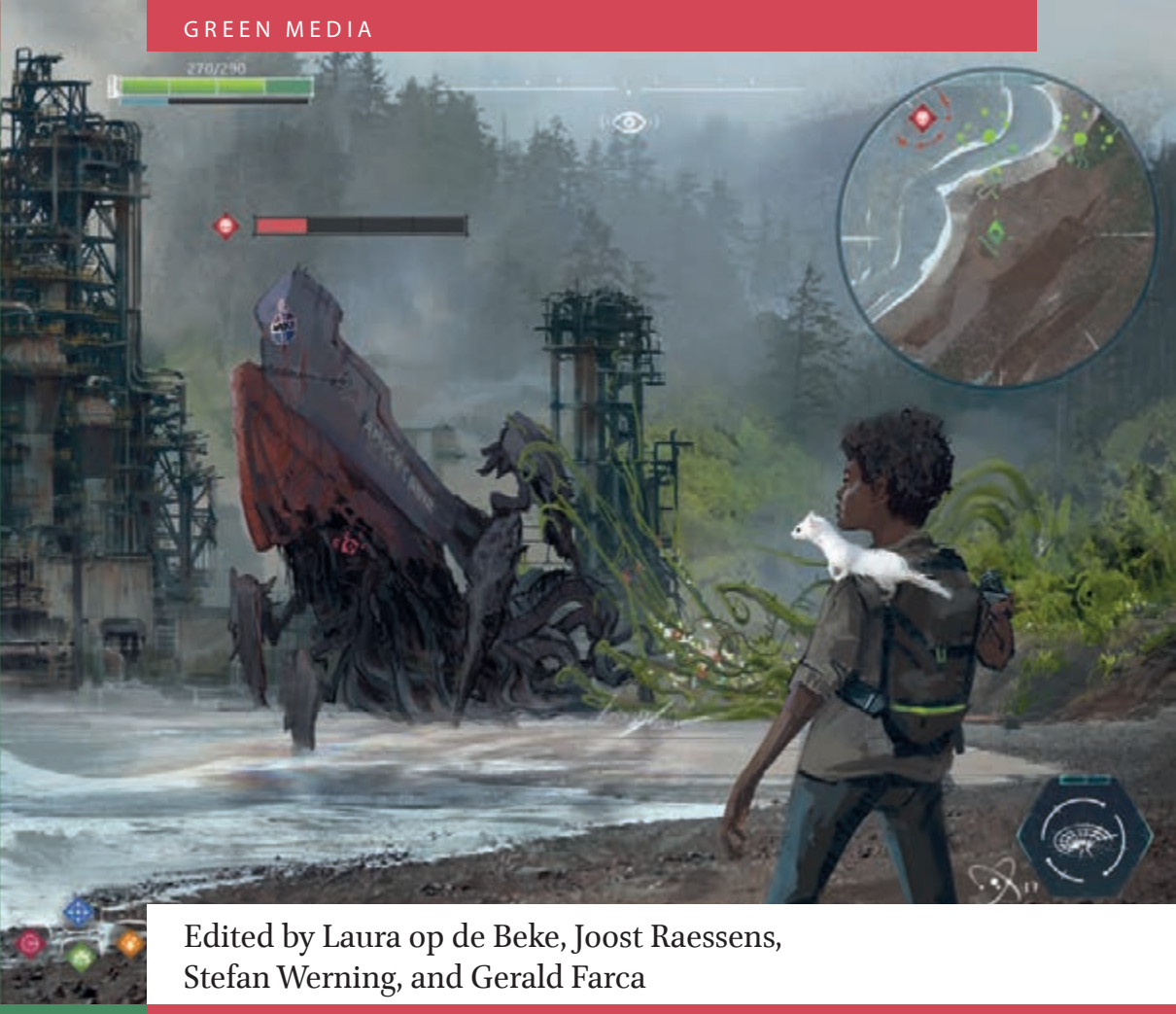
GREEN MEDIA



Edited by Laura op de Beke, Joost Raessens,
Stefan Werning, and Gerald Farca

Ecogames

Playful Perspectives on the Climate Crisis

Amsterdam
University
Press

Ecogames

Green Media

This series is a critical starting point for readers interested in the growing field of green media studies as a subdiscipline within the environmental humanities and social sciences. It examines the ways in which 'Green Media' can influence the public's awareness and understanding of environmental issues and the ecological impact of media technologies.

Contemporary media are increasingly used to support and frame environmental action by companies, NGOs, activists and related groups, as well as to persuade people to adopt more sustainable lifestyles. Because environmental justice and social justice are intrinsically interconnected, the 'Green Media' series seeks to research how people might become global ecological citizens. It introduces the readers to key environmental issues as these are represented in—and connected to the production, distribution and consumption of—videogames, VR, social media, data visualizations, transmedia, film, documentaries, television series, theatre and more.

The underlying questions are: How do green media construct forms of civic engagement on a micro, meso and macro level? How do we conceptualize the impact of green media from a media-comparative perspective? How can green media help transform existing industries as well as corresponding cultural and business practices? What is the ecological footprint of media production, distribution and consumption, and how could sustainable alternatives look like?

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Table of Contents

Part II Future Worlds: New Imaginaries

Part III The Nonhuman Turn

Ecogames: An Introduction

Laura op de Beke, Joost Raessens, and Stefan Werning

In the 1970s, a select audience of computer nerds, economists, and museumgoers had the opportunity to engage with the original "Ecogame." Designed by the Computer Arts Society, *Ecogame* (1970) was a video game as well as an art installation and a multimedia information architecture (Stott 2021). The game simulated a national economy, allowing players to make decisions regarding resource allocation, showing them the consequences of their actions via slides projected onto the walls, indicating the mood of the nation. Depending on your performance, they might show "dole queues, civic unrest, and environmental degradation" (Stott 2021, 47). Two decades later the audience for these sorts of playful experiments would be vastly expanded. Writing from Australia in 1994, McKenzie Wark recounts turning to the early internet in her struggle to keep the biosphere safe from both global warming and nuclear winter in playthroughs of *SimEarth* (Maxis 1990), a game that allows players to tinker with the parameters that determine life on Earth. Ecogames were no longer confined to museums and conferences, they had come home, and were living inside people's desktops. In the twenty-first century, ecogames are even more prevalent, not just because you can choose to play a quick game of *Beecarbonize* (Charles Games 2023, see Figure 0.1) on your mobile phone on your way home from work, but because themes of climate collapse and environmental engagement have begun to dominate mainstream media, showing up in games more generally, both digital and analog. This book collects scholarship on this subject, exploring the themes, politics, and aesthetics of ecogames; the material and discursive contexts in which they operate; as well as the ways in which players experiment with and negotiate environmental issues in gameplay.

The term "ecogames" exists alongside alternatives: "green games," "ecocritical games," or "climate games." We prefer it for its brevity and scope. Ecogames include serious games that aim to raise environmental awareness and educate players about the values of sustainability, for instance, *Beyond Blue* (E-Line Media 2020), a diving game about marine conservation, or *The*

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Figure 0.1: *Beecarbonize*, an ecogame where players can explore different ways to fight the climate crisis.

Forest Cathedral (Whitethorn Games 2023), about the life of celebrated environmental scientist Rachel Carson. Ecogames also include more artistic, independent works and initiatives that use elements of game design to question human–environment relations, for example, the games created and discussed by Kara Stone in this book. They also comprise more popular games that are designed for entertainment, but which simulate environmental challenges, like *The Wandering Village* (Stray Fawn 2022), a game about living in symbiosis on the back of a giant creature. Finally, even extremely commercial games can be read as ecogames if they reflect, either thematically or in terms of premise or setting, the fraught socio-environmental conditions of the present. For instance, the latest installment of the online first-person shooter franchise *Battlefield 2042* (DICE 2021) is set in a near future plagued by super storms, droughts, and the exploitation of stateless mercenaries in a flare-up of the Cold War. The game's different maps reference actual locations in the world that evoke issues like globalization and environmental degradation: a shipping graveyard in India, a Qatari city lost to desertification, a green oasis bordered by desiccated slums, and a stretch of Antarctica where Russia has started an illegal oil drilling operation.

The ecogame scholarship anthologized in this book comes from established authors, early career scholars, and artists, reflecting a broad range of writing and argumentation styles; they draw on disparate fields like media studies, art history and the study of visual culture, the environmental humanities, as well as postcolonial and Indigenous studies. It covers a broad range of subject matters relevant to the climate crisis; while this term seems to foreground aspects like "the increasing average temperature," the

chapters in this book consider those as only a "symptom" of a "much deeper sustainability crisis" that has profound social and cultural implications (Thunberg 2022, 132). The book illustrates the many different methods that inform the discipline of game studies (including analyses of industry documents and conventions, reception studies, reflections on modes of critical play) in addition to more specific game analyses that pay attention to narrative, aesthetics, affect, and symbolism. These methods correlate with three recurring perspectives on ecogames as not only an aesthetic but a broader societal phenomenon. These perspectives bring into focus games as "texts" or media products, the media industries from which they emerge and to which they contribute, and the players, individually and as collectives, as well as their constitutive practices. We see these three perspectives at work in the chapters collected in this book.

For example, Alenda Chang, in previous work (2019b) as well as her chapter in this book, addresses the benefits of games with implicit and more overt environmental messages. She relies on textual analysis and close reading to identify both harmful and beneficial representations of human–environment relations as well as other topics enmeshed with the climate crisis. Analyses like these demonstrate the urgency of the crisis, but they also inform the design of more ecologically sensitive games, for example, pushing for more environmental realism in the representation of flora and fauna (Friedersdorff et al. 2019, and Melissa Bianchi's chapter in this book). In this way, ecogame analysis infuses sustainability concerns into the design of games, encouraging the rethinking of iconic game genres and their built-in ecological biases. This is the case in *Terra Nil* (Free Lives 2023), which is publicly discussed as a "reverse" city builder. The development of more critically informed environmental game design is particularly important since, as explained below, nature as a "theme" is becoming more prevalent in both digital and analog games, which might threaten to flood the market with uncritical, romanticized, or bland depictions of natural environments (already the norm in pastoral video games according to Op de Beke 2021a).

A focus on the game industry requires a media industry studies approach as practiced by Benjamin Abraham (2022) or Sonia Fizek in her chapter for this book. Industry-oriented ecogame scholarship is interested in mapping out processes of game development and marketing, looking at their environmental impact, and exploring more sustainable alternatives. For instance, an industry perspective might interrogate console manufacturers' unquestioned drive to increase the memory and computing power of their products, as well as the resource-intensity of features like game streaming. While the authors in this book focus mostly on the digital games economy

(due to its vastly larger ecological footprint), it is important to acknowledge similar considerations in board game publishing and even game-adjacent industries like toy manufacturing, as evidenced by LEGO's welcome but half-hearted initiatives to experiment with alternatives to plastic (addressed by Nicolle Lamerichs in her chapter for this book).

Player-oriented perspectives are also valuable because while some of the games discussed in this book exhibit problematic design choices—see, for example, Souvik Mukherjee's critique of colonialism in strategy games in this book—these titles may still foster critical ecological thinking if played in alternative, non-normative ways. Focusing on practices of play as well as other forms of what we call metagaming below is of vital importance to interpret ecogames in a broader cultural context and to acknowledge the agency of active audiences. Such practices of play may include refusing to play certain games altogether (as in Rainforest Scully-Blaker's study on the /r/patientgamers community in this book) but also various ways of resisting the so-called "orthogame" (Carter et al. 2012), which refers to how a game's design implies "correct" ways of playing by making certain tactics easier or harder to implement. Hans-Joachim Backe discusses this concept in his chapter for this book, arguing that *Minecraft* (Mojang Studios 2011) can afford ecocritical discourse if played cooperatively and by pursuing self-imposed goals.

As with most taxonomies, it is important to also consider hybrid phenomena that combine two or even all three perspectives; for example, the Climate Special Interest Group (SIG) of the International Game Developers Association (IGDA) not only published a "playbook" (IGDA 2022) on how to represent human–nature relationships in games but also defines algorithms and design patterns for more economical graphics rendering and limited online capabilities to reduce the energy consumed by making and playing these games. In this case, the material context of game production and the aesthetics of games-as-texts are directly intertwined. In short, this book collects scholarship demonstrating and sometimes combining all three perspectives. It features chapters that address games' representation of the climate crisis and their means of affective and aesthetic engagement; as well as chapters on the sustainable production and distribution of games; in addition to work on the emergence and widespread adoption of alternative playing and metagaming practices. Furthermore, to ensure comprehensive coverage and a diversity of topics, we have solicited chapters for four different themed parts (see Figure 0.2): I. Today's Challenges: Games for Change, II. Future Worlds: New Imaginaries, III. The Nonhuman Turn, and IV. Critical Metagaming Practices, each of which will be introduced at length below.

Figure 0.2: Overview of the book's structure and key categories.

This schema implies several dichotomies: an orientation towards both the present (I) and the future (II), an appreciation of both human (I–II) and nonhuman (III) perspectives, and a conceptual framework for both gaming (I–III) and metagaming (IV) practices. Together, these dichotomies provide a multifaceted account of the complexity and even the internal tensions of ecogames as defined above. While we group the chapters according to their dominant theme, they inevitably also exhibit characteristics relevant to the other parts; these overlaps will be briefly addressed below in the chapter outlines.

Before digging into these parts, however, in order to properly contextualize ecogames this introduction will provide a brief preliminary history of environmental themes in early analog games, as well as an overview of the ecogame scholarship that predates this book, on which we build, and which we hope to engage in conversation.

From early analog ecogames to recent developments

One of the oldest games still played in the world today is *Mancala*. It is a game played with seeds or beans that are moved between small depressions on a board. In other words, *Mancala* is a kind of farming sim; a game about sowing life. It takes inspiration "directly from the creation of agriculture itself" (Friedersdorff et al. 2019, 291). We open this brief history with a reference to

Mancala because the game suggests an unexpectedly immediate connection between ecology and play, one that predates the digital age. Since the bulk of the chapters in this book look at video games, we spend a little more time sketching out the history and resurgence of analog ecogames here, in the introduction, hoping to inspire and support future scholarship on the topic.

For hundreds of years playing games was a common practice that overlapped with ecological education. As Dorothea Kühme (1997) notes in her book-length study on play in German society from the mid-eighteenth to the mid-nineteenth century, games were often played outside—e.g., in "gardens or rural trip destinations" (109, translated by the editors). They were associated with being outdoors. Moreover, games were explicitly framed as part of "celebrating nature" (112), regularly occurring during social events like spring festivities. Their association with the outdoors is illustrated by some of the board games archived by the Rijksmuseum in Amsterdam. For example, the *Game of Fishing* (1870–1899, see Figure 0.3), pictures children standing on a bridge angling for fish that swim at different depths. The same compendium, *Home Games for Little Girls*, also contained a *Game of Falconry* and a *Game of Pearl Fisheries* featuring similar game boards and colorful illustrations that paint a romanticized picture of the natural world.

Beyond this focus on Western European cultures, the Digital Ludeme project—an online archive of over 1,000 older board games that were partly reconstructed and made playable via AI technology—provides a glimpse of two more historical trajectories of analog ecogames. The first involves a category of "sowing" games, similar to the aforementioned *Mancala*; while the original game is relatively well known, the category comprises 208 different variants played all over the world. Another archetype is the "hunting" game, which usually refers to competitive two-player games, in which one player plays the hunter—human or animal—and the other the role of the prey. One of the oldest games in the genre, *Cercar la liebre* (*Catch the Hare*), dates back to thirteenth-century Spain. Another game that historians surmise originated in the same time period in South Asia is *Huli-Mane Ata*, in which a tiger faces off against five lambs. In these games, the prey can usually win by immobilizing the predator through strategic positioning. The geographic spread of these hunting games points to the ways in which shared experiences with nature are translated into and communicated across generations through board games. Like the contemporary ecogames discussed in this book, this corpus of older ecogames, though groupable by genre, is far from uniform, with some games foregrounding human dominance over the hunted species and others presenting hunter and prey as more-or-less equal, or even codependent on one another.

Figure 0.3: The printed game board of the *Game of Fishing* (1870–1899).

Since the beginning of the twentieth century, experiences of nature and, more recently, ecological concerns have become increasingly pervasive in board, card, and parlor games. At the time of writing, the largest online archive of analog games—BoardGameGeek—listed 1,449 games in the "environmental" category, which includes games with "themes and storylines regarding environmental conservation and management." One of the earliest titles, *Hunting in the Wilds* (uncredited 1930), also implements hunting as a theme but in contrast to the aforementioned games it simulates extractivist practices since all players represent human hunters and animals are mere "tokens," or resources to be collected. In the 1950s and 1960s, the focus of analog ecogames appears to shift from outdoor activities like collecting plants, to animals (e.g., *Wild Life*, Peter Ryhiner 1964). This shift coincides with an increasing interest in David Attenborough's animal documentaries in the late 1970s (Attenborough 2020), pointing to the importance of a media-comparative view of ecogames as a cultural phenomenon. Such a view reveals

other instances of cross-media synergy, for instance, in the case of the game *Ein Platz für Tiere* (uncredited 1965), which was explicitly derived from the popular German TV documentary series of the same name.

One of the first analog ecogames to approach sustainability in a systemic manner—rather than through personalized activities like gathering mushrooms or going on safaris—is *Ecology: Game of Man & Nature* (Bert Collins, Margie Piret, and Richard Rosen 1970). The rise of this "system's perspective" is owed to the popularization of cybernetics, a science concerned with circular causal processes like feedback loops. Especially during the second wave of cybernetics, from the 1960s onwards, such ways of thinking were often applied to social and ecological concerns. Crucially, they were often introduced to lay audiences through games (Light 2008). Much like the digital civilization simulators or god games of the present, in which this cybernetic outlook endures, the board game *Ecology* tasks players with advancing through four ages, from "Hunting," "Agricultural," and "Industrial" to "Atomic." In accordance with the environmental concerns of the time, the game emphasizes the issue of overpopulation, symbolized by the planet centered on the board, which has limited available slots that fill up quickly, particularly with four players.

As this brief history of analog ecogames illustrates, a diachronic look at this material presents a history of changing environmental sensibilities over the course of the nineteenth and twentieth centuries. For example, games from the early 1990s are characterized by the rhetoric of "saving the planet," like *60 Minutes to Save the Earth* (Seven Gates Designs 1991), *Save the World* (David Shreeve 1989), *Save the World: A Cooperative Environmental Game* (Don Strachan 1980), or *TerraTopia* (Peter and Greg Olotka 1993). This "global" perspective and the language of urgency and heroics that accompanies it can be understood in the context of—among other things—the perceived end of the Cold War and its bipolar geopolitical situation as well as rising concerns about the climate crisis; moreover, the focus on clean energy in these games is consistent with similar themes in other popular media like film and television at the time.

While nature and the climate crisis have informed the gameplay and premise of analog games for decades, since 2019 they have very quickly grown in popularity, led by popular family oriented titles like *Wingspan* (Elizabeth Hargrave 2019) and *Parks* (Henry Audubon 2019). While most older board games are exclusively competitive, this new "wave" of eco board games characteristically also includes cooperative titles like *Rescue Polar Bears* (Darren Black and Huang Yi Ming 2016), *Spirit Island* (R. Eric Reuss 2017), *CO_2: Second Chance* (Vital Lacerda 2018), *The Spill* (Andy Kim 2022),

and *Daybreak* (Matt Leacock and Matteo Menapace 2023). This abundance of ecogames will certainly influence awareness of ecological issues, particularly among younger children playing these games in the family, but it produces new ambivalences as well. In several cases, board game publishers arguably approach sustainability like a franchise, in other words: a shared repository of familiar micro-narratives, character archetypes, and action possibilities that allows for a game to resonate with younger audiences since popular culture is increasingly characterized by "media franchising" (Johnson 2013, 28). This can be positive because it slightly levels the "playing field" for smaller publishers without access to expensive licenses, but overuse can easily desensitize players towards ecological themes, leading them to see flora and fauna in games as merely decorative, enhancing "the aesthetics and feel or atmosphere a game portrays" (Friedersdorff et al. 2019, 292), instead of engaging with them on more ecological grounds.

This potential enfranchisement of nature is much less of a risk in the less commercial world of independent tabletop role-playing games (TTRPGs). This industry also features lively experimentation with environmental gameplay, facilitated by a culture of reskinning and hacking existing games. For example, Avery Alder's *Dream Askew* (2018) inspired a new genre of TTRPG called "no dice, no masters." Instead of divvying up narrative responsibilities between the players, who play their characters, and the game master, who plays the world and everything in it, games like *Dream Askew* hold all players responsible for playing "setting elements" as well as their characters. In other words, when the game's action invokes a particular setting, players are invited to speak on behalf of "the digital realm" or even "the earth itself" to try to express the powers and desires the landscape and the resources it holds. A similar experiment with the animation of otherwise static environmental settings can be found in *The Flora* (Affinity Games 2022), where players are challenged to inhabit trees and to imagine a story told from their long-lived perspectives. Other TTRPGs use collaborative storytelling practices to incubate postcapitalist ways of organizing society, for example, *Solarpunk Futures* (Solarpunk Surf Club 2021), *The Transition Year* (Affinity Games 2021), and *Sunstained* (Ray Chou and Vincenzo Ferriero 2021). Finally, TTRPGs like *Blue Planet: Recontact* (Biohazard Games 2019), *Arcology World* (Dyer Rose 2021), and *ECO MOFOS* (David Blandy 2023) imagine future worlds in which new customs, symbioses, and technologies have completely overhauled modern ways of subjugating and exploiting the Earth.

We wrap up this section on analog ecogames with a nod to the world of live action role-play, or LARP. In LARPing communities the climate

crisis has also become a more popular topic of engagement, as illustrated by the prominence of environmental titles at Nordic LARP festivals like Knutepunkt, Blackbox Copenhagen, and Grenselandet in recent years. Nordic LARP has a tradition of engaging with complicated, pressing topics like discrimination, oppression, and mental health, so its interest in the climate crisis comes as no surprise. Educational LARP initiatives share this sense of societal responsibility. For example, the Erasmus+ project Larp for Climate (2022–2024) aims to harness the social, emotional, and embodied storytelling strategies of LARP in the development of a number of LARPs and corresponding toolkits to improve climate literacy among young people. In doing so, the project actively seeks out collaboration with young people, especially activists, who already show flair and competency with playful, theatrical practices as illustrated by climate protests which often include costumes, stagecraft, mock funerals, and tableaux. Climate LARPs often enhance these practices with elements of collaborative storytelling and role-play, which may produce powerful and persuasive affects (Op de Beke 2023).

An overview of ecogame scholarship

As editors, we are fortunate to build on an existing and extremely rich body of scholarship that explores the environmental orientation of (video)games. To explain how this anthology advances and expands the field, we start with a brief overview of the critical landscape. Ecogame scholarship emerged from the field of ecocriticism in the 2010s. At this moment, ecocriticism had already entered its second wave—during which previously held distinctions between nature and culture were questioned, and work shifted under a single more hybrid notion of "the environment." Second-wave ecocriticism also saw scholars increasingly explore fictional environments treated in nonrealist modes of representation (Garrard 2014). Third-wave ecocriticism was also on its way in, introducing a more global perspective and shaking ecocriticism loose from its Anglocentric focus (Slovic 2010). Yet, at the same time, ecocriticism was, and still is, marked by a primary engagement with written texts, across various historical periods.

Some of the very first ecogame scholarship emerged from inside of, or in response to this body of work. It advocated for a widening of the ecocritical lens to include more popular audiovisual media. Hans-Joachim Backe's (2014) call to "greenshift" game studies was inspired by ecocritical scholarship and bolstered by video games' consciousness-raising potential as a pervasive,

mainstream form of entertainment. John Parham's book *Green Media and Popular Culture: An Introduction* (2015) includes a chapter on video games that is both rooted in ecocritical and video game theory. Alenda Chang and Parham (2017) were also both involved in the first special issue on ecogames published by *Ecozon@: European Journal of Literature, Culture and Environment*.

Both Parham and Chang made space within ecocriticism for the study of ecogames by launching similar arguments. They both dismiss claims like those made in Richard Louv's book *Last Child in the Woods* (2005) that video games are to blame for a so-called "nature-deficit-disorder." Video games are not in competition with the outdoors, and they are no more removed from nature than nature writing is. On the contrary, in these early publications, Chang and Parham demonstrate that a lot of ecocritical scholarship can easily be applied to game environments, for instance, Lawrence Buell's four criteria for environmental texts, as well as Timothy Morton's theory of ambient poetics (Chang 2011; Parham 2015). Moreover, textual descriptions of environments are no more direct representations of the natural world than video game environments are. Both should rather be understood as cultural constructions of nature, constructions that draw on styles, tropes, and registers that have long histories in literature and the visual arts.

More recently, scholarship on ecogames has benefited from the growing popularity of climate fiction—or cli-fi—and its enthusiastic academic reception (Trexler 2015; Johns-Putra 2016; Mehnert 2016; Schneider-Mayerson 2018; Milner and Burgmann 2018; Goodbody and Johns-Putra 2018). Studies of climate fiction tend to engage different kinds of literature than those that have been traditionally looked at in ecocritical scholarship, namely genre fiction. Video games often share these spectacular, science-fictional imaginaries. In a 2017 article, Benjamin Abraham and Darshana Jayemanne set out to map video games' response to climate change, asking, "Where are all the climate change games?" Initially, they find that video games explicitly dealing with climate change are few and far between. Many of them are developed as edutainment and remain limited in their dissemination and appeal. But, taking their cue from Deborah Jordan that "climate change is so pervasive an issue that it exceeds its own explicit thematization, springing up in other less direct ways," Abraham and Jayemanne expand the scope of their research significantly so as to analyze more generally the ways in which video game environments are figured: as backdrop, resource, antagonist, or text (78). They offer this typology, only to realize, finally, that it also fails to satisfy, because it conceives of the environment as something "largely subject to the more lively entities that inhabit it" (84). With the climate

crisis, this no longer seems the case. In conclusion, therefore, Abraham and Jayemanne suggest a "broadening of the climate problem and how it does, or could, appear in games" (84). Indeed, while games that feature the climate crisis front and center remain scarce, tropes and imaginaries fueled by what Mark Bould calls the "Anthropocene Unconscious" abound; "the art and literature of our time is pregnant with catastrophe, with weather and water, wildness and weirdness" (2021, 3). Games are no exception.

Since Abraham and Jayemanne's article, other typologies have been published mapping the ways in which environmentalism, climate change, or the weather can feature in video games (Milburn 2016; Möring and Schneider 2018; Kunzelman 2020). But there is also scholarship that predates the establishment of ecogame studies spearheaded by Chang and Parham and picked up by Abraham and Jayemanne. Being scattered, older, or coming from different intellectual traditions, this work sometimes escapes notice. For example, McKenzie Wark's reading of *SimEarth* in 1994 carefully demonstrates the power of its abstract simulation to engage players with global issues like climate change. Wark sidesteps the conflict between technophobic Luddites like Louv and those in favor of a more expansive ecocriticism like Chang and Parham, by situating her work amid a green politics that has already embraced the digital technology of the early internet to facilitate networking and information sharing. Here "the digital" is a strength rather than a weakness. It connects users across the world, and it develops systems literacy through simulation.

While video games are uniquely multimodal, combining (textual) narrative, audiovisual, procedural, and interactive or kinetic aspects, their potential to simulate complex ecosystems is often foregrounded in ecogame scholarship (Brown 2014; Smith 2017). One method often used to analyze such simulations attends to what Ian Bogost calls "procedural rhetoric." According to Bogost, the constraints and affordances of game rules contain arguments about how the world is, or should, work. For example, in his discussion of *Animal Crossing* (Nintendo 2001), Bogost (2007) highlights how the game's central mechanic of household decoration pushes a certain consumerist practice, even while the game also suggests an alternative practice of "refinement through elimination rather than acquisition" (272). In short, procedural dynamics in video games stage arguments for how the world is run and by what rules. These rules may mimic those of the capitalist marketplace, but they can also model ecological principles like scarcity, seasonal change, relationships of predation and symbiosis, and entropic tendencies like waste accumulation and soil erosion. In the best of cases, they model both and in doing so demonstrate

the incommensurability between capitalism and the conditions of life on a finite planet.

While proceduralist approaches to ecogames remain common, some scholars have raised doubts about their ability to speak to the ways in which games influence players. As Abraham points out, games that aim to convince players of the urgency or reality of climate change by simulating its processes fail to recognize that individuals are rarely persuaded by models, facts, or rational considerations alone, especially if they already hold negative biases (2018). Instead, Abraham forwards the power of aesthetics, which bypasses any potential conscious objections to provocative simulations. Subtle choices on the level of representation, like peppering a virtual landscape with wind turbines and solar farms, as in the sci-fi shooter *Arma 3* (Bohemia Interactive 2013), do not invite any rational discussion of the viability of renewable energy. Rather, such a move harnesses the more persuasive power of an alternative vision of the future by not presenting it as an argument but by allowing it to operate on a more subconscious, affective level. Other game scholars have raised similar issues with models of persuasion based on facts. Joost Raessens refers to what Per Espen Stoknes calls the "psychological climate paradox," which holds that while the facts are out there, so far, they have not motivated people to climate action (Raessens 2019a, 2019b). To combat indifference, he suggests games should try grounding those facts in relatable, emotionally engaging stories that are in line with people's values, and which point out solutions that are within their grasp.

The problem with many simulation games may not just be that they lack persuasion; they also tend to represent the climate crisis as a managerial issue, one that, given the right resources and their proper implementation, can be resolved within existing ethical and economic paradigms. In other words, while simulation games help players develop systemic literacy, they do not necessarily cultivate ideas of systemic change. Writing about popular climate simulation games, Cameron Kunzelman argues that they position the player as an "agent of the system as opposed to a subject within the system" (Kunzelman 2020). This results in the naturalization of certain systems and a deterministic view of the climate crisis as that which is bound to happen, and to which no alternative courses of history can be imagined. Aaron Long, too, argues for ecogames to situate players differently, not as master builders, but as resilient citizens (Long 2021).

Cross-pollination between ecocriticism and game studies has proven very fruitful, but for a comprehensive study of ecogames, scholars have also had to draw on other disciplines. There are more dimensions to the climate crisis and its playful mediations than ecocriticism can attend to.

That is why in recent years ecocriticism has been caught up with by the environmental humanities, a term that delineates a much wider field of scholarship including the disciplines of environmental history, ecological philosophy, and anthropology, among others (Emmett and Nye 2017, 3). It is also the field of scholarship in which we situate this book. The environmental humanities are characterized by a more radically interdisciplinary attitude, one that is in conversation with the natural sciences. Chang's book *Playing Nature: Ecology in Video Games* (2019b) offers a great example to track this transition. The book foregoes the more ecocritical nomenclature used in her previous work in favor of concepts borrowed from biology (edge effects, mesocosm, entropy), and it reflects more extensively on the ways ecogames are developed, played, and powered. Such budding attention to the political ecology of video games was arguably present from the beginning, for example, in Parham's discussion of ecogames and their implication in neoliberal economics (2015), and Chang's article about the easy co-option and commercialization of pastoral video games and their obfuscation of social and environmental harm (2012).

Inquiries into the political ecology of ecogames have only grown in scope and importance, as evidenced by the surge of interest in the environmental impact of gaming practices (Mayers et al. 2015; Abraham 2022). Such scholarship complicates older ecocritical readings, like Matt Barton's call for more photorealistic representations and more dynamic simulations of weather without thinking through the costs of such carbon-intensive graphical innovation (2008). Paying attention to the materiality and the polluting effects of media production has only become customary in recent years (during the fourth wave of ecocriticism, for those keeping count [Slovic 2012]). But it derives from green media studies, where the politics of globalized labor and e-waste loom large. As we have already seen in film and digital media studies (Parikka 2014; Cubitt 2016; Vaughan 2019), the media industries' carbon footprint and its role in worsening the climate crisis is taken more and more into account.

Finally, a lot of scholarship about environmental video games comes from the social sciences. This kind of work tends to study either player behavior, games reception, or types of environmental design and engagement (Fernández Galeote and Hamari 2021). An excellent review article on the field of environmental gamification by Daniel Fernández Galeote et al. (2021) argues that although there is evidence that ecogames can offer engaging and informative experiences that have the potential to increase environmental awareness, in order to apply gamification most effectively, more data is needed on player identities, player contexts, and the effects of

gamification over time. In addition, Fernández Galeote et al. suggest a range of content and design-based interventions that might make environmental gamification more robust and self-reflective.

Thematic framework

Part I. Today's challenges: Games for change

Most titles explicitly designed as ecogames, which primarily include serious or artistic games, arguably fit into the broader category of so-called "games for change." This term is mainly associated with the eponymous nonprofit organization Games for Change (G4C), founded in 2004 by Benjamin Stokes, Suzanne Seggerman, and Barry Joseph. Among other things, G4C organizes an annual festival showcasing social impact games and providing a public forum for players, game developers, and other industry professionals to meet. Even primarily commercial games that lend themselves to ecological readings may also be productively interpreted within the framework defined by Games for Change as an institution (Stokes et al. 2016; Burak and Parker 2017; Pollack 2020; Salen Tekinbaş 2020).

Over the years, other game festivals (like Indiecade and Now Play This) have added to this effort, featuring program items that showcase and reward socially innovative or progressive game design. In this context, games for change are digital and nondigital games and immersive media that are designed and used with the intention to engage contemporary social issues, address real-world challenges, and drive real-world social change. Their impact consists of real-life consequences, for the world outside the magic circle of the game as well as for the players of the game, during and after play (Raessens 2015, 246–247).

The chapters collected in this part of the book speak directly to this broader definition of games for change. They discuss industry initiatives that advocate for and try to enable more sustainable development practices. They also discuss the possible impact of games with regard to the player's civic and consumer identity as well as their sense of agency, and potential to raise awareness of the existential threat caused by the global "climate crisis" (Carrington 2019; Thunberg 2022, 2). Lastly, they discuss the contexts in which games operate and come to be legible (or not) as ecogames, for example, by highlighting the influence of educational framing and self-imposed player goals, or by elaborating the importance of attending to the complicated interaction between environmental concerns and postcolonial

ones in ecogame scholarship. Thus, while the term "games for change" initially evokes the socially progressive potential of games (which are indeed the main focus of the festivals), our interpretation also explores the change-making potential of—and in—the game industry and ecogame scholarship.

To better understand what we mean by this central notion of "change" and what it entails in the context of the climate crisis, we draw on George Lakoff's (2010) differentiation between two moral systems, a conservative and a progressive one. The conservative moral system includes a number of ideas that oppose the realization of global ecological citizenship while the progressive moral system includes a number of ideas that support it. Games for change are those that argue in its favor. Ecological citizenship involves both rights and duties, for instance, "the right to a non-polluted environment and the responsibility both to refrain from harming the environment and to participate in its preservation and rehabilitation" (MacGregor 2014, 114; also see Raessens 2019a). Recognizing what it means to harm the environment, as well as what it means to protect it, is important in political philosophy because it enables us 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). In the words of Chantal Mouffe (2013), it allows us to "think the world politically."

The difference between the conservative and progressive moral systems Lakoff describes can be summarized as follows: a conservative, (neo)liberal capitalist let-the-market-decide ideology (no regulations, low taxes) versus the progressive idea of governmental environmental regulation; a conservative assumption that greed and economic growth are considered to be good in themselves versus the progressive ideas of generosity and degrowth; and 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 that there is "inherent value in the natural world" (76). This includes the notion that humankind is part of nature, and that we have a duty to nurture empathy for all 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 central values with which we as editors started this book. We also see them reflected in many of the critiques of capitalism, anthropocentrism, and environmental exploitation launched by the authors in this volume; and finally, we see these progressive ideas imbued in many of the ecogames singled out for analysis, though not always perfectly or without bias, which is why our scholarship is important.

While Lakoff's distinction provides valuable orientation, it should also be critically assessed since it implies a rather binary worldview, which today might be interpreted as contributing to existing political polarization. In popular discourse, the gap between conservative or neoliberal and progressive framing has arguably widened and, in Lakoff's terms, even been "reified" (2010, 77); for instance, through alternative social media platforms that specifically cater to conservative subscribers and reinforce filter bubbles. In this discursive context, identifying environmental concerns where progressive and conservative interests overlap appears vital, not least to facilitate a working consensus across groups and political orientations to back up the necessary societal transformations. For example, Lakoff refers to the notion of a "regulated commons," which alleges that we "all own the air, and that that ownership should be legalized through a trust" (78). Putting a price on (clean) air and applying market mechanisms to regulate it, similar to the EU's emissions cap and allowances system, can be understood as an example of the use of conservative methods to push a progressive agenda. Such examples might meaningfully contribute to reaching global climate goals if implemented in a just and enforceable manner. Depending on the institutional contexts from which they emerge, games for change might help enable the identification of such shared interests in sustainable futures.

However, despite the currency such business-as-usual approaches still have among global political leaders (as well as, no doubt, many gamers), games for change increasingly aspire to take part in a more incisive critique of the climate crisis, hoping to enact more profound transformative change. In this way, games for change are aligned with the leading experts and activists brought together in Greta Thunberg's *The Climate Book* (2022). For these authors there is no question about the cause of the climate crisis and the decades of inaction that predate the issue's high stakes today. They trace the problem to a specific economic system—(neo)liberal, colonialist capitalism—with its focus on free markets, perpetual gross domestic product (GDP) growth, and the exploitation of people and the environment.

Another world is possible. *The Climate Book* also forwards alternative policies based on market regulations, green growth or degrowth, and a break with human exceptionalism and a plea for solidarity with all human and nonhuman beings. To bring about such change, four aspects of activism are brought into focus: "To solve this problem, we need to *understand* it" (3); to stay motivated to fight climate disruption, we should bring *feelings* like "fear, grief and anger" as well as "deep joy, enthusiasm, and gratitude" into our hearths and honor them (339); there is a need for "*alternatives* to current ecocidal practices" (392); and we need "small, individual *actions*"

as well as "collective efforts and *actions*" to bring about "planetary *system change*" possible (5, 354, our italics). These aspects correspond to the basic dimensions of human experience—*knowing*, *feeling*, *imagination*, and *action* (Kattenbelt and Raessens 2003). Together they cover the ways in which the climate crisis is "refracted" in interactive media, according to Roy Bendor (2018) and the Playful Identities research group (Frissen et al. 2015). For Bendor, the issue of sustainability is refracted in interactive media in the same way a glass prism refracts white light into a colored spectrum. Digital media reveal different aspects, or shades, of the climate crisis, making possible the process of creating and exploring progressive ecological identities through play, which can foster transformation (see Table 0.1).

Table 0.1 The refraction of the climate crisis and the different dimensions of change imaginable

Climate crisis refracted as a …	Change in the dimension of …	Progressive ecological identity in the form of …
… lack of understanding of the impact of political social economic systems on the environment.	… system thinking; ecocritical and postcolonial awareness and reflection; ecological thought.	… knowing (reflexivity of thought).
… lack of felt urgency and engagement for individual and collective climate action.	… unlocking strong motivational forces; reaching players at an affective level, involving (also aesthetic) feelings and emotions.	… feeling (intensity of experience).
… lack of alternatives for today's neoliberal capitalism.	… imagining alternative futures.	… imagination (creativity of new ideas).
… lack of individual and collective climate action.	… making other individual lifestyle choices (behavioral changes) and pushing for societal system change.	… acting (actuality and causality of action).

In addition to these different modalities through which change can be brought about, scale also plays a role. Change can be encouraged to occur on a micro-level (involving individuals), on a meso-level (involving communities such as schools and neighborhoods), and on a macro-level (pertaining to larger publics and political agenda). For example, when played at home by yourself, *Walden, a game* (USC Game Innovation Lab 2017) can be considered a "micro" experience: "a gorgeous, meditative experience that will give you plenty of time to reflect" (according to a player's response quoted on the game's website; see Figure 0.4). But when played in schools, using the

Figure 0.4: *Walden, a game*.

Walden, a game: Curriculum Guide (USC Game Innovation Lab 2017), whole classes can learn about the importance of biodiversity and the power of civil disobedience.

The Dutch game *Wijk & Water Battle* (*Neighborhood & Water Battle*) (2015 Grendel Games) is another example of a game that aims to bring about change on a meso-level. In a first round of applications, children from two primary schools in different neighborhoods of the city of Leeuwarden took part in a "battle" that lasted for three months. In the game, whimsical water creatures live in Leeuwarden's water network. Their tiny homes are flooded regularly because of the city dwellers' intensive water consumption. The schoolchildren participating in the battle were given the chance to prevent these little creatures from drowning by managing their own water consumption. Using a smart meter and an app, they were challenged to decrease and spread out their water usage throughout the day—and encourage their family members, friends, and neighbors to do the same (see Figure 0.5).

Ecogames can also change the public and political agenda on a macro-level. For example, *All Rise* is an ecogame being developed by the *Anticiplay* research project at Utrecht University in which players take big fossil fuel companies and other environmental defilers to court (Rees 2023). This game, which is discussed in more detail in the chapter by Joost Vervoort et al. in this book, is inspired by the very popular *Ace Attorney* video game series (Capcom 2001–), where players take on the role of a defense attorney or prosecutor. It is also being made in close collaboration with the social movements (see Van der Heyden 2014) responsible for actual climate cases, like the Urgenda Foundation against the Dutch government, Milieudefensie

Figure 0.5: *Wijk & Water Battle*.

(Friends of the Earth Netherlands) against Shell, and Fossil Free against ABP, the Dutch pension fund for people working in government and education. The game's intent is to inspire players to fight for their rights and to get involved in actual climate cases. Moreover, *All Rise* has pledged to donate all of the funding it has crowdsourced to effecting real-world change by supporting the NGOs Fossil Free and Milieudefensie in their future climate court cases.

Part II. Future worlds: New imaginaries

The second part of the book explores how video games engage in imaginative storytelling to envisage climate futures using tropes, themes, and conventions common in science fiction. Just like climate fiction, the games discussed in this part speculate about the conditions of the environmental crisis, and the ways in which we will have to change ourselves, and our society in order to salvage more sustainable, equitable futures. However, as Gerry Canavan writes in *Green Planet*, an anthology on ecology and science fiction, the genre is animated by the tension between two "loyalties," hope and dread, utopia and dystopia (2014, 1). This tense division is apparent in the games discussed in this part of the book as well. Having spawned in response to and in tandem with the rise of modernity, science fiction is imbued with an ambivalence that characterizes the age's achievements:

the technological advancement, wealth, health, luxury, and leisure time—acquired for some—have come at the cost of alienation, environmental destruction, rising global inequality, pandemics, and a mass extinction that threatens human life as well as countless of nonhuman species.

In some video game genres the techno-utopian impulse that bolsters ecomodernist responses to the climate crisis reigns supreme. Ecomodernists, or proponents of a "good Anthropocene," believe in the potential of technology to curb global warming. They argue that "in the long run, next-generation solar, advanced nuclear fission, and nuclear fusion represent the most plausible pathways" to a sustainable future (Asafu-Adjaye et al. 2015, 23). They advocate for "greater resource productivity" and efficiency, since "more-productive economies are wealthier economies, capable of better meeting human needs while committing more of their economic surplus to non-economic amenities, including … the conservation of nature" (29). As Laura op de Beke (2020) has argued, in the genre of environmental god games, or Gaia games, this is precisely the kind of climate future that is typically played out. Especially since god games (and civilization simulators more generally) use "tech trees" to pace gameplay. Strategy often demands working your way down the tech tree, developing more advanced technologies by expanding industrialization. The environmental solutions, or techno fixes, "unlocked" in this way are then deployed to clean up the environmental devastation with which they were bought.

Ecomodernist narratives and gameplay are also prevalent in planetary colonization games, a genre introduced at length in Paweł Frelik's chapter in this book. They indulge terraforming fantasies in which players tame uninhabitable planets for profit or for the sake of expansion. Such fantasies smack of Elon Musk's particular brand of techno-capitalist entrepreneurship. More recently, however, video games have started to question such narratives of planetary colonization, imbuing these stories with ambivalence and skepticism. For example, in *Deliver Us the Moon* (Keoken Interactive 2018) you play an astronaut inspecting an abandoned outpost on the moon where until recently scientists were working on a solution to Earth's energy crisis by exploring helium as a new fuel alternative. While it is not important to the plot, a thorough search of the station reveals a whiteboard with some calculations on it demonstrating that the project was doomed from the very start. "Unsustainable," it says, in big red letters, underneath a list of reasons why the project would fail, like the cost of logistics and helium's low energy yield. Other subversive games about space exploration discussed in this part include *Outer Wilds* (Mobius Digital 2019), which, as Lauren Woolbright points out in her chapter in this book, drives home the danger

and instability of space, garnering more love and respect for the only planet we will ever be able to call home: Earth.

One of the main arguments wielded by ecomodernists is that the fatalism of dystopian narratives is demotivating, and that it inspires no change. This is a timely concern, given the popularity of postapocalyptic stories in entertainment media, not least in video games. "The sheer number of games developed with postapocalyptic settings and featuring urban spaces in various stages of ruin is astonishing" (Yeates 2021, 118). This postapocalyptic obsession has been brewing for a long time; as Frederick Buell points out in his book on environmental crisis in American literature, over the course of the twentieth century, conceptualizations of crisis shifted from the immediate and spectacular, to the protracted, and mundane. Crisis became a space in which to "dwell," not something to get through (2003, 183). Canavan agrees that what characterizes contemporary fictions of environmental crisis is "a sense that there is nothing left to do but somehow accommodate ourselves as best we can to ongoing and effectively permanent catastrophe" (2014, 10). Such a sense of having to carve out a living from such a new reality pervades postapocalyptic ecogames like *Frostpunk* (11 Bit Studios 2018) and *Floodland* (Vile Monarch 2022).

For Robert Yeates postapocalyptic spaces offer possibilities of "emotional rehearsal" (2021, 123), which indulge a desire to achieve mastery over challenging prospects. In her article on mastery, repetition, and failure in ecogames, Op de Beke outlines the stakes of such anticipatory play, which can serve to foreclose the future, rather than open it up to new alternatives (2021b). Whether dystopian futures inspire transformative change or not, it is clear that as a cultural obsession they make visible anxieties about societal decline, climate change, and ecocatastrophe, in addition to illustrating according to Stephen Joyce the increasing transmedial nature of the media landscape (2018). After all, "transmedia … favours infinitely suspended fictions," and the climate apocalypse, due to its protracted nature and the global distribution of its effects, offers a rich premise for transmedia world-building (7).

Both dystopian and ecomodernist narratives are prevalent in games, but science fiction is too rich and sophisticated a genre to oscillate between extremes for long. As science fiction scholars like Samuel Delany (quoted in Canavan 2014) have argued, it is the interplay between optimism and critique that fosters some of the most powerful engagements in fiction. For example, images of what Delany calls the "Junk City" (3) detail everyday scenes of decline and destitution, while also illustrating the innovative and resourceful ways in which people restore, recycle, and recombine junk

when pressured by circumstances of scarcity. Such "scrappunk" futures have only become more popular and more resonant in the twenty-first century. For example, according to Evan Calder Williams, the concept and practice of "salvage" has become "one of the fundamental structures of thought that shape how we envision future possibility" (Williams 2015, 845). This is especially apparent in video games, "where salvage as both mechanism and aesthetic has spread the widest," since it is a medium in which we are often asked to scavenge, tinker, and rebuild (856).

