of culture," examples being Games and VR for Change, dealing with issues such as climate crisis, forced migration, and space exploration (www.raessens.nl).