> That spread is due in part to the kind of meandering, snooping time games can encourage and in part because of item gathering and "crafting" systems … that have become common, rewarding players for scavenging, wreck-diving, and peering under rocks. At the heart of a wider swath of games, however, is an even more basic principle of salvage: that there may be value in the neutral, broken, dead, or passed-over. (856)

Given design conventions like these, Shawna Kelly and Bonnie Nardi (2014) argue that video games could become prime spaces in which to explore futures of scarcity. Take, for example, the garbage city builder *Flotsam* (Pajama Llama Games 2019) in which you build a raft city by roping together driftwood and plastic sourced from the ocean.

Sticking with this example for a moment, it is remarkable that while the game's premise is postapocalyptic, its tone is lighthearted and even tongue in cheek, poking fun at the ways in which hipsterish practices like click-baiting or microbrewing might come in handy after the end of the world. This turn to more lightheartedness, or levity, seems to accompany a recent desire for more optimistic visions of the future, no doubt to balance out the doom and gloom of much of what is on the news. Such stories of hope and transformation are often associated with the aesthetic register and narrative imagination of solarpunk (Williams 2019). Games that offer bright and beautiful climate futures include the game of strategic environmental regeneration *Terra Nil* (Free Lives 2023), as well as the exo-planetary dating sim and deck builder *I Was a Teenage Exocolonist* (Northway Games 2022). Especially the latter demonstrates that solarpunk values go beyond sustainability to include anticolonialism and progressive understandings of race, gender, class, and ability.

Taking the solar in solarpunk seriously, however, means paying attention to the representation of energy and energy infrastructures in games. This is an important angle of analysis championed in the field of the energy humanities. As Op de Beke demonstrates in her chapter in this book, there is

much to be gained from engaging with this body of work; in comparison to novels, video games are often much more explicit in their references to the energy systems on which we rely—and which are in desperate need of being transformed. Many games allow players to play with electrical grids and different fuel options. Moreover, the recent years have seen a proliferation of different energy landscapes in video games, from the pixelated industrial, petrochemical slums in *Norco* (Geography of Robots 2022), to the solar-powered urban, rooftop farms of *Detroit: Become Human* (Quantic Dream 2018). Inspired by Benjamin Abraham (2018), in the case of *Detroit: Become Human*, one could ask about the rhetorical persuasiveness of such subtle, largely backgrounded energy visions. What cultural work do speculative energy regimes in popular media perform? These regimes—called steampunk, solarpunk, atompunk, dieselpunk, etc.—cultivate different sets of aesthetics and different visions for the future, but most importantly, they visualize the pervasive influence of energy systems on matters of urban planning and practices of labor and leisure, and indeed all aspects of society.

Part III. The nonhuman turn

The third part collects chapters that engage with the nonhuman both in subject matter as well as philosophical outlook and practice. Nonhuman actors and agencies have not traditionally stood at the center of much humanities research. After all, to the *human*ities, the human has always been identified as the driver and focus of history, language, and culture, in such a way that it has blinded scholars to the importance of nonhuman actors in global, historical processes. In the twenty-first century such blindness can no longer be tolerated (if it ever could). Species are going extinct at an unprecedented rate due to unsustainable development, reckless resource extraction, and the changing climate, and the gaps they leave in the slowly unraveling web of life shine a light on the important roles nonhuman species play, both ecologically and culturally. We inhabit multispecies worlds and our histories, design philosophies, and ethics ought to accord with that reality. Moreover, not only do we need to come to terms with the importance of nonhuman animals, but we should also recognize the nonhuman agency of assemblages of inert matter, or technologies whose effects and abilities may lie outside of our control. Fortunately, there are a number of theoretical fields of scholarship committed to this work, contributing to what Richard Grusin calls "the nonhuman turn" (2015).

The nonhuman turn is "engaged in decentering the human in favor of a turn toward and concern for the nonhuman, understood variously in terms

of animals, affectivity, bodies, organic and geophysical systems, materiality, or technologies" (vii). Since the last decades of the twentieth century there are various theoretical fields of scholarship engaged in this effort. The ones summarized by Grusin include: actor-network theory, affect theory, animal studies, assemblage theory, neuroscience and studies of AI, new materialism, new media theory, the philosophy of speculative realism, and systems theory (viii–iv). To this list we would add disability studies and some branches of posthumanist scholarship, both of which are invested in a deconstruction of the category of the human to expose its false, or exclusionary premises. In ecogame scholarship engagements with the nonhuman take on a variety of forms, drawing on some, though not all of the theoretical traditions listed by Grusin. For brevity's sake we distinguish between three different thematic approaches: Affect and embodiment, human–animal relations, and the vitality of systems and technologies.

Affect and embodiment

One way of engaging the nonhuman in video games is to ask about embodiment. For feminist new materialism, embodiment is key because, as we have learned from disability studies, bodies are willful entities that condition our experience of the world. Bodies are porous, too, always in contact with entities, forces, and atmospheres that impact their ability to function. It is in these entanglements that new ethical and political connections can be made, exposing shared interests, associations, relations of kinship, and so on. But how do we make such connections across the dividing line of the computer screen—to entities and environments composed of bits and bytes? There are no straightforward answers here. "How we come to feel embodied in video game play is much more complicated than simply stepping out of one world and skin and into others" (Keogh 2018, 3). For Brendan Keogh the go-to metaphor of "immersion" is insufficient, even damaging, in the sense that it fuels one of the central myths of video game theory: the belief in "an effortless transferal of agency into a virtual world to take on a virtual body" (6). According to Keogh, subjectivity is never transported or immersed; rather, it is distributed over an assemblage of bodies: eyes, ears, thumbs, prosthetics (controller, mouse, keyboard), interfaces, and player characters. Our experiences of game space, and any environmental relationships we may cultivate inside of and to that space, depend on the nature of the distribution of our subjectivity across it.

Through innovative game design, video games can challenge our anthropocentric biases in favor of more biocentric ways of looking at the world, by situating us differently in the landscape. For example, Adena

Rivera-Dundas argues that video games can "manipulate expectations of interactivity and experiences of time within their nonhuman worlds in order to disrupt Enlightenment-era hierarchies of domination and control" (2017, 122). Video games typically stage the relationship between players and the environment as one of domination, resting on mechanics of traversal, exploitation, or violence. What if we were to stage it differently? In her discussion of walking simulators, Rivera-Dundas argues that through careful delimitation of the player character's movement and identity, the nonhuman world is granted a sense of vitality by being comparatively more mobile, more detailed, and more alive. For example, in *Proteus* (Ed Key and David Kanaga 2013), players move at a relatively slow walking pace, which means they are allowed to observe more closely and more carefully the flora and fauna that surrounds them. Elsewhere in the game, by speeding up the time between seasons, *Proteus* also gestures at the deep(er) time of environmental processes, as well as the finality of death. Such nonhuman temporalities are also of interest to Merlin Seller (2020), whose paper on the Anthropocene simulation game *Lichenia* (Molleindustria 2019) highlights how it engages the slow, looping temporalities of ruination and rewilding, as well as the more rapid waves of change that occur after natural disasters. Seller is also attentive to the affective power of this looping experience of growth, death, and regrowth. The use of slowness, rhythm, and repetition, and the strategic delimitation of player agency, can attune players to life cycles and lifeworlds that are grander and slower, or more minute than those we are familiar with (Caracciolo 2022).

Human–animal relations

In medieval Europe many carnival games involved pigs. In the "pig-beating game" four blind men would be armed with clubs and told that if they beat a tied-up pig to death they could keep it (Porck 2020). The game sounds more like a spectator sport, exploiting the similarity between a pig's squeals and human shrieks of pain as the blind men would beat each other with sticks. Likewise, the fun of a game of greased pig wrestling is in seeing people give chase while slipping and sliding in the mud until they are quite as dirty as the hog they are trying to pacify. In short, although games like these smack of animal abuse, the real objects of their mockery are often the human participants. There is something about playing with animals that levels presumed anthropocentric hierarchies.

In recent times, such games of "animal mayhem" are back (Caracciolo 2021), offering a stark contrast to more conventional titles like *Shelter* (Might and Delight 2013), *Gibbon: Beyond the Trees* (Broken Rules 2022), and *Endling:*

Extinction Is Forever (Herobeat Studios 2022) in which beleaguered animal protagonists primarily serve as objects of empathy. In *Goat Simulator* (Coffee Stain Studios 2014) players rain down chaos on the city by embodying an indestructible, shapeshifting goat whose lashing, sticky tongue can be used to fling objects around and cause havoc in the streets. For Marco Caracciolo the goat embodies a "strange stranger" (2021), Timothy Morton's term for entities that defy human categorization since it is both animal, object, and something more ontologically murky. *Untitled Goose Game* (House House 2019) also upsets human–nonhuman binaries, not by erasing them, but by flipping the script and showing how due to their gullible blindness to nonhuman agency human characters are roped into the scheming goose's antics. The game thus highlights "the creative possibilities of interspecies collaboration" (Caracciolo 2021).

This collaborative mode of play offers interesting new ways of engaging with animals as peers. The experimental game app *Pig Chase* (Utrecht School of the Arts and Wageningen University 2012) was developed in the Netherlands by artists and researchers to complicate the relationship between consumers and farmed pigs. Human players drag their finger across a touchpad causing an attractive light to track across an interactive screen inside a pig pen. If the human can persuade a pig to follow the light with its snout to a corner of the screen, the pig is rewarded with a lightshow. *Pig Chase* draws attention to the commonalities between humans and pigs, like our capacity for boredom and our desire for play. Games of collaboration like these sidestep the pitfall of games that profess to facilitate a becoming-animal that is seamless, which raises the illusion that "players may really be able to understand and appropriate animal ways of life" (Caracciolo 2021). As Tom Tyler and Jonne Arjoranta demonstrate, video games can certainly evoke different sensoria using synesthetic design strategies like "smellovision," but these are far from comprehensive (Tyler 2013, 2022; Arjoranta 2019). Games of collaboration, on the contrary, leave space for animals to retain an element of the unknown and the unpredictable.

Melissa Bianchi has also looked at "awkward animal avatars" (2015). Bianchi argues that video games can aid us in rediscovering kinship with cephalopods. *Octodad: Dadliest Catch* (Young Horses 2014), for example, "trouble[s] the conventions of anthroponormative play" by simulating the ungainliness of octopus physiology on land, making challenges of dexterity out of normal human acts like walking, dressing, and interacting with items (Bianchi 2017, 138). Moreover, Bianchi argues that some video games foster what Donna Haraway would call tentacularity, by asking the player to distribute their subjectivity across a number of different digital platforms

and avatars, thereby calling attention to the nature of video games as player–machine assemblages. For example, when playing the squid-themed shooter *Splatoon* (Nintendo 2015–2022), you have to tend to the TV screen, the Wii U console's buttons and control stick, as well as its tablet and stylus in the manner of a many-armed creature (Bianchi 2017, 147).

As Caracciolo points out, games like the ones mentioned above may cultivate more ecological thinking but they do so using cultural registers that are uncommon in this discourse, like absurdist or slapstick comedy. A lot of this environmental weirdness provides good "clickbait," which means there is no scarcity of playful experimentation with nonhuman players or multispecies games online. For example, based on footage shared on social media the game *Stray* (BlueTwelve Studio 2022) was enjoyed by human players as well as their feline companions (@catswatchstray on Twitter). Moreover, in a recent article, Mark Johnson and Nathan Jackson (2022) investigate the notion of nonhuman game streamers, and they offer as a case study "a live fish observed by a motion tracker 'play[ing]' a game of *Pokémon Red*" (436). As the authors point out, nonhuman players raise important questions about the constantly shifting definitions of agency that inform contemporary gaming culture. Nonhuman players also feature in Michelle Westerlaken and Stefano Gualeni's game design experiences with ants (2016), and in Westerlaken's other work. They demonstrate that games are increasingly perceived as an opportunity for interspecies understanding and mediation.

The vitality of systems and technologies

If you take your hands off the controller or the keyboard, does the game still play? Some signs would suggest that it does. When player input comes to a halt in some games this leaves space for environmental processes to become foregrounded, exposing a "gently stirring rhythm of life" (Galloway 2006, 8). During these moments we are witness to what Alexander Galloway calls "the ambience act" (10). The ambience act is a diegetic machine act, which means it takes place within the story world, but instead of being executed by the player, it is run automatically and independently of player input by the machine. Machine acts, for Galloway, are expressive of "the vitality of pure matter" (8). Galloway's phrasing here is reminiscent of Jane Bennett's notion of "vibrant matter," which urges us to look at inanimate matter and to acknowledge how it acts on us, and in response to us, in recalcitrant and surprising ways (2009, viii). Bennett's project theorizes the "vitality of (nonhuman) bodies," which have "the capacity … not only to impede or block the will and designs of humans but also to act as quasi

agents or forces with trajectories, propensities, or tendencies of their own" (viii). Disruptive machine acts that behave like vibrant matter include glitches, software errors which can be grumbled at or exploited in creative gameplay. Paolo Ruffino, too, lists video games that play themselves among the games of the post-Anthropocene: posthumous games that evoke a world without humans (2020). He also lists idle games, recorded gameplay meant for viewing, the use of bots in MMOs, procedurally generated games, and games of inhumane boredom as trends in nonhuman gaming from which we can learn about the limits of human agency and "the complexities of our situated encounters with the nonhuman" (22).

Alenda Chang suggests another category of nonhuman games that she calls "bit-narratives," named after the "it-narratives" of the eighteenth and nineteenth centuries that centered on the circulation of inanimate objects during the early stages of industrial capitalism (2019b, 124–134). She explains that in more recent years this tradition has survived in the form of the commodity exposé. Bit-narratives are stories or materially self-reflexive games that feature computers or digital objects as protagonists. For example, the mobile game *Phone Story* (Molleindustria 2011) exposes the socially and environmentally exploitative practices behind the production of mobile phones, from coltan mining to sweatshop labor. It remains quite rare for video games to acknowledge their carbon footprint in-game, or to gesture at the material cost of digital entertainment, although exceptions do exist (Milburn 2016; Nguyen 2017). Other ways of engaging the nonhuman in ecogames involves focusing on aspects of hardware and software like the variations of trees and plants available in asset stores (Chang 2019a), or the flat ontology of game engines like *Red Dead Redemption*'s (Rockstar San Diego 2010) Euphoria (Holmes 2019).

Part IV. Critical metagaming practices

The final part of this book is dedicated to how critical metagaming practices can facilitate and perform ecocritical thinking; as such, it acts as an "outlook" by shifting the focus from games-as-texts, which is still the dominant mode of engagement in most ecogame literature, towards games and gaming as sites for strategic appropriation and even resistant practices. The part's focus on practice does not only describe the research "object" of the chapters it comprises but also points to a specific practice-oriented perspective, from which green media can be (re)assessed. While this is not yet common in ecogame studies, we can refer to the work of filmmaker Anuj Vaidya (2020), who offers a practice-oriented rethinking of the concept of

ecocinema. Drawing on his own experience and activities, Vaidya shifts the focus from ecocinema as a genre towards "an embodied practice" (59), which means exploring sustainable ways of powering film production and distribution via low-impact methods (like using hand-powered tools) and distribution through performance rather than streaming. In other words, Vaidya foregrounds "thinking cinematically, [which] means thinking with the apparatus (camera, projector, etc.) and the practices (story-boarding, editing, etc.) that cinema engenders" (50), rather than representations of ecological threats or sustainable alternatives.

A similar practice-oriented perspective on ecogames might expand the discourse beyond ecocritical close readings of individual games. Looking at what the player "does," beyond the framing suggested by the game, broadens the applicability of ecogames as a sensitizing concept. For instance, understanding parenting as an example of "epistemic practices" (Zamora and Herzog 2021, 38) suggests that even games without any explicit environmentalist agenda, like *God of War* (Santa Monica Studio 2018), may facilitate playful practices that speak to environmental awareness and sustainability orientation. After all, playing a parent involves "knowledge production,… sharing information and passing on knowledge to others" (4), which is what often prompts young parents to profoundly rethink their impact on the environment and the responsibility they have for passing it on intact. This example indicates why and how an emphasis on practice can be fruitful in combination with more traditional ecocritical investigations. Metagaming is a playful practice, though for the sake of clarity it needs to be differentiated it from an increasingly broad range of other "green practices" and "eco-lifestyle[s]" (Lewis 2012, 315, 318), which are also characteristically playful but do not use games as material. Below, we briefly differentiate between three types of "green" metagaming practices, even though primarily the last one will be relevant for the chapters in this part: playful practices, green practices that use games as "metaphor," and using games as material or tools.

Playful practices

The first type includes examples such as situated practices like seed bombing and guerrilla gardening, which can be productively understood, both in their historical contexts and as "blueprints" for more contemporary forms of "green citizenship" (Lewis 2012, 316), through the concept of games and play, starting, for example, with their playful appropriation of military language. Playful "green practices" also include more marginalized and ambivalent activities, like voluntary dumpster diving, and other playful

and/or gamelike practices similarly informed by principles such as self-imposed constraints, bricolage, or collective creativity. Dumpster diving has explicitly been defined and studied as a critical practice by Turo-Kimmo Lehtonen and Olli Pyyhtinen (2021). They specifically acknowledge that dumpster divers do not "simply [operate] outside consumer society [but] play with notions of value at its margins" (5), and that "dumpster diving achieves a "play form," [in other words], it becomes a sociable end in itself" (11). Inversely, based on ethnographic research, they state that a common intrinsic motivation among dumpster divers is the "refusal to play the game that is given as self-evident" (16), thus framing the negotiation of late-capitalist food systems as "gamelike." Anecdotes from an ethnographic inquiry into dumpster diving communities in Germany (Kühn 2019) suggest that the practice is—like play—characterized by unresolved ambiguities, oscillating between activism and social experiment, being illegal but not socially harmful, being voluntary for some but helping others make ends meet. Like play communities, these groups develop a shared language and knowledge. They develop their own rules and behavioral "codes" (e.g., using plastic gloves and moving slowly to avoid cuts and infections or keeping quiet to avoid disturbing others). Finally, the groups develop their own rituals such as collectively inspecting the group's haul on a nearby meadow after a dive. Another, more explicitly "designed" example of subversive gamification is pursued by the GamiFOREST project at the University of Tampere, which advocates reimagining the forest as "playspace" to foster climate awareness, via different "ways of gamifying forests."

Green practices that use games as "metaphor"

A second category includes "green practices" that use games as "metaphor." For example, the short video *Game of Moulds* playfully features time-lapse footage of growing fungi set to the soundtrack of, and mimicking shot for shot, the iconic intro to HBO's TV series *Game of Thrones.* More directly "on topic," the performance art performance *Forest* by Emke Idema (n.d.) uses a giant board game as a spatial metaphor to explore a speculative dendrocene future, an "age of the tree," in which "felling or even damaging trees has become [synonymous with] murder." Not only designers but also academics have used metaphors of games and play to make sense of creative ecopractices. For example, Allen Abramson and Robert Fletcher (2007) understand rock climbing and "adventure sports" (3) in general as "deep eco play," or as an unfolding "epic struggle between two opposed forces,… the climber and the particular configuration of rock" (6), which modulates the practitioners' relationship to nature. More recent practices that have

been summarized using the metaphor of "hacking the Anthropocene" (Hamilton et al. 2021, 13) also emphasize that "Anthropocene politics are staged as both urgent and playful" (12). These practices are relevant in that they prototype alternative modes of civic participation and engagement (though not always explicitly environmentalist ones). For example, recent practices like yarnbombing are discussed as examples of contemporary "DIY citizenship" (Orton-Johnson 2014) and allow for the playful exploration of more sustainable versions of the self, using a distinct "'maker' identity" (145).

Using games as material or tools

While the practices mentioned above are relevant in broader discussions about play and the ecological self and deserve to be studied further, this book focuses on a third category, which more narrowly defines metagaming as using games as "material" or tools to "think through." In their eponymous book, Stephanie Boluk and Patrick LeMieux (2017) similarly describe metagaming as "mak[ing] a game out of a game" (2), referring to examples like "complex house rules, arcade cultures, competitive tournaments, and virtual economies" (3) built around digital and analog games. Accordingly, "metagames transform video games from a mass medium and cultural commodity into instruments, equipment, tools, and toys for playing, competing, spectating, cheating, trading, making, [and] breaking" (4). In addition to the practices focused on altering the experience of the game, we also introduce a focus on those practices that "think through" games about something else entirely. Academic interventions like "ClimateFortnite" (Boykoff 2019, 22), which involved a team of environmental scientists streaming the popular battle royale game *Fortnite* (Epic Games 2017–) while talking with fellow players about the climate crisis, can thus be placed in this category. The project alludes to the potential of tapping into massively popular games like *Fortnite* as unique communication channels with teenagers and young adults, but—by design—it only reached a small audience and could not be maintained or replicated. Using examples like these as a jumping-off point, the chapters compiled in this part explore "how [players] do things with videogames" (Bogost 2011), use them as material or simply as inspiration for individual and/or collective ecological practices that are playful or even metaludic (i.e., giving rise to new, emergent rules of playing "with" the game rather than abiding by its own rules).

Operating with these three tentative categorizations allows for differentiating "green" metagaming from related terminology, for example, what Pablo Abend, Benjamin Beil, and Vanessa Ossa call "playful participatory practices" (Abend et al. 2020). With that term, the editors of the eponymous

anthology refer to "playful appropriations of media technology within current digital media cultures" (1). They situate such instances of "co-production, co-creation, and co-creativity" (3) as extensions of Henry Jenkins' notion of participatory cultures. Thus, while they discuss similar practices (e.g., "modding" [33] or "livestreaming" [75]), Abend, Beil, and Ossa are more concerned with the game industry and culture (i.e., participation as opposed to rampant commodification). Instead, this part of the book considers gaming practices as performative engagements with issues like sustainable futures. The term implicitly acknowledges the "latent contradiction between media as 'institutionalized structures, forms, formats and interfaces for disseminating symbolic content' … and as an 'open set of practices relating to, or oriented around, media'" (Lünenborg and Raetzsch 2017, 13) with the goal of "question[ing] the analytic primacy of media as technologies or as institutions" (25), which is still dominant in a lot of contemporary ecogames research. In our thematic context, this distinction between media objects and media practices can refer to creative playing practices that prompt or are deliberately extended into labeled art exhibits as in the case of the work done by the artist duo Eloïse Bonneviot and Anne de Boer. They often stage workshops and performances aiming to (re)experience the virtual ecologies of video games like the space exploration game *No Man's Sky* (Hello Games 2016) and *Eco* (Strange Loop Games 2018) (Op de Beke 2022). To account for these contradictions, Margreth Lünenborg and Christoph Raetzsch (2017) define the role of media in social movements and other contexts as "complex sociotechnical institutions" (17) rather than mere communication channels, which implies an understanding of those that engage in or observe them as "performative publics" (26).

To illustrate this tension between (para)text and practice, consider, for example, the self-imposed challenges originating in player communities for games like *The Sims* (Maxis 2000), which dictate alternative goals and playing conditions and are organized via *YouTube* and other social media platforms. These challenges are usually valorized for offering original, well-balanced metagaming rules that increase gameplay variability, but occasionally they touch upon pertinent societal and lifestyle aspects, including sustainability. They are often archived on dedicated websites and, thus, gradually develop from grassroots practices into de facto "genres" if they turn out to be popular enough. For example, the "Apokalypse Challenge" turns the casual slice-of-life simulation *The Sims* into a survival game, in which players "get to live through their child and teen years as if their life is normal but once they move out of their family home the apocalypse starts." This suggests that "simulat[ing] futures of scarcity" (Kelly and Nardi 2014), by which

games can raise ecological awareness, is not just an established gameplay trope in commercial games but, increasingly, a metagaming principle that audiences gravitate towards, both because it is recognizable and spreadable (for instance, by live streamers; see Jenkins, Ford, and Green 2013), but also because it creates interesting choices and gameplay constraints. Another example is the "Veggie Farmer Challenge," also invented for *The Sims*, which requires "play[ing] through five generations with each one being obsessed with a specific type of vegetable and the color of that vegetable, and they'll be only allowed to earn money through their vegetable crop sales." The *Ultimate Sims Guides* website demonstrates that devising these challenges as metagames is an inherently participatory process as commenters often suggest their own challenges or variations. For example, a player called Leontine proposes a "Gardening Challenge" in which a sim needs to live outdoors and either eat or sell vegetables they planted themselves. These challenges evidently "remix" the gameplay systems of the host game in creative ways, but they simultaneously explore individual pathways to socio-climatic imaginaries as defined by scholars like Manjana Milkoreit (2017).

In addition to decentralized metagame challenges emerging from player communities, there are a few institutional initiatives that have selectively used games as "material" to promote climate awareness. For example, the esports organization FlyQuest devised a campaign to crowdsource the planting of trees called *TreeQuest* in 2020, using its own popularity and the League of Legends Championship Series (LCS) as a platform. The campaign comprised its own metagaming rules: planting one tree per in-game kill by FlyQuest players, ten trees for every Ocean Drake taken by any team, and a hundred trees for every FlyQuest victory. Thus, rather than arbitrarily donating to reforestation efforts, the organization tied the societal benefits to in-game events and conditions, appealing to the internalized logic of (digital) gaming culture.

Published research on this third category of playful green practices which we call metagaming is still scarce. An early example is Cameron Kunzelman's article on playing *Minecraft* as a vegetarian (Kunzelman 2013), informed by the author's horrifying experience of having to kill a pig in the game to acquire food and survive. The notion of performing vegetarianism as a distinct "style" of "being ecological" (Morton 2018) has proven conceptually productive. In response to Kunzelman, James Stanescu notes that "play[ing] as a vegetarian/vegan" "does not usually mean avoiding hunting or domesticating" but primarily "not eating meat that occurs/drops as premade" (2013). Michelle Westerlaken (2017) reflected on her own "vegan

run" of *The Legend of Zelda: Breath of the Wild* (Nintendo 2017), in which she approaches veganism as a "general and interpretable ideology, not a strict set of rules" (5). That is, by emphasizing the more paidic quality of her own metagaming approach, Westerlaken reflects on her idiosyncratic experience of veganism through Michel Foucault's notion of "self-fashioning" (9). She points out the scope of these often-marginalized practices, claiming that vegan player communities exist for games such as "*Stardew Valley*, *Skyrim*, *Oregon Trail*, *The Sims*, *Minecraft*, *Fallout*, *Civilization*, and *DayZ*" (3). As these studies illustrate, "vegan runs" as a type of metagaming practice can raise important questions pertaining to the definition of vegetarianism as a "social identity" in real life (Nezlek and Forestell 2020, 45).

Another area of existing research on green metagaming practices includes ecomodding, which means inserting ecological sensibilities into commercial games by modifying them, often using tools provided by the games themselves. Kyle Bohunicky (2017) makes important observations on how these mods question the procedural rhetoric built into the original games, "confronting players with missing animal populations, and perhaps a degree of unease over *Skyrim*'s speciesist tendencies" (81) or how "romantic environmental mods" (83), improving the rendering of landscapes in *The Elder Scrolls V: Skyrim* (Bethesda Game Studios 2011), may reenact similar reductionist interpretations of the natural sublime as those pioneered by Edmund Burke and eighteenth-century landscape painters. However, Bohunicky's article focuses more on the mods as (para)texts than on (eco) modding as critical practice. To complement this perspective, their text can be read against Nicole Kurashige's (2019), who defines game mods as "(counter)public discourse" (2) and "as responsive or reactive forms of digital rhetoric and composition" (16) that allow players to "challenge, resist, and subvert the procedural rhetoric encoded in a game" (2). This text, similar to an earlier analysis of "rhetorical strategies" in game mods (Werning 2018, 308), frames modding as a discursive practice or, as defined by Stefan Werning, an "ongoing conversation" (317) rather than a collection of interconnected, derivative "texts."

Given the scarcity of research on metagaming as a green practice, it is important to also look beyond the disciplinary boundaries of media studies, for example, towards musicology, which brings into the picture studies like Kate Galloway's (2020) article on soundwalking in *Stardew Valley* (Concerned Ape 2016). Soundwalking, which straddles the line between "creative and research practice," is defined as "any excursion whose main purpose is listening to the environment" (166). That is, Galloway essentially "remediates" this originally embodied practice within the virtual environments

of *Stardew Valley*. Her method does not have an explicit ecological focus but is more concerned with the RPG genre itself; still, observations on "the varied mix of animal sounds" (168) or how the game acoustically marks the "changing of the season [which] brings about different wildlife encountered in the valley, shifts in the characteristics of the valley's flora and fauna, and fluctuations in the resources available for foraging" (171) suggest ample potential for negotiating questions of environmental literacy and fostering players' awareness of their natural surroundings.

Pushing the boundary of green metagaming practices, the chapters in this part specifically explore the conceptual link between metagaming and the need for shared imaginaries of sustainable futures. Authors like Amitav Ghosh and Roy Bendor agree that the climate crisis is exacerbated by a concurrent "crisis of the imagination" (Ghosh 2016; Bendor 2018, 130–131), the consequences of which are anything but imaginary. As we fail to imagine ways to avoid or at least mitigate the climate crisis and develop more sustainable future communities, public support for important initiatives is being eroded, and the legitimacy of climate advocates and political leaders is called into question. According to Bendor, playing games as "unfinished media" (Bendor 2018, 146) enriches the imagination and may make speculative future scenarios appear attainable and worth the effort; even more so, using games as material to collectively envision alternative ways of "doing things" more sustainably can be even more empowering and inspire practitioners to collaborate in writing the rules of these "imaginary worlds" (148) rather than "just" playing by them.

Book structure and chapter outlines

Part I. Today's challenges: Games for change

The chapters collected in Part I speak to the role of games and the game industry in fostering progressive change and climate justice, focusing on matters of terminology, design, impact, and engagement. In her chapter ("Change for Games: On Sustainable Design Patterns for the (Digital) Future"), Alenda Chang examines ecocritical initiatives emerging from within the digital game industry, specifically the Climate Special Interest Group (SIG) of the International Game Developers Association (IGDA). She explains how these initiatives advocate for designing games that feature "green content" with overt environmental messages, aiming to bypass or break psychological barriers for environmental action. In addition to these

"matters of content," Chang also discusses so-called "matters of context": the urgent call to minimize the carbon footprint of ecogame production and consumption. In doing so, her chapter aligns with Sonia Fizek's chapter on the rhetoric of the Association for UK Interactive Entertainment (Ukie) *Green Games Guide* and Rainforest Scully-Blaker's on alternative modes of consumption that exert pressure on and promote change within the game industry. Importantly, Chang demonstrates the multiplicity of the term "games for change," a motif that the following chapters expound on and present in different variations.

For example, Péter Kristóf Makai's chapter ("Do You Want to Set the World on Fire? Amplifying Player Agency to Demonstrate Alternatives to the Climate Crisis") starts off this discussion with powerful case studies of two games: *Fate of the World* (Red Redemption 2011) and *Democracy 4* (Positech Games 2022). Both games are entertainment products that simultaneously explore a vast amount of environmental data and concepts. Makai calls them "social impact games" and investigates how they model the "wicked problem" of the climate crisis, dwelling particularly on the ways in which they situate players as agents in interrelated systems, differentiating between representations of change on a micro- (individual cognition or behavior), meso- (neighborhoods or local politics), and macro-level (national or international policy agendas and imaginaries). This distinction is also productive in other analyses of simulation games in this book, like Paweł Frelik's reading of energy systems in planetary simulation games. Makai contrasts his case studies, and particularly their precarious framing of human agency within climate systems, with two recent sustainability-themed expansions for *The Sims 4* (Maxis, The Sims Studio 2014), a clear-cut entertainment game franchise that simulates a single household. While the comparison establishes a broad spectrum of potential "impact games," Makai cautions that easy gameplay and the "outsize effect of player agency" in *The Sims 4* may fuel a consumerist fantasy rather than inspire critical thinking.

Makai's reflections on difficulty depend on context, especially the player's competence and previous experience with similar games, which is an aspect that Hans-Joachim Backe elaborates upon with his chapter ("Between the Lines: Using Differential Game Analysis to Develop Environmental Thinking"). Backe shifts the focus from specific games to the players and the impact they have on the ecocritical potential of play. The commercial titles he draws on as case studies exhibit similar issues as Makai identified in *The Sims 4*, but Backe proposes harnessing the potential of idiosyncratic, non-normative playing practices for educational purposes. He highlights how video games are experienced and understood very differently depending on

the context of play, taking into regard, for instance, the player's familiarity with the genre or the experience of solitary as opposed to cooperative play. With this perspective, Backe seeks to intervene in ecogame criticism that would preemptively dismiss titles like *Minecraft* or *ARK: Survival Evolved* (Studio Wildcard 2017) as "games for change" without considering alternative ways of playing them. The importance of play, and game reception is also reflected on by Gabrielle Trépanier-Jobin, Maeve Charre-Tchang, and Sylvie Largeaud-Ortega in this book, who report on a large-scale reception study of the diving game *ABZÛ* (Giant Squid Studios 2016).

Thomas Bjørner and Henrik Schønau-Fog's chapter ("A Dynamic Engagement Model to Provide Ecological Awareness of the Climate Crisis through Video Games") also foregrounds the individual player experience, but from a more general perspective, seeking to extrapolate a more holistic conceptual model. Their dynamic engagement model (DEM) facilitates ecogame analysis by mapping how, as "games for change," they can raise awareness of the climate crisis and foster sustainable behavior change. The model comprises characteristics of persuasive engagement before, during, and after gameplay, as well as during moments of dis- or reengagement, thereby acknowledging how ecogames need to be understood as part of a broader consumption experience. The model is compatible with most if not all games discussed in this book as it applies equally to "serious" and entertainment games; in fact, the primary case study, *Cities: Skylines* (Colossal Order 2015), is both a bestselling strategy game and available as a custom TeacherGaming version for educators worldwide (Wawro 2018).

The next two chapters in this part bring ecogame studies into conversation with postcolonial criticism. In "Postcoloniality, Ecocriticism and Lessons from the Playable Landscape," Soraya Murray draws on insights from postcolonial (game) studies to critically reassess how players—by engaging in "intended gameplay," which Backe refers to as the "orthogame" in his chapter—are exposed to certain assumptions embedded in video game environments. For example, Murray criticizes exploitative colonial attitudes within many game spaces and genres, starting with *Sid Meier's Civilization* (MicroProse 1991). In that regard, the chapter can be read alongside Merlin Seller's contribution to this book—equally interested in landscapes—which deconstructs the technical makeup of in-game environments in a discussion of the colonial implications of the lawn. On a more affirmative note, Murray also acknowledges the alternative, more sustainable relationships to the land forwarded in ecogames like *Firewatch* (Campo Santo 2016), *Flower* (thatgamecompany 2009), or *Walden, a game* (USC Game Innovation Lab 2017). Her critique of survival games like

Minecraft but also her emphasis on the "critical value of counter readings" directly connect with Backe's aforementioned chapter; Backe's advocacy of non-normative playing practices may offer a remedy for neocolonial bias in games and aligns with Murray's call for more "nonideal" playing styles of "ideologically difficult" games in important gaming paratexts like Let's Play videos and online games journalism.

Souvik Mukherjee continues this line of argumentation with a specific focus on narratives of dominance that underpin popular video game tropes like exploration and empire building. His chapter ("No Cyclones in *Age of Empires*: Empire, Ecology, and Video Games") explicitly formulates the need for "postcolonial ecocriticism" that considers how human agency, identity politics, and diversity intersect with climate politics in digital games. Such a theoretical position would help unlock the full potential of games for "modelling the complexities of the ecological crises and countering stereotypes" as well as their "potentially significant influence on shaping public perception around environmental issues." For example, Mukherjee's nuanced investigation of animals and their connection to representations of Indigeneity in games like *Red Dead Redemption* and *Far Cry 4* (Ubisoft Montreal 2014) provides a valuable context for Melissa Bianchi's analysis of animal photography as a gameplay trope, which may easily reenact neocolonial ways of "looking" at in-game fauna and flora.

Finally, the chapter by Joost M. Vervoort, Carien Moossdorff, and Kyle A. Thompson ("Games for Better Futures: The Art and Joy of Making and Unmaking Societies") outlines a logical next step given the different interpretations of "games for change" featured before. They advocate for making games that not only reflect but actively foster system change by rethinking and dismantling societal institutions. The authors aptly remark that many "serious" ecogames, despite being designed for that purpose, "have yet to have an impact at scale." Inversely, commercial AA and AAA games have grown to eclipse other media in size and intensity of engagement but, not least due to their complicated production process and desire to reach the broadest possible audience, they are still slow to meaningfully explore socio-ecological crises and sustainable futures. The authors consequently argue for breaking down barriers between more narrowly defined "games for change" and commercial titles. For that purpose, they reframe and actively use crowdfunding as an "interaction ritual" and draw on their own Kickstarter campaign for a game about taking companies to court for their ecological and societal transgressions as a case study. While Chang's chapter outlines ecoconscious change "from within" the games industry, Vervoort, Moossdorff, and Thompson emphasize external forces such as

crowdfunding to highlight the malleability of institutions as well as the activist potential of ecogame development.

Part II. Future worlds: New imaginaries

Part II comprises chapters that explore the kinds of speculative storytelling video games engage in and the critical engagement with the climate crisis that is enabled thereby. Rather than start this section of the book with a straightforward example, we kick off with a chapter that does a bit of preparatory work. In "Climate–Game–Worlds: A Media-Aesthetic Look at the Depiction and Function of Climate in Computer Games," Sebastian Möring and Birgit Schneider propose a framework to conceptualize climate or weather in games, using as an example the online multiplayer crafting game *Eco*. The chapter aims to support scholars and students who seek to make climate and climate change legible in games, even if they do not explicitly announce it as a theme. The framework helps readers recognize the way climates, biomes, and environments are featured in games, and how they can be read ecocritically. This forms a useful start, since the other chapters in this section almost exclusively discuss commercial games whose environmental or climate rhetoric is made explicit through interpretation.

For example, the next two chapters, which are well read in tandem, discuss big-budget postapocalyptic games whose environmental themes might not be immediately apparent. They do, however, engage the issue of an ecologically diminished future, and in doing so posit what can be understood to be a grim climate future. In "Healing a Life out of Balance: Slowness and Ecosophy in *Death Stranding*," Víctor Navarro-Remesal and Mateo Terrasa Torres draw on the work of theologian Raimon Panikkar to unpack themes of disconnection, isolation, but also regeneration in *Death Stranding* (Kojima Productions, Sony Interactive Entertainment 2019), paying attention to the laboring body of its protagonist and its vulnerability to a hostile climate. As they demonstrate, postapocalyptic games like *Death Stranding* acknowledge the extent and irreversibility of societal and ecological collapse, but they also often make space for stories of found family, community, healing, and resistance.

Hitting many similar notes, Gerald Farca's chapter ("Ecology in the Postapocalypse: Regenerative Play in the *Metro* Series and the Critical Dystopia") analyzes themes of death and renewal in *Metro Exodus* (4A Games, Deep Silver 2019), while elaborating on the concept of regeneration and what it has to offer ecogame analysis. Both Farca's chapter and the one preceding it engage important notions of temporality like slowness, recurrence, and

seasonality. Temporality, specifically inertia and flow, is also central to Laura op de Beke's chapter in this same section, and further down, it becomes a subject of interest for Scully-Blaker in his study of slow gaming. Moreover, Farca's discussion of the sublime resonates with other references throughout the book, to the ludic sublime (Navarro-Remesal and Terrasa Torres; Trépanier-Jobin, Charre-Tchang, and Largeaud-Ortega), the technological sublime (Fizek), stuplimity (Paolo Ruffino) and the petrochemical sublime and gamified sublime (Op de Beke).

Leaving the Earth behind for a moment, the next two chapters discuss how the vastness of space and the availability of other planets to colonize helps bring into focus environmental issues, using themes like finitude, planetary boundaries, and our ability to break them (or not) through extraplanetary colonization. In "There Is No Planet B: A Milieu-Specific Analysis of *Outer Wilds*' Unstable Spaces," Lauren Woolbright uses a method developed by ecomedia scholar Melody Jue to analyze the dizzying, unmoored experience of playing the space exploration game *Outer Wilds* (Mobius Digital 2019). Woolbright argues that from such a place of uncertainty and instability *Outer Wilds* creates opportunities for players to reconsider their attachments to dreams of spacefaring, technological hubris, in favor of a newfound appreciation for planet Earth.

Taking a more bird's-eye perspective, in "Green New Worlds? Ecology and Energy in Planetary Colonization Games," Paweł Frelik looks at the gameplay conventions of science fiction games about extraplanetary colonization, interrogating their ideological assumptions about technology, progress, and nature. In his critique of colonialism and extractivism in this gaming (sub)genre, Frelik echoes much of the criticism launched by Murray and Mukherjee in earlier chapters, though Frelik also singles out a number of exceptions to the rule: planetary colonization games like *Factorio* (Wube Software 2020) and *Imagine Earth* (Serious Bros. 2021) which simulate ecological feedback loops to environmental degradation, and *Rimworld* (Ludeon Studios 2018), in which social micro-dynamics are often demonstrated to be more important for a community's survival than feats of technological innovation.

Like Frelik, Laura op de Beke also directs her attention at a popular, and deeply commercial, genre of video games. Her chapter ("Dark Play and the Flow Time of Petroculture in Oil-Themed Games") brings game studies into conversation with the study of petroculture by looking at oil tycoon games, especially the way in which these games envision the past, present, and future of oil extraction. She concludes that while they acknowledge the questionability of oil's timeliness in the present, they also exhibit a reluctance

to let go of oil and an inability to conceive of a future beyond it. Op de Beke's focus on representations of energy systems picks up where Frelik left off, and her even-tempered consideration of the ambivalence of oil-themed games perfectly sets up the next chapter, which is also concerned with the ways in which games might and might not fulfill their ecocritical potential.

We close this part with "The Underrealized Ecocritical Potential of *ABZÛ*" by Gabrielle Trépanier-Jobin, Maeva Charre-Tchang, and Sylvie Largeaud-Ortega. Singling out *ABZÛ* from a host of recent environmentally engaged diving games, the authors perform an ecocritical reading that highlights the game's warnings against unfettered extractivism and human exceptionalism. In the second half of the chapter, however, the authors qualify this reading by juxtaposing it with a reception study in which it becomes apparent that these themes are not reliably picked up on by its players. In other words, this chapter helps articulate that even though playful media propagate climate futures of all kinds, the extent to which their environmental themes and values are recognized (and embraced) by players is contingent on disparate factors that exist beyond the fiction. This insight links back to the chapters by Backe and Mukherjee, as well as the more general emphasis on player agency and interpretation elaborated in the final part of the book on critical metagaming practices.

Part III. The nonhuman turn

The chapters in this part of the book develop the nonhuman turn in game studies in interesting and thought-provoking ways. Jordan Youngblood's chapter ("'Have You Ever Heard a Worm Sing?': The Spectral Ecology of *Kentucky Route Zero, Act V*") draws on the work of Timothy Morton, one of the foremost philosophers of the nonhuman, to unpack the poetic language, game mechanics, and imagery of *Kentucky Route Zero, Act V* (Cardboard Computer 2020), which features an unassuming cat as player character. Youngblood specifically analyzes the way the game perforates the boundaries between the human and the nonhuman, the living and the dead, emphasizing the mingled coexistence of ghosts, animals, humans, and discarded matter. His detailed discussion of Morton's philosophy provides helpful context for its use in Backe's chapter and the theme of connecting bodies and environments, or perforating across perceived borders, also informs micha cárdenas' work introduced in her chapter below.

Merlin Seller shifts the focus from animals to plants in her chapter ("Hiding (in) the Tall Grass: Rethinking Background Assets in Video Game Plantscapes"), where she performs a comprehensive cultural and visual

analysis of grass assets in video games, especially lawns, using *The Last of Us Part II* (Naughty Dog 2020) and *Flower* as case studies. She argues that more focused consideration of "plantscapes" offers an important provocation to the disciplinary assumptions of game studies regarding agency and interactivity, foreground and background. In their ubiquity and marginality in video games, grass assets often escape the instrumentalizing impulse that seeks to make other fauna and flora functional or interactable, thus folding them into anthropocentric frames of reference. In a visual medium, this is not necessary, and plants—grasses especially—do enact a passive, framing force that can be studied from disciplines like cultural history. Seller's emphasis on the importance of visual culture aligns with Murray's argument about playable landscapes. It also offers some welcome counterweight to the more proceduralist perspectives represented in this book.

Joost Raessens' chapter ("*Symbiosis*, or How to Make Kin in the Chthulucene") describes in detail the VR installation game *Symbiosis* (Polymorph 2020), an elaborate storytelling experience inspired by Donna Haraway's work that involves prosthetics, audiovisual design, as well as olfactory and gustatory elements to explore deeply embodied ways of making kin in the Chthulucene. By inhabiting playable characters like a human–orchid–caterpillar hybrid, a symbiosis between a human and a toad, a slime mold, and a multibody—consisting of a head, a body, and an AI—*Symbiosis* gives shape to a speculative imaginary of a future of deep, deliberate human and nonhuman entanglement.

Raessens' motif of voluntary hybridization and mutation is further unpacked in Colin Milburn's chapter ("Mutate or Die: Neo-Lamarckian Ecogames and Responsible Evolution"). Milburn homes in on the trope of mutation, or mutagenesis, in three recent video games featuring nonhuman protagonists trying to survive in hostile, anthropocenic environments. Drawing on the trope's history in science fiction discourse, Milburn argues that in these games the pressures to adapt represents the need to change tactics in a warming world. In its engagement with resistance and adaptation, Milburn is concerned with the same themes that run through the chapters by Farca as well as Navarro-Remesal and Terrasa Torres. The reading's grounding in science fiction scholarship also strengthens this chapter's ties to the previous part on future worlds, although its engagement with nonhuman characters, and the posthuman politics of mutagenesis, means it is equally at home in this section on the nonhuman.

Paolo Ruffino's chapter ("No Man's Game: The Infinite Boredom of Procedurally Generated Environments") looks at procedural content generation (PCG) in *No Man's Sky*, tracing how it displaces humans as both players

and creators of games through the automated creation of inhumanly vast and boring environments. In its attention to virtual environments and the assets used to populate them, Ruffino's chapter complements Seller's on grass assets, but instead of the visual marginality of plants, he is concerned with the labor politics behind PCG, asking how it marginalizes humans in ways that are provocatively beneficial, such as when they instill humility, and ways in which they are not, such as when they devalue human labor.

The last two chapters prefigure the book's final part on metagaming by exploring how innovative uses of game design and theory can bridge the supposed gap between nature and culture. In her chapter ("Trans Ecologies in Digital Games and Contemporary Art"), micha cárdenas explores how her own work as a game designer and that of other artists, generates trans ecologies that perforate boundaries between bodies, species, and environments. To do so she draws on theories and concepts from Black and Indigenous studies, for example, Tiffany Lethabo King's notion of an ecotone, or a transitional space like a shoal. In cárdenas' multidisciplinary artwork *Sin Sol* (2018), this ecotonal space is occupied by Aura, the glitchy protagonist from of an augmented reality game about wildfires.

Finally, Kara Stone's chapter ("The Earth's Prognosis: Doom and Transformation in Game Design") gives a brief overview of her work as a game designer. Talking through four of her works—*Ritual of the Moon* (2019), *Humaning* (2017), *the earth is a better person than me* (2018), and *UnearthU* (2022)—she explains how her thinking draws on insights from the field of animal and disability studies. For example, she explains how her games are in conversation with scholarship on the medicalized experience of time, the labor of care, and the possibility of transformation in the face of death. Stone's chapter provides a seamless link to the subsequent part on metagaming practices, and the chapter by Jordan Clapper, who also reflects on their game-making practice, but with more of a focus on process.

Part IV. Critical metagaming practices

Jordan Clapper starts off the metagaming part with their chapter ("What Do We (NDNs) Do with Games?"), a critical investigation of Indigenous game design, comparing Ashlee Bird's game *Full of Birds* (2018) with their own performative practice of game making as Indigenous ecoscholarship. Similar to cárdenas, Clapper emphasizes the urgent need for an inclusive perspective on the climate crisis and the numerous "blind spots" of commercial ecogames but foregrounds the empowering potential of amateur game making rather than cárdenas' trained "design" approach, as well as

the Indigenous experience instead of trans identities. They employ autoethnographic reflection to show how self-made games can offer alternatives to Western imaginaries, media histories, and naturecultures and challenge. Game making here emerges as a metaludic activity that is pleasurable as well as driven by (self-imposed) goals and constraints but, as in the chapter by Stefan Werning below, the question arises how this alternative content can carve out a persistent niche for itself within the contemporary games industry and gaming culture.

In their chapter ("Imagining the Future: Game Hacking and Youth Climate Action"), Chloé Germaine and Paul Wake continue with the theme of game making rather than "playing by the rules." In contrast to Clapper's and Stone's chapters, which also concern the scholar-as-game maker, the authors modify existing games and embrace the materiality of analog rather than (primarily) digital games. They outline a replicable approach based on "hacking" board games to critically engage young people with the climate crisis and empower them to imagine and work towards sustainable futures. Similar to Vervoort, Moossdorff, and Thompson, the authors foreground deconstructing and dismantling (games as) institutions, albeit with a focus on younger rather than adult audiences. Their technique synthesizes existing youth participatory action research (YPAR) methods and is exemplified using the game *Orchard* (Anneliese Farkaschovsky 1986), designed for children aged three and up. The metaludic qualities of "hacking" board games stem from the joy of deconstructing the game-as-product but also from the bricolage approach afforded by the tactility of board game components.

Rainforest Scully-Blaker shifts the focus from grassroots game making towards alternative consumption practices with his chapter ("Reframing the Backlog: Radical Slowness and Patient Gaming") on the /r/patientgamers subreddit, a community of players resisting the focus on novelty and "disposable" experiences that characterize commercial gaming. Accordingly, the "patientgamer" ethos suggests that play may be reframed to undercut logics of efficiency and productivity through "cozy gaming" and "radical slowness," a deliberate failure to keep up with the pace of capitalist consumption as a political, metaludic act. In turn, the increasing cultural relevance of "cozyness" finds its way back into the games themselves, for example, as a gameplay mechanic and metric in iconic recent titles like *Valheim* (Iron Gate Studio 2021). While the chapter frames slow gaming as a metaludic practice, a form of social playing "with" rather than "of" games, the theme of temporalities is one that runs throughout the other parts as well.

At scale, slow gaming can and hopefully will challenge games industry practices and institutions, a goal that even more explicitly guides the chapter

("Material Infrastructures of Play: How the Games Industry Reimagines Itself in the Face of Climate Crisis") by Sonia Fizek, which scrutinizes the rhetoric of sustainable game production on the basis of the *Green Games Guide*. The argument directly connects with Chang's chapter but revolves around the *Guide* as a "playbook," which implicitly frames "greening" the games industry as a metagame. The concept of materiality in game production, which informs both this and Ruffino's chapter, builds a bridge to the nonhuman turn and the corresponding part of this book, especially in light of Jane Bennett's notion of vibrant matter, which highlights the agency and vitality of seemingly "dead" matter like game consoles and data centers. This theoretical context can provide a foundation for Fizek's more specific analysis of agency in game production, which the *Guide* rhetorically situates downstream of more carbon-intensive processes of extraction and manufacturing allegedly beyond the game industry's control.

The last three chapters transcend the industry focus by including fans and fan practices, which form an important part of the extended value network around games as a commodity. Nicolle Lamerichs' chapter ("Sustainable Fandom: Responsible Consumption and Play in Game Communities") establishes the concept of "sustainable fandom" and shows how sustainability gradually informs discourses and practices in fan communities such as "ecocosplay." These can be productively understood as playful (according to Nina Lieberman) or even metaludic, not least due to their reliance upon humor and cognitive as well as social spontaneity. In that regard, the chapter creates a foundation for Bianchi's and Werning's work on in-game photography below by exploring the potential but also the characteristic constraints of player creativity expressed via cocreative fan practices.

Melissa Bianchi's chapter ("A Field Guide to Monsters: Practices of Wildlife Watching in Video Games") frames in-game animal photography in *New Pokémon Snap* (Bandai Namco Studios 2021) and *Monster Hunter Rise* (Capcom 2021) as a means of negotiating human–animal relations. By juxtaposing close readings of the games with writings about observing and photographing real animals, Bianchi draws attention to the ambivalence of in-game fauna, which may spark ethical discussion about nonhuman agency but also reify problematic aspects of the human–animal divide. Her chapter harkens back to Backe's distinction between the orthogame and idiosyncratic playing practices, as her examples usually straddle the line between both and illustrate how one shapes the perception of the other and vice versa.

In the final chapter ("Remediating Green Practices: Landscape Photography and Nature Documentary Filmmaking in Video Games"), Stefan Werning expands on this dichotomy by conceptualizing in-game nature

photography and videography as metagaming fan practices but also as remediated forms of real-world "green practices." Via early amateur nature photography as context, the author highlights the potential of its virtualized counterpart to promote environmental literacy, but he also warns of its potential to perpetuate romanticized perceptions of nature as suggested by critics of the "natural sublime." While the chapter by Möring and Schneider analyzes representations of climates in digital games, the material compiled by Werning shows how players aesthetically engage with in-game climate through metagaming, by inhabiting the perspective of a photographer. Drawing on examples produced in *Red Dead Redemption 2* (Rockstar Studios 2018) and *Grand Theft Auto V* (*GTA V*, Rockstar North 2013), the chapter also points to the political implications of ready-made "photo modes" as well as the institutional prerequisites for scaling up these practices, in, for example, educational contexts, to unlock their socially transformative potential.

Future avenues of ecogame scholarship

While the chapters in this book showcase an enormous diversity of games, topics, and angles of analysis, the field of ecogame scholarship is so multifaceted and in such rapid development that there are inevitably subjects that remain to be explored further, and in more depth. As the climate crisis worsens, we are likely to see engagement with it rise in entertainment, education, and politics. To wrap up this introduction, therefore, we'll briefly highlight some avenues for future research, formulating questions that we find particularly current and promising.

Firstly, we would encourage further study of the particular insights and affordances offered by media modalities beyond digital games. This includes further study of board games and their material components, the multisensory experiences offered by interactive VR applications, the pervasive, activist potential of alternate reality games, as well as the deeply embodied, social experiences made possible by LARP.

Secondly, in the study of playful climate futures there is still a lot of work to be done to map the use of energy imaginaries in games. How do the stories, images, or feelings that video games propagate engage with themes of energy, energy transition, or energy infrastructures such as pipelines, electricity grids, and data centers? Can video games make energy visible, or tangible? Can they increase energy literacy?

Furthermore, as we mentioned above, metagaming is the most exploratory part of the book, which means that many of the questions and concepts that

it raises would benefit from more extensive research. In particular, one of the aspects it highlights is the relationship between gaming practices and the institutional contexts they operate in and/or seek to transform. Many critical practices position themselves in opposition to the established cultural industries; yet, they still often have to operate within corporate-controlled boundaries or are limited in terms of their scalability and impact on the material conditions of contemporary games and play. Companies also often co-opt player activity and, more often than not, closely control its framing, as in the case of the *Pokémon GO* (Niantic 2016) "sustainability week," during which developer Niantic commits to planting a tree for every player walking 5 km on the so-called "community day." Thus, the ecological contribution of the developer is inherently linked to "productive" player behavior, stimulating in-game activity and addressing lapsed gamers. To cultivate a more finely tuned sense of what counts as environmental engagement in game culture, therefore, we need more studies on greenwashing in the digital entertainment industry.

Additionally, while the chapters in this book emphasize the informative, persuasive, and critical potential of games and metagaming practices, it is important to remain aware of the carbon footprint they entail. For example, game streaming can offer unique benefits in terms of reaching specific target audiences through personalized communication. However, as Laura Marks (2020) points out, streaming also has a profound material impact on the environment, particularly with higher resolutions and lower latency, both of which require more capable—and energy-intensive—data centers. Thus, the hypothetical notion of "green streaming" would need to look beyond themes or subject matter and also consider alternatives to existing formats, which may include deliberately offering shorter or lower-resolution content. A case in point is Kara Stone's recent project *Solar Server* (2022): "a solar-powered web server set up from [their] apartment balcony built to host low-carbon videogames." Other conceivable impacts of green streaming conventions on games might involve the emergence of new genres catering specifically to the interests of "green streamers" and their communities. One can imagine, for example, video games streamed for short periods of time each day during moments when the solar grid is producing a surplus of electricity.

Next, as we mentioned above in the introduction to Part I, *All Rise*, a game currently in development about taking ecocidal companies and governments to court, we hold out hope for the service that games can provide when linked to existing environmental movements. Hein-Anton van der Heijden argues that all major social change is accompanied by forms of political citizenship and social movements (2014). From abolition to socialism, labor movements, and feminism, activist organizing has been

pivotal in the fight for emancipation and justice, as well as in the general dissemination of progressive values. Ecogames might facilitate system change when we connect them to civic action. Asking about games and environmental activism broadens the field of ecogames to include examples that might otherwise remain unnoticed. What are the games you play when you occupy a coal mine and need to pass the time; and what do you play during a climate protest to lift your spirits?

A final research direction to be explored further pertains to the way in which games and the climate crisis are linked in what Lindsey Grace (2021) describes as macro- and metapersuasions. In contrast to micro-persuasion, which is triggered by playing a specific game that can "change a player's interests, activities, or opinions" (120), macro-persuasion requires the work of organizations such as Games for Change, that "support and form a community, foster citizen participation, express creativity, or practice desired skills" (122). Within this context of macro-persuasion, the fact that specific game titles lack widespread recognition is less important than the fact that Games for Change, through their institutional network, attracts and catalyzes substantial public interest. Building on Grace's work, ecogame scholars have yet to look at the use of game jams to incubate sustainable design practices and development cultures. Such work could expand on existing scholarship about game jams (Locke at al. 2015; Kultima 2021), applying its insights to the study of ecojams, both of them hosted by established institutions as well as grassroots initiatives. Last but not least, metapersuasion takes place via "blogs, websites, forums, and threads" (2021, 131), that is, networked, grassroots, online initiatives. The importance of such public reflection is corroborated by Vervoort et al. in their chapter for this book. Media coverage, discussion, and analysis, as well as a game's embrace by an active community of fans, modders, hackers, and critics, helps amplify its potential to exercise socially progressive change. Significantly, metapersuasion includes the work we do as ecogame scholars and the interpretive labor performed by the audiences they seek to engage—using books like the one you are reading right now.

Ludography

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Laura op de Beke is Assistant Professor of Interactive Media, Screens, and Interfaces at Utrecht University. She received her PhD from the University of Oslo, Norway, where she wrote a doctoral thesis called "Anthropocene Temporalities in Videogames," about a new structure of feeling particular to these times that is expressed using various temporal narratives and affects, for instance, anxiety over the future, petromelancholia, a preoccupation with death, failure and extinction, as well as techno-futuristic hope. Her other interests include science fiction, veganism, analog role-playing games, LARP, and the environmental humanities more broadly. She is also the founder of the online reading group un-earthed (https://un-earthed.group/).

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).

Stefan Werning is an Associate Professor for New Media and Game Studies at Utrecht University, where he initiated the Utrecht Game Lab and organizes the annual Ecogames summer school. He previously worked as an assistant professor at the universities of Bayreuth and Bonn and as a research assistant at the Fraunhofer Institute Media Communications in St. Augustin. While completing his PhD dissertation, Werning has worked in the digital games industry, most notably at Nintendo of Europe and Codemasters (2006–2009). He has been a visiting scholar and fellow at the Center for Comparative Media Studies at MIT, and his latest book, *Making Games*, was published in the Playful Thinking series at the MIT Press in 2021.

Part I

Today's Challenges: Games for Change

1. Change for Games: On Sustainable Design Patterns for the (Digital) Future

Alenda Y. Chang

Abstract
The United Nations Environment Programme launched the Playing for the Planet (P4TP) initiative in the fall of 2019, closely followed by the International Game Developers Association's (IGDA) Climate Special Interest Group (SIG) in the fall of 2020. While the P4TP alliance has focused on company-level interventions, the IGDA Climate SIG has worked in a more grassroots fashion to develop both game and design-patterns databases. These parallel efforts invite important philosophical and practical questions. What are sustainable games? Are they the same thing as sustainably developed games? Are they games with overt environmental messaging, or ones whose production or consumption carbon footprints have been minimized? Or, most radically, are they the games we refuse to play?

Keywords: game design, game industry, game production, tactics, climate

To be sure, much of what goes on under the guise of design at present involves intensive resource use and vast material destruction; design is central to the structures of unsustainability that hold in place the contemporary, so-called modern world.
—Arturo Escobar, *Designs for the Pluriverse* (2017, 1)

Game studies has generally evolved independently of the game industry, despite occasional crossovers and a growing, but still scant, catalog of ethnographic and media-industrial studies of game development companies, festivals, conventions, and so on (Van der Graaf 2012; O'Donnell 2014; Parker et al. 2017; Bulut 2020). Games have, by dint of great efforts by academics

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of all stripes, earned the privilege of being treated like other cultural or media objects. Like novels or films, they may now be subjected to scholarly interpretation and critique, often severed from authorial intent, if one can even speak of a singular intent when games are created by teams of dozens to hundreds of people. All this has its merits, of course, but the practice of opining on games apart from their contexts of production seems less and less desirable as we move ever more fully into the climate-disrupted future. Although my own work has primarily employed textual analysis guided by insights particular to environmental science and communication, in order to identify both harmful and beneficial models of ecological relations embedded in games, without opening a dialogue with those actively creating games, my arguments may at best produce an analytical shift without systemic change. As Escobar observes in the opening epigraph, design is essential to modern life, yet the bulk of what qualifies as design does not take into account negative impacts on the biosphere and more-than-human beings. Later referencing design theorist Tony Fry, Escobar labels unsustainable design practices as practices of "defuturing" (2017, 16), or the reckless foreclosure of potential planetary outcomes.

Within the circumscribed ambit of games, then, how can scholars help to ensure that game design is not the defuturing kind? This might necessitate many parties working outside of their usual comfort zones, from researchers engaging with industry and vice versa, to activists and policymakers engaging media makers as critical to changing the environmental status quo. What follows is an embedded media-industries research account of how pursuing more sustainable games precipitated such a novel collaboration between academics, developers, and nonprofit organizations. While there may be an unresolved tension between calls for more environmentally intelligent games (matters of content) and calls for more sustainable production techniques (matters of context), this should still serve as an instructive case study for those looking to change the game industry from within and to find allies in greening digital production.

My book, *Playing Nature: Ecology in Video Games*, was published in December of 2019, and my modest hope was that it would circulate among a small circle of scholars interested in games and/or the environmental humanities. Although I had written the book and several shorter pieces with an eye toward articulating design principles and had even collaborated on the creation of a game based on my own recommendations (Chang 2019a; Chang 2020), at the time I had had very little interaction with the games industry or opportunities to deploy theory in design. This changed in October 2020, as the world lay largely dormant in the wake of the novel

coronavirus. It was then that a woman named Paula Escuadra reached out to me, in her capacity as the cochair of a new Climate Special Interest Group (SIG) within the International Game Developers Association, or IGDA. To my surprise, Escuadra was familiar with the book and invited me to attend some of the SIG's first meetings, and at least a few of her colleagues at Google's cloud gaming service Stadia had also read my work about the implicit environmental messages of games. For me, this was exciting evidence that scholarly introspection could have broader currency. While I had always envisioned my work as not simply a template for environmental media critique, but also for environmentally minded design practices, short of passing out free copies of my book at the annual Game Developers Conference, I had little sense of how to engineer such connections without brazen self-promotion or microcelebrity status.

Not entirely sure of who or what was involved, I nevertheless attended some of the IGDA Climate SIG's first working sessions in the fall of 2020, aimed at determining its eventual scope and anticipated outcomes for 2021. In the numerous meetings I have participated in since those early days, I was often the lone academic, although Benjamin Abraham joined initially, and doctoral candidate Clayton Whittle has been especially instrumental as the main author for the "tactics" report described in great detail later in this chapter. Most of the SIG's members, as would be expected, are workers in or around the game industry, from independents and those working in related spaces in the nonprofit sector to employees at large multinational game or technology companies.

According to the IGDA itself, the organization has over 5,000 paid members as of August 2021, as well as some 150 local chapters and global special interest groups. To give some sense of how SIGs function within the IGDA, they are completely voluntary and as of this time divided into three categories: advocacy, discipline, and affinity. The relatively new Climate SIG falls into the advocacy group, along with the longstanding Game Accessibility SIG and others devoted to LGBTQ+ matters, allyship, anti-censorship, mental health, and so on. By far the greatest number of special interest groups is present in the discipline category, which appears to revolve around issues of craft in game form and content. For instance, there are discipline SIGs dedicated to analog games, serious games, audio, localization, and the cloud. Finally, the affinity category invites members to affiliate based on shared identity characteristics, with SIGs like Black in Games, Chinese in Games, or Devs with Kids.

Granted, as the Climate SIG has expanded its roster and clarified its target goals, to be discussed momentarily, it has become overwhelmingly clear that

advocacy inevitably overlaps with affinity groups and the design-oriented nature of disciplinary SIGs. People advocate from a place of shared values and are looking to include aspects of those values in their work as game designers.

Sustainable design patterns

Early on, members of the Climate SIG, led by Escuadra and cochair Hugo Bille, a game developer who worked on the Electronic Arts game *Fe* (Zoink Games 2018) and *They Breathe* (The Working Parts 2011), opted to divide and conquer with several "workstreams." While this chapter will focus almost entirely on the "design patterns" workstream, it is worth first briefly describing each of them to give a sense of the scope of the SIG's considerations as well as the challenges, discussed later, of spreading leadership and volunteer effort over several areas:

- Climate guide: In this workstream, members are trying to create a simple, "climate facts" reference document for time-strapped game professionals who want to educate themselves on climate issues, especially as they pertain to the game industry. As part of this, members have reached out to youth movements like Earth Uprising and Sunrise and looked at comparable business and policy documents, all while trying to push beyond Western case studies and taking note of parallel movements in other media industries like film and television.
- Climate councils: This workstream entails more direct advocacy and aims at systemic change through organizational change. The principal idea is to establish "climate councils" at as many game companies as possible, with the goal of eventually forming an industry-wide climate advocacy network. In a way, the Climate SIG is already doing this at a less formal level, with many companies unofficially represented in the SIG's membership, including Google, Ubisoft, ustwo Games, and a wide variety of smaller studios and one-person operations.
- Industry benchmarking: Members in this workstream hope to gather data on game companies' carbon-reduction strategies to create both benchmarking guidelines and best-practices resources for corporate adoption.
- Design patterns: This workstream is geared toward giving game developers practical tools and examples to help infuse sustainability into game design and business decisions.

Of these four original workstreams, "design patterns" has proven to be one of the most active, perhaps because it offers such tangible and manageable ways to contribute, and is closest to the core membership's daily concerns—that is, how to design games.

Before proceeding, we might profitably linger over the term "design patterns": What exactly is being designed in these patterns, and if so, by whom? Although Escobar would have it that "everybody designs" (2017, 2), design in its professional manifestations is typically policed by tastemakers and gatekeepers of all kinds, from hiring managers and university administrators to consultants needing to distinguish their expertise from amateur efforts. Presumably, the Climate SIG is addressing its constituency of game developers, who engage with game design, and thus the patterns in question must be in some way part of the game development process. However, that still leaves a fair amount of leeway. In addition to promoting environmental realism in graphical representation or game mechanics, like botanically accurate plants, or opting to make supplies finite in a game that involves resource use, could design patterns also include, for instance, procurement strategies for the energy used to power the computers on which a game is developed? A decision to distribute a game via digital download rather than in shrink-wrapped boxes? Encouraging players to play a game in a low-resolution, power-saving mode when on the move or in a distracted state? Perhaps the latter would be better labeled "development patterns" or "distribution patterns"?

As a participant-observer in the Climate SIG, it has been illuminating for me to see how the language of design patterns has shifted over time. I originally gravitated to this workstream because the idea of design patterns so closely resembles the ways that we academics talk about games in terms of discrete and observable gameplay elements—like the way a frog crosses a river or busy road by hopping in cardinal directions in *Frogger* (Konami 1981), or the way game time is compressed in *Stardew Valley* (ConcernedApe 2016) or *Passage* (Jason Rohrer 2007)—but at scales ranging from the minute to commonalities by genre and beyond. Game studies scholars have endlessly invented or borrowed arguably synonymous terms for design patterns: game mechanics, unit operations (Bogost 2006), procedural rhetoric (Bogost 2007), "allegorithms" (Galloway 2006), or what Noah Wardrip-Fruin has recently restated at a more foundational level as "operational logics" and "playable models" (2020).[1] Furthermore, "design patterns" almost certainly

1 In Wardrip-Fruin's (2020) formulation, for example, collision is a logic, and 2D spatial games like *Pong* (Alan Alcorn 1972) and *Space Invaders* (Tomohiro Nishikado 1978) are one class of playable models.

references earlier debates and discourses in game design and architecture, particularly the "pattern language" methodology of Christopher Alexander and his collaborators (Alexander et al. 1977; Holopainen and Björk 2003).

Yet the word "patterns" also evokes sewing patterns and more craft-oriented design work, itself an important material and feminist trend within critical design studies (Rosner 2018; Sayers 2017; Monteiro 2017). Importantly, for Escobar,

> design refers to much more than the creation of objects (toasters, chairs, digital devices), famous buildings, functional social services, or ecologically minded production. What the notion of design signals in this work—despite *design*'s multiple and variegated meanings—is diverse forms of life and, often, contrasting notions of sociability and the world. (2017, 3)

If we take this concept of design seriously, design patterns can and should refer not just to objects or things (a game file, a device), but also to the relationships they engender and a holistic sense of the worlds that are brought into being *by design*. This is, I suppose, a way of saying that design patterns need not just be building blocks, to be slotted into an existing game design to add just the right amount of green consciousness. Rather, they are strongest when they are left open-ended, flexible, requiring the input of players.

Curiously, however, something about the phrase "design patterns" proved unappealing to the core group of people working on them (the workstream is helmed by SIG cochair Bille and Arnaud Fayolle, an art director at Ubisoft). The terminology gradually shifted more toward action-laden terms. In fact, the design patterns workstream eventually split into three, interrelated parts: a "tactics" report, an "actions" wiki, and a games list. The remainder of this chapter deals with the tactics report, which was provisionally titled "The Environmental Game Design Framework: An Evidence-Driven Developer's Guide to Creating Games with Impact." However, it is worth noting that the newly relabeled design patterns (now "tactics") will at some point be integrated with the wiki and games list. The wiki is built around more general modes of climate action, for example, "normalizing green tech" or "forging emotional bonds with nature," while the games list essentially compiles as many games as possible that in any way engage environmental crisis, either via more macro-level "actions" or micro-level "tactics."

After many months of crowdsourced authorship, editing, and design, the tactics report was released in alpha form in April 2022 as *The Environmental Game Design Playbook* (Whittle et al. 2022). The *Playbook* is an over

eighty-page academic-leaning document detailing psychological barriers for environmental action and the design patterns, or tactics, that games can use to bypass or break down those barriers. As mentioned earlier, Whittle, a doctoral student in education, is by far the primary author of the document (hence its unofficial nickname within the SIG, The Clayton Report), and thus it draws heavily from the literature on educational and serious games. The playbook begins with a brief primer on environmental psychology and the predictors of positive environmental behavior and presents a few overarching frameworks for thinking about game-driven environmental change, in particular, Sabrina Culyba's Transformational Framework and the Ouariarchi Framework (Culyba 2018; Ouariachi et al. 2019). The playbook then moves on to the second part focused on tactics, prefaced with the question: "How might we make our game impact players in the way we intended?" Again, the report, as with many of the workstream's and overall SIG's deliverables, is meant to be read and used by developers short on time but still interested in positive climate action.

Currently, the design patterns/tactics are organized into the following, not necessarily comprehensive categories, ranging from the specific (Mechanics and Procedural Rhetoric; Narrative; Mixed Reality Designs) to the more abstract (Systems Knowledge and Simulations). Part 3 of the playbook is reserved especially for interpersonal and community gameplay tactics (Social Play; The Metagame). Each tactic's description follows the same template: a brief paragraph introducing the tactic, a hypothetical development scenario ("conceptual example"), reasons why to use the tactic, and more details about the tactic, including caveats and suggestions for deployment. Each tactic section also highlights at least one existing example game that uses said tactic. For instance, the tactic "No-Win Scenarios" (Whittle et al. 2022, 35) describes games where defeat is inevitable (but instructive), and as an example development scenario, suggests a game about running an oil company in which resources sooner or later run out and the company goes bankrupt. As an example game that uses this tactic well, the report features the often-cited newsgame, *September 12th: A Toy World* (Gonzalo Frasca 2003), in which retaliation against supposed "terrorist" others in the wake of the 9/11 attacks only generates more foes, radicalizing grieving bystanders (Whittle et al. 2022, 37). Finally, the remainder of the tactic's entry explains that no-win scenarios are best used as education, rather than punishment, and that they can be effective even though they fly in the face of the traditional tenets of good game design. They are especially helpful, write the authors, in terms of drawing attention to complex structural or systemic problems.

In the narrative category, we find tactics like Roleplay and Conflicting Goals. Conflicting Goals, to expand another sample, is described as presenting the player with competing objectives, like greening the energy grid of a town (as mayor), while also upgrading its transportation infrastructure. The global management-scenario game *Fate of the World* (Red Redemption 2011) is listed as a model, and the tactic is to be valued because it encourages players to see decisions less as binary than as multivalent, with inevitable trade-offs. While it is not always entirely clear why tactics in this category are more oriented around story than mechanics (game studies' apocryphal ludology and narratology debate shuffles quietly in its crypt here), this overlap is perhaps inevitable when trying to compartmentalize design matters. It may at some point prove more useful to consider these categories more as descriptors, rather than mutually exclusive domains, so that individual tactics can and should carry multiple attributes (for example, role-play can be social, while also exploring a no-win situation).

Further, the Mixed Reality Designs and Systems Knowledge and Simulations Tactics sections emphasize more serious games that encourage deliberate crossover between game and real world, from games that require the taking of action to games where you collect scientific data or inhabit an experimental attitude. Although the bulk of the SIG's documentation thus far represents digital games, these categories theoretically leave the door open to use by analog game designers, or even artists, architects, or other creators that make games, but might not consider themselves game designers—for instance, Janette Kim's many games about climate change, gentrification, urban planning, and sea-level rise, including *Bartertown* (2017), part of the ironically entitled series *Win-Win*.

The report's final part is, again, devoted to multiplayer contexts and player sociality, as well as the "metagame" around games themselves, that is, game paratexts and fan communities, which helps to round out the discussion of individual tactics and single-player games.

Challenges

The Environmental Game Design Playbook, which is still in provisional form, provides a nominal basis for thinking through systemic change from within the very institutions contributing to technological overwhelm, destruction of habitat, and labor exploitation, even as they also create meaningful and widely shared forms of culture. Much of my analytical interest in the SIG has been in trying to ascertain just where agency lies in the games

and environmental nexus—that is, Who has the power to effect change? The obvious answer, given the SIG's umbrella organization IGDA, is game developers. Yet, to return to the tentative academic–industrial–nonprofit alliance with which we started, we might add that games researchers are also deeply invested in these matters, as well as many players and policymakers. Moreover, game developers are not the only ones who design. Not even in the strictest sense if we include the work of modders, and not when design is seen as deliberate creative decisions that produce particular worlds and ways of being. It is perhaps better to think about who has the power to effect change at what level, or in what ways.

Right now, the Climate SIG functions as a kind of megaphone aimed at the industry writ large, amplifying the concerns of its membership, and searching for footholds to shape proenvironmental behavior and attitudes at the scale of both individual developers and corporations. The SIG also has an ambiguous but mutual relationship to the United Nations' Playing for the Planet (P4TP) initiative, which was launched in September 2019, and interestingly, despite the name, places the onus of change on companies rather than players. The Playing for the Planet Alliance (P4PA) now boasts over forty member companies, from behemoths like Microsoft and Sony to smaller studios like Strange Loop Games, all of which "have made voluntary, ambitious, specific, and time-based commitments for people and planet" (P4TP n.d.c). This emphasis on corporate innovation aligns well with Abraham's impatience with generalized hopes and fears surrounding what games can do in *Digital Games after Climate Change* (2022). Abraham argues that we are misguided if we believe that games alone could convince climate change denying players to accept that reality, let alone make the world a better place through some version of wishful, osmotic uptake of enlightened game content. Thus, he sidesteps ecocritical approaches almost entirely in favor of studying game companies that have taken concrete steps toward sustainable operations and advocating that the game industry green its supply chains primarily through the use of renewable energy and digital distribution.

Of course, there's a strong case to be made for both the Playing for the Planet initiative's and Abraham's insistence on corporate-level intervention. Many scholars in environmental communication and journalism have expressed skepticism over corporate and governmental attempts to displace environmental responsibility onto consumers, rather than addressing it internally (if you'd just buy energy-efficient light bulbs!) (Supran and Oreskes 2021; Monbiot 2019). There is understandable and widely shared discontent with the limitations of individual choices, as well as a desperate yearning for collective

action and system change. In terms of games research, I have found writing more directly about media infrastructure as somewhat soothing to these worries and have embraced Lisa Parks' excellent advice to start describing media less as given objects than in terms of their energy–media matrix (2019).

That said, however, for a number of reasons I suspect we ought to distribute our hopes for games more broadly. For one, we have seen that companies like Microsoft and Apple can spin a good yarn about going carbon negative, their corporate philanthropy, progressive politics, and so on, while still working behind the scenes to support lobbyists looking to sink social and environmental reform (Milman 2021). Careful work needs to be done to distinguish genuine efforts toward decarbonization from greenwashing. I am also not quite ready to give up on players, or designers, recognizing that system change can happen from within or without, at various scales, and through strong and weak ties. The ongoing example of the IGDA Climate SIG already provides ample rationale for why we ought to support intersecting roles, where developers are also players, activists, and concerned citizens. The SIG successfully hosted one of the advocacy microtalks at the 2021 Game Developers Conference (GDC), and has also helped with various eco game jams, like the P4PA's Green Game Jam or the now annual IndieCade climate jams. Notably, the Playing for the Planet Green Game Jams have not been "jams" in the standard, amateur, or independent sense, but periods during which companies in the alliance pursue game-based and metagame "activations," "such as new modes, maps, themed events, storylines and messaging" (P4TP n.d.b). Although one company, PlayStation Studios Media Molecule, did host a more traditional game jam using its game-creation platform Dreams, most opted to create new content for existing games. One alliance member, TiMi Studios, hosted a separate Green Game Jam for Youth, which invited teams to pitch original game ideas or "activations" in existing games (TiMi Studio Group 2021).

In the Playing for the Planet initiative's UN-guided work, the term "activation" is significant in its common recurrence, and like "tactics" carries with it the search for demonstrable behavior change and concrete deliverables. According to P4TP's 2021 Annual Report, "Green activations refer to educational content related to different environmental topics, integrated in video games" (P4TP n.d.a). This is, admittedly, a lackluster definition, and one that unwittingly treads on long-running debates over gamification and the impact, if any, of serious games.[2] To me, the word "activation" has a faintly scientific tang to

2 Having once worked on a game about asthma in California's Central Valley, for which I conducted pre- and posttest surveys with high school students who played a prototype of

it (activation energy being the energy required for chemical transformations to occur), as well as military undertones (as in, "Activate the reserve guard!"). Activation also raises the specter of whether design patterns are just green "nudges," a notion popularized by Richard Thaler and Cass Sunstein (2008) as a way to gently prod people in the right direction without disturbing them too greatly (one prototypical example is refusing disposable plastic straws or replacing them with reusable ones). This is, once more, a question of system change and how it happens, through minor and incremental, but cumulatively impressive change, or through wholesale changes, maybe even … revolution? After all, the concept of the green energy transition is easily and tantalizingly achieved in language, but in practice demands a veritable paradigm shift, one incommensurate with existing infrastructure and assumptions about how nations and economies should work.

Thinking again about tactics, we could eschew the whiff of military rhetoric in favor of Michel de Certeau's well-known philosophy of the everyday, where tactics are practical, on-the-ground responses to the strategies of the dominant (2011). Design patterns could, in theory, expand to include more base-level interventions into game design practice, which encourage more mindful use of onboard computer or device resources as well as networked resources, in terms of energy. Developers are likely to classify such steps less as design than optimization, or a matter of efficiency more so than aesthetics, but niche efforts linking energy and processing limitations to satisfying design are already underfoot in other areas, from retro or 8-bit games, to text or tiny game jams, to the Small File Media Festival. This festival started in 2020, a product of the School for the Contemporary Arts at Simon Fraser University in Vancouver, and it specifically targets young filmmakers:

> We invite young makers who care about the environment to make small-file videos. Why small files? Because streaming video is responsible for one percent of global greenhouse gas emissions! That's because the data centres, networks, and devices we rely on for streaming are mostly powered by fossil fuels. The Small File Media Festival celebrates videos of under five megabytes that show movies don't have to be big HD files to be beautiful and inspiring. ("Small File Media Festival Youth Contest" n.d.)

the game, I find the logic of activation familiar but still somewhat off-putting. Although it is understandable to feel the desire to see change happen at a time when inertia at political and social levels is stymieing decarbonization, energy transition, and environmental justice, change is not always something we can quantify.

Although the Small File Media Festival initially prioritized 5 MB or smaller video files, the 2021 iteration expanded that limit to include a "bingeworthy" category allowing up to 22 MB and solicited a wider "range of works including looped, data moshed, executable and cinematic works." Continuing on, however, the organizers cautioned, "These tiny files have big hearts and will be streaming to you at no more than one megabyte per minute" ("Small File Media Festival" n.d.). The festival is a public-facing and practice-based extension of what Laura Marks and other cinema and media scholars have recently investigated, namely, the carbon footprint of streaming media (Marks et al. 2020). Lucas Hilderbrand, for instance, argues for the planetary friendliness and pedagogical efficacy of watching films together in a classroom or theater rather than individually streaming them at home, while Marks contends media consumers should mentally liken streaming high-quality video to eating a steak—both being the extravagant culminations of hugely resource intensive and largely unsustainable land and energy practices. Yet shaming is not the point, so much as an accurate accounting for things we have learned to take for granted.

Other tactics may one day include the right to repair, or perhaps even the decision not to play at all. It is telling that Abraham begins *Digital Games after Climate Change* with his childhood dilemma—whether to play on the computer on hot Australian summer days, and thereby risk sleepless nights in an unbearably overheated room (2022, 1). While he often chose to play anyway, future temperatures may take such choices out of our hands.

Conclusion

To wrap up, environmentally speaking, we are clearly at an "all hands on deck" point, or one where we no longer have the luxury of finding the one, best option—instead, we have to try *all* the options. This has to include not only policy, data, and political reckoning, but also media and culture, including games. Although it would be easy to quibble with the categorizations or goal-oriented instrumentalism of *The Environmental Game Design Playbook*, I rather admire the curiosity and ingenuity of the SIG's members. I have watched the SIG's membership balloon from a scattered few to over 500 people, witnessed the rise and sometimes fall of many a collaborative instrument (Trello boards, Google Docs and spreadsheets, Discord channels, and more), and contributed to the difficulties of coordinating so much good intention in the small pockets of time available to people working demanding full-time jobs or beholden to more unpredictable freelance work. All too often the bulk of managerial and emotional labor falls on the

SIG's current cochairs, but what remains extraordinary is that the group's efforts take place largely outside the auspices of any formal arrangement. No one is being paid. Aside from the few academics for whom this might arguably be considered research, most of the people who are giving their time to these workstreams are doing so while also pursuing careers in the games industry or nonprofit sectors.

In sum, I find it refreshing, and necessary, to break the closed loop of academic exchange and recognize that designers and players also have ideas and the ability to theorize through and around practice. More and more, I found myself speaking out about the value of play and games even in the face of climate precarity and the ecologically compromised nature of the industry as it stands. In part, this is because of what games offer us—inspiration, rejuvenation, even comfort, and not just avoidance. I still make time, when I can, to attend the SIG's monthly general community meetings and biweekly workstream meetings. I now also invest more in industry–academy crossover, talking to preprofessional students, artists, and many other kinds of specialists from around the world, to make the case that games can be change agents, but also that we can bring much needed change to games.

Finally, it should be clear that the issue of making games more sustainable as individual objects and sets of supporting practices, and as an industry, depends largely on design, but not only design, for there are intersecting issues like accessibility and socioeconomic disparity. From science and technology studies, Langdon Winner's (1980) discussion of Long Island's low overpasses that were designed to discourage bus traffic and thus keep out poorer, black leisure seekers might lead us to wonder, too, about the design of digital objects. How does a high-resolution object or processor-intensive game present barriers to entry to those without disposable income and an excess of gadgetry? How does a game's development draw from or reciprocate planetary resources and the conditions of the living? To return to Escobar and Fry, we might move design away from defuturing and toward world-building. Escobar cites Anne-Marie Willis to remind us that "in designing tools,… we are creating ways of being" (2017, 4). True, these ways of being are not necessarily egalitarian, as when he recognizes that the Global South is largely the designed by-product of the North. However, Escobar also acknowledges that when "we design our world,… our world designs us back" (2017, 4). While playing *for* the planet, or empowering gamers to "act for nature" may be laudable goals (Takahashi 2021), nature itself has a role to play, too, from epigenetics to the indifferent refusal to sustain continuing human greed. Taking a humbler attitude toward design, not only in deference to the agency of players, but also to a world and material

forces that may or may not be visible but undergird gameplay, would be a truly tactical response.

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2. Do You Want to Set the World on Fire? Amplifying Player Agency to Demonstrate Alternatives to the Climate Crisis

Péter Kristóf Makai

Abstract
This chapter demonstrates that the outsized role of player agency in climate change games is a double-edged sword: on the one hand, it illustrates that human action can have a measurable impact on the Earth's climatic systems; on the other, it sends the message that individuals are empowered to make systemic changes—a notion swiftly undercut by the messiness of political realities. I argue that computer games are particularly suited to model the climate crisis, particularly the interaction between human and nonhuman elements of the climate system. As a corrective to the virtual agency afforded by these simulations, I discuss how, even with inflated player agency, the insights generated by these games are inflected by their difficulty level.

Keywords: simulation games, systemic change, climate systems, earth systems games, complexity, difficulty

As average global temperatures rise, climate activists are organizing and the leaders of the world struggle to uphold the status quo. The situation seems more and more akin to that of the yellow dog from the webcomic *Gunshow*—a well-known meme by now—who is sitting at home, engulfed in flames with a speech bubble that reads, "This is fine" (Green 2013), before promptly melting. Part of the global decision-making paralysis is due to the fact that, as Frank Incropera (2015, 13–15) states, climate change is a "wicked problem," a society-wide problem with many interlocking parts

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that add layers of complexity because competing stakeholders have different interests, while a clear-cut solution remains elusive. It is also clear that it is not more scientific evidence that we need—we face the greatest hurdles on the level of collective social and political action to mitigate climate change. Modeling complexity and fostering systems thinking is essential in this context, since "in order to understand the actual environmental impact of a particular human's existence we need to account for many, often interrelated factors.... This is where 'games come into the picture,'" as Hartmut Koenitz (2019, 257) asserts.

Video games do a great service in modeling the conflux of natural and sociocultural factors in climate change, since they connect human action to rule-based systems (Backe 2014). They also use procedural rhetoric (Bogost 2006) that articulates via game mechanics the cause-and-effect relationships that influence the climate. To do so, they temporarily reduce systemic complexities to a manageable level to enable the playful exercise of agency, that is, the "satisfying power to take meaningful action and see the results of our decisions and choices" (Murray 1997, 126). The other half of the equation, complex system, also needs a definition. I adopt Susan Stepney's, in which a system is complex if it

> exhibits strong interactions between components, feedback between levels, emergence, self-organisation, openness, adaptation, growth, and change. [They] can comprise any combination of natural,... artificial,... and social ... parts, involving multiple stakeholders from multiple disciplines with differing requirements and goals. (Stepney 2018, 27–28)

The simulations of climate games were never meant to be as detailed as scientific models, rather, they are designed to sketch out a problem space in a way that cognitively maps actions to results and allows for experimentation with different outcomes. As such, they also fulfill Stepney's criteria for complexity. Recently, ecocritical game scholarship has even argued that such experiments in games and science "are cut from the same cloth" (Chang 2019, 20).

The purpose of this chapter is thus threefold. First, in order to indicate how video games as media highlight human agency as both the cause of and the solution to the climate crisis by incorporating it into the fabric of modeled weather systems, I close-read three games, namely, *Fate of the World: Tipping Point* (Red Redemption 2011), *Democracy 4* (Positech Games 2022), and two expansions for *The Sims 4*, *Island Living* (Maxis, The Sims Studio 2019) and *Eco Lifestyle* (Maxis, The Sims Studio 2020). With this effort, it is

my goal to support the assumption in our field that ecogames "overcome the critique … that conventional climate communication does not always work optimally, or, worse still, can even be counter-productive" (Raessens 2019, 232). They create working models that take into account the multitude of factors that affect our own climate, and then simplify them just enough to make the experience playable and (with due effort) winnable. By offering an ostensibly politically neutral and scientifically supported problem space that can be negotiated by the players from a variety of policy standpoints, they disarm the imaginative resistance that "arises when global warming is framed in such a way that it is not compatible with our values or our sense of identity" (Raessens 2019, 234).

Secondly, I also want to critically examine the role and magnitude of agency the games under survey here grant to the player. Surely, one of the biggest challenges of the climate crisis is that even the most powerful people on the planet are beholden to human interests, desires, and wills that are conflicting, otherwise, we would have solved it already. It is by providing a common narrative and algorithmic representation of these human actions and goals that we find the nexus of what ails us, and it is through the systematic analysis of them that we shall find common ground and new opportunities for the sustainable development of humankind in accordance with the needs of all living beings.

A third thread running through my chapter here is that earth systems games can, and some already do, incorporate scientific data to simulate the workings of the climate. Putting such software toys into the hands of the players provides them with an argument for certain climate models and their inclusion of human agency. By compiling individual action into collective agency, they emphasize the counterintuitive effects people have on the environment, and they give us an opportunity to playfully explore scenarios of our own making. These raise consciousness, dissolve imaginative resistance, and inspire action at a time when it is sorely needed. Nonetheless, we ought to critically examine past achievements for improvement. It is my hope that this chapter contributes to that goal.

IPCC: A little silhouette of man, very frightened by thunderbolts and lightning

The Intergovernmental Panel on Climate Change (IPCC) is the leading scientific organization devoted to bringing climate science to global consciousness, communicating the latest evidence for policymakers to act on.

April 2022 marked the publication of Working Group III's part of the IPCC's landmark Sixth Assessment Report (SAR6) (IPCC 2022), which paints a bleak picture of the situation, but draws hope from ongoing efforts to mitigate climate change. In a virtual press conference for an earlier segment of SAR6, Valérie Masson-Delmotte explained that the report's findings meant that "the only way to limit global warming is to reach net-zero carbon dioxide emissions at the global scale" (IPCC 2021).

Yet, the action gap between what we know we should be doing and what we are actually doing is widening still. Earlier models of science communication assumed that a knowledge deficit stymied the acceptance of new scientific facts (Simis et al. 2016). However, advancements in the field have unearthed a complex web of influences on the acceptance of scientific ideas and policy support (Brondi et al. 2021). The realization has dawned that "if the communication of scientific facts … is to have some kind of impact, the facts need to be personalized or given a concrete meaning that is relevant for the everyday life of citizens, for example, by way of narrative element" (Bruhn 2020, 7). Video games are well poised to take advantage of their ability to personalize the consequences of human action upon the climate. As my case studies hope to illuminate, the actions taken by players indeed translate to discrete results in the games via their mechanics, and each case study is meant to present ludic environmental agency on a different level of social organization. At the same time, the analysis also intends to draw critical attention to the sometimes overly optimistic manner, in which video game agency plays out, as compared to real-life climate action.

Fate of the World: Tipping Point is a turn-based deck-building game for influencing global decision-making. In it, the player tries to stem the tide of climate change by petitioning for regional governmental bodies to enact environmental policies (with the caveat that they can remove support, and thus, your agency, on their countries), while considering not just energy production and CO_2 emissions, but the global standard of living, national security, social issues, and even humankind's spacefaring ambitions. This feeds into the techno-utopist idea that technology might not only save us, it might actually provide us with a Planet B if the Earth becomes uninhabitable. In *Democracy 4*, players take on the mantle of a political leader in a developed nation-state. While your goal is to win reelection rather than save the world, the game implements a fairly complex model of how the environment is affected by policy decisions. *Democracy 4* visualizes the complex interdependencies of laws, taxes, collective behavior, and nonhuman elements of the world system, such as pollution. Finally, *The Sims* is a wildly successful life simulation series, whose fourth installment features

ecologically themed expansion packs, *Island Living* and *Eco Lifestyle*. The former portrays the effects of player agency on their habitats, and the latter homes in on an individual household's contributions to fighting climate change.

The selection of games is motivated by several factors. A chief concern was to only include games with realistic worlds, because indexical references to our planet press home the necessity of taking action. Another motivation was to include high-profile titles, since they are more likely to penetrate global consciousness, and while not as popular as *The Sims*, *Fate of the World* and *Democracy 4* are well known within the genre of the policy simulation game. Finally, as Joost Raessens notes, "impact is a shared goal of every social impact game and can occur at three different levels: a micro level (individual cognition and behavior), a meso level (organizations, groups and communities, such as schools, companies, and neighborhoods), and a macrolevel (politics, policy agendas, a shift in public discourse)" (2019, 239). My goal was to find games that straddle these three levels: *The Sims* shows how individual behavior can influence the meso-level of one's own neighborhood, *Democracy 4* simulates the power struggle between organizations, interest groups, and communities in determining macro-level politics, while presenting micro-level effects of policies with news headlines of personal interest stories, and, finally, *Fate of the World* integrates macro-level agency with meso-level impacts. It is with the hope that games in the future continue along this path of integration that I now turn to the complexities of climate change simulation in games.

Blessed are the policymakers: How *Fate of the World* adapts scientific climate models

In *Fate of the World*, the player is hired as the leader of the Global Environmental Organization (GEO), an environmental protection office similar in stature to the United Nations. As the head of GEO, she is invested with the power to influence regional policies across the globe, ranging from energy policy to society-wide reforms in order to keep global warming in check. The primary gameplay loop consists of recruiting agents in various world regions and using the subsequently unlocked card slots to play policies in order to reach the twenty-first and twenty-second centuries with environment and society intact. Each turn of the game lasts five years. As such, each scenario lasts around an hour of gameplay at most; but, of course, in the likely event that the world goes to hell before you finish the level, you can start again

much faster. The 117 cards in play affect key indicators of political and economic performance, such as the region's Human Development Index (HDI), its gross domestic product (GDP), its stability, and its enthusiasm to aid the GEO. Crucial climate-affecting statistics also make their presence felt: annual CO_2 emissions as a factor of the region's power plants, transportation options, each economic sector's level of development, and the role of deforestation are taken into account. As the player opens more offices and time progresses, a more wide-ranging set of policies becomes available to meet challenges called "tipping points," such as economic crises, habitat loss, and natural disasters.

The carbon model of *Fate of the World* was explicitly based on climate scientists' working models, most importantly Myles Allen's work (Allen, Frame, Huntingford et al. 2009; Allen, Frame, Frieler et al. 2009), which reinforced the need to keep emissions lower than a cumulative one trillion ton of greenhouse gases and emphasized the effectiveness of short-term emission reductions. The designers created a nuanced model of how regional (continent-wide) energy and population policies affect the climate, with several subsystems working in tandem to realistically depict the effect of the GEO's decisions (to appreciate its complexity, see Figure 2.1).

The level of difficulty encountered in *Fate of the World* is due to the sheer complexity of the way the various statistics interact with one another. In their study of players' cognitive mapping of the game's climate model, David Waddington and Thomas Fennewald observe that "a common response to the game's complexity was to be overwhelmed by the number of variables that the game required them to manage" (2018, 15). This is to be expected in a game that prides itself on creating a workable model of how emissions and human agency map onto the future of the planet (Figures 2.2 and 2.3 show different aspects of the in-game regional emissions and how they contribute to the simulated Earth's global emissions).

But, as Laura op de Beke observes, "only a handful of players will actually be able to reach [the game's] final stages. Most players will only struggle and fail" (2021a, 193) in the face of these tipping points. In fact, the excruciating difficulty is one of the recurring critical tropes when discussing *Fate of the World*. Op de Beke's reading of the game suggests that repeated failure to beat the game's harder scenarios serve an important purpose; it can prompt reflection and real-world agency: "flailing with failure can give us a much better understanding of the ways in which certain systems let us down" and it "shifts doubt onto the simulation itself—which foregrounds techno-fixes as opposed to other, more systemic, solutions" (2021a, 194, 197). It may also urge players to reach for the strategy guides.

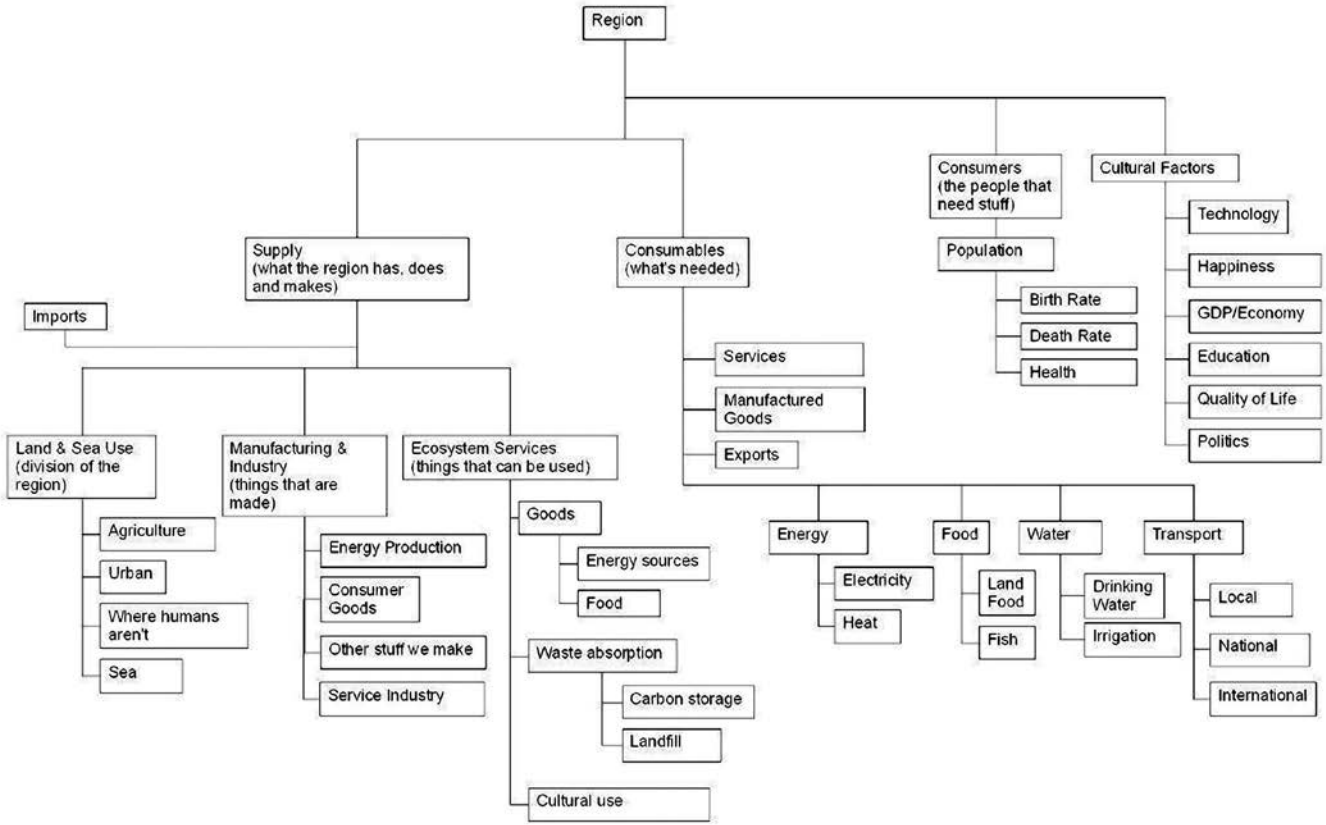

Figure 2.1: Regional model at the conceptual stage. Note the scope of simulated factors affecting regional emissions, which included land and sea use, economic factors, waste-related emissions, human happiness, quality of life, etc. The final version of the game offers a more streamlined but still ambitious model for emissions. (Red Redemption Games 2011, 34)

Figure 2.2: A simplified view of mid-game emissions. Compared to the conceptual model, the factors affecting emissions have been made more legible and actionable, focusing on sources of emissions that can be impacted by more technocratically minded policies. Source: Author's screenshot.

Figure 2.3: Model of Middle Eastern energy production. This panel opens up when the player clicks on the Energy tab in Figure 2.2. The complexity of the simulation extends to the impact of transportation, agricultural, industrial, commercial, and residential consumption as well as emissions resulting from different mixes of energy productions and how they are distributed in society. Source: Author's screenshot.

Instead of focusing on frustration and the desire for mastery, I would like to offer a different reading: the many failed thought experiments (Schulzke 2014) that the play sessions constitute (until you finally succeed) communicate that complexity is something that can be explored repeatedly, giving the players the awe of understanding without the joy of mastery. The sense I get from watching the world burn time and again is precisely a keenly felt contingency of the game system's history, somewhat affected by

me, but more often by the probabilities encoded into the game. To illustrate this, I played the "Oil Fix It" scenario five times with the most hands-off play style: I simply never hired any agents and played no cards. Running the game until 2080, I failed once because of a thermonuclear exchange initiated by Russia, once by the Middle East, twice by failing to raise HDI levels sufficiently, and once by oil use mysteriously dropping through the floor without my intervention. In any case: business as usual is a recipe for disaster.

An empirical study on players of *Fate of the World* found that "a leading focus of doubt was the game's foundational assumption that there was a world body capable of enacting sweeping climate change regulations," and players were also skeptical of the game's tendency "to overemphasize top-down solutions and minimize the messiness of real life" (Waddington and Fennewald 2018, 16). Players also criticized the game's model for being "too pessimistic" (Waddington and Fennewald 2018, 16). Weighing in on the bleak outlook of the game's "procedural futurism" (Op de Beke 2021b), Derek Price notes that

> Whether players choose to be a benevolent, enlightened, planetary monarch or a cold-hearted, calculating eco-fascist, [the game] suggests that there is no solution to climate change that does not involve some form of violence, either structural, political, or interpersonal.... [T]he game suggests that only policy-making bureaucrats have the necessary knowledge and authority to determine "the fate of the world." (Price 2019, 110)

Such a damning assessment runs contrary to the game's promise—implied by the title and its gameplay affordances—that the fate of the world is in your hands. This assessment is borne out by a cursory glance at the game's achievements (for a thorough critical reading of achievements in climate change games, see Lundblade 2020; this study adopts a more limited version of this approach). The achievement "... is in your hands," which sums up the moral of the game, requires the player to reach 2200 with a minimum HDI of 0.85 and five billion population, or better—presumably, this is the sort of dream scenario in which human welfare and responsible environmental stewardship go hand in hand. As of early 2022, only 2 percent of the players have achieved that paradise on Earth. Fortunately, other games have recognized the necessity of sending a hopeful message that we not only can but must find a democratic solution.

Ecotopia through electoral autocracy: The rocky road to a better climate future in *Democracy 4*

Democracy 4 is the latest installment in Cliff Harris' series of politics simulation games that put the player in the position of the prime minister/president of a developed democracy. Players influence their polity by hiring capable ministers, who earn Political Capital that can be spent on modifying or canceling existing policies, or introducing new ones in the areas of Tax, Transport, Public Services, Economy, Law and Order, Foreign Policy and Welfare.

Demonstrating that policies have repercussions on the whole of the polity amounts to the core argument of the game, which means that different political actors will be constantly at cross purposes, and any canny politician must exploit this for their own ends (Czauderna 2019). The effects of policy changes are tracked in a neural network that registers many cascading effects. For example, in my game with Japan, instituting a Trade Council raises International Trade and Foreign Relations, the first of which causes the GDP, Air Travel and CO_2 Emissions to rise but reduces the number of Farmers and Food Prices, and the second effect raises Tourism, Received Foreign Aid, Emigration and Immigration Demand; but other knock-on effects from other policy decisions compromise International Trade, Foreign Investment and membership within the Patriots voting group are also reduced, as well as Racial Tension in Japan. These effects can culminate into long-lasting Situations, like Japan's Debt Crisis or a Technological Advantage.

Such so-called Situations have a strong influence on the country and your reelectability, which is the most important metric, since you can lead your country into an unholy mess and still come out on top at the next election. Martin Pichlmair even argues that "the game is actually modeling a dictatorship [=electoral autocracy] rather than a modern democracy" (2015, 1). In fact, both *Fate of the World* and *Democracy 4* can be criticized for the distancing effect and the level of abstraction involved in the simulation of political decision-making, which gives the player an outsized power to project her agency upon the game world.

When it comes to ecofriendly legislation, one must begin with noting that environmental policy is just one concern among many for the player, and it is entirely viable to succeed as a politician in the game without paying any attention to the state of the environment or the Environmentalist voting group. Like several other factors marked by a blue background, the Environment exists as a passive simulation value that can be indirectly influenced with policies, and its fortunes may rise and fall with other blue simulation values (Figure 2.4 represents some of the factors contributing to the Environment score).

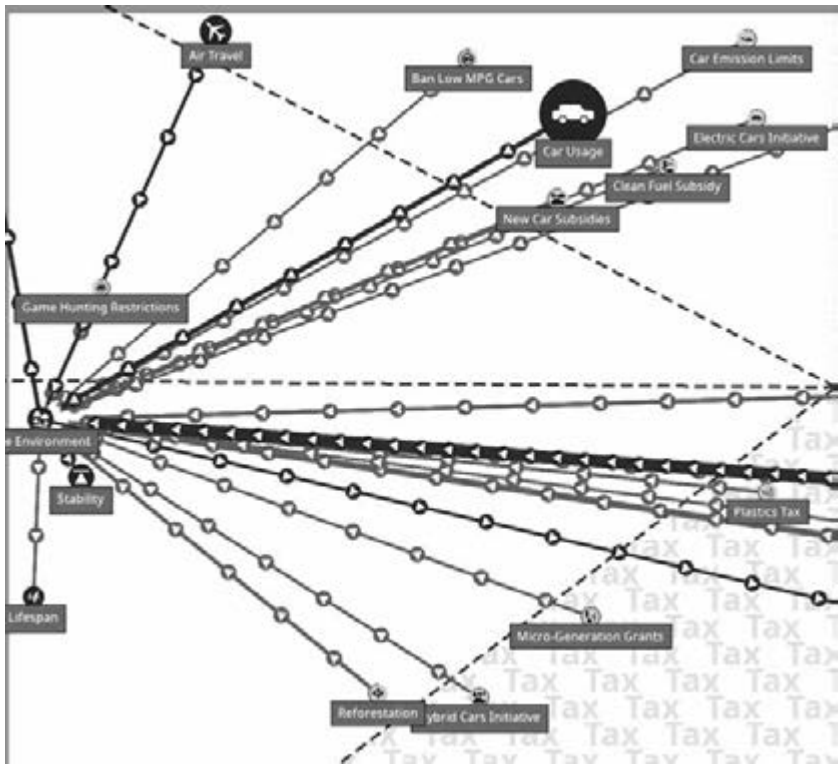

Figure 2.4: Factors affecting the Environment (detail; players who see the interface in color can distinguish between positive and negative impacts of policies, with green lines representing beneficial effects, gray lines indicating negligible effects and red lines detrimental effects; not pictured: the thick right-hand sideline above Plastics Tax represents GDP).

Air Travel, Car Usage, Tourism, and GDP all affect it inversely, whereas Energy Efficiency, and policies like Recycling, Pollution Controls, Car Emission Limits, Hybrid Cars Initiative, Micro-Generation Grants, Clean Fuel Subsidies, and Clean Energy Subsidies all improve its score. A sufficiently low score can trigger devastating situations like Cyclones or an Asthma Epidemic, while a high score will contribute to the Environmentalist voting group's sympathy, it will increase the polity's life span, as well as the Stability of the country.

Another crucial variable is CO_2 Emissions. Emissions rise with many of the same factors that affect the Environment, including GDP. In my game as Germany, I have instituted some, such as Car Emission Limits, Biofuel Subsidies, a Green Electronics Initiative, and a Carbon tax, but even passive simulation values such as Energy Efficiency or Electric Car Transitions impact the amount of Emissions (see Figure 2.5).

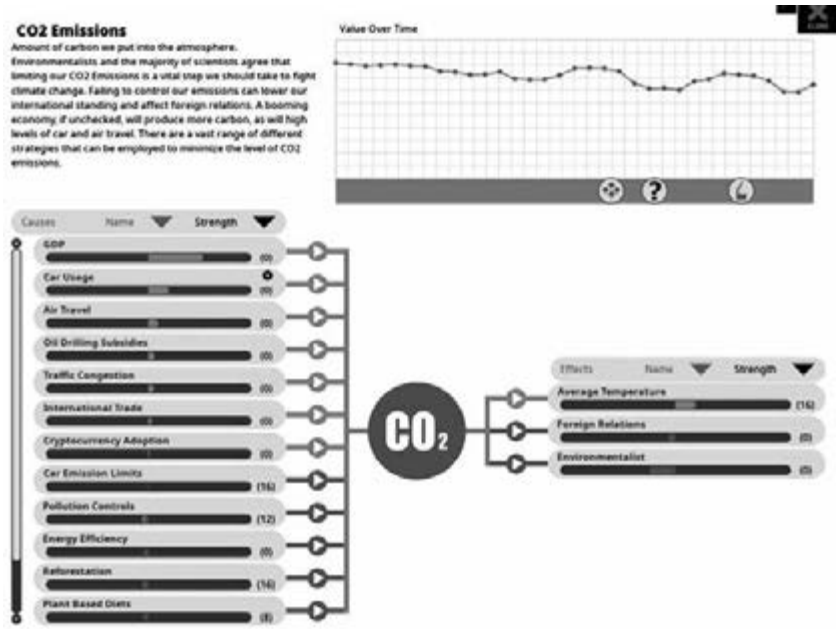

Figure 2.5: CO_2 emissions and their implications. Input sources and outputs are clearly represented, multifactored, and wide-ranging; bracketed numbers indicate policy implementation lag in number of turns. Source: Author's screenshot.

As the reader can surmise from the sheer number of policies and factors to consider, *Democracy 4* represents political decision-making in many of its complexities, even if winning reelection might be relatively easy on lower difficulties. The game is also notable for offering up-to-date if controversial policies, like Mandatory Microgeneration, Carbon Capture and Storage, or the outright Banning of Coal.

One of the ways games encourage players to explore alternative play styles is through the use of achievements. *Democracy 4* features an achievement called Ecotopia, whose text reads: "It seems everything these days is carbon-neutral, recycled and made from 100 percent organic hemp, or somesuch. You have become a true hero of the environmental movement, expect a nice green statue made of recycled plastic." To get the achievement, the player must enact several ecofriendly policies that affect key variables like Energy Efficiency and CO_2 Emissions, as well as having a large percentage of the electorate becoming an Environmentalist.

The *Steam* achievement statistics for the game suggest that such a course of action is not often explored by the players: at the time of writing, only 1.6 percent of the purchasers have unlocked it. Although this is cause for discomfort, since it appears that the sustained use of ecological policies is

not something pursued by the player base. However, one credible explanation is that the achievement requires a fairly consistent and obscure set of requirements. Due to the complexity of the climate model represented in this game, even players with a fairly good understanding of the mechanics might miss one crucial variable that is necessary for the achievement to fire. At least we can rest assured that the least pursued achievement is "Apocalypse Now," with a 0.2 percent unlocking rate. It requires gangs to roam the streets, climate devastation, frequent cyclones, a food crisis, and a severe water shortage. May we never reach that stage.

From interior design to exterior design: Climate engineering in *The Sims 4: Island Living* (DLC) and *Eco Lifestyle* (DLC)

In contrast to the more dire scenarios offered by *Fate of the World* and the charts-and-graphs abstractions of *Democracy 4*, *The Sims* is far more forgiving, human-centered, and geared toward player-driven, emergent storytelling. Starting with *The Sims 2* (Maxis 2004), each iteration features a *Seasons* expansion pack that introduces temperature, weather elements, and the change of seasons to its gameplay. Each season has its particular weather patterns, which manifest in a dry continental climate familiar to gamers of the Global North. Left to its own devices, the weather system follows expected weather events, such as snowfall in winter, heat waves in summer, heavy rains in autumn and spring, and attendant changes in the degree and color of foliage. In *The Sims 4: Seasons* (DLC) (Maxis, The Sims Studio 2018), each game world gets its own, distinct climate (with the exception of Strangerville), so tropical archipelagos and desert towns never experience snow, whereas the Japanese-inspired Mount Komorebi is primarily noted for its heavy snowfall.

The length and order of seasons have been modifiable since *The Sims 2*. Using a reward object, the Weathernaught 57X, players can set the current weather to their liking. This allows for weather-based storytelling, but it is a blatantly anti-mimetic option that does away with any pretense to realistic weather simulation, let alone climate. In fact, Sims' worlds were not usually portrayed as in any way threatened by habitat destruction or a shifting climate. Pollution itself was seldom seen.

This changed with *The Sims 4*'s environment-related expansion packs. *Island Living*'s game world, Sulani, features Mua Pel'am, a polluted desert island, which ties in with the new mechanic of island clean-up and the Conservationist career track. Mua Pel'am's fortunes can be single-handedly

changed for the better by the player, which translates into visible beautification. Ordinary Sims can clean up seaweed, ash, sulfur, and litter piles, and they can confront litterbugs, while Conservationists can also survey and spray invasive species, spread conservation awareness, shoot nature documentaries, or create environmental regulations. Since *The Sims* was never known for its difficulty, these changes rapidly take effect and require relatively little effort on the player's part, which might be considered empowering for its everyone-can-make-a-difference message. At the same time, it does erase the actual challenges of conservation efforts, because the only antagonistic forces are individual litterbugs, who can be beaten into submission by your Sims, rather than polluting companies and negligent governments, who are much harder to grapple with. The net effect is that the "Taylorist micromanagement" of individual homes and Sim needs that the franchise became famous for (Paulk 2006) is now extended to the environment as well, with just as much tedium. Interior design gives way to exterior design.

Still, the success of *Island Living*'s explicit ecological message swiftly resulted in the *Eco Lifestyle* expansion. *Eco Lifestyle* is the franchise's most sustained attempt to infuse *The Sims* with green gameplay. A major innovation is that neighborhoods now have a pollution level, with a tripartite system similar to Mua Pel'am's level of island pollution. However, unlike in Sulani, the pollution levels tend to change based on the objects housed on the different lots, which now have an Eco Footprint value, contributing to either industrial or ecofriendly change.

The kinds of objects that contribute to an Eco Footprint include better-insulated doors and windows, solar roofs that generate power, whereas corrugated metal floors/walls and power generators exude an Industrial Eco Footprint. In general, it is much harder to find objects that worsen the environment directly than those that improve it. What is more, the game features no mechanic for dealing with waste. Objects can be sold, but not sent to the landfill, and household waste is rarely specified (whether biodegradable or not). In short, the series continues its age-old tradition of "sim-ideology" (Frasca 2001), which offers friction-free fantasies of frenzied consumption. Where the rubbish goes, no one knows.

With the advent of *Eco Lifestyle* came the overhauling of the bills system as well. Electronics now have a Power Consumption Rating and plumbing has a Water Consumption Rating, which contributes directly to the bills with their use. Additional power and water can be generated as well for later use, driving down costs. Another way of circumventing brown energy is to opt for the Off-the-grid lot challenge, in which one cannot use the modern luxuries of the utility company, but instead must resort to analog

entertainment and do-it-yourself water and electricity generation. In true *The Sims* fashion, the so-called challenges of the game end up being no more than minor inconveniences. Gameplay in *The Sims* allows players to fantasize about actions they are wary of pursuing in real life (Griebel 2006).

Finally, the neighborhoods themselves take on a character of their own, thanks to a bowdlerized version of local politics, known as Neighborhood Action Plans, which change entire facets of gameplay. The most relevant environmentalist concerns are Green Initiatives, Clean Energy Production, Ecofriendly Appliances, Green Gardening, and Power and Water Conservation, which directly affect gameplay by either alleviating factors contributing to pollution, or by introducing twelve-hour shutdowns for electricity and water on all lots in the neighborhood.

In contrast to *Fate of the World*, which was noted for its soul-crushing difficulty, *The Sims* seems to take to heart Waddington and Fennewald's exhortation that "everyday citizens, and not just simulation enthusiasts, need to be able to experiment without having to cope with a steep learning curve,… and feedback systems that … punish them increasingly over time" (2018, 22). If anything, *Eco Lifestyle* errs on the side of being too easy: players can have an outsized influence over the look and feel of their neighborhood, but much of this influence is cosmetic and not systemic, belying the nature of climate change. Once again, it is a welcome change to see local action impacting the weather systems simulated in the game, but such gains are never really earned, and they are entirely disproportionate to what individual actions can achieve in the real world.

At this stage, James Paul Gee and Elisabeth Hayes' confident assertion that simulation games such as *The Sims* in fact "encourage learners to think about rules of play and how they do or [do] not reflect reality" (Gee and Hayes 2010, 172) must be taken with a pinch of salt when it comes to the environment. Rather than providing room for reflection, the outsized effect of player agency results in a consumerist fantasy that ethical consumption can save the planet. The inconsistent use of weather and climate in individual neighborhoods thwarts any complex simulation of issues surrounding human environmental impact.

Conclusion

As my analysis has demonstrated, the complexities of climate change politics are modeled with considerable respect to the consensus view of scientific knowledge and policymaking. Although the effects of playful agency are

often exaggerated, and both extreme difficulty and a relatively challenge-free experience could hinder galvanizing people into action, it has been my main goal to showcase that all climate games do in fact supercharge player agency, which sends a powerful message that humans are both responsible for current climate change and are necessary to mitigate its effects.

Most of the criticisms raised about these games focus on their tendency to offer solutions without modeling the resistance to energy transitions in sufficient complexity and for losing sight of the powerful interests of capital and national governments to retain their hegemonic positions. We often see the power that is being generated in power plants to be more critical for success than that which is generated within the halls of power—with the player's living room being the most important.

Game designers also have to walk a fine line between making a game too easy and making it too hard. *The Sims 4* errs on the side of being too easy for one player (and one Sim) to affect the climate, the *Fate of the World* on being too hard for the whole of the world to steer clear of global disaster. *Democracy 4* is not a golden mean, but, rather, it offers more options for players to customize the level of difficulty for themselves, which is a better practice than what is available for the other two cases.

As one of our most recent media, video games enable us to build thought-provoking simulations of any system, and they give us represented powers unimaginable to us in the real world. But such agency comes at a cost: it engenders a sense of futile omnipotence, which does not translate to the real world. What it does communicate, though, is our understanding of the systems we devise and how they map onto the real world. And there is hope that humankind will, like the yellow dog from *Gunshow*, wake up from its stupor to shout "This is not fine!! // Oh, my god, every things on fire [sic] // Oh my god Jesus fuck // What the fuck was I even thinking // There was no reason to let it last this long and get this bad" (Green 2016). Humanity might yet take decisive action, so that it, too, may sit crestfallen in the burned-out house of humankind, singed and a bit worse for wear, but still alive.

Ludography

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3. Between the Lines: Using Differential Game Analysis to Develop Environmental Thinking

Hans-Joachim Backe

Abstract
When discussing Games for Change, there is a tendency to focus on the didactic potential of playing one specific game with its well-researched representation of ecological issues and carefully encoded values. While such arguments are doubtlessly needed, they may underestimate the importance of the context in which play makes meaning. This chapter highlights two important contexts within which players understand their actions in a particular game: their experiences in similar games, and their personal play compared to that of and with others. It presents deep readings of four survivalist games played both solo and cooperatively and shows how much ecocritical reflection is produced not by engagement with the individual example, but the comparative perception of games and players.

Keywords: system thinking, *Minecraft*, formal education, schools, methodology

Digital games relate to the natural environment in numerous ways, as this book impressively demonstrates. Given this broad range of approaches, the diversity of academic perspectives, and the virtually endless variety of digital games, it goes without saying that no single general analysis model could ever be universally adequate. However, particularly in schools, there is a need for methods of understanding games and their role in climate education; digital games are an often-central part of teenagers' media consumption. Many schools use dedicated educational games, while ignoring the playing habits of pupils. But integrating the games that students play in their free time into a curriculum in traditional fashion would necessitate preparing

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and distributing teaching guides for potentially short-lived games and educating teachers in game analysis methods.

In this chapter, I will present a small-scale empirical experiment that suggests a different solution to this challenge. I will discuss the variations of meaning produced by playing four comparable games in different player configurations. On the one hand, this will showcase the considerable impact of even minor differences in game mechanics between similar games to caution against generalizing across genres or drawing conclusions based on superficial play. On the other hand, it will juxtapose the same games played by an individual in isolation and the same person with a coplayer, to illustrate how the aims and parameters of play change with the social parameters within which they take place.

Through this analysis, I will demonstrate how a minimal method that focuses on identification and the discussion of differences—both between games and players—has the potential to produce reflections and learnings about the relationship between humans and the environment, especially when directed by a set of simple analytical questions or discussion prompts. After situating the study briefly in the existing theory and research, I will present a comparative analysis of four popular survival games. The analysis focuses on the systemic character of all games, which emerges from the differences between the games as well as the differences between play situations—in this case, playing the games alone and cooperatively with another player. In the end, I will suggest how the findings of the study could be refined for use in schools, to structure discussions of games that students select themselves. The goal of such an engagement with the natural environment via games is not primarily awareness-raising or learning about sustainability, but a more deep-seated adoption of system thinking, an otherwise very challenging learning goal (Evagorou et al. 2009; Assaraf and Orion 2010). Seeing how the various systems of familiar game worlds interact and codepend will pave the way for insights into the large-scale systems of reality. Such differential thinking has been proposed by Timothy Morton as a general ecocritical strategy for dealing with the interdependence of the natural environment: "The curtain rises on a pregiven holistic world. But interdependence is not organic: it's differential" (Morton 2010, 285).

Not agreeing on *Minecraft*: Studying difference

Digital games have been the subject of critical and academic scrutiny for some time now—not the least, because they have been recognized as

vehicles of values, here understood as "properties of things and states of affairs that we care about and strive to attain" (Flanagan and Nissenbaum 2016, 5). Numerous analysis frameworks have attempted to fuse often divergent approaches into coherent methods and to operationalize them for direct application by students and scholars (Consalvo and Dutton 2006; Mäyrä 2008; Fernández-Vara 2019). Simultaneously, the analysis of digital games from an ecocritical perspective has become an established, highly specialized practice (Ulman 2001; Clary 2004; Chang 2009; Chang and Parham 2017; Chang 2019).

Accordingly, one finds discussions of the same game from as many perspectives as would be the case for a novel or a movie. *Minecraft* (Mojang Studios 2011), one of the best-selling and most influential digital games of all times, and one that deftly situates its players in a simulation of the natural environment, has been analyzed from countless perspectives—among them dedicated ecocritical ones (Bull 2014; Phillips 2014). There is, however, a surprising amount of discussion of ecology-related aspects in philosophical (Vella 2013), philological (Lobo 2019), technological (Costello 2018), and economical approaches (Dooghan 2019) as well. A recurring context in many analyses (Vella 2013; Nguyen 2016; Dooghan 2019) is that of Daniel Defoe's classic castaway narrative *Robinson Crusoe* (Defoe 1994), emphasizing the protagonist's "bending the landscape to his will [in] the first moves of colonization and industrialization" (Vella 2013, 6). This view on the game culminates in Daniel Dooghan stating that "Minecraft's mechanics not only encourage this kind of expansionist thinking but go further by representing the physical and cultural violence of territorial expansion as a pleasurable challenge" (Dooghan 2019, 71).

Several factors make such a strong, unambiguous interpretation of not just *Minecraft*, but any game, problematic. To focus on only two: first, the complexity of digital games is hard to address fully in any given interpretation: "[E]very game expresses a set of values, but it's often difficult to understand the many ways in which those values come to be embodied in the game" (Flanagan and Nissenbaum 2016, 15). The objects and discourses encountered in a game, the characters and their dialogue, the places and spaces all carry meaning and express particular positions, explicitly or implicitly. Yet the simulation systems are carriers of meaning as well: "What simulation games create are *biased, nonobjective* modes of expression that cannot escape the grasp of subjectivity and ideology" (Bogost 2006, 99, emphasis in the original). Whether veganism, pacifism, or sustainability are actionable concepts in a game world depends on the simulational rules of the system, on what is possible under which parameters. Therefore, mapping

the possibility space of actions in a digital game (Consalvo and Dutton 2006) is crucial in order to contextualize the representation and discourses of the game. One's actions in a game only have meaning before the background of what one can and, equally importantly, cannot do. While in themselves finite, the combination and permutation of (im)possible actions and the represented world produces staggering numbers of combinations. Still, compared to real-world systems, game systems and their constituent loops (Sellers 2018) are less complex, and can be more easily perceived, studied, and understood.

Second, "a study of videogame experience cannot merely examine the outputs of a given system or application" (Newman 2002, 410). It is not just that how we analyze games "depends on who we are, and why we do it" (Aarseth 2003, 6), but that what we analyze has been partially produced by us. The already potentially endless complexities of the systems are actively concretized by players' actions. Even though players exert "not authorship but agency" (Murray 1997, 153) within a game, they still "are going to transform the text" (Fernández-Vara 2019, 28). It is evident that the "videogame experience cannot be understood without recognizing the integration of the player in the process" (Newman 2002, 419). It is therefore not merely a relativizing interpretation when Amanda Phillips posits that *Minecraft* "is simultaneously ripe for capitalist exploitation *and* full of alternative queer embodiments and relations" (Phillips 2014, 109, emphasis added). That she sees alternatives to Dooghan's monolithic view is partially due to her playing the game differently than him. The player is still limited by the framework set by the game's authors, yet the player's active participation is required to produce the surface text of the game itself.[1] That being said, any game suggests to its players more or less concrete roles, goals, and behavioral patterns. These are crucial to the game's progress: a player who cannot or does not want to (quite literally) play along will not advance towards the games' goals. With recourse to reader-response theory, Espen Aarseth

1 A third major factor, which however will not be explored further in this chapter, is the ongoing development of hardware and software, which results in different commentators potentially having played different versions of a game. As interactive pieces of software, they are volatile objects. The differences between the available versions of *Minecraft*, from experimental PC versions in 2009 to the (as of the time of writing) current version 1.15.2, for different platforms and apparatuses, in different concurrently available play modes (survival, peaceful, or creative) are vast, to the point where they have little more than passing similarity. Dooghan (2019) and Philips (2014) not only argue from different perspectives and before the background of different ideologies with particular methods, they also produce different results by playing similar, yet not identical, versions of the game.

has termed the expectation of a player with particular skills, tastes, and interests the "implied player" (Aarseth 2007). And, as play philosopher Miguel Sicart has argued, players will at least implicitly compare their behavior in games with observed or assumed behaviors of other players (Sicart 2009, 122). They develop an impression of the "orthogame," in other words: "what players collectively consider to be the 'right and correct game' [distinct from] peripheral game activities" (Carter, Gibbs, and Harrop 2012, 14).

Players have been empirically shown to fall into distinct types. Nick Yee's typology, based on surveys with tens of thousands of respondents, identifies three main motivations (Achievement, Social, and Immersion) and ten sub-motivations (Yee 2006; Yee, Ducheneaut, and Nelson 2012), distinguishing, for example, casual or goal-oriented play with others from play as a prosocial activity aimed at improving the well-being of others. Such broader studies of players have been supplemented by investigations of single-player (Aarseth 2007; Waggoner 2009), multiplayer (Myers 2008; Pearce 2009; Sundén and Sveningsson 2012), and team play (Taylor 2012).

Most relevant for the topic at hand is the influence of real-life relationships for player identity and behavior, for example, in the play of family members (Enevold 2009): "A mother playing chess with her child will play a different game from that of two chess masters—the game may be the same but the context changes how it is played, including tweaks in the rules" (Fernández-Vara 2019, 28). In very general terms, the importance of existing social relationships for players is connected to the concept of care. From a phenomenological perspective, the relationship between player and avatar as well as that between player and game is characterized by a need to care, in the double sense of to care for and about (Möring 2013, 289–291), and depending on the parameters of play, even a survival game like *Minecraft* will move the player from fear of survival to a need to care (Möring 2014, 8–11). Playing games together with close friends or a loved one creates a complex dual care structure that exposes just as much about the players as it does about the games.

To return to the divergent interpretations of *Minecraft*'s value system that I used as an initial example, we can see that such divergence is inevitable. This chapter suggests we take this divergence and its causes into account, as the lack of critical consensus is a powerful motivator for the reflection and discussion of play experiences. I have previously advocated for analyzing the ecocritical potential of examples that are not explicitly "ecothemed" through a simple analysis framework (Backe 2017), and in the following, I will demonstrate the application of this concept. The focus of the analysis is the differential dimension: by analyzing four examples, played both solo

and cooperatively, I want to outline how a very limited number of analysis questions can provoke reflection about not only the individual games, but about their systemic nature—a method that, I argue, could be applied to classroom discussions of games with relative ease.

Analyzing the possibility space of the game systems

To demonstrate the diversity of implementations of nature in digital games, the relevance of studying not explicitly ecology-themed games, and the impact of the player situation on the game and its analysis, I conducted the following study: between January 2018 and January 2020, I played four relatively similar games both alone and cooperatively with a partner. I assessed the details of their representation and simulation of the human role in the natural environment through an open coding process, successively refining the analytic dimensions through the emerging minor differences. To guide play and interpretation, I formulated a number of research questions based on the generic analysis framework[2] as well as addressing the points of contention in discussions of *Minecraft* mentioned previously: Does the game accommodate living in different relations with the simulated natural environment? Is it possible to live sustainably? Is the player encouraged or even forced into a specific way of living by the parameters of the simulation? Is one alternative clearly privileged or punishing?

While such an analysis could be profitably conducted with any digital games modeling a virtual environment, for this study, I limited the selection to first-person perspective survival games (Kelly and Nardi 2014; Abraham 2022). Here, players engage with complex simulations of open natural environments, in which they need to find shelter and sustenance and learn to craft tools from resources (Giant Bomb 2018). By giving the player responsibility for the avatar's subsistence, and by embedding them in an interrelated ecosystem, these games lend themselves to ecocritical studies. The selected games are *Minecraft*, *ARK: Survival Evolved* (Studio Wildcard 2017), *The Long Dark* (Hinterland Games 2017), and *Subnautica* (Unknown Worlds Entertainment 2018). All games simulate interactions

2 Is the natural environment engaged with semiotically—that is, audiovisually and discursively—as well as ludically? Do these modes of engagement with ecological questions cohere or create friction? Is the treatment of ecological topics explicit and central or rather implicit and peripheral? Is the treatment of "nature" specific and informed? Are game mechanics or semantics anthropocentric, or do they offer alternative perspectives? Is the treatment of ecological topics affirmative, critical, or ironical? (Backe 2017).

with the natural environment (flora and fauna) as well as subsistence and crafting of equipment or shelter. All examples engage with the natural environment from a strictly anthropocentric perspective. They are primarily played from a first-person perspective, and they all were (at least originally) developed and published independently. All examples were played on PC.

ARK is the most similar to *Minecraft* in terms of overall orientation. It interprets most gameplay elements differently, though, and replaces *Minecraft*'s trademark blockiness with near photorealism. Both examples can be played individually or together with others on shared servers; for the purpose of this study, they were played solo and together with one other player in a cooperative survival mode. To contrast the degree of freedom afforded to players in these two examples, *The Long Dark* and *Subnautica* were chosen as they offer single-player-only story modes reminiscent of the quest-driven structures of traditional single-player games. The result is a selection of four games mapping a significant portion of the diversity of the survival game genre, as well as chronicling my familiarization with the genre and the transfer of knowledge between the games that informs my current view of *Minecraft*. The open coding process (see Table 3.1)[3] allowed the identification of subtleties of the simulation (e.g., the impact of food spoilage or the degree of safety offered by shelter).

Table 3.1 Feature comparison of the examples (excerpt)

Title	Minecraft	ARK: Survival Evolved	The Long Dark	Subnautica
Country of origin	Sweden/USA	USA	Canada	USA
World	Procedural	Static/ procedural	Static	Static
Quest structure	End goal	End goal	Fully scripted	Fully scripted
Character creation	Binary choice	Sex/body	None	None
Scripted player char.	No	No	Yes	Yes
Tech trees	Free, nonlinear	Free, linear	Scripted	Scripted
Animal prod. essential	No	Yes	No	Yes
Threat diversity	Low (ca. 30)	High (>100)	Very low (1)	Low (c. 20)
Safety in shelters	High	Low	Absolute	Very high
Food	Depletes when active	Depletes constantly	Depletes constantly	Depletes constantly
Water	No mechanic	Depletes	Depletes + purification	Depletes + purification

3 The data is based on play experience and was verified and augmented by consulting the official game wikis (Gamepedia.com 2009, 2013, 2015; Fandom.com 2014).

Title	Minecraft	ARK: Survival Evolved	The Long Dark	Subnautica
UI representation	Drumsticks	Ham	Stomach	Apple
Easiest food source	Animal	Animal	Animal	Animal
Farming	Yes	Yes	No	Yes
Irreparable change to ecosystem possible?	Yes	No	Yes	Yes
Food spoilage	No	Yes	Yes	Yes
Tool degradation	Degrade through use	Degrade through use	Degrade through use	Are energy based

The most impactful factors that emerged through this coding process were the presence of an overarching quest structure and its interrelation with the player's agency; the threats the avatar is exposed to; and the simulation of subsistence. For all factors of survival and subsistence, the examples form a continuum of complexity. This goes both for the modeling of the avatar and the environment. To take just one example: While *Minecraft* does not simulate hydration and has the avatar burn energy only through strenuous activities (like running and jumping), *ARK* even simulates constipation and defecation, with the two other games falling in-between (but adding elements, like the need for purifying water).

The examples thematize discourses of ecology only very sporadically. *The Long Dark* signals paratextually its engagement with ecology through a text page at startup that informs players that the survival simulation and the behavior of wolves in the game are not true to nature, but dramatized for a more engaging play experience. *Subnautica*'s intradiegetic help system includes a few comments on vegetarian living (see Figure 3.1), but neither *Minecraft* nor *ARK* offer much discourse at all.

All examples exhibit some friction between how ecology is simulated, discursivized, and visualized, sometimes in ways that undermine impressions of well-researched implementations of the natural environment. This begins with the fidelity of representation: *Minecraft*'s low-fidelity rendition of a world consisting of blocks of equal size suggests that its simulation will be similarly simplified. For example, in *Minecraft* apples only grow on one type of tree, yet they are oaks, not apple trees. Still, the simplifications or distortions of natural processes Alenda Y. Chang finds in most games are less pronounced in *Minecraft* (Phillips 2014, 111–114). The impressionistic visuals of *The Long Dark* have a similar effect, signaling constantly a detailed, yet highly stylized approach to nature and survival (see Figure 3.2).

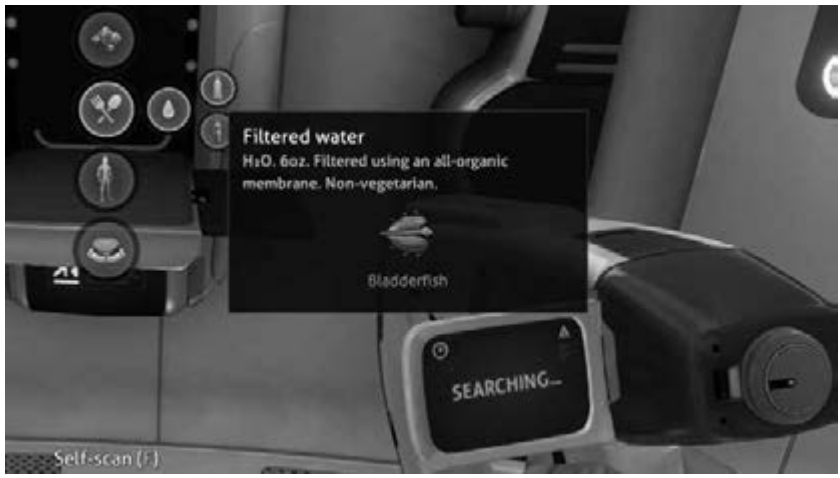

Figure 3.1: Animal-based nutrition flagged as nonvegetarian in *Subnautica* (cropped screenshot).

Figure 3.2: Killing or sparing a rabbit in *The Long Dark*.

ARK, on the other hand, strives for photorealism; the diversity of wildlife, their behavior, sizes and colors, not only appear well-researched, but implemented with great attention to detail. Many of the liberties the game takes are explained through the notes left by Helena, a prior visitor to the deserted island the game is set on. They reveal that the island and its inhabitants are an artificial construct, commenting, for example, on the unsustainably high ratio of carnivores to herbivores as well as on the coexistence of animals that lived millions of years apart (see Figure 3.3).

Moving from the appearance of the game world to its simulation, the nonobjective character of simulation systems in games becomes quickly

Figure 3.3: A pack of direwolves and a *Tapejara imperator* in *ARK*.

apparent. The arguments for *Minecraft* as a perpetuation of capitalist, colonialist, or neoliberalist logic stem from the fact that its simulated environment appears "as stockpiles of resources standing-reserve" (Vella 2013, 9). Learning in the first minutes of play that elements of the world can be used for crafting food, tools, or shelter, every newly encountered element will be perceived at least partially as a new resource. Additionally, *Minecraft* forces its players into some degree of utilitarian efficiency thinking through the way the avatar's inventory works: as weight is not calculated, only space is a limiting factor. The finite number of available inventory slots in which only resources of the same kind can be put into the same inventory slot, encourages the players to think in monocultures, using, for example, one kind of tree as a wood supply because it stacks neatly in the inventory.

But is it still possible to live sustainably in *Minecraft* or any of the other examples? And how do we judge this? The factors that emerge most clearly from the comparative critical play conducted here are those of primary subsistence. In *Subnautica*, it is impossible to play for more than half an hour without catching fish or collecting coral, as they are the only sources of fresh water in the early game. Plant-based living only becomes a possibility once the player builds the first sea vessel and finds an island. *The Long Dark* sidesteps this issue by spreading out prepared food throughout the environment. While *Subnautica* is set in an ocean on a foreign planet, *The Long Dark* takes place on a rural Canadian island with numerous settlements, which, although deserted, still provide sufficient canned and dried food to sustain a cautious player's avatar—which, though not sustainable

Figure 3.4: A small sustainable farm built in forty-five minutes in *Minecraft*.

living as such, allows the player to keep destructive interactions with the environment to a minimum.

The situation is more complex in *Minecraft* and *ARK*, not the least because in these examples, players need to construct shelter early on. In *Minecraft*, one can build a primitive shelter within minutes after starting a new game with the avatar's bare hands, and plant-based subsistence with a small ecological footprint is possible. Starting a completely new game in a randomly generated world with standard parameters, I reached such homeostasis within forty-five minutes of playtime. After that point, I built an earthen hut with a trench around it to keep monsters at bay and cultivated a wheat field adjacent to a small pond (see Figure 3.4). For tools and materials, I had to fell two trees. They produced enough wood for tools, torches, a workbench, and other necessities, as well as providing saplings to plant four trees close by. Avoiding fights by only venturing out in the daytime and never straying far from the hut, my avatar stayed well-satiated, reducing my need for foraging to a bare minimum. While such behavior is hardly the orthogame of *Minecraft*, it is possible, and it provides the basis for a relationship to the environment based on care (Möring 2014, 8).

Repeating this experiment in *ARK* led to completely different results. In *Minecraft*, blueprints for new craftable items are readily available, while in *ARK*, they need to be unlocked by gathering experience points and progressing through levels. This minor difference has a major effect: initially, the *ARK* avatar only knows how to craft paper, a stone pickaxe, and a torch. At level three, they learn how to craft primitive clothes, and at level four, they learn how to build primitive structures with thatch. Building a shelter after

half an hour of play is possible. Establishing a self-sustaining settlement, however, cannot be achieved in *ARK* until much later in the game. Only at level twenty-six can an avatar learn how to build a medium-sized crop plot, which is the prerequisite for cultivating corn, potatoes, and other highly nutritious food. To reach level twenty-six, the player must gather 3,250 experience points, eighty times as many as for level four and equivalent to building eighty wooden houses or killing fifty *Tyrannosaurus rexes*. Until then, the avatar depends either on gathering berries, scavenging carrion, or hunting. The decisive factors for sustainability that emerge through this experiment are *Minecraft*'s decoupling of crafting skills and level progress, and its subsistence model that allows the player to actually conserve the avatar's strength and thus reduce the need for food, giving them time to build a small farmstead and harvest its crops before dying of hunger. Hunting animals for food is possible in all four examples, and it always is the most easily available and most nourishing source of sustenance. Inexperienced players of all examples will find plant-based alternatives more difficult, and the game structure of *Subnautica* makes eating fish all but inevitable in the beginning. The notable exception is *The Long Dark*, which, as mentioned, suggests living off canned and preserved food. In the tutorial section of the single-player campaign, it nonetheless teaches the ability to catch rabbits. While the game suggests that it might be prudent to use them for their meat and pelt, the player is given the choice to kill or release even the first animal they catch (see Figure 3.2). This opens up the option for vegan play that is impossible in games like *Ark* with its prevalent use of hide as a crafting material.

Caring differently with and without other players

The comparison between games produced rich insights about what behaviors are possible in them. Suggested play styles and goals come, however, into focus best through comparing solo and cooperative play. The single-player only structures of *The Long Dark* and *Subnautica* spell out their goals unambiguously: in both cases, the player character is stranded in an inhospitable place and needs to get back to civilization. In both cases, there is a complicating factor connected to a care structure: in *The Long Dark*, player character Will has to rescue his ex-wife, Astrid; in *Subnautica*, player character Ryley is infected with an alien illness, for which he needs to find a cure before returning, so as to not infect humanity. The scope of both endeavors is different, though: Will's journey spans only several days

or weeks at most, while he travels through the frozen remains of mining and fishing towns, whereas Ryley has to gather the materials and the knowledge to manufacture a spacecraft, which not only takes inevitably longer, but also involves building one or several temporary bases. *The Long Dark* frames its interaction with the environment thus as a travel experience, while *Subnautica* suggests for its player the role of a nomad.

While *Minecraft* and *ARK* also have an endgame, they are more elusive and even more difficult to achieve. In both cases, creating at least longer lasting settlements with cultivated plant life and even livestock is all but inevitable. In *ARK*, human interference with wildlife can result in benefits for the animals: most species can form families, herds, or packs with each other and humans, which give bonuses, making them stronger and more resilient, allowing them to defend themselves as well as nearby friendly animals (see Figure 3.3). As such, both games rather suggest a pastoral lifestyle. The relationship to these virtual creatures can be completely utilitarian and one-sided; yet both *Minecraft* and *ARK* implement some simple means to stimulate a care relationship with the animals, most poignantly the animals' constant effort at making eye contact. Additionally, *ARK* allows players to communicate with tamed animals, not only in terms of pragmatic commands, but in some cases (*Hyaenodon*, *Lystrosaurus*) by petting them. In direct comparison, *Minecraft* offers less direct communication. It is, however, no longer correct that a player "may kill or ignore mob enemies, for example, but players cannot communicate meaningfully with them" (Bull 2014, 94). Pet creatures such as cats and parrots as well as wild animals such as pandas—most of them added to *Minecraft* since 2019—can be interacted with, eliciting a wide variety of reactions. While these acts of communication just as well as the ones with the game's human-like creatures, the villagers, are primitive, they are nonetheless meaningful.

These (para)social interactions with the game environment I would not have experienced through solo play. After playing *Minecraft* and *ARK* extensively in single-player survival mode, I played both games with my life partner. In terms of Yee's player motivation types (Yee 2006), she prefers socializing and role-playing, while I am rather attracted to advancement and discovery. Playing together, we explored each other's preferences, led by the more experienced player: in *ARK*, I would lead her on travels to map the island and advance to higher levels, while in *Minecraft*, she would introduce me to interactions with villagers and initiate building projects not for purpose but for role-play. Additionally, we experienced how in the early phases of introducing the other to a game we were familiar with, our protective instincts for the well-being of the other would sometimes

Figure 3.5: A fortified village built in co-op play in *Minecraft*.

dominate play behavior. In *ARK*, where vegetation is often very dense and lower-level avatars are vulnerable even to small predators, I would find myself disrupting attempts at sustainable play by deforesting the environs of our shelter so we would see attackers early enough to flee from them. These differences in our initial approaches to the games and our gradual adaptation to the other's actions led inevitably to discussions, reflections, and comparisons between both the games and our play styles.

Exploring environmentally responsible play together, our cooperative play gravitated towards Yee's category of "relationship" (defined primarily by finding and giving support to other players) in both games: In *ARK*, we would create increasingly more diverse herds of animals that would benefit from each other in various ways, while in *Minecraft*, our implicit mission became to find villages and help them thrive. Figure 3.5 shows a village several in-game months after our arrival, with a protective wall, fields, and a park. The cohabitation with the villagers is even in the then-current version of the game (1.15.2) rudimentary and mostly based on trade of goods and services, yet still affectively charged.

Conclusion

This chapter, while modest in its methodological claims, has demonstrated how critical play practices are enmeshed in both the subtleties of the game systems they engage with, the researcher's own player identity, and the resulting view on the game system as it emerges from their own personal

play behavior. Which specific interactions with the simulated natural environment the game allows or disallows, incentivizes or disincentivizes, cannot be judged without taking into account the preferences and abilities, wishes and traits of the empirical player. While this is to some extent true for all game analyses, it becomes pivotal in a value-conscious approach like ecocriticism. *Minecraft* produced in the course of this differential analysis an even more nuanced value system of the human role within the natural environment than previous studies give it credit for.

The result is not a method, per se, and some observations are rather anecdotal. Yet, as Sean Cubitt has argued, anecdotes are particularly valuable for ecological thinking and amount to a method:

> As method, anecdotes require differences and disjunctures that produce encounters, a category that includes not only encounters with texts but with technologies and with other people and places in situations and socio-historical conjunctures at the complex micro- and macro-scales where social forces, biographies, geography, and history converge as conditions for action. (Cubitt 2020, 7)

Accordingly, the cooperative play phase of these familiar games shaped my understanding of them, modified my play behavior in them, and taught me lessons about my own instinctive behavior in them that I did not experience in hundreds of solo play hours. The comparison between games and players brings out differences and possibilities, thus encouraging, if not outright provoking, conversation about these differences.

Such an approach to digital games as tools of reflection can be facilitated in a classroom situation. Middle school and high school students tend to play games in their free time and inviting them to engage in show-and-tells, shared play experiences and discussions, or other forms of integration of their favorite games in class can be guided by simple prompts for reflection and discussion like the ones used here, by any teacher without the need for in-depth familiarity with the games in question. The learning outcome would, of course, not primarily be knowledge about the natural environment or environmentally responsible behavior, but it might include understanding of personal motivations and individual environmental values. Comparing game systems and player experiences in an ecocritical framework has three potentials: 1) Players compare their behavior towards the simulated natural environment with each other, sparking reflection of individual practices; 2) players compare their perceptions of the adequacy of nature representation in games, sparking knowledge exchange about and reflections on facts about the natural environment; and 3) players

discuss the simplifications of real situations through simulation, drawing attention to interdependencies and complexities, and promoting system thinking. The reflection on individual and collective experiences of interdependence with a virtual environment renders larger contexts of coexistence tangible: "[C]ollectivity signifies the conscious choosing of a coexistence that already exists whether we think it or not" (Morton 2010, 278).

Empirical tests would, of course, be necessary to evaluate several factors (e.g., corpus coherence, granularity of research questions, group sizes) and to develop a robust didactic concept. This chapter should, however, have demonstrated that small differences of games, players, and player configurations can productively be taken into focus without involved analytical methods and hold promise for teaching otherwise hard to convey (yet ecologically crucial) skills like system thinking.

Ludography

ARK: Survival Evolved. 2017. Studio Wildcard. Multiplatform.

The Long Dark. 2017. Hinterland Games. Multiplatform.

Minecraft. 2011. Mojang Studios. Mojang Studios, Xbox Game Studios, Sony Interactive Entertainment. Multiplatform.

Subnautica. 2018. Unknown Worlds Entertainment. Multiplatform.

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4. A Dynamic Engagement Model to Provide Ecological Awareness of the Climate Crisis through Video Games

Thomas Bjørner and Henrik Schønau-Fog

Abstract

We present an overview of elements that contribute to making successful video games that promote critical engagement with climate threats and sustainable futures. Major challenges exist in how to design engaging, serious games that target the climate crisis, including, for example, motivation, flow, learning outcomes, or even behavioral changes. Building on past research and different "ecological" games, we suggest a dynamic engagement model (DEM) that outlines four stages of engagement for video games, including before, during, and after gameplay and dis- or reengagement. We argue that more work should be spent on studying a holistic perspective of engagement, including the importance of engagement in the four stages, to improve our understanding of motivational factors for playing ecological games.

Keywords: persuasive games, behavioral change, motivation, types of engagement, holistic perspective

Video games with ecological themes, or simply ecological games, have developed quickly during the last decade (Bjørner 2021; Chang 2019; Galván-Pérez et al. 2018; Neset et al. 2020; Ouariachi et al. 2019; Raessens 2019; Rossano, Roselli, and Calvano 2017; Stanitsas, Kirytopoulos, and Vareilles 2019). Most of the currently developed ecological games propose enhancing comprehensive knowledge related to the climate crisis by providing new learning and awareness opportunities. Ecological games are often categorized as so-called "games for change" (Burak and Parker 2017) because they not

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only try to contribute to ecological thought, but also to encourage people to become more environmentally active. Ecological games exhibit huge variations, both as serious games for specific learning purposes and as games for entertainment. There is no consensus on the definition of serious games, and they are used in divergent ways, focusing on various perspectives depending on their purpose, players' goals, and content. Previous definitions have emphasized that serious games are applications designed not simply for fun or with the intention to be more than entertainment (Ritterfeld, Cody, and Vorderer 2009). However, there remain some unsolved categorical challenges regarding what constitutes a serious game and what it means for them to aspire to more than entertainment. Furthermore, some categorical problems often exist within the terminology associated with serious games, gamification, and their connection to ecological games.

Take, for example, *Cities: Skylines* (Colossal Order 2015). This game has been Paradox's best-selling published title and has more than six million units sold across all platforms (McGregor 2019). But is it an ecological game, an entertainment game, a game with a purpose for more than entertainment, or something else? The expansion *Cities: Skylines–Green Cities* (Colossal Order 2017) adds new ways for players to build ecofriendly cities. The *Green Cities* expansion includes more than 350 new assets to the core game, adding a massive selection of green options and policies, complete with ecofriendly buildings, organic shops, green electricity (e.g., solar and geothermal power), ecofriendly transportation (e.g., biofuel buses, electric vehicles, bicycles), sustainable gardens, new technologies designed to make pollution a quaint notion of the past (e.g., various eco water treatment plants), various types of recycling, and climate research centers. Players can create more diversified cities or try to go completely green as the urban population grows.

One could argue that *Cities: Skylines–Green Cities* is an ecological game with serious content and context. It is a game for change because it not only seeks to contribute to ecological thought but can also turn players into ecological citizens (Raessens 2019). This perspective is supported by Alenda Chang (2019), who suggests several ways to rethink existing game taxonomies and how commercial ecological games can go beyond the realm of entertainment to do something serious. Increasingly, commercial games such as *Cities: Skylines–Green Cities* and *The Sims 4: Eco Lifestyle* (DLC) (Maxis, The Sims Studio 2020) encourage support, sympathy, and action for various ecological issues (Raessens 2019). One could also argue for *Cities: Skylines–Green Cities* as an example of a simulation video game that emphasizes *paidia* (Caillois 2001; Frasca 2013), as there is no immediate objective. *Cities: Skylines–Green Cities* places much emphasis on *paidic*

gameplay because the player is free to create an aesthetically beautiful city with sustainable housing and city planning using green energy and to achieve freely chosen ecological objectives. *Paidia* contrasts with *ludus* (Caillois 2001; Frasca 2013), where activity is organized under a system of rules that defines a victory or a defeat, a gain or a loss. Much has changed in aesthetics, number of assets, mods, and player choices since Barry Atkins (2003) described how other city-building games like *SimCity* (Maxis 2013) work as both a game and as a narrative. Despite these changes Atkins' reflections on the biases behind the utopian framing of these city builders, and the ways in which they might clash with the player's ideas of what makes a good—indeed green—city, remain relevant.

How to conceptualize and design for engagement in ecological games

Some general agreement exists on the requirements for making a potentially successful serious game (Caserman et al. 2020; Ritterfeld, Cody, and Vorderer 2009). This includes complex reciprocities of engagement. However, engagement should not only be implemented as in-game engagement, but it is important to emphasize the importance of engagement before, during, and after gameplay, and also the moment of dis- or reengagement. Our inspiration in this regard comes from Heather O'Brien and Elaine Toms (2008), who, in the context of human–computer interaction, critically deconstruct and demonstrate various definitions of engagement and suggest that we look at engagement as a process comprised of four stages: a point of engagement, a period of sustained engagement, disengagement, and reengagement. Furthermore, they suggest various attributes of engagement that pertain to the user/player, the system, and user–system interaction. O'Brien and Toms' framework for engagement as an ongoing process is a good starting point, although its attributes are very general, and their model focuses very much on intrinsic motivation. Furthermore, we are also inspired by Gordon Calleja's (2011) work and his six-dimensional measure of player involvement, which is largely focused on immersion. However, we would like to contribute to a holistic understanding of games, including dynamic gameplay with different types of engagement. Consequently, to describe and explore how video games provide engagement with and raise awareness of the climate crisis, we propose a circular model (see Figure 4.1) called the dynamic engagement model (DEM), which focuses on engagement elements and their features. The basic tenet in the DEM is that players go

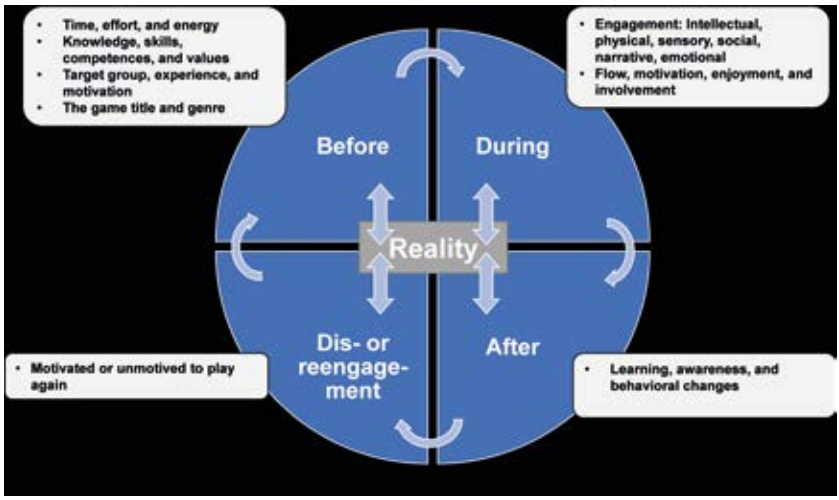

Figure 4.1: Dynamic engagement model (DEM).

through a dynamic progression of different engagement stages: before, during, after, and moments of dis- or reengagement. At all stages, there is also the possibility of carrying over knowledge and practice to reality, in ways that the game designer may or may not have intended.

Reality

A player typically begins at the level of physical reality, meaning that, before players even pick up a game to play, they find themselves in real situations and surroundings. The reality construct in the context of video games and other media is very complex and used in many ways. We define reality as the level at which the player has total awareness of the surroundings and is not involved with the game. Eduard Siou-Hao Tan (2008) has also described this as the executive space, and Rick Busselle and Helena Bilandzic (2009) have described this as the actual world, although both are described in a broader media context. Richard Bartle (2004) has described the complexity of the relationship between the real world and the virtual world, and he defines the virtual world as an environment that its inhabitants regard as self-contained. However, players do not always have full control over their environments, and they may be disturbed or distracted during play (and forced back into reality), for example, by social acts (e.g., by their parents, friends, or dog). The included reality factor also emphasizes that the ecological game is not an isolated medium but can be merged or used

in complex interactions with other media, for example, chats, text messages, books, films, or transmedia storytelling (Kalogeras 2014). In all four engagement stages, the player can return (voluntarily or not) to a total awareness of the surroundings again and a state of not being engaged with the ecological game.

Before: Motivating players to play

Time, effort, and energy: The players' starting point from reality comes with many different variables. One important factor is the player's motivation to start playing the game and spend their time, effort, and energy on it (Brown and Cairns 2004). Hence, players' intentions to interact with the ecological game are crucial.

Knowledge, skills, competences, and values: Ecological games' success in raising awareness or achieving behavioral change depends on players' knowledge, skills, competences, and environmental values, as well as different levels of experience with gaming. For this reason, successful ecological games need to be adjusted to, or adjustable for different players to have a good initial experience of the game. Furthermore, it is important to start with a good briefing to have the player understand the game's purpose, framework, and controls, which can be included as an introduction or tutorial. The briefing is to be matched accordingly to the players' knowledge, skills, competences, and values.

Target group, experience, and motivation: Before starting the design of an ecological game, it is important to consider the target group in terms of age, gender, culture, geography, and other demographic variables. Past research has shown gender-based differences between preferences for some types of video games. Kristen Lucas and John Sherry (2004) show that women and girls tend to prefer games that convey the experience of the successful completion of challenges compared with those that impart a sense of domination over others. Previous game experiences are also crucial in the before stage (Udeozor et al. 2022). When players have mastered specific challenges, they develop a greater level of skill that can be used and improved with increasingly complex challenges in other levels or games (De Jans et al. 2019). Such a positive history might increase intrinsic motivation for playing an ecological game (Wouters et al. 2013). When a player is intrinsically engaged, they will start playing the ecological game voluntarily, without the promise of rewards, external constraints, or teacher/educational demands. Ecological games (especially with a focus on learning)

in general may need to focus more on such intrinsic motivation because "green" learning materials need to invoke curiosity, flow (i.e., the interplay between challenges and skills), be fun and enjoyable, and eventually allow the player to gain new knowledge about or attitudes to sustainability. Before the gameplay, it might be necessary to clarify what the ecological game can provide in terms of gained knowledge, what kinds of experience it offers, and what it helps players accomplish.

The game title and genre: Game titles should be appealing, but also provide some insight into the game's plot and premise. Take, for example, the educational ecological game *EnvironMan* (Dane Falk Mortensen et al. 2021), which is to be used in the context of the plastic crisis in social science subjects that target high school students, teachers criticized the title for being too broad (and for not focusing on the plastic crisis), and some female students criticized the game title for not including women. Lastly, in the before stage of the DEM, another important aspect to consider is the genre, which can be tailored to provide a good match for a specific target group. Previous research has shown that apart from socio-demographics, individual and content-related gratifications are relevant engagement factors for genre preferences (Scharkow et al. 2015).

During: Maintaining engagement during gameplay

Based on a literature review, we (Schønau-Fog and Bjørner 2012) suggest six types of engagement that motivate players so much that they want to continue playing, and we follow an engagement mapping method to validate the theory. The six types of engagement are *intellectual*, *physical*, *sensory*, *social*, *narrative*, and *emotional*. These six types of engagement can be dependent on one another and they might change during gameplay, thus creating for the player a dynamic, fluctuating experience. We outline these six types of engagement below and provide specific examples within an ecological game context.

Intellectual engagement concerns intellectual challenges, activities, and creativity, and can result from a player's motivation to keep playing in order to solve puzzles and face challenges that demand the use of intellect. *Cities: Skylines–Green Cities* also invites intellectual engagement when it requires players to balance in-game demands, such as education health care, police, fire fighting, green solutions and much more, along with the city's economy system. The intellectual stimulation in *Cities: Skylines* can result in what Frans Mäyrä and Laura Ermi (2011) describe as challenge-based immersion,

related to mental skills, such as strategic thinking or logical problem solving, or, as what Calleja (2011) describe, as ludic involvement, which include the strategic choices made in the game and those choices' repercussions.

Physical engagement in ecological games, such as haptic feedback, can be utilized in various aspects of, for example, virtual reality (VR). With emerging technologies in VR, mixed reality, and haptic suits, the potential of physical engagement is expected to increase. An ecological game with much emphasis on physical engagement is *SpaceBuzz* (Media.Monks 2018), which is a VR educational program for children inspired by astronauts' missions. The VR experience takes place inside of an actual rocket ship. The rocket ship is placed on a big truck trailer to make it mobile for visiting different schools. The primary activity of *SpaceBuzz* is to inspire and educate with a view of astronauts on planet Earth and to create ambassadors of planet Earth (Van Limpt-Broers et al. 2020).

Sensory engagement is related to stimulating the senses during gameplay. This form of engagement can be provoked when sensory inputs mediated by the game support players' game experience in such a way that they want to prolong and explore the sensory experience. *SpaceBuzz* also includes much emphasis on sensory engagement, such as being present in an actual rocket ship, and it uses 4D simulations. The children are sent into orbit around planet Earth, guided on their trip by a virtual recording of the astronaut André Kuipers (Van Limpt-Broers et al. 2020). *SpaceBuzz* is an embodied experience in VR that involves sensory engagement so that the children are able to see, hear, and feel experiences as if they were really happening (Ahn 2021).

Social engagement in ecological games comes with huge variations. For example, in the online multiplayer survival simulation game *Eco* (Strange Loop Games 2018) players have to work together to create a sustainable civilization on a virtual planet. The players have the option to build a player-run government and economy, and to advance down a technology tree to stop a meteor that is on a collision course with the planet. The social engagement elements in *Eco* correlate with interaction among the other players, both during gameplay and in real life, for example, within an educational classroom setting. No matter how strong or real these interpersonal relationships are, the ability to play with other players is one of the primary engagement factors to play online games (Yee 2006). Examples of causes that can result in social engagement are quests, challenges, and puzzles that can only be solved when players collaborate. Fame, acceptance from others, a sense of belonging, opportunities to brag, compete, cooperate, and share experiences with others evoke social engagement and the motivation

to continue playing (although social engagement in ecogames might also involve sabotage and so-called griefing, see Op de Beke 2022).

Narrative engagement is related to the story experienced while playing the game and may result in imaginative immersion (Mäyrä and Ermi 2011), narrative involvement (Calleja 2011), and narrative immersion (Adams and Rollings 2007). *The Sims 4: Eco Lifestyle* is an example of an ecogame that provokes narrative engagement. *The Sims 4: Eco Lifestyle* challenges players to make a difference in the fictional Evergreen Harbor community. For example, it is possible to help, watch, and transform your neighbors to be more ecofriendly. The desire to know how the story is going to unfold in Evergreen Harbor may create curiosity, suspense, and excitement, and thus make the player want to continue playing (Schønau-Fog 2011). This type of desire to keep playing might then result in narrative engagement. The characters in *The Sims 4: Eco Lifestyle* may also support narrative engagement when the player begins to involve themselves in the character that they are playing, as well as how the other characters are developing in the narrative.

Emotional engagement in ecological games could be an important factor. This factor incorporates forms of engagement to positively (interest) and negatively (boredom, climate anxiety, anger) affect the player's engagement. Emotional engagement can be the result of the player's own emotions during gameplay, feelings toward other players, empathy toward nonplayer characters, or elements that spark player involvement (Schønau-Fog 2011). In ecological games, events like environmental disasters, the actions of other players or nonplayer characters, or the attributes of an in-game asset can create emotional engagement. Examples of such emotions encountered during gameplay could include, for example, anger, frustration, affection, remorse, relief, and tension. Other types of engagement, such as narrative engagement, which occurs when players feel a strong tie to the game's characters, process, narrative, and story, can also cause emotional engagement. The literature also supports this close relationship between emotional and narrative engagement with explanations of emotional involvement in games that refer to, for instance, their descriptions of imaginative immersion, identification, or affective involvement (Calleja 2011). One way to garner emotional engagement could be to include in-game surprises, which scholars have shown to have some positive learning effects (Van der Spek, Van Oostendorp, and Meyer 2013; Wouters et al. 2017; Zhonggen 2019). In ecological games, surprises can be implemented, stimulating cognitive activity and high arousal, by means of sudden disasters, sudden insects flying with loud sounds, or other fun or surprising elements.

Flow, motivation, enjoyment, and involvement: Scholars have developed various suggestions to increase players' engagement, by keeping them in the flow, providing motivation, enjoyment, and involvement (Calleja 2011; Csíkszentmihályi 1997; Ouariachi et al. 2019; Sweetser and Wyeth 2005). Penelope Sweetser and Peta Wyeth (2005) drew together various heuristics (game interface, mechanics, narrative) into a concise model of enjoyment in games building on flow theory. Their model includes an overall goal and a set of central criteria used to design and evaluate games with respect to player enjoyment: concentration, challenge, player skills, clear goals, feedback, immersion, and social interaction.

After: Engagement after gameplay

Learning, awareness, and behavioral changes: The ideal effects of gameplay are learning, awareness, or even sustainable behavioral change. However, some general problems exist in measuring these effects. Measuring ecological engagement after gameplay can be difficult to define because it includes complex dynamic processes that might take time and can take many shapes (Kapp 2012; Laurenceau et al. 2007). Furthermore, players each have their own unique set of cognitions, habits, and contexts that influence processes of change; consequently, the scope of change will also differ between individual users (Van der Kooij et al. 2015). Therefore, the reliability of the correlation between gameplay and behavioral change decreases the more time is spent between play and the measurement of behavioral change. Additionally, a potential correlation does not necessarily imply causality. Meaning that even if some positive correlation effects can be measured (e.g., learning, awareness, behavioral change), based on specific ecological games, this does not mean that the ecological game causes these effects; there could be many other variables involved. That said, past research has found potential positive effects of serious gaming in terms of communication and collaboration (Guillén-Nieto and Aleson-Carbonell 2012; Hummel et al. 2011; Jacobs and Jansz 2021).

Dis- or reengagement

Motivated or unmotivated to play again: Disengagement (the lack of motivation to play again) and reengagement (motivation to play again) involve complex elements of motivation to play. This stage is not the same as the

after stage, as that stage does not necessarily involve the motivation to play again. It is also not the same as the before stage because players are already familiar with the game, and thus they may skip the briefing. The game experience will not be the same; however, there remain elements of both intrinsic and extrinsic motivation at play. For example, the motivation to play *Cities: Skylines* again (reengagement) might involve the desire to gain more knowledge for specific ecofriendly building activities, to experience further sustainable building assets in the workshop, or to accomplish specific goals for reducing pollution. The motivation to resume playing could also involve more extrinsic motivation, including competitive elements, for example, competitions with friends to raise citizen happiness to more than 90 percent within two hours. Reengagement is not dependent on the pleasantness of the previous experience, because even unpleasant elements (e.g., having lost a game) can intensify the attractiveness of playing again. The lack of motivation to resume play can stem from aspects like interrupted smoothness and availability (O'Brien and Toms 2008) because of updates, downloads, bugs, or computer incompatibility. Alternatively, interruptions or distractions in the players' environment, as well as the lack of or intensity of the challenge, could cause players to disengage from a game.

Discussion and conclusion

The popularity of serious games with environmental themes seems relatively small compared to that of games intended for fun and entertainment. However, both serious games and entertainment games can play an important part in learning about ecological science and politics. Moreover, the serious gaming industry is expected to increase (Adkins 2019), including games with sustainability themes. The expected growth is especially favorable for learning purposes and correlates to the coming of age of a generation of digital natives with greater adaptability to technological change (Adkins 2019; Burner 2018) and ongoing innovations integrated into next-generation serious games, including advances in psychometrics, neuroscience, augmented reality, and artificial intelligence. These new game and media innovations could make room for ecological games, where the imaginary meets the real in even more complex interactions as well as within new contexts.

Much research exists on various aspects of ecological games. However, there could still be more focus on improving methods of evaluation. Previous studies have mainly used posttest surveys and questionnaires, observations, and interviews (Ibarra et al. 2020; Vandercruysse, Vandewaetere,

and Clarebout 2012) to evaluate serious games with learning purposes. We argue that there should be more work spent on gaining a holistic perspective on engagement, including the importance of engagement before, during, after gameplay, and during dis- or reengagement. This holistic perspective could also improve our understanding of motivational and engagement factors for playing ecological games. Such a perspective could, for example, include work on the role of teachers in involvement throughout the entire design process (from game idea to evaluation), pilot testing, target group analysis, and genre evaluation. Especially when evaluating serious games with ecological messages it is important not to neglect the challenge of matching the participants to the games that may change them.

Ludography

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5. Postcoloniality, Ecocriticism and Lessons from the Playable Landscape

Soraya Murray

Abstract
What methodological lessons for ecocriticism may be learned from previous critical game studies interventions? Specifically, I consider the political work undertaken by postcolonial critiques of video games, and their pertinent address of human-centered understandings of the land, within the context of larger issues of inclusion, representation, diversity, and the challenging of hegemonic power structures. What can ecocritical games' crucial visual culture function be, in operating against the grain of profit and innovation-driven ends—or even the very real problems of raw resources needed for their existence? This chapter asserts that ecocriticism and postcolonial critique exert a doubled pressure on rote forms of play design and present meaningful possibilities for video games as a maturing cultural form.

Keywords: postcolonial critique, in-game environments, world-building, visual culture, play design

This chapter considers the connection between postcoloniality and the playable landscape, and what lessons may be taken from those discourses, for ecocritical games and their scholarship. Specifically, I ask: What is the political work undertaken by a postcolonial lens on video games as forms of visual culture, and their pertinent critique of human-centered understandings of the land, within the context of larger issues of inclusion, representation, diversity, and the challenging of hegemonic power structures? What can ecocritical games' crucial visual culture function be, in operating against the grain of profit and innovation-driven ends—or even the very real problems of raw resources needed for producing them?

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Can the context of games and play provide any lived-world intervention into the urgent ecological challenges that are becoming an existential threat?

This chapter is an extension of a larger discussion about the functions of postcolonial and other critical cultural video game studies, and what opportunities for generating criticality they offer. It asserts that the dual lenses of postcolonial critique and ecocriticism can effectively reveal implicit exploitative colonial attitudes within most game spaces and exert pressure on rote forms of play design, presenting meaningful possibilities for video games as a maturing cultural form. In addition, coreading video games through the dual lenses of the postcolonial and ecocritical can become a powerful tool in denaturalizing the organization of game spaces around discovery, imperial expansion, and resource exploitation. It also cracks open alternative ways of relating to space, beyond the repetitive narratives of conquest, and narrow neoliberal expansionist models of amassing and managing resources. Video games are also one of the most potent visual forms of the twenty-first century and shape the visual literacies of a global community of players. It is reasonable to expect that the visual representations of video games are part of a media ecology that sways attitudes and outlooks. They are persuasive playable representations (Bogost 2007; De la Hera et al. 2021). In fact, I would go as far as to say that such playable representations, like other forms of mass culture imagery, tread into areas of ideology, political affects, and even propaganda (Murray 2018b, 2021). As scholar Alexis Boylan has argued, "Visual culture is frivolous, trivial, indulgent, even incidental, until it is life-altering, traumatizing, violent, and deadly" (Boylan 2020, xiv).

As part of a larger discussion about the functions of postcolonial and other critical cultural scholarly interventions, my inquiry is more methodological in nature. Here, I am less interested in close readings of representational elements of a specific gamic text, though I do argue for the critical importance of these analyses as well (Murray 2018b). Instead, for this consideration, I am thinking about ways of productively applying lessons from postcolonial game studies, to ecocriticism and games. But I also advocate for an awareness that postcoloniality and ecocritical concerns are strongest when allied. Ultimately, I argue for the strategic mobilization of such counter-readings as a means to push back on the friction that such games exert on the non-normative player. Analyses by scholars who look particularly into those areas of postcolonial ecocritical friction help contradict a deeply ground in systemic Western discourse about how we should think about the land, about human and nonhuman allies, and about the binary opposition between culture and nature which engenders a panoply of abuses.

Postcolonialism and games

I have previously discussed the many ways that the construction of game spaces are neither natural nor without politics, but in fact signal a great deal to players about how they should relate to their environments (Murray 2018a, 2018c, 2020). Game worlds become "gamescapes"—as Shoshana Magnet first coined the term—or landscapes that are "actively constructed within a particular ideological framework" (2006, 142–143). In addition to Magnet, scholars like Sybille Lammes, who describes games as "postcolonial playgrounds" (2010), Johan Höglund, who has addressed postcoloniality in terms of military games and their larger ideologies of empire (2008), and Vít Šisler's deconstruction of Arab representation in video games constitute three distinct approaches (2008). Irene Chien has critiqued what she describes as the deeply primitivist underpinnings of the acclaimed and beloved game *Journey* (thatgamecompany 2012). She identifies the game as seductive for its pernicious Orientalist desert fantasies of "the natural, the primitive, the pre-modern, and the pretechnological, as emblematized in the figure of a 'noble savage'" (Chien 2017, 131). Daniel Dooghan's discussion of *Minecraft* (Mojang Studios 2011) unveils the game's neoliberal logics and valorizing of expansionist thinking (2016). Of course, there have been numerous such critiques of overtly proempire games like *Sid Meier's Civilization* (MicroProse 1991), such as in the work of Dom Ford (2016). With the expansion of critical game studies, such examples are only the tip of the iceberg at this point.

Souvik Mukherjee has been the most consistent and definitive voice on postcolonialism and games. He invites us to think about the ways in which video games, as ambivalent forms, can equally offer a chance for insight—or collusion—with the liberal, capitalist, and expansionist rhetorics they tend to model. Perhaps most importantly, and extremely significant for this conversation, Mukherjee has effectively pushed back on the presumptive notion of the gamer as a normative White character (2016). He draws attention to the postcolonial subject as someone who *plays* games, and Mukherjee sees that this would profoundly shape their interpretation of a narrative demand to embrace a colonizer's perspective:

> For the millions of Indian gamers, it is a moot question whether their gameplay of *Max Payne 3* (2012) or *Assassin's Creed* (2007) is influenced in any way by their colonial history. When they play games such as *Empire: Total War* (2009) or *East India Company* (2009), however, their encounter with colonial history is direct and unavoidable. Likewise, the Syrian youth playing *America's Army* (2002) or, conversely, mods such as *Under Ash*

> as well as the gamer from Central Africa playing *Far Cry 2* (2008) could certainly be expected to engage with a distinct political consciousness where discourses of power and colonization are involved. (2016, 504)

Mukherjee speaks in regard to games that deal overtly or surreptitiously with the colonial impulse in games, and how the postcolonial critique is an inevitable extension of the fact that postcolonial subjects play games and bring their own criticality to those forms. In the same conversation, Mukherjee points to how these postcolonial subjects have discernment and agency in how they receive and actualize the narratives within such games:

> Alternative narratives can be written into being in the game world but only within the system that the game provides. The player, whether from the erstwhile colonized countries or elsewhere, nevertheless, both writes and writes back in games that engage with the questions relating to colonialism whether he or she chooses to or not. The video game medium offers the simultaneous possibilities of subalternity, protest, elitism, and hegemony; it is the actualization by the player that results in a deeper understanding and experience of the postcolonial. (2016, 518)

The presence of the colonial, and also the questioning of the colonial, therefore, reside within. I want to underscore how much of an asset this untapped wealth of perspectives can be in agitating to make strange that which is so naturalized and implicit to games—about space, exploration, and conquest. This is a point to which I will return.

Undertaking postcolonial critique of media in the academy is not without peril, and there are two main apprehensions that I have expressed around such critical approaches. First, the vast majority of such approaches have taken as their objects of study games that either topically relate to narratives of colonization and expansion, such as *Age of Empires* (Xbox Game Studios 1997–2021), *Assassin's Creed III: Liberation* (Ubisoft Sofia, Ubisoft Milan 2012), or *Assassin's Creed IV: Black Flag* (Ubisoft Montreal 2013), or at least contain specific settings or objectives related to ideologies of empire (like the *Red Dead Redemption* and *Tomb Raider* series). In fact, I claim that the imagined landscapes of virtually all rendered spaces in games can be viewed through this lens. That is, video games that do not specifically contain narratives or settings overtly relate to colonization still agitate for a set of very particular relations to space. Second, despite the meaningfulness of these interventions, I have exhibited a concern that the postcolonial critiques of video games are ultimately treated as a kind of institutional cultural labor

of due diligence that, while well-intentioned and often earnest in their politics, can do little to impact the core structures of large systems like industry and academic institutions (Murray 2018c). I have been quite frank about my concern that institutions demand—and often greatly reward—a performance of diversity, inclusion, and tolerance discourse while never enacting authentic change. In a larger sense, I have been quite pointed in my concerns for the effectiveness of such critiques in the field: "[I]s it any longer enough to employ conventional liberal academic strategies of pointing out the neocolonial visions, the global capitalist drives, the sexism and militarism in games and then assume that some critical political work has been done?" (Murray 2018c, 4). These are surely haunting questions that point to the pitfalls of merely calling out harm and offense and expecting that a strategy of appealing to people's better angels can bear fruit, within rapacious capitalistic and neocolonial circumstances. After all, it is worth considering that the machinations of empire persist because they effectively serve the aims of domination through resource extraction. Colonizers aggressively expand their domain and subjugate populations, in order to reap benefits and raw resources of the territories they take. Harm and offense are thought of as tolerable by-products of such a lucrative structure, even though, in the long view, such systems are so extreme and greedy as to be unsustainable.

To my first point about how all game landscapes are systems that encourage a relation to space, such a critique has been part of the earliest critical cultural approaches to games. Even before all of these considerations, media scholar Henry Jenkins and literature scholar Mary Fuller identified the strong tendency of articulated game worlds to reinstantiate narratives of discovery and the reiteration of colonial paradigms and frontier ideologies. As early as 1995, they extensively discussed how video games and virtual reality "opens new spaces for exploration, colonization, and exploitation, returning to a mythic time where there were worlds without limit and resources beyond imagining" (Fuller and Jenkins 1995, 59). They saw a clear connection between the mapping, construction, and movement through of space in games and the preexisting ideological construction of the frontier in colonial America. Among other things, this presumes a deeply anthropocentric positioning, into which a player is demanded to order the game world around them. Indeed, much of game design organizes the representations of its spaces and their traversability through its direct use-value for the player. In many cases, progression through the game depends upon this, and, as Fuller and Jenkins describe, the role-play implicit in such a scenario functions to socialize new little colonists:

> Because all ways of organizing narratives presuppose ways of organizing social and cultural experience, there are ideological implications as well in seeing Nintendo® games as sharing a logic of spatial exploration and conquest with these earlier works. Nintendo® not only allows players to identify with the founding myths of the American nation but to restage them, to bring them into the sphere of direct social experience. If ideology is at work in Nintendo® games (and rather obviously, it is), ideology works not through character identification but, rather, through role playing. Nintendo® takes children and their own needs to master their social space and turns them into virtual colonists driven by a desire to master and control digital space. (Fuller and Jenkins 1995, 72)

One of the largest lessons is that these games create scenarios in which a whole universe of possibility is foreclosed upon, by virtue of the structure which continually reinforces and urges the player to rehearse its values. These might include perceiving the whole space in terms of a use-value—what in relation to representations of nature in games, environmental media scholar Alenda Chang has referred to as "nature as resource" instantiated purely for its functionality as tools for the player (Chang 2020, 70; see also Chang 2019). Or, as I have argued earlier, it may result in the positioning of the player as a kind of predator, who perceives the whole space through the lens of dominating or consuming all that can be seen (for more on the predatory eye and dominion over the land, see Murray 2018a).

Video games already do frequently link the land and its local inhabitants, in a way. For instance, for many years, it was typical that populations within the setting of a video game's space could not be interacted with, or in any way affected—neither engaged, spoken to, nor killed. Nonplayable characters were effectively a part of the environment. In other examples, local inhabitants might be entirely absent from the space, with only combatants present. Such decisions within the rule-based system might have partially been out of necessity—for example, activating every character might be too technically complex, or require too much memory. Or maybe the problems of representing harm to local innocent bystanders might be too fraught for viewers or for designers who wish to provide a fulfilling and untroubled entertainment experience. But the decision is one that has consequences in terms of what message is sent through the imaging of people as nondisturbable objects. Or worse, being rendered entirely absent as a means of morally simplifying the game is also highly problematic. How is it different from the Edenic landscape paintings of America during the colonial period, which made the lived

space fantastical, sublime, and free of Indigenous people, to encourage a doctrine of Manifest Destiny?

Some scholars have begun pushing back on these kinds of troubled relations between player and gamescape. Chang stands out as an extremely impactful and nuanced voice in the discourse of games and ecology, writing broadly on various facets of games that touch upon ecological issues ranging from the thematic contents of games, their rule-based systems and their image-making practices to the sustainability of their creation and consumption. She writes:

> Both of these criticisms—game designers treating game environments as mere scenery, and falling back on caricatures of landscapes rather than attempting to plumb their biogeographical complexity—give rise to the third major issue: game designers have yet to develop more sophisticated rules for interaction between players and game environments. (Chang 2011, 60; see also Chang 2019)

And it is true that game spaces are often handled as backdrop—sometimes magnificently detailed and impressive, but nevertheless mostly staging. In turn, the goal orientation of games often preconditions players to adopt a position of disregarding game landscapes except as they are necessary to stage a successful mission.[1] Later, Chang continues:

> Ecocritical play, should we attempt it, would recognize that to play is always in some way to inhabit, and in acknowledging the ecomimetic properties of games as environmental texts, we might begin to erode the oft-posited but little-experienced divisions between the real and the virtual, the ecological and the literary, the visual and the textual. (Chang 2011, 78)

This lesson that ecocritical play can in some way impact lived world effects remains a goal, but an exceedingly challenging one considering the associations of the medium with distraction and entertainment. What can ecocritical games' crucial function be, in operating against the grain of profit and innovation-driven ends—or even the very real problems of raw

1 Of course, there are some exceptions to this model, such as *Firewatch* (Campo Santo 2016), a walking simulator in which one exhibits care for a forest, or *Flower* (thatgamecompany 2009), in which a player flows as wind, across a natural landscape, or *Walden, a game* (USC Game Innovation Lab 2017), in which a player explores Henry David Thoreau's ideas of self-reliant living.

resources needed for their existence? Can the context of games and play provide any lived-world intervention into the urgent ecological challenges that are becoming an existential threat? For my purposes, another way of asking this is: What is the role of visual culture in this existential problem? And can the video game, as a form of visual culture, impact outcomes?

To help answer these questions, I turn to the nexus of thought between the postcolonial and ecocritical. I do this, on the one hand, because postcolonial and ecocritical approaches to games remain overwhelmingly separate. There are also important lessons to be learned from the strategies of each, on the other. And, thinking ecology through postcoloniality reframes the conversation in highly productive ways that opens up possibilities for more holistic understandings of a problem that sometimes seems far too large to grasp on a human scale. In the next section, I turn to the efforts to sync up those two frames of postcoloniality and ecocriticism together outside of games, since there is virtually no precedent within it. Afterwards, I will think through practical ways in which such a dual lens may begin to manifest itself within critical game studies and possible strategies for the future.

Postcolonial ecocriticism

Much has been written about the connection between postcoloniality and ecocriticism—or, more accurately, the ongoing lack of dialogue between the two fields (for an excellent overview of the critical discourse around postcoloniality and ecocriticism, see Roy 2021). At the beginning of his essay subject, environmental humanities scholar Rob Nixon asks: "What would it mean to bring environmentalism into dialogue with postcolonialism?"(2005, 233; 2011). While there is a longer history of connection between postcolonial studies and ecocriticism which is too extensive to survey here, a particularly compelling conversation is taking place in literature, which considers the colonial destruction of nature as a core component of ecocritical concern (Grove 1996; Nixon 2011; Roy 2021).

Nixon points to a series of ideological disconnects between postcolonialists and ecocritics that impede conversation, including things like the former having roots in ideas of hybridity, cross-culturation, cosmopolitanism, displacement, and subaltern histories; while the latter subscribes to notions purity, ideals of the uncorrupted, place, national rootedness, and "romantic primordialism" (Nixon 2005, 235). One may easily see the incompatibilities. In addition, Nixon points to a Western-centric academic ecocritical discourse which is typically populated with what he describes as "mono-nationals with

a deep-rooted experiential and imaginative commitment to a particular American locale" (2005, 236). And, as he well points out, such notions of the American wilderness, while romantic for some, are in fact fraught and imperiled for others, like African Americans, Native Americans and other constituencies, who may associate those spaces with peril, displacement, "cultural erasure and dispossession" rather than pure and unspoiled nature (Nixon 2005, 238). In a potent set of examples, Nixon draws upon several authors such as Jamaica Kincaid and V. S. Naipaul, whose postcolonial subjectivity offers exceptional and pointed insight into the environmental degradations of conquest, and a larger burgeoning ecocriticism peppered throughout postcolonial literatures. Nixon points to this critical intersection for the greening of the humanities, and likewise I underscore his model as one that can also be useful for video games as a key mass culture form that greatly informs the social imaginary around constructions of nature and our relations within it.

Scholar Animesh Roy continues this conversation in a brilliant essay that both presents a useful literature review of key flashpoints in postcolonial ecocritical thought, and then pushes the discourse further. Enhancing the conversation to include other postcolonial authors such as French West Indian political philosopher and psychiatrist Frantz Fanon and Palestinian scholar Edward Said, Roy advocates for a greater attention to the ecological concerns of postcolonial countries as critical to recuperation. Roy sternly warns against the marginalization of postcolonial voices and highlights the key role of environmental exploitation for the colonial project.[2] And, casting his view forward, Roy implores us to look to the fallout of such histories, to the environmental degradation and new ecological harms wreaked by more contemporary neocolonial and neoliberal realities (Roy 2021, 219). He points to the key roles of postcolonial environmentalism as one of imagining alternatives to overbearing Western paradigms of neoliberal economic globalization, ideologies of development, and unquestioning faith in progress.

This shift matters because it provides a far more holistic approach, one that accounts for the colonial causes of environmental degradation, and names the compounded challenges faced by countries disproportionately impacted by unsustainable practices imposed on their lands. To be able to name such challenges is the first thing, to give shape and context to them is another. Representation thus plays a key role in grasping the problem,

2 Though Roy does not specifically mention him, I would also point to the writings of Edouard Glissant, who wrote about the significance of the unique properties of a colonized or formerly colonized place as a source of strength for its people (see Glissant 1997).

drawing public attention, and changing the culture around it so that, eventually, persisting in such views becomes untenable. A visual culture that represents ecological crisis as continuous with the postcolonial condition reveals an already existent connectedness; in other words, imperial and environmental catastrophe are facets of the same pernicious worldview made manifest. After all, part of the pain of a postcolonial subject is in becoming a product of globalization, while also being forced to fashion one's identity from the detritus of empire.

Postcolonial ecocriticism in the realm of the visual

Ecological impacts are often too large and gradual to grasp, so being able to adequately and compellingly represent them becomes critical. And capitalist contemporary life, with its perpetual need for consumerism, relies upon an enormous number of images to stimulate and maintain desire for products, most demonstrated in the visual culture of advertising, which grows ever more complex (Sturken and Cartwright 2009, 265–306). Boylan goes so far as to declare visual culture as

> not merely an important feature of contemporary life; it is the most important culture we must navigate. We are forced to see more yet given fewer tools and less time to think about seeing. If we cannot remove ourselves from the pipeline of contemporary living, then we must carve out spaces to think, debate, and come to terms with this visual world. (Boylan 2020, xix)

At the same time, contemporary consumer-oriented living depends upon making enormous amounts of waste, labor abuse, and pollution invisible—an ecological burden that is borne most onerously by poor, disenfranchised, and non-Western subjects. Nixon's book on environmental destruction's disproportionate impacts on the poor, describes it as a form of "slow violence"—meaning "a violence that occurs gradually and out of sight, a violence of delayed destruction that is dispersed across time and space, and attritional violence that is typically not viewed as violence at all" (Nixon 2011, 2). He warns of the dangers of "a violence that is neither spectacular nor instantaneous, but rather incremental and accretive, its calamitous repercussions playing out across a range of temporal scales. In so doing, we also need to engage the representational, narrative, and strategic challenges imposed by the relative invisibility of slow violence"

(Nixon 2011, 2). Nixon draws specific attention to visual representation as a key dilemma of the ecocritical movement. He writes:

> To confront slow violence requires, then that we plot and give figurative shape to formless threats whose fatal repercussions are dispersed across space and time. The representational challenges are acute, requiring creative pathways of drawing public attention to catastrophic acts that are low in instant spectacle but high in long-term effects. To intervene representationally entails devising iconic symbols that embody amorphous calamities as well as narrative forms that infuse those symbols with dramatic urgency. (Nixon 2011, 10)

This notion of giving "figurative shape to formless threats" engages directly with the representational, pointing to a key component of the social engineering many hope games will facilitate. And it is true, the postapocalyptic spaces of *The Last of Us* (Naughty Dog 2013), or *Tom Clancy's The Division* (Massive Entertainment 2016), or the postgovernment collapse scenario of *Days Gone* (Bend Studio 2019) are all much easier scenarios to envision in a video game—and indeed already participate in a long cultural tradition of imaging disaster in literature, film, photography, and television. But the visualization of the long-term fallout of global e-waste for particular nations, the melting of glaciers, the multigenerational impacts of toxins in the soil and water—these all currently strain the imagination of the mainstream video game industry.

There are some who are specifically seeking to understand how to better make visible this "slow violence" of which Nixon speaks and which capitalism seeks to hide. One such scholar, T. J. Demos, comes to the conversation from a perspective that critically enhances the visual component, namely visual art and activism, in relation to environmental destruction. A scholar of contemporary art, radical politics, and ecology, Demos critiques the problematic nature of the "Anthropocene" as the central construct that creates the conditions for a universalizing perspective, when in fact human responsibility for climate change is unevenly distributed.[3] In fact, historical responsibility falls to some constituencies more than others, and both human rights and equality impact the beneficiaries and casualties of global environmental circumstances.

3 In the case of this text, the Anthropocene is defined as a geological period defined by the profound impact of human activity on the environment, such as the impact of resource extraction, pollution, global warming, and other strains on the planet.

Demos is especially of interest because of the crucial visual component of most video games, and the ways in which Demos is engaged with contemporary visual forms of activism as one possible pathway for reshaping human attitudes to the world. He proposes that contemporary visual culture has a meaningful role to play in consciousness raising around environmental abuse, as well as the human toll of, for example, the fossil fuel industry's everyday operations. "Such visual culture," he writes,

> whether documentary photography, indie media photos, or artistic projects,… invites us to participate in what Isabelle Stengers terms the "cosmopolitical present," alluding to the progressive composition of a common world, where commonality is predicated upon thinking "in the presence of" those most negatively affected by governmental policies. (Demos 2017, 58)

Though Demos is rooted in contemporary art and activist discourses rather than video games, his work is instructive in that it connects global capitalist systems, the environment, and the role of the visual in agitating for greater awareness. The postcolonial model in this case is less centered in his work than the machinations of global capital. Still, these conversations clearly overlap in terms of economic neoliberal conditions in which global systems tend to cluster certain forms of raw resource extraction, inexpensive labor and waste disposal in particular regions of the globe. It is, what Demos describes as "the globalization of precarity … a newly racializing logic of climate injustice, and a crepuscular aesthetics of postcolonial liberation" (Demos 2020, 3).

Of course, one of the challenges of visualizing massive systems and their impacts, particularly within the context of Demos warns of the abstraction of images of ecological destruction into forms of visual pleasure:

> The logic [of Anthropocene aesthetics] reminds me ultimately of Walter Benjamin's [(2003)] oft-quoted insight about fascist aesthetics: "Its self-alienation has reached the point where it can experience its own annihilation as a supreme aesthetic pleasure." Is that not what is happening when we admire these images of the tar sands, or of California's oil fields, translating scenes of destruction into compositions of aesthetic beauty? Part of our alienation, in this case, is the perverse enjoyment the photographs afford of images of our own annihilation. (Demos 2017, 70)

This point is extremely urgent in terms of both the representation of individual and larger systemic impacts of ecological impact. In the context of art,

fetishization of the image is common, as is a penchant for reducing an image to its formal aesthetic components in such a manner as to detract from its topical concerns. Mainstream video games are complicated in that they come overburdened by conventions of entertainment, distraction, and fun—all highly contested notions, but which nevertheless linger as a predominant expectation of customers purchasing a consumer entertainment product. In this, players may also engage with an ecocritical game in a manner that provides "perverse enjoyment" of immersion in image worlds around our own annihilation of which Demos speaks (2017, 70).

Postcolonial ecocriticism and video games: Denaturalizing exploitation

One way or another, and whether or not a game contains specific ecocritical themes, video games—almost all of them—work on our relationship with the environment. Any game that renders a world (or, in other words, engages with world-building) is an ecogame, in the sense that it proposes a set of persuasive relations between the player and that world. These games presuppose a set of relations to the world, land, space, and place that are potently conveyed through the world-building of the game. And as Thomas Elsaesser once wrote of the computer-generated image, "the denser the details, the more deceptive the reality" (Elsaesser 2017, 221). As games become more visually complex and attain seemingly ever more photorealistic heights, the stakes around those representations get higher, too.

There are lessons to be taken from the conversation about postcolonial ecocriticism in relation to games. First, representation, and more importantly the critical reframing of representations in terms of a "cosmopological present" (via Stengers and Demos), can be an effective tool for interrupting underlying presumptions about the world and our place in it. For example, the neoliberal-minded, bureaucratized relationship to the land as a set of resources to be mined and administered for gameplay, such as in the extremely managerial nature of games like *Red Dead Redemption 2* (Rockstar Studios 2018) and *Metal Gear Solid V: The Phantom Pain* (Kojima Productions 2015), heightens naturalization of an extraction-oriented mindset. As a player, one spends a great deal of time scanning spaces for food, tools, and supplies, scavenging them, modifying them, allocating or otherwise managing them, and sometimes even managing or delegating tasks to other characters in the game. This encourages seeing the space through a mindset of exploitation, rather than, for example, an ethics of stewardship.

Second, postcolonial ecocriticism offers an effective example of how two critical toolkits can be stronger together, as a means of combating implicit exploitative colonial attitudes that predominate game spaces. Game design that seeks to make predominating models strange can denaturalize them for players and make them unsustainable for designers. Third, I propose that in addition to the structural approaches of design, multiple forms of critical intervention will be necessary.

Here I want to highlight the critical value of counter readings that strongly emphasize how mainstream games are typically not made for, or from, the perspective of postcolonial subjects. Their messages are not universal but in fact demonstrate a very specific set of values that should be identified and called into question—particularly by those constituencies who do not constitute a target audience, but who are nevertheless able to access and engage with the material, and come to the world of a given game from a subjective position of intense friction. I would argue for the polemical power of this, and the intense worth of personal, idiosyncratic approaches, such as the autotheoretical, which combines theory with the subjective for denaturing the normative position presumed and often so highly overdetermined in games (Fournier 2021). Specifically, I have argued that it is of extreme worth to sustain oneself within, and work through games that are ideologically difficult, and to record in great detail the social production of space that goes on in games, the "disorientations, displacements and idiosyncratic experiences" of those players who are not interpellated by game images (Murray 2022, 280). I argue that it is within those very frictions that we may break from the tendency toward a fetishizing pursuit of a frictionless and apolitical engagement with games, one grounded in mastery and formalism. The nonideal player should aim to take up space in games, not just in scholarship but in games journalism, on streaming platforms, and in Let's Plays, especially regarding games that seem not to be for or about them. The pressure this exerts against the self-alienated enjoyment, of which Demos speaks, may force new critical forms to emerge. The most important critiques will be made from all spheres of influence: through disruptive systemic critiques as well as idiosyncratic individual ones that occupy a more autotheoretical tradition.

In a kind of manifesto for what environmental game design might imagine for itself, Chang writes of embracing a rambunctious positionality—that is to say, one of unruliness and boisterousness (2020, 68). She addresses how we think about game worlds and how players are asked to relate to them, proposing eminently useful suggestions for designers around nonhuman agency, for greater interactivity and entanglement with the game environments, toward the leveraging of scale (for which, she argues, games have

unique assets) and the cultivation of greater connection to lived world environments. I argue that we also need unapologetically rambunctious critical game studies scholars: historians and critics of games willing to insert ourselves within the murky difficulty (sometimes outright awfulness) of mainstream games, call them out, and interrupt their logics.

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6. No Cyclones in *Age of Empires*: Empire, Ecology, and Video Games

Souvik Mukherjee

Abstract
This chapter analyzes games themed around exploration, which have an express colonial premise, and empire-building games that depict the exploitation of flora and fauna, particularly in settings of colonialism and empire. The discussion also addresses other games where hunting is directly connected to the colonized landscape. In doing so, the chapter addresses larger questions raised by postcolonial ecocriticism in the context of video game cultures. Such a discussion aims to supplement the ongoing discourse on ecocritical issues in video game studies as well as to broaden the ambit of postcolonial thinking around ecology, especially by extending the framework to newer digital narrative media such as video games.

Keywords: postcolonialism, ecocriticism, Anthropocene, fragmentedness, marginalization

In 1997, when the video game *Age of Empires* (Ensemble Studios 1997) was released, it was a novelty to see groups of tiny identical-looking villagers being spawned onscreen from a town center and heading towards the woods to fell trees or to hunt deer. The exploitation of natural resources seemed to be a given for the building of virtual empires. Just over a decade later, the novelty of seeing the cowboy-protagonist John Marston hunting buffalo on the prairie in *Red Dead Redemption* (Rockstar San Diego 2010) became a cult video game experience and, in fact, the player who manages to kill all the buffalos in the game receives the rather controversially named "Manifest Destiny" achievement. In the more recent *Mass Effect: Andromeda* (Bioware 2017), the protagonist is tasked with colonizing planets in the Andromeda galaxy by mastering an advanced alien technology of weather

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control, and in *GreedFall* (Spiders 2019) the colonial legate is tasked with finding the cure for a pandemic in the wilderness of an island that has been colonized by multiple groups. For years, many video games have presented landscapes that are lush, starkly barren, or insidious; and, in many cases, these environments have been connected with narratives and gameplay tropes of domination and colonization. Earlier discussions of ecocritical issues in video games have not addressed postcolonial issues per se. The intrinsic connections between portrayals of colonialism and the environment that have been only cursorily hinted at in earlier video games research need to be spelled out. Many of the ecological hazards of today have been historically connected to colonial practices. It is necessary to point out how some video games often end up glorifying these problematic practices and including the colonial logic that is intrinsic to such practices within their gameplay, albeit perhaps unwittingly. Consequently, adding to the groundwork done by earlier researchers, an urgent intervention is now required from a postcolonial lens as this chapter aims to do.

Video games and ecology: Emerging research, colonial contexts

Pathbreaking research on video games and ecocriticism has already been done by many game scholars. In her book *Playing Nature: Ecology in Video Games* (2019), Alenda Chang has set the key parameters on ecocritical research of video games through her exhaustive thinking of the subject. Chang states that "from education and communication perspectives, games offer less didactic, less moralizing, and therefore less off-putting ways to encourage people to consider environmental problems and their solutions" (2019, 15). She, however, identifies serious problems in the environmental representations in games such as *FarmVille* (Zynga 2009), where farming is represented as a sort of pristine natural activity and "farm life is hard work, but always profitable; the work is voluntary, not forced upon you by unemployment or transnational labor crises; and the work is often done singlehandedly or with the help of at most one relative or a handful of workers" (167).

Such a meliorist approach that holds that the environment can be improved by human effort is problematic in the sense that it whitewashes farming as a problem-free and ecologically rewarding activity that benefits human beings and the environment alike. The reality, as has been evinced through various farming-related catastrophes such as the massive farmer suicides in India (Roy 2015) or misguided government policies such as the Great Sparrow Campaign in China (Steinfeld 2018), shows a different picture.

Chang underscores the role of video games as a space of possibilities where the environment can be studied and researched. She sees such a model in Will Wright's *Spore* (Maxis 2008), which "models the strain between envisioning nature as either a design space or a problem space, or a place of invention and expression versus an arena fitted with recognizable troubles and solutions" (2019, 83). According to a reviewer, Chang posits that "instead of simply critiquing such games for anthropocentric representation and crude violence, one might view them as opportunities for 'education,' 'disaster preparedness,' 'emotional catharsis,' and 'pleasurable amoral aggression'" (Ağın 2021). Chang's pioneering work has been followed by extensive commentary by other game scholars.

Writing before the publication of Chang's book but responding to her earlier work (Chang 2012), Hans-Joachim Backe (2014) argues for a "green-shifting" of games studies itself in an early essay where he sees the need to analyze games through the lens of ecocriticism inasmuch as "it is not only serious games that convey warnings about detrimental behavior toward the environment; mainstream hits from *Frogger* (Konami 1981) to the *Fallout* series deal centrally and explicitly with humanity's threat to the ecosphere, both on a local and a global level" and they do so in more compelling ways than literature and film because video games allow the player to test out environmental scenarios (as Chang also suggests). Exploring the media-specific potential of video games as such ecocritical tools, Kyle Bohunicky suggests that through modding "players can engage the problems of living in the Anthropocene—a contemporary moment of global human impact on other species and environments" (2017, 76).

The video game mod enables mastery and domination over the game by players that enables them to control the environment and make the game more environment-friendly. Benjamin Abraham and Darshana Jayemanne (2017) outline the usual classification of the environment in video games as backdrop, resource, antagonist, and text. Following their masterful analysis, Víctor Navarro-Remesal sums up the potential role of the video games in addressing ecological issues as showing

> a complex "pixelated nature" that … interpreted with the appropriate intellectual tools, allow[s] us not only to explore it but to reflect on it. We can play in (digital) nature and we can play to understand nature, or better yet: we can play to understand ourselves as part of this nature. (2019, 25)

Despite the extensive discussion that has been ongoing, the representation of ecology in the colonial contexts that many of the video games involve

still remains to be addressed. Indeed, for example, the logic of modding, albeit understood as resistant to hegemony by Bohunicky, still promotes a sense of "mastery and domination" over the environment (76), which could be viewed as a remediation of colonial processes by video games. The fact that the player can claim mastery over the environment is also akin to the colonial mastery wherein the domination over nature is an important part. In fact, Chang does indicate that environmental exploration may not be entirely innocent since, as "histories of settler colonialism might remind us, exploration is … also a frequent euphemism for imperialistic expansion" (2019, 135). She makes a similar point as other video game scholars such as Sybille Lammes (2010), Shoshana Magnet (2006) and myself (2017) that

> whether or not a map is actually created, the explorer sets about penetrating the unknown and testing personal and geographical limits—in a realtime strategy game, she feels satisfaction in dispelling the fog of war as she advances into new territory; in the seemingly open-world game, she seeks out the inevitable zone walls in a bid to peek or sneak past bounding game structures. (Chang 2019, 135)

Abraham and Jayemanne also indicate the need to study the potential of video games to address colonial engagement with ecology when they state that, beyond the categories they describe, ecogames will perhaps "be poised to make a unique contribution after all to addressing what Amitav Ghosh has called 'The Great Derangement'" (2017, 89). This brings up a direct connection with issues that have arisen out of the colonial way of thinking which, as Ghosh argues, still dominates the ways in which landscape and the environment continue to be modified in the current century based on cultural parameters dating back to the heyday of the colonial projects:

> [W]hen we see a green lawn that has been watered with desalinated water in Abu Dhabi or Southern California or some other environment where people had once been content to spend their water thriftily in nurturing a single vine or shrub, we are looking at an expression of a yearning that may have been midwifed by the novels of Jane Austen [in pursuit of these novels' images of the lush green English landscape]. (Ghosh 2018)

As he comments ruefully, future generations can do little else than

> conclude that ours was a time when most forms of art and literature were drawn into the modes of concealment that prevented people from

> recognizing the realities of their plight? Quite possibly then, this era, which so congratulates itself on its self-awareness, will come to be known as the time of the Great Derangement. (2018, 11)

He observes that from the seventeenth century onwards colonial cities began to be established on seafronts around the world and that Mumbai, Chennai, New York, and Charleston were all founded in this period. In his novel, *The Hungry Tide* (2016), he addresses the issue of the human settlement of the great mangrove forests of the Sunderbans in Eastern India and the ecological hazards arising therein and how the British project of building a second port, Port Canning, in the vicinity of Calcutta (modern Kolkata) ended in disaster as the entire town was destroyed by a cyclone in 1867. Ghosh, however, also identifies another key issue that often makes it very complicated for ecocriticism to engage with the postcolonial: the settlement and migration of disadvantaged and othered populations as a result of colonial practices.

Postcolonialism and ecocriticism: A complex relationship

Before discussing the tension between ecocriticism and postcolonial discourses and the tricky question of how video games can be analyzed within this complex framework, it is important to establish what "ecocriticism" signifies. Hannes Bergthaller's description expresses it pithily:

> The idea that the roots of the ecological crisis are to be found in a failure of the imagination, and that literary studies—the human imagination being their home turf—therefore have an important role to play in understanding and overcoming this crisis, is foundational to most forms of ecocriticism. (2010, 730)

Just as literary texts provoke our imagination to consider ways of overcoming the environmental crisis, game studies commentators have argued that video games can achieve the same. Of course, just as postcolonial criticism would read canonical literature from Europe and the US against the grain, any ecocriticism that stays aware of the role of colonialism in shaping the environment, will also guard against any recommendations of modifying the environment according to certain prescribed ideals (Ghosh's criticism of Abu Dhabi being made to look like Jane Austen's landscape is a case in point). In relation to postcolonial critiques of ecocriticism, it is important to mention that there is also often a conflict between efforts to save natural

habitats and vegetation and those of humans trying to survive. As Ghosh represents in his novel *The Hungry Tide*, the refugees seeking asylum on a desolate island of the Sunderbans exist in a state of precarity because the state and its armed personnel are aiming to vacate the island as part of its Project Tiger initiative. Ghosh's story is grim and especially so when one realizes that the "Marichjhapi Incident" of his story was no fiction. Timothy Clark (2015) also points out the dichotomy between wanting to save an environment and doing right by the people trying to survive there, made more stark when such efforts to save the environment come at the cost of human lives.

There is another related point that needs to be mentioned here. Graham Huggan and Helen Tiffin (2015) refer to what is called the "environmentalism of the poor," a term coined by Ramchandra Guha in his book on the Chipko Movement.[1] Guha accused the state-planned industrialization in India of "pauperizing millions of people in the agrarian sector and diminishing the stock of plant, water and soil resources at a terrifying rate" (Guha 2000, 196), despite its narrative of sustainable development, in effect carrying out the same practices as the colonial powers that had initiated such mass-scale ecological damage. Huggan and Tiffin raise the following questions:

> Is there any way of reconciling the Northern environmentalisms of the rich (always potentially vainglorious and hypocritical) and the Southern environmentalisms of the poor (often genuinely heroic and authentic)? Is there any way of narrowing the ecological gap between coloniser and colonised, each of them locked into their seemingly incommensurable worlds? The opposing terms seem at once necessary and overblown, starkly distinct yet hopelessly entangled. (2015, 2)

Before engaging with the internal complexities of postcolonial ecocriticism and how it sits with the environmental thinking of the Global North or of the state-sponsored "development" that it influences, it must be made clear that the Port Cannings and the artificial lawns were not the only problems created by colonialism. The key driver of natural exploration was the exploitation of resources, and this also went hand in hand with racism and human exploitation. As Leslie Green observes,

1 The Chipko Movement was a popular environmental movement in India in the 1970s led by the rural population of the northern state of Uttar Pradesh (currently the region falls under the state of Uttarkhand). The movement was aimed against the logging of trees by the government and was characterized by people hugging trees (from which it gets its name, "*chipko*," or hug) to prevent logging. The environmental activist Sunderlal Bahuguna was a major figure connected to this movement.

> The entrepreneur Cecil John Rhodes amassed a personal fortune from the diamond rush, taking control by means fair and foul of claims around the Big Hole of Kimberley, where the largest kimberlite volcanic pipe extrudes. Appointed prime minister of the Cape Colony in 1890, Rhodes set about establishing a legal infrastructure that favoured mining and a social infrastructure that established race-based disenfranchisement, creating a class of black laborers who would serve the emerging white-owned mining houses. (2015)

It was such colonial endeavors that could be said to have ushered in what is called the Anthropocene wherein it is human intervention that is shaping nature in what was previously called the Holocene epoch in geology. How does one understand the role of the postcolonial subject (often the subaltern and the marginalized) within a framework that ascribes agency to the human subject—an agency that is moving the planet towards its destruction? It is here that historian Dipesh Chakrabarty's intervention may be helpful. Chakrabarty (2012) notes that humans occupy a fragmented position in relation to the environment—on the one hand, they are political agents who change nature consciously, and, on the other, they are a geophysical force that even they are not in control of. He also leaves a comparison open with the simultaneous fragmentedness of

> the human of the everyday who illustrates the human condition as the embodiment of what Bhabha once called "difference within"—the insider as the outsider and vice versa—the human who improvises and survives and the human who asserts his or her cultural and economic rights in the expectation of being the sovereign figure of the citizen some day. (Chakrabarty 2012, 6)

Chakrabarty does not make any direct connection here—unless it is one of analogy; however, he emphasizes that the "idea of the human needs to be stretched beyond where postcolonial thought advanced it" (2012, 15). Even as it is understood now, in the environmental context "the term 'postcolonial' risks being misleading in directing attention from the complex internal politics of many countries, where ruling elites are now effectively continuing and often accelerating practices of former colonial powers" (Clark 2019, 141) exacerbating environmental injustice in the quest for development and modernization. Clark is right in stating that "as a result, environmental activism in the postcolonial state is in fact often a plural and not necessarily self-consistent matter, mediated through differences of caste, class or gender" (2019, 141).

No cyclones in *Age of Empires*: Postcolonial ecocriticism and video games

In the face of this multiplicity, the analysis of video games in terms of postcolonial ecocriticism becomes a complicated task. It is, nevertheless, a necessary one because often these are either not easily comprehensible or are forgotten within game cultures outside the Global South and other formerly colonized nations. Ecological scenarios in video games can be straightforward instances of the exploitation of natural resources. The *Age of Empires* games are predicated on the need to gather resources and to build units (whether these are buildings or people). The player has to keep gathering wood (by getting villagers to fell trees), food (by farming, fishing or hunting), and stone and gold (both by mining). When a section of the forest is cut down, there is no way to enable reforestation; similarly, the other resources are also used up and cannot be replenished except for the farms and the fish traps that can be constructed over and over. The scenario has not changed even in the latest iteration of the franchise and, as Cameron Kunzelman states in his review of *Age of Empires IV* (Relic Entertainment and World's Edge 2021), "delivers some well-worn myths by way of its design: about human beings, the things we've done and so on" (2021) and resource-gathering methods from the older games such as forestry and mining are still paramount in the new game. The same goes for the latest iteration in the *Civilization* series; *Sid Meier's Civilization VI: Gathering Storm* (Firaxis Games 2019) features environmental hazards and climate change. Nevertheless, the game's dependence on engineering projects such as dams and canals as a means of controlling the environment obfuscates the human cost of such dam building (see Guha 2000, for example). Despite efforts of game companies to begin addressing issues of environmental destruction and climate change, the thinking around this is very limited and lacking provisions to include the diverse and the subaltern.

As Abraham and Jayemanne (2017) have already commented, a classic problem of video game ecology is when game mechanics frame the environment merely as a resource. Indeed, the gathering of resources that are evidently nonreplenishable is a condition for the technological advancement of the player's civilization and also for building a wonder, a building whose endurance for a period of time will ensure the player's victory. The game's inherent logic is clearly evocative of the Anthropocene. Other than the resources being depleted, there is no other ecological damage that is experienced in the game. The climate remains the same and, of course, there are no cyclones or other ecological hazards despite the massive deforestation and the indiscriminate extermination of wildlife. The chief concerns of the game, whether it is the

occupation and conquest of land or the upgrading of a civilization, are achievable without being affected by or without affecting the climate or causing the ecological hazards that would be inevitably associated by the player's actions in the game. The *Age of Empires* Wiki provides a detailed description of how hunting and felling trees feature in the game. According to the wiki, "hunting is very attractive in the early game as it requires few resources to set up and its gather rate is faster than all other methods of obtaining food" ("Hunt" n.d.) and also, "trees are abundant on almost every map found in the game, including arid ones. Major forests can easily be located and cut down, both supplying wood for new buildings and clearing land to build on" ("Wood" n.d.).

Hunting is also a major part of several role-playing games where it enables the player to obtain better weapons and other upgrades. Many of these games have locations that are associated with "empire." Of these, *Red Dead Redemption* has already been discussed by Backe (2017), who notes that hunting is not trivialized and that the game shows skinning and gutting as messy activities but also lucrative ones. He goes on to talk about how an achievement in the game is called "Manifest Destiny" and although he notes the cynical usage of the phrase, he does not comment at length on its connection to the eradication of animals in the game (2017, 50). The phrase is historically associated with the belief that Americans possess cultural superiority and has been used to justify expansionism in the North American continent and settler colonialism, which led to the displacement of the Native American peoples from their ancestral homes. Historian Julius W. Pratt has identified a journalist John L. O'Sullivan as the originator of the term, where the latter claimed "the right of manifest destiny to overspread and possess the whole of the continent" (Pratt 1933, 796). The decimation of the buffalo population in the game being likened to Manifest Destiny with its distinctive settler colonialism is extremely problematic in that it underscores the right of the American population to settle and remove not just the Indigenous inhabitants but also the wildlife. Such a thing was proposed by the American artist George Catlin in 1941: "[T]he native Indian in his classic attire, galloping his wild horse, with sinewy bow, and shield and lance, amid the fleeting herds of elks and buffaloes. What a beautiful and thrilling specimen for America to preserve and hold up to the view of her refined citizens and the world, in future ages!" (quoted in Baigell 1990, 10).

Speaking of another writer, more hostile to Native Americans, Baigell states "Remington described an Indian as a "human brute.... He was a perfect animal, so far as I could see. Never was there a face so replete with human depravity, stolid, ferocious, arrogant, and all the rest" (1990, 10). Both of these quotes are testimony to how upholders of Manifest Destiny equate Native Americans

with beasts. Returning to *Red Dead Redemption*, some commentators see in Rockstar's naming an in-game achievement "Manifest Destiny" an attempt to criticize settler colonialism in North America. Kyle Gratton states that

> Civilization demands growth, an economy to sustain it, and the elimination of competing populaces. Thus, natural resources such as the plentiful herds of bison were hunted to near extinction. *Red Dead Redemption* lets players revel in American exceptionalism, being the one to snuff out the existence of an entire species. *Red Dead Redemption 2* takes a much more pointed look at the effects of Manifest Destiny on Native Americans, when the Wapiti tribe is repeatedly antagonized by the US Army despite multiple treaties being signed. (Gratton 2021)

Gratton's Darwinian assumption of the need to eliminate competing populaces to sustain civilization is problematic but the comment regarding how *Red Dead Redemption* allows players to experience American exceptionalism firsthand is valid. The player's agency comes in here and how she reacts to the scenario depends on her choice. Gratton also attempts to point out how the game's second part (which is, incidentally, a prequel) is more sensitive to the issue in that it addresses how the Native Americans are being antagonized by the US Army. Sara Humphreys also notes the ludo-colonial mechanics of the game in her book *Manifest Destiny 2.0*, stating that "the procedural rhetoric of the game demands that the players engage in a type of 'Indian Removal' in Tall Trees, which is adjacent to the urban sprawl of West Elizabeth" (Humphreys 2021, 11). There is, however, a point that is not made by these commentators despite their criticism of the game's connection to Manifest Destiny: none of the ecologically harmful actions of the player attract a penalty. Despite the fairly elaborate Karma system where the protagonist loses and gains karma for his actions, the environmental destruction, the decimation of animals, and the uprooting of the Indigenous populations do not fall within the game's honor system.

Hunting, of course, is an essential mechanic in many other games. *Far Cry 4* (Ubisoft Montreal 2014), which is set in a fictitious region modeled on Nepal (see Mukherjee 2021), seems to celebrate hunting both as a sport as well as a way to establish the player's skill. Of course, the element of "crafting" or upgrading weapons and gear with animal skins is also available here. Many of the so-called exotic species of British India (some of which are endangered or near-extinct due to indiscriminate hunting) make their appearance in the game and the player can shoot rhinoceroses, tigers, and even elephants. There is a whole side quest that is rather worryingly named

the Kyrat Fashion Week where the player is required to hunt an alpha version of a certain animal to gain special achievement points. Intriguingly, killing an animal without injuring its skin (in the game this is apparently possible by hunting with the knife, hand and arrow) gains the player karma points. The game replicates the same logic of hunting in the colonial British Raj and the player reprises the role of the colonial hunter of *shikari*—after all, the fictitious Kyrat is a failed state that has not seen any improvement after the departure of its colonizers. *Far Cry 4* is not the first to celebrate hunting in the British Raj. As Siddhartha Chakraborti states,

> in the franchise of *Cabela's Dangerous Hunts 2009* (Fun Labs 2008), we find that the player/traveller is flung into the forests of the Sunderbans where a pack of jackals have been harassing Indian villagers. The player is approached by an official of the Indian forestry department, who declares that the salvation of the villagers lies in the hands of the player/agent. The player is not only transported across space but is also reminded of the times of the British shikaris. (Chakraborti 2015)

Chakraborti predictably brings up the hallowed figure of Jim Corbett, India's celebrity big-game hunter who, despite all the nods to postcolonialism, has a national park named after him in northern India and whose books have been bestsellers for almost a century. As Prasanta Das comments,

> [R]ecent scholarship in environmental history allows us to take a closer look at the Corbett myth. It would of course be anachronistic to expect Corbett to display the attitudes that would today pass muster as ecologically sound but to continue seeing him as a pioneering conservationist and protector of the weak is wrong. (Das 2009, 20)

Unlike George Orwell's (1936) anticolonial anguish in his essay "Shooting an Elephant," Corbett upholds hunting "as a responsible, protective task, undertaken to save helpless, panic-stricken villagers and their livestock" (Das 2009). Of course, that right is just the prerogative of the White sahib. Although Corbett's books give an impression of the forests of Kumaon being spaces of tranquility (maintained by the iron hand of colonial rule) that are disturbed by an occasional rogue wild animal that can be tamed or killed by the sahib, there are hints of unease in his writings when he indicates that tigers had lost their natural habitat due to excessive felling of trees or when he is silent about how local "peasants often protested against the forest policies of the British by setting reserved forests on fire" (Das 2009).

Postcolonialism, just like independent India's celebration of figures such as Corbett despite its deploring of colonial environmental destruction, is rather ambiguous in its responses to ecology. Video games, as interactive media that often create a sense of agency for the player, may serve to problematize the often simplistic responses to ecology that emanate from the Global North as Chang has already mentioned, for example, in her discussion of the farming games. The colonial bias in some of these games and the ecological destruction that is concomitant in the procedural rhetoric (see Bogost 2007) of these games needs to be called out and challenged by games studies researchers so that more and more developers and players recognize such a bias. In her paper on *Tropico* (PopTop Software 2001) and its perpetuating of colonialism, Magnet speaks of how the game's space interpellates or hails the player through the "twin discourses of colonialism and capitalism" (Magnet 2006, 143) and she coins the term "gamescape" to indicate that landscapes in video games "are not static objects 'to-be-looked-at,' but are dynamic and require the active involvement of the player in their construction" (143). To add to Magnet's point, it is important to note that landscapes do not exist independent of climate change and ecology; therefore, particularly, the effects of colonial exploitation and its aftermath today need to be reflected in such gamescapes. Espen Aarseth points out that the real world is not an ideal playground and that games engage in what he terms "ludoforming," that is, "turning a contemporary, historical or fictional landscape into a gameworld" (Aarseth 2019, 127). For Aarseth, the game's experience exists on the dual level of topological and topographical, where the former is the actual "room for movement" that the player uses whereas the latter is the space that the game engine provides the player. On the topological level, the ecological experience becomes crucial—what the player experiences then can be reflected on the topography and by extension how the player understands the topography of the place in real life. What is being called for here is not just ludoforming but ecologically responsible ludoforming involving both the in-game topographical affordances and the player's topologically experienced space.

In connection with the ludoforming of gamescapes, another point may be noted. Speaking of the player's experience, Lawrence May (2021) notes how monstrosity, often associated with the sociocultural anxieties of a particular era, is now increasingly being associated with the environment in current video games. In *The Witcher 3: Wild Hunt* (CD Project Red 2015), the Leshen is a monster that "does not and never belonged to any biosphere of the known world, hailing from another world.... [T]he monster cannot be categorized conventionally" ("Leshen Ecology" n.d.). As nature is rendered

Other (because it is uncategorizable), some key concerns of the contemporary sociocultural scenario come to light. May observes that a

> bitter form of "pleasure" aptly describes an ecocritical encounter with ecological monstrosity: the pleasure of battling and defeating virtual monsters, complemented by desolate (and possibly motivating) reflections of the ongoing ruination of our planet provided through the development of ecological thought on the part of players. (May 2021)

Ecological monstrosity also informs the novels that form the game's source material. As Kim Bell comments, the novels' "little-mentioned but nonetheless present 'tree monster' speaks to an ongoing theme in both the novels and the series. That is, the idea that humans are actually responsible for the creation and behavior of some of their most horrifying opponents" (Bell 2021). Bell also goes on to address the Slavic mythological origins of the "Leshy," a trickster demon-god, and she notes how the games change this to a monster that the player is supposed to kill.

Beyond this, however, one needs to observe that whenever nature has been considered untameable or uncategorizable within the archival thinking of colonialism, it has always been rendered monstrous. The Leshen is perhaps a more recent video game equivalent of colonial monsters such as King Kong (see Fahmi 2017), who are uncategorizable hybrids whose monstrosity is probably the product of the colonial encounter with those natural elements that cannot be controlled in the colonial process. In this the environmental monster in the video game is not different in conception from what was conceived as monstrous by colonial powers—be it human or nature. Just as the postcolonial readings of games and their (ludoformed) gamescapes address the problem of rendering Other anything that is not culturally compatible with the set norms of the Global North, it is impossible to ignore how the games treat ecology, whether it is in eliding climate change from gamescapes or creating monsters out of the environmentally unclassifiable and incomprehensible.

Conclusion

Postcolonialism has a complex relationship with ecocriticism. It is, nevertheless, of vital importance to take into account postcolonial thinking in ecocritical debates and the way in which it presents the "idea of the human." Chakraborty compares postcolonialism and ecocriticism as both

highlighting aspects of the fragmentedness of human identity and agency. Video games, too, are a medium where there is a sense or an illusion of agency (see Mukherjee 2015, 149) that acts as a driver for playing these games, but where between the constraints of the game and the perceived agency of the protagonist, the identity-formation process is fragmented and transitory.

Perhaps, therefore, one might view them as media with the potential to represent how fraught the question of human agency in relation to the environment remains, especially in response to colonial depredations of and interventions in nature. Such fragmentariness of human agency in ecology makes it difficult to adopt a meliorist program for resolving the environmental crises that video games follow; instead video games, with their own fraught sense of agency and interactivity and the space of possibilities that they embody, can be helpful in modeling the complexities of the ecological crises, countering stereotypes, recognizing problems in greater depth and bringing deeper sense of diversity and inclusivity to ecological discussions. Bringing postcolonial perspectives to studies of ecological representation in video games achieves a twofold objective. The first of these is the direct engagement with representations of environmental exploitation that directly ascribe the responsibility to colonialism and empire; in extant research in game studies, this is not yet clearly highlighted. The second is the even more rarely considered issue of the plight of migrant, minoritarian, and marginalized peoples of the Global South, and how they are affected by the climate crisis, and overlooked by the Global North in drafting environmental policies. As interactive media, video games have a potentially significant influence on shaping public perception around environmental issues and as, increasingly, games start to convey messages on ecological issues, the complexities of environments in the postcolonial context need to be accounted for.

Ludography

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Age of Empires IV. 2021. Relic Entertainment, World's Edge. Xbox Game Studios. Windows, Xbox.

Cabela's Dangerous Hunts 2009. 2008. Fun Labs. Activision. Multiplatform.

Far Cry 4. 2014. Ubisoft Montreal. Ubisoft. Multiplatform.

FarmVille. 2009. Zynga. Multiplatform.

Frogger. 1981. Konami. Sega/Gremlin. Arcade, multiplatform.

Greedfall. 2019. Spiders. Focus Home Interactive. Multiplatform.

Mass Effect: Andromeda. 2017. Bioware. Electronic Arts. Multiplatform.

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7. Games for Better Futures: The Art and Joy of Making and Unmaking Societies

Joost M. Vervoort, Carien Moossdorff, and Kyle A. Thompson

Abstract

This chapter proposes that games engaging with the global ecological crisis would benefit from engaging with the processes of building and dismantling institutions. We first describe how institutions are at the core of human society, culture and organization. We then discuss the link between games and institutions; subsequently, we discuss game media ecosystems and introduce the value of looking at game design and gameplay as utopian processes. Next, we discuss the need to not only focus on building new institutions but also on dismantling existing, destructive institutions. Finally, we discuss structural changes needed in the game sector—e.g., regarding funding and publishing, game developer education, and platforms—to realize its transformative potential using the concept of imagination infrastructuring.

Keywords: games industry, transformation, rituals, institutions

The massive challenges faced by humanity in the twenty-first century and the lack of progress made on these challenges can be daunting and dispiriting. There is a need for change in the deepest layers of societal structures—the rules, goals and fundamental paradigms, myths and ideologies that make up our current hypercapitalist societies (Moore and Milkoreit 2020). This need for radical change is further exacerbated by inequalities, power imbalances, and injustices that only become more pressing as time goes on, and as feared futures threaten to become harsh realities (Avelino 2021). Along with many of the authors in this book, we see games as an avenue that might help humans engage with the need to transform societies. Games are unique in their ability to combine individual and collective

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imaginations with social interactions. Games also allow for the playful experimentation with systems, rules, and structures that make up real and fictional worlds. However, we also believe that those interested in games for change should think much more radically about their potential, which is still largely untapped.

On the one hand, games that have been designed specifically for the purpose of encouraging behavioral change have yet to have an impact at scale. On the other hand, the commercial games industry has grown to eclipse other media in size and engagement (Vervoort 2019), while real opportunities to combine commercial success with effective engagement with the planetary crisis are only beginning to be explored. Consequently, we argue for breaking down barriers between "games for change" and commercial games.

In this chapter, we offer a new angle on the transformative potential of games by looking at how they imagine and realize institutional change toward better futures, breaking down the walls between games and real-world contexts. Our focus on institutional change is meant to complement existing approaches to ecogames. Such approaches typically focus more on individual behavioral change and on ecological awareness and insight. We argue that for games to be effective avenues for institutional change, we have to start with the ways in which games already engage with institutional complexity—by featuring fleshed-out worlds with customs, practices, histories, and power structures. We will investigate, first, how games facilitate engagement with these institutions. We then go on to discuss how games and the media ecologies that surround them—specifically, public reflections by reviewers, journalists, and content creators—should be understood as utopian processes that can be fostered and spread. Next, we use all these insights to discuss how games might engage with the need to unmake and tear down current institutions and societal structures. Finally, we discuss the deeper infrastructural challenges and opportunities that influence the potential of games as a force of societal change.

Games and the joy of building institutions

One area where we believe games have much potential for transformative change is what we call "the joy of building institutions." In sociology, institutions are defined much more broadly than the commonplace use of this word. In *The Social Construction of Reality*, Peter Berger and Thomas Luckmann (1966) describe institutions as any stable, socially constructed

patterns of behavior between people. This means that institutions are not just governmental (such as a local city council) and legal structures (such as a constitution or marriage), but they also include informal conventions, expectations, and traditions, such as Christmas or the cultural importance of meat in many societies. This means that institutions involve a great deal of human action. Berger and Luckmann have famously described how institutions may come to exist as entities that are both socially constructed and external to the individuals who create them and who are influenced by them. This happens through a process where all actors are aware of the shared meaning they ascribe to a certain repeated action. This pattern can then become externalized and objectified, to a point where its creators are not necessary to uphold it, leaving it free to be taken up by (other) people. Think of the ways Halloween has spread to countries that did not originally celebrate this holiday, for instance. The building of institutions is an important means of changing societies—since it is the way new traditions, customs, norms, standards, and organizational structures are created. Examples would be regular and widely supported climate protests or the widespread adoption of vegetarian and vegan diets.

The sociological angle on institutions is valuable in game analysis. Institutions are an important part of world-building (Chang 2019), because they are an important part of what constitutes societies, fictional or not. For instance, in the action role-playing game (RPG) *Horizon Zero Dawn* (Guerrilla Games 2017), institutions play an important role in the world-building and story: the Nora tribe is not allowed to speak to outsiders or to enter ruins where high tech equipment still lingers. *Disco Elysium* (ZA/UM 2019) is another RPG seriously focused on the sociology of institutions, investigating deeply what it means to be a police officer when the legitimacy of that profession has become questionable in addition to discussing religious and political movements and ideologies and their impacts on institutional structures in the game world.

We have conducted a qualitative analysis of seventeen popular commercial games that engage with institutional contexts in some way, linking this engagement to experiences reported in seventy-eight professional reviews (currently in progress by Carien Moossdorff, Joost Vervoort, Kyle Thompson, Mae van Veldhoven, and Nicky Heijmen under the working title "Institutional Complexity and Societal Transformation in Successful Video Games"). From this analysis we were able to conclude, on the one hand, that a strong engagement with institutional complexity corresponded with reviewer appreciation since they judged these games to be more engaging, meaningful, and artistic. On the other hand, and perhaps ironically,

institutional play is not so prevalent in noncommercial games for change, or serious games, as found in our analysis of 200 climate games (currently in progress by Carien Moossdorff and Joost Vervoort under the working title "Connecting Climate Change Games to Social Action Theories"). Serious games, it appears, often focus on getting one message across. The popularity of institutional complexity in commercial games suggests a way for serious games to increase their engagement as well as their depth. Players enjoy playing with institutions and institutional change—and so games become a potential space for active, engaged learning. Institutions can also emerge from play, especially in multiplayer games. A classic example is the organizing of funerals for fellow players in online multiplayer games (Servais 2015). In analog gameplay such as tabletop and live action role-playing, there is even more space for the building of institutions. Finally, institutions are also being built around games—in the form of communities, traditional events, norms for games journalism, and more.

One theory from sociology that helps explain how and why building institutions together in and around games can be enjoyable is Randall Collins' model in *Interaction Ritual Chains* (2004). Four ingredients are necessary for successful interaction rituals: physical gathering, barriers to outsiders, a shared mood, and a shared focus of attention. If and when people come together and share a moment in this way, they may build up emotional energy through "rhythmic entrainment," a form of bodily synchronization. This can rise to a point of collective effervescence, where the group experience is overwhelmingly stronger than the individual one. Outcomes that may result from such an intense ritual after it is done are: an experience of group membership; experience of emotional energy in individuals that continues after the ritual; shared morals; and shared symbols. The fact that rituals yield morals, symbols, and groups singles them out as potential tools for institution building.

Moreover, individuals often feel emotionally energized after a successful ritual. This is important, because whatever the type of emotion that is felt, emotional energy is an empowering sensation, with an urge to do more and engage in more rituals, especially when related to the same group, symbols, and morals. This is often a desirable feeling in the individual—even when it is expressed in destructive ways (Asif and Weenink 2022). Of course, rituals can and often do fail to be successful on Collins' criteria, and people can feel left out even when rituals are successful for most people. Tabletop role-playing games and live action role-playing (LARP games) obviously qualify as interaction rituals and in our research on these game forms we see evidence of this. For example, in Nordic LARP, rituals are a common

component of dramaturgy and design (Fatland 2015). In addition, even though multiplayer video games do not feature physical copresence in the classic sense, research has shown that interaction ritual theory still holds up in online spaces (Boyns and Loprieno 2013; Jodén and Strandell 2022). Players often use their real bodies in some way that connects to their virtual avatars that do occupy a shared space. This implies that online multiplayer sessions may yield similar results for players as live rituals: shared identities, symbols and norms, and emotional energy.

While a more general focus on world-building helps explain the imaginative engagement of players with games, a focus on institutions in and around games highlights the fact that those who engage with games enjoy learning about and creating new and potentially stable social constructions. Our research indicates that playing with institutions makes for good games and game experiences. We would argue that it is therefore beneficial for game designers to be more reflexive about the role of institutions in their games. Deliberate institutionalization, a form of caring for society, can be rewarding and playful. The joy players get out of building institutions in and around games may be an important way to understand the joy of creating institutions that help foster more sustainable futures.

Games, utopian processes, and reflection

So far, we have discussed institutions in and around games. But games are part of and supported by wider media ecosystems. To understand how games might contribute to societal change, it is important to understand how these wider ecosystems entangle games with the rest of society. We find it useful to shift from the idea of games as somehow isolated from the rest of the world to a perspective that understands game design, play, and the activity around games as social processes.

We want to do the same with desired futures, or utopias—treating utopia not as an end state, but a process that is always developing. This leads us to investigating game design and gameplay as utopian processes. Ruth Levitas' *Utopia as Method* (2013) and the theory of process philosophy (Whitehead 1929) both serve as inspirations for utopian processes. Generally, process philosophy posits that nothing is fixed or unchangeable and that the world is always in the process of becoming due to continuously shifting relationships. This perspective connects well to scholarship on other media such as literature and TV that connects the act of imagining futures, pasts, presents, and other worlds with civil action. Shelley Streeby (2018) writes about how

activists in climate and decolonial contexts mix, link, and cross-fertilize activist activities, such as protests with visionary science fiction and other forms of imaginative work. This includes invoking different relationships with time itself. We believe it is useful to follow in what ways there may be continuity of process between engagements with media and with the rest of society, meaning that environmental engagement in and with games runs in tandem with environmental engagement in society.

When it comes to understanding the continuity of process between games and wider societies, we believe that public reflections—by journalists, writers, game communities—are crucial. From a process perspective, reflection is crucial because it allows for the orientation of action (Osinga 2007). We understand public reflection as drawing out the significance and the insights of gameplay experiences, making them available for wider public engagement, and helping orient what games and play should look like. Public reflections may also inspire societal action. Public reflections around games are entangled with gameplay itself—articles, live streams, and Let's Play video series are extremely popular (Cabeza-Ramírez et al. 2021). This means that for games with utopian elements and intentions, it is crucial to understand how public reflection benefits the transformative potential of games.

To investigate this assumption, we examined reflective media across four games and their contexts that engage with institutions in diverse and complementary ways, and in different genres (currently in progress by Kyle Thompson and Joost Vervoort under the working title "Utopian Processes: Reflections Connecting Games and Societal Transformations"). We examined reflections around the episodic narrative game *Kentucky Route Zero* (Cardboard Computer 2020), the recursive mystery game *Outer Wilds* (Mobius Digital 2019), the tabletop role-playing game podcast *Friends at the Table* (Walker n.d.), and the village life simulator *Animal Crossing: New Horizons* (Nintendo 2020). Despite their differences, each of these games is characterized by having a utopian character with an active community engaged in public reflection. We investigated essays and articles in different formats (text, video, audio) and social media interactions. In general, reflections on the four games showed a strong focus on emotions experienced by those reflecting—on melancholy, hope, enthrallment, joviality, and more. There was also a strong focus in the reflections on the most vivid, concrete details of relational interactions—on the details of community, dialogue, and game worlds. In other words, these reflections focused on the details of institutional dynamics.

Moreover, what stands out among these public reflections is how descriptions of emotional engagement with the institutional dynamics of these

games are often connected to real-world experiences, both in personal and public/political domains. For example, games critic Austin Walker, reflecting on *Kentucky Route Zero*, writes in his review (2020) that "the beating heart" of the game is "the shame of being a failure under capitalism and an exploration of the demands that shame places on us." Walker uses the review space to interweave his personal story as a games critic over the many years of the game's development with a reflection on the game's meaning, and he relates the struggle of the game's protagonists with debt and failure to his own health struggles due to poverty.

Public reflections make accessible the experiences of others, framing those we have ourselves in different lights, highlighting different interpretations of and engagements with the institutions and relational aspects of games. When those games have utopian elements, those elements are exposed and become a part of play experiences. This way, play and reflection can be understood as moving together in utopian game processes. Manjana Milkoreit (2019) highlights the use of media to reinforce very specific political frames. We consider reflections that are less specifically motivated and more diverse to be valuable in a more general, open, and, perhaps, unpredictable. We see public reflections on games as opening game-related processes to become more deeply rooted in societal concerns and activities.

We believe that the potential of public reflection for utopian gaming is still largely untapped. Increasing the willingness and capacity to reflect deeply and fully on games would benefit their transformative potential. If games can be understood as more meaningful, more worthy of deep reflection, players might imagine more powerful inroads between games and society. To aid such activity, we would propose that an "openness to the continuity of process"—an increased ease with which to relate game experiences to experiences elsewhere in society—would be a valuable skill for people to learn, for example, at high schools and universities. Finally, the hacking and modding of games offers another source of public reflection, one that changes the games themselves and opens them up for the expression of other ideas and concerns (Schleiner 2017).

Games, activism, and the art of tearing things down

So far, we have discussed how the joy of engaging with institutions in and around games holds potential for societal transformation. Reflection can help create connections between game-related processes and larger societal processes. But games and societal change can be connected in

more direct ways as well. Games, political action, and activism have the potential to be blended actively. This is where we can look beyond the joy of building institutions to investigate the potential of games that help tear down institutions. Realizing the deep societal transformations the world needs requires more than building up new projects, organizations, and institutions. Many of our current systems are fundamentally broken and unjust, and only benefit those in power. In their paper "(Un)making in Sustainability Transformation beyond Capitalism," Giuseppe Feola et al. offer the following challenge:

> Amidst ever more compelling evidence of the simultaneous unsustainability and continued reproduction of capitalist modernity, it is misguided to assume that transformation can happen by the mere construction of supposed "solutions," be they technological, social or cultural. We rather need to better understand whether and how existing institutions, forms of knowledge, practices, imaginaries, power structures, and human–non-human relations can be deconstructed at the service of sustainability transformation. (2021, 1)

The need to unmake current systems is a challenging proposition because this entails engaging in conflict and shifting power away from those who currently hold it. Processes of unmaking include, according to Feola et al. (2021), the weakening of current systems (destabilization), the phasing out and decommissioning of support for current practices (exnovation), unlearning past ways of working, making sacrifices, the delinking from current discourses and rhetoric, and various forms of resistance and refusal. This means that for games to be truly useful as a pathway for change, they need to engage with the power struggles and conflicts that attempt to dismantle current systems. And it is not enough for games to simply be about the role of power in transformations. There is a need to understand how games can be designed, used, and mobilized to inspire real engagement with creative destruction.

This is where the weakness of many "serious" ecogames emerges. The analysis we recently conducted across 200 climate games (currently in progress by Carien Moossdorff and Joost Vervoort, see above) shows that all too often such games avoid conflict entirely. Instead, they follow the kind of placid didactic tone of classic sustainability discourse (as explained by Seymour 2018; Malm 2021). Sustainability challenges are largely framed as a rational management problem. This placid educational tone seems to be a real blind spot for ecogames. Part of the issue is the question of who funds,

supports, and builds these games. Many ecogames are commissioned by organizations that are part of incumbent systems: governments, universities and other research institutes, and companies. Games produced by large NGOs can follow a different track—but international NGOs can also be characterized as being part of dominant systems. We suspect that bureaucracy matters as well in this regard—when games are built for large organizations, they have to account for organizational politics, as well as for proving why their games would be useful, and they often default to fairly neutral approaches, and to basic awareness raising. But the value of awareness raising as a change mechanism is disputable—all the more so when it comes to engaging with issues of power and conflict in societal change (Avelino 2021). So what kinds of games do we need? When it comes to engaging citizens with sustainability transformations, we think that connecting games to the realm of civic action, political action, and activism is by far the most impactful: games that take the idea of utopian development further, and activate and motivate people to get out there, to organize, to get involved in politics; games that stir up the trouble needed for systemic change; and, specifically, games focused on tearing down existing structures and systems.

How might such practices and strategies for unmaking current systems be engaged with through games? First, it is valuable to recognize that activist games fit in a rich and storied context of activist art. We have already mentioned Streeby's (2018) reporting on the mix of visionary fiction and activism by Indigenous activists and writers. Additionally, in the activist manual "Beautiful Trouble: A Toolbox for Revolution" (Beautiful Trouble 2022), the authors provide many examples of art-based activist tactics, such as invisible theater, guerrilla light projections, and artistic and ritualistic protests and vigils. Recent work by the CreaTures research project offers a wide range of experimental and playful productions that use creative practice and imagination to try and challenge existing systems (CreaTures 2022). UK-based practitioner Phoebe Tickell (2022) works with the concept of "imagination activism" which can be described as empowering people through a blend of imaginative coproduction of new futures and concrete action.

Games can fit, and sometimes already do fit, in this wider tradition. The tabletop role-playing game *Solarpunk Futures* (Solarpunk Surf Club 2022) challenges players to imagine different change pathways, and it features one game mode called "IRL RFN" (meaning "in real life, right fucking now"), which encourages players to brainstorm and then take real-life action around a local community challenge. The renowned games by Molleindustria, such as *McDonald's Video Game* (2006), offer a suite of perspectives, satire, and critique of unsustainable and unjust aspects of society. Their developer,

Paolo Pedercini, also provided a manifesto in which he describes "the theory and practice of soft conflict—sneaky, viral, guerrillero, subliminal conflict—through and within videogames" (Pedercini 2013).

How do we connect games and activism that engages in unmaking current systems in a more complete and concrete manner? At the Other Futures Festival, held on November 5, 2021, in Amsterdam, an anonymous activist presenter coded as ACAB (but standing for the alternative descriptor All Cats Are Beautiful) offered a presentation on the roles games have played in the Hong Kong protest movement (Other Futures Festival 2021). They described a looping process of games and protests feeding into each other. Their presentation included the use of existing games like battle royale shooter *PUBG: Battlegrounds* (PUBG Studios 2017) as a way to practice with police evasion, and *Animal Crossing: New Horizons* as a platform for protests. Maps of *Pokémon GO* (Niantic 2016) were used as a way to announce protest locations. *Liberate Hong Kong* (Hong Kong Protesters 2019) simulates what the protests are like as an experience in a digital game. The text-based game *Revolution of Our Times* (Spinner of Yarns 2019), before it was taken down, focused more on agency and choice, allowing players to choose what they would do in various situations in a protest. Game spaces such as e-sports events also became sites of protest; and game language and terms were used to cloak conversations from the police. It is clear from these examples that games can be integrated with real-life action in a way that supports the fight for climate justice.

But protests are only one pathway associated with attempts to unmake current systems. There are many other pathways of unmaking. What would it look like, for instance, for games to be enmeshed into concrete societal processes of unlearning knowledge, habits, and ways of working that no longer serve a sustainable society? How might games be combined with political action in the space of "exnovation" (Van Oers et al. 2021)—the conscious stopping of financial and institutional support for harmful technologies and practices?

As an example of a game focused on dismantling current systems beyond protest, the authors of this chapter are currently working on a game project named *All Rise*, inspired by the art of Enora Mercier (see Figure 7.1), which seeks to integrate its development and play with real-world unmaking (Vervoort 2021b, 2023). This game has been inspired by the preparation of a lawsuit by the Dutch activist group Fossielvrij to force the ABP Pension Fund to divest from fossil fuel; which was in turn inspired by earlier, successful lawsuits by the Dutch branch of Friends of the Earth (Milieudefensie) against Royal Dutch Shell and the Urgenda activist group against the Dutch government to force them to align with the Paris goals. For further inspiration, we

Figure 7.1: "Seeds of Resistance," created by Enora Mercier.

are drawing on the success of a popular game about court cases, *Phoenix Wright: Ace Attorney* (Capcom Production Studio 4 2001), and its sequels. Our game will allow players to organize campaigns and court cases against powerful fossil fuel actors in the Phoenix Wright style. A board game and a video game version will be developed. The goal will be to inspire players to take on powerful actors in real life.

What we believe makes our project unique and not just an inspirational game, is the design and funding process. The game will be crowdfunded,

which is a common way to get independent game projects off the ground. However, in this case, 50 percent of the funds provided by funders will go directly to real-life climate lawsuits organized by Milieudefensie and Fossielvrij. This means that the point of the game is to inspire fundraising that leads to real-life action, making the game impactful before it is even designed. We will learn from broader efforts to crowdfund climate action as well (Rodan, Mummery, and Henkel 2017). We hope for the game to become a cultural symbol and rallying point for playful empowerment. In turn, we hope this project will inspire other combinations of game design and play and societal action that go beyond the education or inspiration of players through play alone. We are developing this game while investigating the ways in which climate court cases themselves are powerful examples of concrete, present-day action that inspires and opens up possibilities for imagining better futures by helping to unmake current systems.

Inspired by the climate court case game, we ran a workshop on games, activism, and unmaking with a number of game developers and researchers. We focused on the following questions: 1) How can games focus on the need to destroy, challenge, fight with, and dismantle current destructive societal systems? 2) How can the joy of and engagement with challenging and dismantling current systems be done in a way that is integrated with real-life action?; and 3) How can games like that actually be funded, built, and supported? Several ideas emerged from this workshop, including games that would subversively attract and siphon away destructive types of investments and games that actively cultivate failure to change the world as a challenging and fun game mechanic. In terms of funding, there were ideas to turn destructive monetization strategies like microtransactions on their head to use for growing new community resources. Our next step will be to involve activists engaged in successful acts of societal unmaking to work together with game developers to develop new activist games that engage with the dismantling of real, destructive systems.

Imagination infrastructures: Transforming the game sector

Unlocking the transformative potential of games to engage with the building and tearing down of institutions requires some deep changes to the game sector. There are many infrastructures that contribute to games: publishers, platforms like *Steam* and console stores, different types of investments that fund games, educational programs that train game developers, and games journalism. Following systems innovation activist Cassie Robinson, we refer

to working on these wider structures of support as "imagination infrastructuring" (2022). Our definition also includes the games themselves, because, as we discussed, they offer the technological and social infrastructure for imagining new institutional futures.

Describing games and their ecosystems and support structures as imagination infrastructures helps keep the focus on the imaginative and utopian potential of games, in contrast to the realities of the game sector. Large parts of the game industry are purely focused on economic gain, and imaginative possibilities matter only as a far as they can contribute to sales. Mainstream or "AAA" games are exceedingly expensive to make and to market, and this leads to highly conservative behavior when it comes to game design. Many games copy each other and regurgitate the fictional worlds of Hollywood. By contrast, smaller, independent or "indie" game developers are in a different position. Originality can help indie games stand out. This means that much of the innovation in the game industry happens in indie game spaces. So what can be done? We have been co-organizing a global community of game developers, researchers, game funders, policymakers, and others interested in the transformative potential of games. Under the name "Games for Better Futures" (Vervoort 2021a) we are exploring how the imagination infrastructures of the game industry might be shifted.

Our community believes that game publishers and funders can do much to stimulate game developers, especially small- to medium-sized teams, to develop games that focus on the joy of creating institutions and on challenging existing, destructive institutions. There is scope, in particular, in providing incentives for projects that blend the goals of commercial games and "games for change," as well as bridging game and nongame activities and processes. This also includes involving new types of players and touching on new interests and capacities in existing players. For example, we have been involved in the development of a location-based mobile game (*Utrecht 2040*, IJsfontein 2019) that stimulates students to engage with real-life urban environments, start live performances, discuss topics with strangers and store owners, and so on, and to share these activities with other players (Mangnus et al. 2022). This is very much an example of a "serious" or educational game, meant to be integrated into student curricula. But what would a commercial version of this game look like, one that is popular but not uninterested in societal engagement?

Providing the right criteria and funding might stimulate a well of creativity around new game formats and modes of engagement. Ideas about games and institutional engagement could also be taught at game development schools. The Utrecht University of the Arts (HKU) features a program on

game development for coders, designers, and visual and audio artists. We are working together with this program to help around 150 students each year build games based on the principles discussed in this chapter. These game development students are paired up with students of sustainability from Utrecht University to develop games together and to learn from each other in the process, while working with clients like the UN Environment Programme, the Stockholm Resilience Centre, and Oxfam. We are aiming to stimulate game developers in training to develop a greater interest in the possibilities of games as a source of collective imagination and help inform them in how institutional change plays a role in games and in societies. Many of these students end up working in indie studios, AAA studios, or the development of "serious" games. Changing the educational programs for these students is an example of changing imagination infrastructures for the game industry.

Another infrastructural possibility is the creation of new platforms and ways to make alternative, radical games more visible and easier to find since the games market is so flooded with titles. Better working conditions in a currently exploitative, frantic sector should also be created. This would help create the safety and stability to stop, reflect, and make adventurous, novel, and politically risky games. Dialogue between those in the game sector and those dedicated to societal change should be stimulated to increase awareness in the game sector of what is possible in terms of imagined futures. The reverse is also necessary: to increase awareness in society about what is possible with games, especially among decision makers.

Conclusions

In this chapter, we have made the case for gameplay and game design to be understood as means to foster change in the institutional structures and systems that make up our societies. First, we argued that many games, analog and digital, already engage with the joy of creating and building institutions, and that such games are generally well-received. We then discussed how games are part of larger game media ecosystems that enhance the transformative potential of games through the role of public reflection. To understand the utopian potential of game media ecosystems we think of them as utopian processes that run in tandem with real-world developments and movements. Finally, we argued that more than "positive," constructive change is needed.

Currently, destructive systems must be challenged and dismantled and there is much scope for games to turn the "joy of creating institutions" into

the "joy of dismantling institutions." Drawing from our own experience designing games and organizing game communities, we concluded the chapter by listing the reasons why the transformative potential of the game sector remains mostly unrealized. We finish by calling for structural reform, introducing the notion of "imagination infrastructuring" as a frame to help raise ambitions. Among other things, changes to funding, publishing, and education are needed. We believe that these structural changes start with developing an interest in the unrealized potential of games by those unfamiliar with the medium and cultivating a deeper understanding of societal challenges among those within the sector.

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Part II

Future Worlds: New Imaginaries

8. Climate–Game–Worlds: A Media-Aesthetic Look at the Depiction and Function of Climate in Computer Games

Sebastian Möring and Birgit Schneider

Abstract
This chapter seeks to establish a coherent and critical framework that can aid in future analyses of the depiction of climate and weather in computer games. In its attempt to generate an analytical schema, the chapter expands on existing media-aesthetic, media-ecological, and existential-ludological perspectives, thereby mixing methodological approaches with concepts drawn from climatology. This mixed-methods approach allows the authors to put forth a number of key insights, most importantly that the examination of climate as an in-game actor—that is, as a component that has an impact on gameplay—can lead to new levels of analysis in the field of games studies. The authors conclude by testing their critical schema on the survival-crafting game *Eco* (Strange Loop Games 2018).

Keywords: media ecology, media aesthetics, atmosphere, serious games

A number of thinkers have posited that climate and human existence are existentially linked to one another. The Japanese philosopher Tetsurō Watsuji (1889–1960), for example, advocated this concept in his seminal work *Fūdo* (1935), in which he suggested that the historicity of culture is determined by climate. Watsuji also argued, however, that the interrelationship was by no means monocausal; instead, he used the idea as part of an attempt to understand human existence in its temporal structure, which is embedded in space (Watsuji 1992). The key question we ask in this chapter is: To what

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extent does climate take on an existential role in computer games (that is, as a factor that determines the existence not only of the player's avatar but also of the game as environment)? And, in contrast, to what extent do climate and weather remain a mere decoration or backdrop? How and in what form do ecology, iterations of nature, and climate interrelationships flow into each game? How are climate conditions thematized in games? And what role are they given in each specific game?

Our examination of contemporary computer games was guided initially by a fundamental distinction between representation and simulation. In other words, we investigated to what extent climate appears either as representation alone, that is, as a backdrop and/or a mute decoration in games, or in the form of a simulation, whereby it takes on the role of an in-game actor, that is, a game mechanic that affects the course of the game. Building on this distinction, the following pages contain an analysis of the extent to which changes in weather, changes in seasons, climate change, plant geographies, and atmospheres play a role in computer games, as well as an investigation of the way player agency is situated with respect to these conditions. This chapter focuses on a game with an explicit climate narrative: the survival-crafting game *Eco* (Strange Loop Games 2018), but in previous work we have tested the schema we introduce below on other examples as well.[1] We derive the categories of the schema from the fields of game studies and climatology. First, we present them in the hope that they will prove useful for further investigations. In a second step, we apply our categories to *Eco*.

Preliminary methodological remarks

To generate our analytical schema, we intertwined two distinct perspectives with one another. The first is a media-aesthetic perspective developed from the study of climate images, and the second is a game studies perspective

1 An earlier version of this chapter was first published in German (Möring and Schneider 2018). In this earlier version we examined overtly environmental games like *Walden, a game* (USC Game Innovation Lab 2017), *Eco* (Strange Loop Games 2018), *StadtklimaArchitekt* (Exzellenzcluster CliSAP der Universität Hamburg n.d.), *Block'hood* (Plethora Project 2017), and *Anno 2070* (Related Designs and Blue Byte 2011), alongside games with no explicit climate-fictional or ecological framework, such as *Grand Theft Auto V* (Rockstar North 2013), *The Legend of Zelda: Breath of the Wild* (Nintendo 2017), and *No Man's Sky* (Hello Games 2016). The chapter at hand has been significantly revised and the application of our analytical schema for in-game climate now focuses primarily on the game *Eco*.

that is interested in metaphors in games and the existential philosophy of games. The key question we ask in this context is the following: To what extent do the particular games under analysis here incorporate climate and weather as aesthetic components? Our approach also has a media-ecological component by virtue of the fact that we examine causal networks and relations within the games themselves, but also in terms of how games shape environments as media as well as how games shape ecological awareness. Finally, we also relate our analysis to environmental narratology.

Intertwining our two distinct approaches also makes it possible for us to identify those climate narratives and topoi that currently prevail in the field of games. To answer these questions, we refer to the field of "green game studies" (Chang and Parham 2017)—a field that links ecological issues with concepts relating to game studies and ecocriticism—that is still coming into its own (see Barton 2008; Chang 2009, 2011, 2012, 2019; Abraham and Jayemanne 2017; Backe 2017; Kunzelman 2019; Op de Beke 2021; Abraham 2022).

Climate, environment, and atmospheres

For the purpose of our analysis, it is essential that we define more precisely what is meant by phenomena such as climate, environment, and atmospheres by drawing on scientific terms relating to climate and weather. If we follow the modern definitions found, for example, on the website of the German Environment Agency (Umweltbundesamt 2013), "climate" refers to those typical atmospheric conditions of a geographical location that are measured and recorded over a period of thirty years. However, we are most interested in what climate research refers to as "climate factors," and the extent to which these factors can be found in video games. Climate factors in climatology include the elementary power and angle of the sun, the distribution and size of land and sea, the composition of the atmosphere, the geographical height of a location, and the circulation of the atmosphere, that is, wind and storms or ocean currents and monsoons. Many games use particular climate zones as settings, such as polar regions and tropical forests, and as themes, including typical plants and animals. Other games contain climate zones similar to Earth, such as regions of coniferous trees, tropical plants, desert vegetation, and regions covered in ice.

The distinction between weather and climate is equally important for our analysis, as the aesthetic question of climate perception lies at its very

core. If climate is an object of statistics, then it only follows that climate, strictly speaking, cannot be an object of physical perception. Indeed, what people perceive and experience is actually the weather of a location as a function of the climate (in the general discussion of the perception of climate change, the scientific definition of the term leads to a critical discussion as to who would be able to logically argue that they can actually feel climate change [see Rudiak-Gould 2013]).

The association between climate and weather and the issue of their perception were also concerns that preoccupied the proto-ecologist Alexander von Humboldt (1769–1859). Von Humboldt defined climate not only based on measurements, but equally as an aesthetic object, arguing that climate "comprises in its most general sense all of those changes in the atmosphere that have a noticeable effect on our organs" (Von Humboldt 2004, 340). According to this definition, climate is aesthetically perceptible as an "atmosphere tempered" by means of light, moisture, air pressure, and temperature (Böhme 2014). In other words, it is registered phenomenologically, shaping and impacting all living organisms. This is what Mike Hulme has called "weathered" (2016).

Just like Watsuji, Von Humboldt theorized a relationship between climate and culture, one that is worth discussing today in times of human-induced climate change and which we explore in contemporary games. How does this relationship between climate and culture play out in video games, which are, after all, virtual, simulated spaces that contain neither air nor wind nor moisture? The following questions are designed to facilitate the study of depictions and simulations of climate cultures in video games:

- How does the game make it possible for players to experience climate?
- Which climate factors are integrated into the game, portrayed and/or simulated?
- What is the in-game influence of the atmosphere and how does the game make it possible to experience this atmosphere?
- Has a climate zone, including plants, animals, and seasons, been generated? Does it follow a real-life example, or does it invent new climates?
- How many different types of weather are there in the game and what happens when the weather changes?
- Does the game have a time line that allows for seasons or even climate change?
- Do weather and climate impact the game and, if so, how?
- Does the game integrate climate as an in-game actor, that is, as a factor and force that impacts the course of the game?

By applying these questions to video games, we can start compiling what kinds of games integrate climate as an in-game actor and how.

Climate I and II in games

We have chosen to draw on the aesthetic-meteorological concept of atmosphere (literally: a ball filled with steam) as the most productive approach for our argument, in that it spans two levels of meaning that can be called climate "factors" and climate "phenomena." When we speak of "climate I" or "climate as actant," we are referring to the meteorological parts of an in-game atmosphere that we define as actor and "actant" in our examination of climate (Latour 2014). The concept designates the simulation of climate conditions in the abovementioned definition of climate factors as conditions of existence: for example, a lack of rain, which would decimate a player's harvest, destructive floods, or life-threatening cold, which impact the avatar or the gameplay. Climate I is programmed into the game mechanics as a causal structure.

In contrast, when we speak of "climate II" or "climate as a backdrop," we are expressing the aesthetic of climate and weather, that is, as climate phenomena such as fog, sunset, rain, and clouds. Their impact is an aesthetic, mood-setting one. Although these things most definitely depict climate, in most cases they have no existential impact on the game. Of course, climate I can contain natural phenomena of climate II.

Our distinction builds on existing research but takes the definition of the categories of climate and weather further. For example, the analysis of environment as a backdrop has been brought up by several scholars, and it also applies to climate and weather. Alenda Y. Chang, for example, criticizes the fact that the environment serves as a mere backdrop in a majority of contemporary computer games, all too often depicting simplistic "clichés" (2019, 123) of what are complex bio-geographical landscapes. Benjamin Abraham and Darshana Jayemanne also note that the environment often figures as a "backdrop" in computer games (2017, 79–81). In turn, Matt Barton (2008) emphasizes the usually secondary role played by weather in computer games and argues that it often serves as "decoration" and as an "optical effect" for the purpose of creating a particular "ambience" or "mood" so as to underline certain dramatic settings in games. Barton introduces a third category, namely the "environment as antagonist" (Barton 2008; Kaczmarek 2010 offers a more general opponent-based model for games). With our category of climate as actant, we want to

focus on in-game climate presentations and specifically on climate itself as an actor. Our perspective comes closest to Barton when he suggests introducing weather in computer games in such a way that it has a "direct effect on gameplay" to make games more realistic and ecologically savvy (Barton 2008).

Global and spherical views as first-person and third-person perspectives

In addition, we have incorporated into our analysis another heuristic distinction, namely the one made by anthropologist Tim Ingold in his essay "Globes and Spheres: The Topology of Environmentalism" (Ingold 2007, 31). Ingold differentiates between the terms "environmental" and "global," and this distinction can be almost seamlessly transferred to the first-person and third-person game player perspective, that is, between a *vagrant* perspective and an *omnipresent*, or rather omniscient, bird's-eye view (see Elverdam and Aarseth 2007).

Ingold developed his distinction to explain how two irreconcilable perspectives have become entangled in the environmentalist movement. The two perspectives are the modern concept of an environment that surrounds the organism in a spherical manner (*sphere*) and the equally central concept of a global outlook (*globe*). Hidden in this distinction between *sphere* and *globe* is a political question that is also relevant to games. Preceding these categories is the observation that the spherical environmental perspective and the top-down global perspective cannot be reconciled with regard to the manner in which they situate the subject. According to Ingold, an *environment* is transparent, soft, subjective, close, spherical, acoustic, and can be physically experienced. It shares many criteria with the vagrant perspective in first-person and third-person games. In contrast, the top-down global perspective is opaque, massive, objective, distant, global, centripetal, confrontational, disconnected, total, and tends to be colonial. It appears as something that can be owned and controlled. It shares many criteria with the omniscient perspective of many strategy games.

This distinction is significant for the narrative of climate change and the role assigned to players, because at the moment one of these perspectives is assigned as a primary mode of experience, the decision has already been made as to whether the framework for action will be a controlling one, whereby the systems are regulated from above, as in *Anno 2070* (Related

Designs and Blue Byte 2011) or *Sid Meier's Civilization VI: Gathering Storm* (Firaxis Games 2019)—Donna Haraway would call this view-from-above the "God Trick" (Haraway 2000, 114)—or whether the framework will, in addition, include a more spherical-subjective one, as in *Eco*. In other words, it's all about how the player comes to have control and power, that is, whether the game establishes the framework for action panoptically in a top-down setup or according to the local, bottom-up grassroots principle. *Eco* features both a view from above as well as a subjective perspective. In Cameron Kunzelman's (2019) view, the interplay between the two is crucial for the game's environmentalism.

Climate as a condition of human existence and existential ludology

No doubt, climate has an impact on human life. We are geographically and indeed also climatically impacted. In concepts such as *impact*, *vulnerability*, and *adaptation*, which pervade the current literature on climate change research, this connection is becoming more and more valid (IPCC 2022). Our vulnerability to climate also informs computer game worlds, which are existential for many game avatars as they narrate the relationships between geography, system worlds, and protagonists in many different ways and sometimes also tell of how the conditions of existence change decisively as a result of climate change. In addition, human beings are also climate factors; the existence of human beings depends on the climate, but the existence of a certain climate also depends on humans. What we find here, therefore, is a twofold existential structure whose factors mutually determine each other's existence.

A similar structure developed historically in computer games, and Olli Tapio Leino and Sebastian Möring (2015) describe this structure using the concept of existential ludology (see also Payne 2009). In their chapter they argue that in games such as *Tetris* (Alexey Pajitnov 1989), *Minecraft* (Mojang Studios 2011), *Doom* (id Software 1993), and *SimCity* (Maxis 2013), the existence of the game and/or its gameplay depends on the actions of the players; however, at the same time, the existence of the players is contingent on feedback from the game. For example, when *Tetris* is played unsuccessfully, the game comes to an end and the player ceases to be a player until a new game is started.

This structural similarity between the existentiality of climate and the existentiality of games and computer games shows that games with an

existential ludic structure are particularly well-suited to simulate human vulnerability in face of the climate crisis. This ontological element of a number of games is critically important to our analytical schema.

Description of our analytical schema for in-game climate

We have developed a critical analytical schema for the analysis of in-game climate that we will now introduce before testing its application in *Eco* and, on occasion, *Gathering Storm* and other games for the purpose of comparison. The schema makes it possible to examine computer games from a media-ecological perspective with the help of relevant climate categories. In turn, it also makes it possible to evaluate the manner in which climate and its elements are made perceptible in computer games. The schema is not a closed system; instead, it can and it should be altered and extended. Like all analytical schemata, it is heuristic and can make visible transitions between categories. Our intention is to encourage an examination of climate in computer games using categories drawn both from game studies as well as scholarship on the discourse and depiction of climate and climate change.

1. Climate simulation/climate as a backdrop. How and to what extent are climate and ecological systems simulated in their functioning and interactions? What parts appear as climate I (actant) or climate II (backdrop)?
2. Climate temporality. What kind of time structure is present in the game (days, nights, years, other)? Do seasons occur? Can changes in the weather take place?
3. Climate geography. Are there in-game climate zones that involve different plants and animals adapted to those zones?
4. Climate determinism. How do climate phenomena and climate/weather factors determine the progress of the game?
5. Topos of system or balance. Is the game determined by the theme of balance or the topos of system stability?[2]
6. Vulnerability. What and who is affected by climate?

2 The notion of a (literary) topos, as defined, e.g., by Ernst Robert Curtius (Beller 2007), refers to common themes that persist over long periods of time, being continually revisited and, on occasion, reworked.

7. Situatedness. How is the player situated in the game, for example, as steward/system manager, shepherd, explorer, victim, or somebody of kin with local experience?
8. Climate narrative. Does the game make use of narratives such as ecological dystopia, an "ecotopia," a technocracy, green growth, etc.?
9. Climate care structure: guilt, control, concern. Relationships between the player figure and entities in the game world.
10. Anthropocentrism or biocentrism. Does the game frame climate explicitly from the perspective of human beings, or does it take a more multispecies perspective?

Applying the schema to *Eco*

Eco uses a specific way to model the Earth. Unless they join already inhabited servers, players of *Eco* start on an unmarked and unsettled land, not unlike players of *Minecraft*, except *Eco* features a spherical planet. The planet is threatened by a meteor that will make impact within thirty real-time days (on a server with a standard configuration). Facing this natural catastrophe, the players have to develop their civilization as efficiently as possible in order to be able to destroy the meteor with laser cannons, a technology locked behind an extensive technology tree. But players also risk destroying their planet before the meteor hits due to serious environmental pollution which may result from industrialization. As the game's website claims, the game clearly has an educational mission (Strange Loop Games n.d.) and puts ecological crisis at the front and center of its world. Since *Eco* is very complex, we not only rely on our own gameplay experience for this analysis, but on wikis as well as reports from other players and researchers, and we also compare it to other games at times to sharpen points of distinction.

1. Climate simulation (*climate I*)*/climate as a backdrop* (*climate II*)
In *Eco*, the climate appears as climate I and climate II. When the sun's rays shine through the trees and when the lush flora sways gently in the wind, the climate is an atmospheric, but passive background (see Figure 8.1). Yet, in contrast to games like *Red Dead Redemption 2* (Rockstar Games 2018), where the climate mainly functions as a backdrop, the climate in *Eco* counts as climate I since the animals, the plants, geological resources, as well as elements such as water are simulated in a systemic, interrelated way. The different factors influence each other. Hence, killing the entire species of a plant or an animal will have an impact on the ecosystem.

Figure 8.1: Spherical view/first-person view in *Eco* with a typical regional temperate climate zone and forest fauna. Sunbeams and wind generate an aesthetically pleasing atmosphere of climate as a backdrop, but at the same time climate is rendered dynamically as an actant. Screenshot.

2. Climate temporality

Most games do not feature weather changes. But racing games such as *Forza Horizon 4* (Playground Games and Turn 10 Studios 2018) and flight simulators like *Microsoft Flight Simulator 2020* (Asobo Studio 2020) do. After all, activities like driving and flying a plane are decidedly weather- and climate-sensitive. Game weather of this kind is not only part of climate II; it also forces drivers and pilots to adapt their gameplay to changes in the simulated weather (atmosphere I). A sudden change of the weather adds a layer of gameplay complexity which is rare for games in general.

Although *Eco* is a real-time game played from a first- or third-person perspective, it does not simulate seasons or weather changes. *Eco* features a day-and-night cycle only. The most important temporal framing in *Eco* consists of the thirty real-time days that players have left from the start of the game until the meteor strikes the planet. This time limit gives meaning to all actions in *Eco* and makes some actions preferable over others. In the face of an impending meteor impact, some actions are more conducive to the overall goal of destroying the meteor in time. This meteor can be read as a metaphor of the environmental crisis. But unlike climate change, which is gradual, the meteor ultimately strikes in an instant. As long as it orbits the planet, however, it has no effect.

3. Climate geography

In the game *Eco*, "each server hosts a uniquely generated finite procedural world" which consists of different biomes (e.g., desert, grassland, forest, ice)

that "fall into particular ranges of precipitation and temperature" (Strange Loop Games n.d.). This means that a planet in *Eco* consists of an individual climate geography which does not, however, mimic that of planet Earth. The climate geography of *Eco* is dynamic: depending on the activities of the human population (i.e., the players), biomes may "be radically reshaped" and "climate change may shift the boundaries of biomes, displacing communities." Hence, snow and ice may disappear, and water levels may rise due to climate change. Most interestingly, climate geography in *Eco* is determined by the world generation algorithm of the game which "ensure[s] every world has the amount of resources players will need to progress through the game and build large civilizations" and, thus, "controls the proportion of land masses, oceans, biomes, and all their starting populations of species" (Strange Loop Games n.d.).

4. Climate determinism

The game *Eco* is strongly determined by two possible catastrophes. One of them is the environmental destruction that results from human activity. It is best demonstrated with Alice Bell's description of playing *Eco.* After having settled on a yet untouched *Eco* server and changing the perspective from spherical to global by zooming out, Bell quickly realizes how much of her "new home was the centre of a zone of one-woman destruction" and that her "tiny home had necessitated the destruction of a surprisingly large swathe of virgin forest" (Bell in Kunzelman 2019, 118). The impact becomes even more apparent as soon as new players settle on the server, build skyscrapers, and destroy large parts of the forest. The second determining catastrophe derives from a human failure to act. This occurs when the players fail to prevent the meteor from striking the planet. As mentioned before, the meteor symbolizes the climate crisis, but instead of presenting climate change as "slow violence" (Nixon 2011), the threat occurs as a single event, which sets a pressing goal and a possible ending to the game (although nothing stops you to keep playing in the ruins). With the overall goal of developing the population on the planet into a society that is able to destroy the meteor and simultaneously lead a sustainable life, almost every player action in *Eco*, if scaled up enough, could unleash a potential climate crisis, even though those actions aim to *prevent* a natural catastrophe.

5. Topos of system or balance

Computer games are often conceptualized as cybernetic systems that have to be kept in balance (Salen and Zimmerman 2003, 212–228). Ecosystems, too, are often described as being in or out of balance. However, as Frederick

Buell explains in his history of environmental crisis (2003), in recent years, the scientific paradigm of balance has proven to be insufficient to describe processes in nature. For computer gameplay, however, balance is still the guiding factor. The topos certainly applies to *Eco*, as the game asks players to walk a fine line between technological development and destructive industrialization, pollution, and deforestation. Thus, players have to use climate diagrams in the game and convince the other players of the right measures to keep the system in a stable equilibrium. To sum up, *Eco* inextricably relates technological progress and industrialization to the climate system but does not offer the possibility to prevent the meteor impact without it.

6. Vulnerability
In *Eco*, it is not possible for an avatar to die. However, the meteor may destroy all the structures which players have spent a lot of time building. Apart from this, an increase in CO_2 may cause the extinction of plants and/or animals which play an important role in the long causal chain of production necessary to produce the laser cannon. Hence, while climate vulnerability is often mediated via the health condition of the avatar in many other crafting games like, for instance, *No Man's Sky*, the most vulnerable things in *Eco* are future projects, whose construction may become stalled due to careless behavior.

7. Situatedness
This category makes it possible to distinguish between different ways the player is situated towards the climate in the game. These positions are derived from different views of the world contained in early accounts of the climate crises in the 1950s. For instance, the biblical figure of the shepherd is roughly connected to Buckminster Fuller's idea of spaceship Earth where humans are stewards of the entire Earth system and have to take care of the planet (Steffen, Rockström, Richardson et al. 2018). In turn-based strategy games, players are often situated as stewards/system managers who configure or administer many different variables on the road to victory. This positionality emerges from cybernetic ideas of the world as a manageable and controllable whole. The position is often derived from and supported by a scopic regime that offers a top-down perspective.

With regard to the idea of situating players, *Eco* is an interesting borderline case. It offers players both a spherical/environmental and a global perspective (see Figures 8.1 and 8.2). The former is a grounded first/third person phenomenological experience (for instance, when gathering, crafting, and building) and the latter is a distanced or global bird's-eye perspective

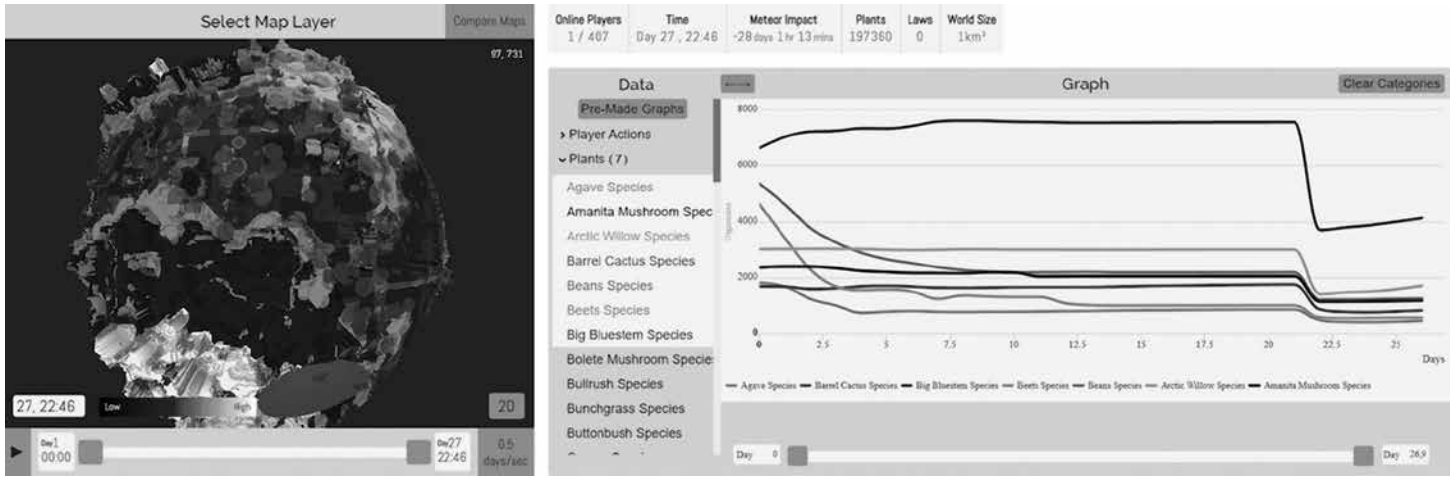

Figure 8.2: Bird's-eye/global view in the management and observational mode of *Eco*. Screenshot.

popular in strategy games, where players look at heat maps and charts showing concentrations of different plants, animals, or CO_2 on the planet. However, players mostly act from the environmental perspective, since this is the level where they implement any conclusions drawn from charts and heat maps. Thus, they are situated locally. Regardless, the positionality of stewards or system managers also come to the fore by means of the policy, because in the game players take on political and/or administrative roles. One could argue that the game is centered on the idea of ecological play (Chang 2009), because all actions are given meaning by the two ultimate ecological catastrophes. Would it be possible to play against the neoliberal logic of "better, faster, more"? Is there an ecosocialist way of playing *Eco*? In a way, *Eco* tries to make the causes of the climate crisis (capitalism, narratives of technical and scientific progress, etc.) the very basis for its solution. This leads to a paradox in which those games that are supposedly about a retreat from neoliberal worlds actually rely on programmed neoliberal logics (see Abraham 2022).

8. Climate narratives

Some games are story-driven. They may offer a number of different ways in which their story unfolds, and the specific climate narrative created by these games can be categorized more easily than in simulation-driven games. *Eco* is strongly simulation-driven. This means that depending on player decisions, as well as elements of randomness, many different climate narratives can be created. As in many sandbox games, narratives emerge as a result of gameplay. If players intervene as little as possible in the environment, then they are playing an ecological utopia (before the meteor strikes, of course). If they destroy the environment, or if the meteor strikes, it is an ecological dystopia. Judging from the official game trailer of *Eco*, the designer's favored solution seems to imply an ecological technocracy (see Figure 8.3). After all, the trailer of *Eco* suggests that gameplay should involve the development of a large and growing population as well as factories. A growing population will require that laws are put in place in order to govern the development of the technology to destroy the meteor.

It seems that in *Eco* many of the most prominent Western climate narratives (including green growth, techno fix, and ecological disaster) can be realized with a tendency towards techno fix (Huesemann and Huesemann 2011; Schneider 2017). Where the game suggests giant lasers, real-world geoengineers suggest large-scale technology such as radiation management and carbon capture. According to Laura op de Beke, many ecological computer games premediate possible futures that may emerge from the

Figure 8.3: Developing technology and industry in *Eco*. Source: Screenshot of the official trailer for *Eco*.

current climate crisis (2021). She criticizes the fact that this imaginary is often limited to include only those futures that accord with hegemonic structures like global capitalism or militarized technoscience, excluding futures grounded in more equitable, pluralistic, and low-tech solutions. As a multiplayer sandbox game, arguably *Eco* opens up space for discussions about the role of technology and ways of governing in a warming world.

9. Climate care structure: Guilt, control, concern

As already established, the susceptibility of the climate in games is often represented by means of different vulnerabilities and responsibilities in the relationships between the player figure and entities in the game world (e.g., the climate, animals, plants, other nonplayable characters). Hence, the existential ludic structure of many ecogames requires players to care about certain game states more than others. This care structure (see Möring 2013, 289; 2022) can take the form of different topoi that are common in climate change discourse such as guilt, control, or concern. Like many other contemporary computer games that take place in open, modifiable, and procedurally generated worlds, *Eco* resembles a robinsonade, in that the narrative arc revolves around exploration and the establishment of a settlement. One may argue that the game actualizes the topoi of guilt and control in divergent game phases and outcomes of *Eco*. Yet the central climate topos of *Eco*, like for many games, is that of concern because the players' future projects in the game depend on the integrity of the planet and its climate. The looming deadline is the primary concern and the motivation to

act in the game. That concern is not only demonstrated by the administrative and management success of one player, but also their ability to work well with the other players on the planet, as no players are fully in charge of what happens. The topos of control would only be actualized when players went for world domination. Still, as many authoritarian states show, wielding the most control does not necessarily coincide with making the best possible decisions for their people. Other ecogames center on guilt. For example, *Endling: Extinction Is Forever* (Herobeat Studios 2022) is an environmentally conscious 3D side-scrolling stealth survival adventure in which players play a mother fox trying to survive in a polluted environment. Since it is very difficult to secure the survival of all the cubs, the caring of the players is shaped by the topos of guilt.

10. Topoi of anthropocentrism or biocentrism
Unlike many other games in the survival-crafting genre, one could argue that *Eco* has the potential to enable biocentric play. This would involve players limiting their own expansion and leaving enough space for species to exist on their own terms, independent of human players. Ultimately, one could also argue that even *Eco* is an anthropocentric game since the well-being of the planet and its species is in the hands of human players.

Suggestions for further research

Computer games offer ways to experience nature and engage with ideas about nature. Moreover, they are capable of shaping the relationship between nature and humans. In this chapter, we proposed an analytical schema developed from the perspectives of media studies, game studies, climate aesthetics, and media ecology to interrogate the relationship between humans and nature in relation to climate in computer games. The schema includes categories that should help guide future approaches to video game climates.

The starting point for our analysis was the assumption that games produced in recent years ascribe a newfound agency to the climate in response to the climate crisis. To analyze this, we asked how climate and weather currently appear in an existential way, that means as an active agent that impacts the players' choices, the relation between the player figure and its environment, and, finally, their survival.

We think that this broad perspective on climate in games is useful precisely for analyzing contemporary games, because our scheme can be used to critically examine the narratives of ecological games that claim to

make it possible for players to experience the issue of climate change and ecological problems. Our analytical schema allows us to examine in more detail the ways in which climate appears in games. In our research, we were surprised how much even well-intentioned sustainability planning games and serious games are guided by ideas of technocracy, profit-oriented economics, and systemic equilibria, or repeat relatively unreflectively the common juxtaposition of humans with nature. Here, a question for further research is how much computer games, by virtue of their programming, tend to depict the world as a manageable ecosystem from a top-down standpoint, or whether dominant, technocratic narratives are simply repeated at the level of games. In turn, this raises the following question: Is it possible that the omnipresent computer-game theme of a "system in equilibrium" reflects an idea that can be related solely to the machine, but does not itself occur as a principle of nature in this manner? The detailed analysis of the integration of climatic phenomena into actual game elements provides points of reference for further studies. However, the answers obtained by means of our analytical schema can also be used in the planning of new games in this sector, specifically as a template for questioning the games' own narratives and simulations.

Another suggestion for further analysis includes a media-aesthetic approach that examines the influence of game engines on the representability and simulation of climate phenomena and climate factors in computer games. Game engines today have a major influence on what is represented and simulated in computer games and the manner in which the representation is carried out. We found that a large amount of basal weather phenomena is represented or simulated in contemporary computer games, which was not the case ten years ago (see Barton 2008). Today weather data are live-fed into video games such as the *Microsoft Flight Simulator*. Consequently, one can ask how dynamic scientific weather models are implemented in games such as *Fate of the World* (Red Redemption 2011), whose simulation was based on existing climate models of the time.

When we inquire into the existence of narratives that might serve to decolonize our imaginations, we are obliged to admit that there are only a few independent games out there telling different stories about the multiple ecological crises we are experiencing today (see also Op de Beke 2021). Such games resist the heroic perspective of successful management and instead take environmental and local approaches that are much less powerful and spectacular. Rather than being heroic stories, they are often tinged by an atmosphere of sadness and grief. In taking this approach, they offer the possibility to rehearse feelings that are invoked by the crisis (see, for example, the

aforementioned *Endling: Extinction Is Forever*). Indeed, when games only mirror the dominant hegemonies of today's power relations, although they might serve to raise awareness about the climate crisis, they do so in a very limited way.

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9. Healing a Life out of Balance: Slowness and Ecosophy in *Death Stranding*

Víctor Navarro-Remesal and Mateo Terrasa Torres

Abstract

In this chapter, we analyze *Death Stranding* (Kojima Productions 2019) through the concepts of collapse, slow gaming, and ecosophy, in particular, Raimon Panikkar's ecosophical metaphor of the three bodies (self, humanity, Earth). *Death Stranding* is an ecodystopian AAA game that presents a metaphysical collapse that has affected human existence, society, and the landscape. Unlike similar ecodystopias, the game offers a way forward through slowness and regenerative play. We argue that, by encouraging player reflectivity on encompassing myths of neoliberal societies, the themes and mechanics of *Death Stranding* problematize disconnection, isolation, and human destruction of the environment, and also highlight a potential healing by working on the interdependences of these ecosophical bodies.

Keywords: slow gaming, mythanalysis, vulnerability, ecodystopia, body

Futures where society has collapsed and nature has healed are a common and popular setting in contemporary big budget (AAA) video games, especially after the financial crisis and recession that started in 2007 and has been often called the Great Recession (2009–2015) (Pérez-Latorre et al. 2019). That economic and social crisis resulted in a social imaginary marked by austerity and precariousness, neoliberal views, as well as anti-establishment iconography and motifs that formed "the main backdrop to the hero's strictly individual aspirations" (Pérez-Latorre et al. 2019, 13). This imaginary is dominated by ideas such as the postapocalyptic trope of regeneration through violence (6), or collapse (Chang 2019), which are

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central to games such as *Horizon Zero Dawn* (Guerrilla Games 2017), or *NieR: Automata* (PlatinumGames 2017).

We can look at these imaginaries as mythical, understanding myths as recurrences of an event which, "in some sense, had happened once, but which also happened all the time" (Armstrong 2005), or as "any story that can transcend, be repeated, give rise to new stories, or even be the origin of new myths" (Martínez-García 2017, 29). Sometimes, as in *Enslaved: Odyssey to the West* (Ninja Theory 2010), games refer to classical myths, while at other times they end up establishing new mythical structures. A myth-analytical view helps us discover the patent or latent myths that characterize or sustain a certain cultural moment (Gutiérrez 2012, 183); hence, reading these ecodystopian AAA games through the lens of myths helps us connect them to the anxieties of their (our) times.

What would the main anxiety of these ecodystopian games be? Alenda Chang highlights "collapse" as a central theme in contemporary video games, with "interlinked social and environmental breakdown" acting as notable premises of many dystopian and postapocalyptic titles (2019, 187). The idea of collapse acts as a mytheme, a structuralist term for a fundamental generic narrative unit that creates new mythical structures. And it matters that many of the games using it are big-budget productions: their scale shows how culturally dominant and financially lucrative this mythical structure is nowadays.

Collapse is so prevalent in our culture that Pablo Servigne and Raphaël Stevens have proposed we need a "collapsology," which they define as "the transdisciplinary exercise of the study of the collapse of our industrial civilization and of that which could replace it" (2020, 175 [translated from Spanish]). Our reactions to potential collapse, they argue, are not shaped by facts but by the myths that found our identities and our worldviews. In particular, they find two myths clashing: the myth of unlimited growth, linked to economic and technological progress (152), and the myth of the apocalypse, connected to the founding myth of our liberal societies, the myth of the survival of the fittest (148) in which might makes right. More specifically, we could argue that the myth of the apocalypse is replacing the current dominant myth of eternal growth, resulting in a crisis of our encompassing myth.

The idea of an "encompassing myth" was proposed by Raimon Panikkar (1998), a philosopher who had an interest in myth throughout different cultures. For him, myth is the horizon against which all hermeneutics is possible, present before any interpretation (Panikkar 1979). The encompassing myth connects the individual, society, and their understanding of reality:

"Each culture, in a sense, could be described as the encompassing myth of a collectivity at a certain moment in time and space; it is what renders plausible, credible, the world in which we live, where we are" (Panikkar 1998). From this perspective, collapse is not only a breakdown of social and environmental systems, but also of our encompassing myth.

Death Stranding, collapse, and slowness

Death Stranding, the first game by studio Kojima Productions, is a game about collapse. It uses many of the tropes of ecodystopian AAA games, but it uses them for a discourse that is more openly political and, surprisingly, optimistic. It takes place in a world where a paranormal cataclysm, called the Death Stranding, has broken the boundaries between the world of the living and the world of the dead, resulting in a world where humans, society, the landscape, and even the climate (with a toxic rain called *timefall* that speeds up the ageing of things) are out of balance. Because of that, what is left of humanity has been secluded into isolated underground communities. The player assumes the role of Sam Porter Bridges, one of the porters delivering cargo between these settlements.

Sam's main mission is to link these human dwellings to the Chiral Network, a sort of metaphysical internet, reconnecting them to the United Cities of America (UCA) and allowing them to communicate and share 3D-printed resources with each other. Regeneration (of oneself, of society, of the land) is thus firmly linked to community. Sam's journey has mythical undertones: Antonio José Planells de la Maza (2021, 126) sees it as a search for the refoundation of the country. The player's journey is an allegory of the need to be united in front of adversities to create a better world. And it is built on a thematic and mechanical emphasis on slowness.

Unlike ecodystopian games such as *The Last of Us* (Naughty Dog 2013) or *DayZ* (Bohemia Interactive 2013), *Death Stranding* rarely focuses on action. Instead, its core gameplay loop comprises the hazardous and harsh traversal of the land, with careful planning and a slow pace, and the asynchronous collaboration between strangers, through an online system where actual players share constructions with each other. This gives the game a reflective tone and moves it away from the fast pace and spectacular action of mainstream gaming. It also connects it to current anxieties related to growth and collapse and to the resistance against them because slow gameplay resists acceleration.

Servigne and Stevens write repeatedly about acceleration (2020, 20). This is not a new problem: in 1977, philosopher Paul Virilio coined the term "dromology" to refer to the logics of speed, in particular, as they relate to society and politics. Virilio talked of a "regime of absolute speed," and later connected acceleration to ecology and the distribution of goods: "[W]e cannot separate the magnitude of power, or success, from the magnitude of poverty, or finitude.... The Earth is too small for progress.... Acceleration dominating accumulation ('just-in-time, zero stock') is making it implode before our eyes" (2012).

Acceleration is, in this light, a harbinger of collapse. The so-called "slow movement" has opposed it worldwide and from many fronts. As a cultural movement it began with the opposition to fast food in Europe in the 1980s and crystallized with the establishment of the World Institute of Slowness in 1999 in Norway by Geir Berthelsen and the release of *In Praise of Slowness* in 2004 by Canadian journalist Carl Honoré. Since then, the "slow" label has been applied to many areas, from cinema to academia to video games. The phrase "slow gaming" is currently being used not only to market (normally small and independent) productions, but also in creative manifestos, such as Artur Ganszyniec's "In Praise of Slow Games" (2019), where he defends games that treat the player "as an adult, someone capable of thinking, feeling, and understanding." *Death Stranding* was not described as a slow game in its marketing paratexts, but it fits the formal tenets of the movement.

In previous approaches to slowness in games (Navarro-Remesal 2020), we have described slow games as having a dilated sense of time, a focus on serene contemplation, and a noneconomic sense of action. We have also identified some mechanics of the style, including walking, waiting, sitting down, resting, talking, and contemplating (2020, 136–137), present in games such as *Old Man's Journey* (Broken Rules 2017) and *ABZÛ* (Giant Squid 2016). Slow gaming is marked by "hypoludicity," a term used by Steven Conway (2012, 38) to describe an emptiness "of empowerment, of challenge, of agency" in games. It is also related to Roland Barthes' idea of "catalysis" (2005), or that which is useless to the action. Shaila García-Catalán et al. (2019) argue that catalyzes allow description and shape the character. Lastly, boredom (Terrasa Torres 2022) is an important potential ingredient of slow games. Olli Leino (2018) has described the "ludic boredom" that describes gameplay in *Euro Truck Simulator 2* (SCS Software 2012) and Jaakko Stenros (2021) has studied the "beautiful boredom" that can occur in live action role-playing games (LARPs), when players rest, catch up, and temporarily wander from the demands of action without leaving the state of make-believe necessary for playing.

The slow game experience is generally a very reflective and regenerative one. We argue that *Death Stranding* shares this nature. Based on that, we propose an ecosophical reading of how its slow gameplay and its thematic emphasis on slowness articulate a discourse on regeneration and healing after collapse. To do so, we present Panikkar's view of ecosophy and, in particular, his metaphor of the "three bodies," which will structure our analysis of the game's ludofiction and its (ambiguous) use of mythemes about the self, the communal, and nature.

Ecosophy and the three bodies

Born in 1918 in Barcelona to a Spanish mother and an Indian father, Panikkar was a philosopher and theologian who self-described as Christian, Hindu, and Buddhist. He coined the term "ecosophy" more or less in parallel with Félix Guattari and Arne Næss (as discussed in Pigem 2021), though each one of them used it in a slightly different manner. Panikkar's thought is too diverse and nuanced to be properly summarized here, but thankfully his texts and interviews on ecosophy were recently collected in a single volume titled *Ecosofía: La sabiduría de la Tierra* (2021). In that book, Panikkar summarizes his views with the metaphor of the three bodies: "My first body is this body I see. The second one is humanity.... Our third body is the Earth, nature. We *are* Earth, we do not only inhabit its surface and use it or exploit it" (2021, 47 [translated from Spanish]).

This metaphor does not mean that we are strictly constructed in three closed areas, or concentric circles, but that there is movement between these spaces because we are connected and inter-independent: "We are microcosmos: we are not, each one, a small part of the world, but a small world" (2021, 31). Panikkar repeatedly argues that Earth is a living being and reality is alive, and advocates for slowness to feel that: we need "contemplation, silence, walks" (2021, 31). Panikkar saw the Earth as a subject, as a body, as an *anima mundi*, and talked of the Vedic ideas of *bhūmitva*, or "Earthliness," that which relates to the Earth, and *bhūmi-jñâna*, "Earth-wisdom" (2021, 57). Although he distrusted an uncritical view of technology, he was wary of idealizing the past: "Our global situation does not allow us to be so monoculturally provincial. We also cannot accept the old obsolete images of the world" (2021, 60, translated from Spanish]). More importantly for this chapter, Panikkar rebelled against "directional time," and defended going back to the idea of time proposed by Hesychius of Alexandria as "the life itself of being" (2021, 84). There is no arrow of time, Panikkar argued:

"From a philosophical point of view, I'd say that the essence of time consists of rhythm … reality is rhythmic" (2021, 85).

As a philosophical framework, Panikkar's ecosophy allows us to study the societal and environmental sides of collapse. Moreover, it makes them inseparable from the individual. We are not living in a society or on Earth; we are part of them. Ecosophy also gives us a critical view of technocracy and the myth of unlimited technological development. Slowness is a central asset of its proposal for regeneration. For all these reasons, it is a very useful conceptual framework to unpack what *Death Stranding* has to say through its fiction and its mechanics.

The first body in *Death Stranding*: Self

Our first bodies are these bodies we see. Our physical bodies situate us in the world. Being a body means being part of nature and makes us think of physicality, of labor and wounds, of death and birth. The world of *Death Stranding* is out of balance due to an explosion that broke the limits between life and death. As a product of the Death Stranding cataclysm, *being* itself, our first body, has collapsed.

Death changed, because "repatriated" people, like Sam, are able to come back from it. His soul can navigate a purgatory called "the Seam" to come back to life. We never truly die in *Death Stranding*, only go temporarily to the Seam and back. A broken relation with death defines many of the secondary characters' backstories, such as Heartman (who stops his heart every twenty-one minutes to die and search for his family in limbo), Deadman (a modern Frankenstein monster whose body was created from corpses and stem cells), or Mama (who is still bound to her unborn child). Corpses have become menaces. If they are not incinerated, they become BTs ("Beached Things"), ghosts stranded in the world of the living that cause explosions ("voidouts") if they interact physically with the living. Sam's first mission is to transport the corpse of his adoptive mother and incinerate it.

Birth has also collapsed in *Death Stranding*. The game puts it at the heart of its fiction in a way that is uncommon in popular culture. Like death, it has also been broken by the cataclysm: there are BBs (or stillborn babies used as tools to detect BTs), the ghost of Mama's baby is still connected to her through a ghost umbilical cord, and some characters, such as Deadman, were bred artificially. While death has been widely discussed in academia, birth has been generally ignored, mainly because, Alison Stone argues, existentialism sees human existence as being fundamentally structured by

mortality rather than natality (2019, 14). Stone reminds us that being born implies "coming into the world with and as a specific body, and in a given place, set of relationships, and situation in society, culture, and history" (2019, 1). Being born is historically, socially, ethnically, and geographically situated. Taking natality into account "sheds new light on our mortality, foregrounds the extent and depth of our dependency on one another, and brings additional phenomena—such as our relatedness to others and the temporal shape of human life—together in a new way" (2019, 1).

BBs like Lou, Sam's companion, evoke, as Korine Powers (2020) explains, the science fiction tradition of male pregnancy. *Death Stranding* displaces the effects of the physical realities of pregnancy onto a playable male body through gameplay mechanics like balancing Sam and his cargo over diverse terrain. Pregnancy and parenthood is presented in the game mechanics with the care that Lou demands. *Death Stranding* is a game about care, first of our first body and of a body dependent on it. As Stone (2019, 11) argues, pregnancy exemplifies how the self is always already in relation with others: "[W]e begin life profoundly dependent on the other people who care for us physically and emotionally" (2019, 2). Throughout the game, Sam is chased by Clifford Unger, a ghostly soldier demanding to get "his BB" back. In the final moments, we discover that this BB was Sam himself: like Lou, his birth also collapsed, but was saved by someone who cared for him. The game ends with Sam accepting Lou as an individual and not a tool, and liberating Lou from her pod, in practice, birthing her.

Beyond death and birth, the collapse of being in *Death Stranding* is ever present in bodies. The vulnerability of bodies is shown through illness and injuries. There is a lot of body horror in the game, a recurrent motif in Hideo Kojima's work, and Sam suffers aphenphosmphobia, or aversion to being touched. Sam's main interactions with others are through holograms, and his body shows spectral, bruiselike handprints, a result of his interactions with the dead. Mechanically, the game shows the physicality of Sam's body through his meticulous movement, in the need to hold the controller's triggers to hold his cargo and keep balance, in the need to hold his breath so as not to be captured by the BTs. Every one of Sam's movements takes effort and time, his body articulating the slow aesthetic experience of the game.

Sam's body also reveals his precarity: Kojima said that he is "like a blue-collar worker" of the obscure Bridge corporation (Chen 2020). As a "working-class hero," he illustrates the irregular power relations between company and worker (Iantorno et al. 2021, 90). *Death Stranding*'s mechanics literalize the precarity of Sam's occupation through its core gameplay loop, linking "physical precariousness to the economic precariousness of the

working class" (House 2020, 299–300). The game represents some of the values that construct the modern imaginary of working-class occupations, like "underappreciation, resiliency in the face of danger, perseverance, autonomy, hard work, and camaraderie" (Iantorno et al. 2021, 89). This precarity, as we will show in the next section, complicates Sam's social connections, or his second body.

In summary, *Death Stranding* begins its discourse on collapse and healing by presenting a set of broken and vulnerable individuals, starting with Sam, its hero and avatar. Some of their vulnerabilities were created by the Death Stranding, but others are inherent to our human condition. The game shows us that, as individuals, we are vulnerable. Our first body is vulnerable. Being vulnerable, as Judith Butler (2004, 26) states, is part of our ontological or existential condition, and it makes us need care and protection. For philosopher Joan-Carles Mèlich, "vulnerability is the anthropological structure that expresses the need for ethics" (2018, 11 [translated from Spanish]). In that sense, it is remarkable that the final confrontation in the game is solved not with a battle, but with a hug. We need each other to heal ourselves. This is where humanity, our second body, comes in.

The second body in *Death Stranding*: Humanity

Vulnerability is not only a personal matter, but a social one. Society produces and heals our vulnerabilities. The social emphasis of *Death Stranding*, together with its body horror, brings to mind literal interpretations of the European medieval metaphor of "the body politic" (Thacker 2015), which compared the state to a body and individuals to body parts. Under that metaphor, a broken society and a mutilated body mirror each other. The way settlements in *Death Stranding* are disconnected from the Chiral Network mirrors how Sam cannot touch other human beings. Healing the world (meaning the planet, but also society) is often used as a metaphor, and characters repeatedly implore Sam to "make us whole again."

The gameplay loop of reconnecting society has an evident function as social commentary. *Death Stranding*'s stance on humanity is deeply political. Kojima stated that *Death Stranding* is a reaction to the corrosive atmosphere of social media, Brexit, and Donald Trump's presidency (Powell 2019). Gerald Farca and Charlotte Ladevèze (2016, 3–4) highlight that in game dystopias, the fate of the world falls into the hands of players and it is they who are responsible for laying the foundations for a better society—normally, through the use of violence. In contrast, the dystopia in *Death Stranding*

moves away from violence, fitting better with "discourses geared towards community leaders and the value of empathy" (Pérez-Latorre 2019). In the world after the Death Stranding, a weak new state tries to impose itself on chaos and the law of the strongest (Planells de la Maza 2021, 125). We can only face the threat of individualism, or the physical and ideological barriers that some in power try to impose upon us, through unity.

Servigne and Stevens remind us that human societies have "an incredible capacity for self-healing" (2020, 147). While most emergency plans focus on preserving physical structures, it is social structures that should be preserved. "Preparing for a catastrophe," they argue, means "establish[ing] links with each other" (147). For them, one of the main missions of collapsology should be the rebuilding of a solid and lively social fabric, "with the goal of gradually establishing a climate of trust" or a social capital to be used in case of a catastrophe (150). It is worth noting that in *Death Stranding* society is rebuilt by using technology but not because of technology. Sam's slow traversal reconnects individuals and only then does the Chiral Network, with its 3D-printed tools, enter the scene. Arguably, social structures create physical ones, and not the other way around. Talking about the internet, Kojima laments, "I wish people would use the technology in a different way" (Chen 2020), which recalls Panikkar's disaffection for technocracy. And yet the game runs its own kind of social media, which allows players to compliment and encourage each other through messages and to get paid with "likes."

Death Stranding asks us to build a new relationship to technology in its fiction but also literally in its online multiplayer features. Players explore the vast game spaces alone, but, at the same time, they are always connected to hundreds of anonymous online players who share items, materials, devices, and constructions such as bridges, ropes, ladders, or zip lines. Here we see an interaction between game, player, and world that recalls the regenerative experience of play defended by Farca, Alexander Lehner, and Navarro-Remesal (2020, 206), which grants players a different viewpoint on issues of their contemporaneity. This collaborative asynchronous gameplay becomes visible towards the end of the game, when the player must travel the entire map in reverse: what was previously an arduous solo journey is then full of the devices of anonymous players, making the return trip much faster than the first time.

By playing in parallel, the multiple "Sams" of many players are healing the world. Heartman calls attention to the utopian potential of play in the game. He explains that saving the world is in the hands of the "homo ludens," a "very special type of human" that can "unite people—creating

culture, shaping the very world around them—not through violence, nor laws or proscriptions, but rather through metaphorical acts of play." For Heartman, only Sam matches this description. Play, a deeply personal force, is thus connected to the social—the first and the second body interwoven in play.

This invisible presence of other porters (players), however, also provides a darker commentary. Sam's struggle is now shared by a whole class. The individual precarity we showed above is suffered by a new class that emerged with globalization to be more competitive by tolerating more degrading working conditions: the precariat. The game links the myth of the refoundation of the nation with our contemporary societal angst, because "while Aeneas (or the American settler) is convinced of his task, Sam emerges as a pawn, a man more driven by circumstance than his national faith" (Planells de la Maza 2021, 126 [translated from Spanish]). Planells de la Maza sees the world of *Death Stranding* as a reflection on the contemporary confusion between the state and the corporate world and the precariousness derived from it (2021, 127). Ryan House (2020, 291) also reads the game as an allegory of the precariat. For him, the game is a "ritualization of life in the *gig economy* in which labor dimensions are characterized by temporary and variable employment" (House 2020, 294). It is significant that players can compliment and encourage each other through messages and get paid with "likes."

Sam shows little solidarity with his fellow precariat class. He seems less motivated by a general compassion for humanity than by his relationship with Lou. In his journey, he is helped by, and bonds with, a wide cast, including Mama, Die-Hardman, Fragile, and Deadman. But he cannot stay to see the results of his success. Once the promise of a better future has been fulfilled, Sam cannot be part of it. He has never wanted to. The genesis of his new society resides in Lou, not in the UCA. As Planells de la Maza states, it is the baby "who closes precisely the paternal-filial circle that sustains much of his story of the promised land" (2021, 126). Mèlich distinguishes the intimate, that "of two," from the public or politic, which starts with "the presence of a third, the third person, the plural" (2018, 49 [translated from Spanish]). Sam makes the politic whole again but decides to retire to an intimate space of two.

Healing our second body is never easy and, the game seems to suggest, it should never be done at the expense of our individualities. A collapsed society (a collapsed second body) requires social structures to heal, but this takes slow hard work, work where individuals can be exploited. *Death Stranding* is an optimistic game that suggests the building of bridges, not

walls, and encourages players to help each other, but its discourse is not naïve. It is neither, especially, when it deals with nature.

The third body in *Death Stranding*: The Earth

Nature is central to *Death Stranding*'s ludofiction. It was fundamentally changed—made unnatural—by the Death Stranding event and in turn radically altered being and society. Late in the game, it is revealed that the Death Stranding is not the first catastrophic environmental rupture, with five previous ones corresponding to the five main mass extinction events in the planet's history. The Death Stranding, however, was man-made, like the sixth mass extinction that is currently responsible for the decimation of species all across the globe (Kolbert 2014). The Death Stranding happened when Bridget Strand, president of the United States of America and founder of the Bridges corporation, brought Clifford Unger's son (that is, Sam) back to life. The collapse of our third body came about because of the well-intentioned mistakes of our first and second bodies.

The environment plays an important role in *Death Stranding*, especially as an obstacle. The terrain is hard to traverse, so walking through it demands attention, patience, and skill. This is significant because walking has been often trivialized in video games, as the pejorative expression "walking simulators" shows. By simulating the difficulty of traversing the complex terrain, *Death Stranding* makes walking important, thematically and gameplay-wise. Snow makes walking incredibly slow and tortuous. Storms reduce visibility. The landscape is the impassive, indifferent, and majestic monster that the player has to confront, a manifestation of what Daniel Vella calls "the ludic sublime" (2015). The BTs are just reminders of the broken, unnatural state of the world. The main obstacle in *Death Stranding* is the world itself, including the vagaries of the weather. Timefall is a dangerous kind of rain that falls, speeding up decay and degradation, lethal to anyone who gets caught in it.

Walking through these lands creates an "awareness space" (Zimmerman and Huberts 2019), an aesthetic dominance of the space that produces an evocative, lonely, and unreal atmosphere based on the uninhabitability of the world. While other games provide moments of respite between action sequences, quietness in *Death Stranding* is part of the core gameplay loop. By virtue of being sublime, this world-obstacle opens another window for the potential regenerative play mentioned above. The landscape of *Death Stranding* is postapocalyptic, but it eschews ruins in favor of sweeping

views that recall Iceland's volcanic geography. The affects provoked by this landscape can be regenerative in an aesthetic way that "resensitizes players to the beauty of the natural world" (Farca et al. 2020, 206). The game is designed to be as harsh as it is contemplative, giving players moments to stop and take in beautiful vistas. It should be pointed out that the visual and sonic aspects of the game work to reinforce each other, with majestic camerawork and the use of the melancholic and soothing music of American-Icelandic band Low Roar. Even with all its gloom, *Death Stranding* remains a hopeful game, always pointing at what needs to be preserved and what and what weaves everything together.

One of these linking elements is weather. *Death Stranding* shows that society, landscape, and weather are interconnected. Japanese philosopher Tetsurō Watsuji described that interconnection with his notion of *fūdo*, understood as interdependent climate, geography, and culture, "wind and earth,… the natural environment of a given land" (1961, 1). *Fūdo* in *Death Stranding* has collapsed. Timefall is the main reason why people are confined underground: it affects every living being, ageing them and corroding materials. Plants exposed to the toxic rain grow, die, and grow again in an infinite cycle of death and rebirth. Furthermore, this rain increases the chances of encountering BTs. If, as Panikkar argued, reality is rhythmic, its rhythms are being reestablished in *Death Stranding*.

How is humanity recalibrating to the rhythms of a new *fūdo*? When cultural practices get out of sync with their reality, their interdependence causes problems. A settlement called "Timefall Farm" teaches us to use the phenomena in our favor, exploiting it to raise crops. Our third body is not dead and, as collapsology would have it, we ought to find ways to reconnect to it after the collapse. Mèlich argues that "inhabiting the world is being able to find its rhythm, and we know—or should know—that this rhythm is not exclusively ours" (2021, 161 [translated from Spanish]). Timefall Farm shows that humanity is slowly adapting to its new *fūdo*, using its rhythms and variable speeds to thrive. The third body in *Death Stranding* might be broken, but, just as is the case with the first and second ones, it is not beyond healing.

Conclusion: Slowly healing three bodies

Death Stranding is a stylistically slow game both in its pacing and its design style. It uses slowness as the basis of its regenerative play and, more importantly, harnesses it to speak to themes of collapse. Unlike the vision of slowness as the next trend in consumer wellness mobilized in many

games and meditation apps that promise "attention by design: a discursive strategy that frames attention as an antidote to technology addiction" (Jablonsky 2021), *Death Stranding* points to the invisible slow labor in our real world and how social structures are vital to our existence and take effort to maintain. Using Panikkar's three bodies we have highlighted how the game makes us notice physical effort and vulnerable bodies, societal distances and precarious work, harm to nature and the need to adapt to the rhythms it develops after a collapse.

Does *Death Stranding* reveal something about the encompassing myth of our times? That is, perhaps, too ambitious; the game is too close to that myth to truly be an "other" that shows us a new perspective. But it does offer reflections on the fragmentation of society, the increasingly precarious nature of work, and the contemporary sense of estrangement from nature. Its critique also sheds light on notions of apocalypse and eternal growth; it defies the myth of the survival of the fittest, establishes the precariat as a central driving force in society, and articulates the mytheme of collapse in a hopeful and humanistic manner. Against the crash caused by individualistic acceleration, it posits slow work and social cooperation.

Like other slow games, *Death Stranding* is often hypoludic and narratively catalytic, but unlike other slow games, such as *Animal Crossing* (Nintendo 2001) or *Neko Atsume: Kitty Collector* (Hit Point Co. 2014), it deploys these traits in a manner that frequently brings attention to the needs of bodies, literal and metaphorical. Healing is possible in its world, but it demands time and attention to embodiment and human connection (to each other, to nature, to oneself). And that is, perhaps, the main mythic recurrence in the game: a tale of slow healing, of rebuilding, of reconnecting. Its landscape can be monstrous, but it is also beautiful. Its technology can help us reconnect. Its inhabitants are worthy of being helped and supported, as even its ghosts (not monsters, but "beached things," stranded in perpetual agony) are worthy of being freed. Read through the lens of ecosophy in the face of collapse, *Death Stranding* tells a cautious but optimistic tale of slow global healing.

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10. Ecology in the Postapocalypse: Regenerative Play in the *Metro* Series and the Critical Dystopia

Gerald Farca

Abstract

This chapter performs an ecocritical reading of the *Metro* games (4A Games 2010–2019), their themes and development as a series, as well as their narrative, affective, and aesthetic strategies, focusing specifically on the series' last installment, *Metro Exodus* (2019). The chapter argues that the gameplay offered by the *Metro* games, which relates a story about the renewal and rebirth of society from a nuclear wasteland, is regenerative on many levels. *Metro Exodus* is a playable critical dystopia in that it holds out the potential of hope and regeneration in the face of violence and societal collapse.

Keywords: utopia, regenerative play, aesthetic, sublime

The *Metro* games (4A Games 2010–2019) are based on Dmitri Alekseyevich Glukhovsky's eponymous novels. They involve players in the ramifications of nuclear warfare and xenophobic ideology. Players assume the role of twenty-four-year-old Artyom, a ranger who has lived at Exhibition Station for most of his life. His mother died in the nuclear apocalypse, and Artyom has grown up without a childhood, in the enclosed and decaying Moscow Metro tunnel system while the outside world has become an irradiated wasteland.

The game series' premise is an extreme one, in which social interactions are mistrustful and xenophobia prevails against Othered ideologies, factions, neighbors, mutants, and, most of all, an ominous race called the Dark Ones. At the start of the series, Artyom embarks on a mission to destroy the leading players of the Dark Ones deep into the Metro system in a metaphorical journey into the underworld. What follows is a first-person shooter with

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Figure 10.1: The Caspian in *Metro Exodus*.

intense shootouts and stealth elements that tasks players to make their way through the tunnels where hordes of mutants and hostile factions abound. On the way, the player is faced with difficult choices regarding their treatment of the Dark Ones. One of the game's endings, in which Artyom establishes peaceful communication with the Dark Ones, rewards kind behavior during the campaign. The alternatives are more disturbing and include their genocide at the players' hands.

With Russia on the warpath, and the rising fear of nuclear escalation, the *Metro* games are topical once again. They engage themes of war, totalitarian regimes, and the mistrust and mistreatment of Otherness. Nevertheless, the series also grants players the opportunity to show compassion and kindness, as well as the opportunity to work towards forms of coexistence. Especially the latest installment, *Metro Exodus* (4A Games 2019), combines these routes towards the idea of utopia—a philosophy of hope in the sense of a continual struggle towards a better future (Vieira 2010). As this chapter will demonstrate, this hopeful journey benefits from a storied, affective and aesthetically rich environmental backdrop.

The regenerative appeal and the ecological force of ecogames

The setting of a derelict wasteland (see Figure 10.1), combined with a fight for a better future, creates a gameplay experience that has a fundamental regenerative appeal that affects players on many levels. It is this aspect of gameplay, regenerative play, that this chapter wants to explore in detail.

The notion of regenerative play is built on the assumption that games stage private struggles that fuel societal efforts to build better futures. Private tragedies—such as Artyom's loss of a childhood and mother (in *Metro 2033*) and his struggle to protect his wife, Anna (in *Exodus*)—are used in the game to relate a story about the struggle for utopia. What is the potential of regenerative play for ecocritical analysis? What kinds of interpretive moves does it allow us to make? As this chapter will demonstrate, the notion of the regenerative that I develop not only outlines different aspects for (eco) game analysis to take into account, but it also centers on hope, which is an important affect in environmentalist discourse.

> In biology, regeneration is the process of renewal, restoration, and growth that makes genomes, cells, organisms, and ecosystems resilient to natural fluctuations or events that cause disturbance or damage. Every species is capable of regeneration, from bacteria to humans. Regeneration can be either complete where the new tissue is the same as the lost tissue, or incomplete where after the necrotic tissue comes fibrosis. (Wikipedia n.d.a)

Regeneration thus describes *processes* by which the new *emerges out of the old*. In the context of art and culture, Hubert Zapf writes that fiction can also be regenerative:

> Texts are sites of radical strangeness, alienation, and alterity, both in terms of aesthetic procedures of defamiliarization and of existential experiences of alienation and radical difference; and they are also simultaneously sites of reconnection, reintegration, and, at least potentially, of regeneration on psychic, social, and aesthetic levels. (Zapf 2016, 12)

In other words, fiction, in this regard, takes on the form of an "ecological *force*" (28), able of "transmitting and conveying certain ethical and political environmental agendas" (Zapf 2016, 20–21).

In video games, regenerative play begins on a basic level: the experience of characters, dilemmas, and events, roaming a natural/cultural game world, savoring its beauty. Take, for example, *The Last of Us* (Naughty Dog 2013) (Farca and Ladevèze 2016), which sends players on a journey through devastated city spaces, infested with the ugly remains of the past, whereas lush forest regions function as a safe space for regeneration and dialogue between the two characters. The natural world majestically takes back what capitalism has claimed and not only reminds players of the planet's beauty and diversity but also of its terrible power. Sounds of the natural world, music,

and lyrics contribute to this sense of alleviating the psyche. Regenerative play, in other words, brings us *affectively* and *aesthetically* in touch with the natural world, including attuning players to the *cyclical* rhythms of seasonal change, birth and death. This environmental experience is also a *reflective* one. Even an ethical one, such as when players are faced with difficult choices, or confronted with the need to reject *egotistical* points of view while embracing more *communal* forms of ecological sustainability and diversity.

To explore the regenerative appeal of the *Metro* games I outline six different but overlapping and mutually imbricated categories of the regenerative. These categories will help structure the analysis below.

- Affective: Basic emotions that arise out of nature/culture experiences and their juxtapositions such as terror, claustrophobia, mistrust, lust for power, but also friendship, love, tranquility, and prudence. These affects profoundly anchor players in the game world, resensitizing them to ecological themes and personal dilemmas.
- Reflective: Contemplation and involvement may continue long after play and in discussions with peers, in game forums, at universities, and so on.
- Aesthetic: The sensorial interaction (audiovisual, haptic, spatial) with the game world that may result in sublime experiences and confrontations with otherness.
- Cyclical: A natural temporality for example, the recurring seasons; cycles of life, death, rebirth, etc.
- Ethical: Matters of plot, character, or player choices concerning the natural environment, the human and the nonhuman, ideologies, etc.
- Communal (from ego to eco): Overcoming individualism, shifting from linear conceptions to more open senses of time and movement, multiperspectivity, and the negotiation of differing perspectives. The porosity of boundaries regarding e.g., gender, concepts of nature and culture, hierarchies, and so on.

The (post)apocalypse and the sublimity of a dead but regenerating world

As a narrative genre, but also as a mode of thinking about the future, apocalyptic fiction conjures images of destruction, an all-consuming fire that, as the French philosopher Gaston Bachelard described in his psychoanalysis of fires, is vivid and swallows everything along its way; yet fire can also be cleansing, a purification paving the way for the regeneration of the world (2015, 23, 174). This is also true for the *Metro* games, which cautiously explore

the possibilities for rebirth after nuclear warfare. It is a brutal rebirth that will take a long time to unfold, and that necessitates passage through, and out of, the darkness of *Metro 2033*, the first game of the series.

In *Metro 2033*, players set foot in the postapocalyptic world of the Moscow Metro some years after the bombs have fallen. Stepping outside is possible, but one needs to wear a gas mask. Both the darkness of the tunnels and the glimmering frozen white of the outside are frightful to pass through. Frightful, but fascinating. Postapocalyptic games often combine the affects of terror and delight, which confront players with an "unexpected sublime vision of decadent beauty" (Canavan and Robinson 2014, 3). To witness the vastness and unfathomable appeal of the natural world—a system one cannot grasp in its entirety (Vella 2015)—makes players feel small and inconsequential. For Edmund Burke, the original philosopher of the sublime, this affective and aesthetic effect evokes reflections about nature, life, and culture because it conjures the sensation of terror and the fear of death in its observers, from a position of relative safety (i.e., behind the screen) (2017, 35–37). The philosophy of the sublime has gone in and out of favor since its inception, and currently, in ecocritical discourse, its status is rather complicated. As Emily Brady explains, sublime aesthetics have been critiqued "from a range of positions including feminist, postcolonial, Marxist, and sociological thought" (2015, 178). However, she redeems them from what she calls the anthropocentric argument by arguing for their reconceptualization as a quality of mystery. After all, the sublime demonstrates that "some natural phenomena are certainly not completely within our grasp. Appreciating nature as having the quality of mystery underpins a kind of regard for nature where nature cannot be fully known or appropriated, which supports an attitude of humility" (189).

The sublime aesthetics of *Metro* contribute to its regenerative appeal. The experience of exploring a game world, witnessing its wonders, dangers, and vastness, solicits regenerative play, which arguably results in a cognitive rethinking of one's own surroundings: how our planet has suffered from cultural and ecological "mismanagement" (Stableford 2005, 136). This "claustrophobic sense of impending ecological limit" (Canavan and Robinson 2014, 9) is reflected in the *Metro* games—not only in the sublimity of its game world, but also in how people treat each other.

Regeneration points to the future, and so do the *Metro* games. They do not only dwell on the past, but also raise questions about what is to come and how we get there. After all, the apocalypse does not necessarily stand for "a final position of the imagination" (11), as Canavan and Robinson claim. Other questions still stand such as: Will we repeat the mistakes of our ancestors? Or will we exploit the opportunity of a fresh start?

Metro 2033 and the reversal of the Stalinist utopia

The Moscow Metro was an underground utopia; the stations were underground palaces that plunged travelers into awe and delight: a network of golden tunnels, plastered with murals celebrating the working class, sculptures and chandeliers illuminating everything. In fact, this was Stalin's plan: to build "a structure that embodied *svet* (literally 'light,' figuratively 'radiance' or 'brilliance') and *svetloe budushchee* (a well-lit/radiant/bright future)" that also functioned as a means of transportation (Wikipedia n.d.b). The socialist utopian dream in the first half of the twentieth century was that the Metro should allow members of the working class to travel between the countryside and the city. This utopia combined the images of a new social order—"a sort of Communist cathedral of engineering modernity"—with the physical prowess on the powerful new *Homo Sovieticus* to bring order to a preindustrial society and strengthen the status quo—but also to control the populace (Wikipedia n.d.b; also see Hatherley and Herwig 2019).

In the *Metro* games, this order is utterly reversed. The Metro tunnels are dark, dilapidated ruins of humankind's worst sins. They are the places where people have fled and live as vermin. Misery and sickness abound in the stations, and instead of working together, people have formed factions and ideologies which continue the fight on the surface. For example, the Reds and Nazis are involved in a never-ending feud, which is beautifully illustrated by a bridge players must pass over. One the one side, the Nazis have barricaded themselves in the Metro cars, while on the other side the Reds await them. Players need to navigate this shootout and can either participate in the frenzy or sneak below the bridge to evade conflict. Not even a nuclear apocalypse could stop the bloodshed, and the bridge creates a terrifying image of the futility of such conflicts, raising the question whether humankind is doomed to fight forever—but also whether players accept or reject this attitude since you can circumvent the bridge if you want.

Circumventing the bridge brings with it its own challenges since it means dealing with the Dark Ones, a posthuman race whose members are perfectly adapted to the dark Metro tunnels and stand in contrast to the *Homo Sovieticus*. People are afraid of the Dark Ones—whom they do not know and cannot see. Only the kind and compassionate player, who has helped people and avoided conflict, will be granted the choice to evade the bridge.

To aid players in their decision-making, nonplayer characters offer commentary on the world they live in, providing two perspectives. The first is Khan's, Artyom's companion and mentor. "You reap what you sow, Artyom: force answers force, war breeds war, and death only brings death. To break

this vicious circle, one must do more than just act without any thought or doubt" (*Metro 2023*). Khan's position is one of prudence and openness to dialogue and promotes benevolence towards the Other. In stark contrast is Miller, who has established a base of operations in a church and is ready to strike against the Dark Ones. His vision is clearly militaristic: "If it's hostile, you kill it." Players can choose to exterminate or reach out to the Dark Ones. Nevertheless, such acts of negotiation are rare and risky. Over the course of the series, this pessimism will gradually turn into ecological optimism moving the overall story into the direction of critical dystopia, in which hope is more commonplace (Vieira 2010, 17; Farca 2019, 129).

Metro Exodus and the bumpy road towards an ecological utopia

Whereas *Metro 2033* and *Metro Last Light* only show rare glimmers of hope, *Metro Exodus* is considerably more utopian. The journey, or rather exodus, moves away from the enclosure and darkness of the Metro tunnels and reaches to the East, where Artyom has registered mysterious radio signals. Nobody believes him, but his insistence pays off, and he and Anna, his wife, discover a train called the *Aurora* (Latin for "dawn") (see Figure 10.2), which leads them outside of the city. As Fátima Vieira argues, the search for the train shows a utopian impulse derived from a "feeling of discontentment towards the society one lives in," driven by "the principle of hope" (2010, 6). As in the biblical Exodus, many trials await Artyom and his crew on the trek eastward—moving from Moscow to the Volga, to Mount Jamantau, to the desert of the Caspian Sea, and finally into the lush woods of the Taiga, with a detour confronting them with their past in Novosibirsk (see Figure 10.3).

The gameplay experience of *Metro Exodus* again shows diverse regenerative aspects: the sublime landscapes start to include rivers, deserts, and forests beyond the more familiar urban ruins, and seasonal change becomes noticeable again. In addition, while the journey is still generally linear, confined to the train tracks, the horizons expand and pockets of small-scale open-world areas become available for the player to explore, moving away from the more linear, militaristic worldviews that were prevalent in the Metro. To reach these pockets, Artyom and his friends will pick up people in need, celebrate weddings on board the *Aurora*, fight for their lives in the wastelands, and grow closer as a community in search of peace, health, and a fresh start. The communal aspect of the game and the increased opportunities for the respectful treatment of human beings in the game's decision tree is fundamental to the game's ecological and regenerative appeal. In addition, the journey is patterned by the four seasons, which function not

Figure 10.2: Onboard the *Aurora* in *Metro Exodus*.

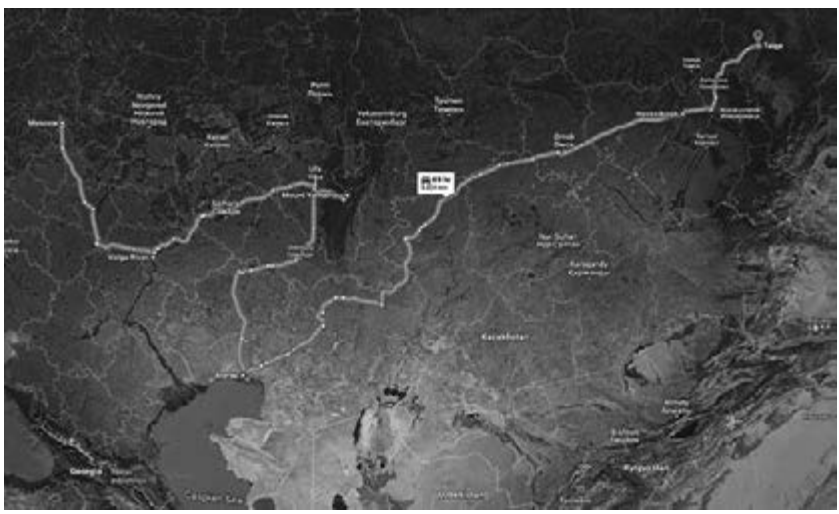

Figure 10.3: The game's approximate route in Google Maps, tracing the modern Trans-Siberian Railway.

only as a backdrop but add additional meaning to the stations and events, imbuing the game's ending with hope, with spring just around the corner.

Winter: Leaving behind the Metro and the train track towards utopia

Metro Exodus begins in the never-ending winter of Moscow. Artyom and his friends barely make it out of the city and into the wilderness that awaits

Figure 10.4: The chronotope of the railroad in *Metro Exodus*.

them. As implied above, the journey to the East can be seen as an escape from the confinement of the Metro tunnels, where war, fear, and suspicion of Otherness abound. The escape has both a literal and figurative meaning, and the chronotope used to structure the story is the "train track" (Lanser and Rimmon-Kenan 2022, 433). The track implies a certain spatio-temporality and it is a recurring image in the game. It will steadily lead Artyom towards a utopian community, but to get there, players will have to dodge bumps in the road and pass through several open world segments each with their issues and dilemmas (Volga, Caspian, Taiga). As seen in Figure 10.4, the train track beckons these promises, challenges, and unknowns that lie just beyond the horizon.

Spring: The frozen lands of the Volga and the abyss of Jamantau

The first stop in the journey lies in a wide river region called the Volga (see Figure 10.5). The train tracks are blocked, and the *Aurora* has suffered damage from accidentally running over the blockade. Artyom is sent out to gather intelligence, which leads him to a technophobic cult whose members worship a large mutant fish they call the Water Tsar. The cult condemns all use of technology and enslaves or sends people to their death who do not share their opinion.

Among these enslaved people are Katya and her daughter, whom you can set free on your way and who tells you about a mechanic, named Krest, who can help with the engine problems. After fighting the water beast, repairing the engine, and letting down a bridge to cross the river, the crew (including its new members) resume the journey, with a major setback, however. For in

Figure 10.5: The Volga in *Metro Exodus*.

the meantime, Anna embarked on a scouting mission and fell into a military ammo dump filled with poisonous gas. Exposing the war's atrocities and its pollution, this is a pivotal moment in the plot. It will push the crew to find a cure for Anna, no matter the cost.

The value of compassion and kindness are again foregrounded, and the frozen spring of the Volga is a reminder of how difficult this is to achieve. The same holds true for Mount Jamantau (the next step in the journey), where the crew encounter the last of the Russian government. Instead of helping Artyom, these people have become cannibals and stand as a symbol of the old, militaristic order. The stop at Jamantau, while a point of elevation, thus recalls humankind's deepest, darkest atrocities, but it also helps Artyom and the crew to find their way—both figuratively (by allowing them to distance themselves from militaristic trains of thought towards more communal values) and literally, in that they are made aware of a satellite center in the Caspian that could lead the way to a habitable space to settle, and where the fresh air could cure Anna.

Summer: The desert of the Caspian Sea

The Caspian Sea is one of the most polluted bodies of water in the world. Its ecosystems are in critical condition due to sewage runoff, and pollutants

dumped by the oil industry that extracts natural gas and oil from the region (Tehran Bureau Correspondent 2015). In *Metro Exodus*, the sea, which is actually a lake, is completely dried up, recalling the devastating environmental history of the Aral Sea, which was also critically reduced due to damming and reckless water management under Soviet rule. As a result of climate change, the Caspian Sea might face the same prospect (Wesselingh and Lattuada 2020). In *Metro Exodus*, this prospect has come true. The Caspian Sea powerfully reminds players of the sublimity of a dead world. On entering the area, players are astounded by the vastness that awaits and its quietness. Hot air, drought, and unrelenting, blinding sunlight are steady companions—and specifically at night, the Caspian becomes a place of mystery plunged into a shimmering blue by the bright moonlight.

Yet, the desert is not as empty as it seems, and a faction of bandits led by the "Baron" have transformed it into a totalitarian space. They have enslaved the locals and erected a phallic symbol of power, a huge tower where they now reside. In addition, a large gate blocks the *Aurora*'s way. Players have to negotiate the blockage and consider what to do about the enslaved people. On his way to get the satellite images, Artyom meets Giul (a native of the Caspian), who helps them obtain what they need. This includes water and fuel for the *Aurora*, which they steal from the Baron. Artyom tries to negotiate peace with the Baron (to free the slaves), but the encounter ends in bloodshed and with the Baron's death.

Acting with compassion and generosity is hard in tense situations—where murder, famine, and plague abound—but news of them travels among Artyom's crew, improving their opinion of him. Moreover, there are plenty of side missions in which players may show compassion instead of indifference: by showing mercy instead of killing people, sneaking past guards, helping the slaves in different situations, or even through small deeds such as bringing Giul a family picture of hers from a bunker.

In between: The *Aurora* as a safe haven between the madness of the wasteland

An important aspect of the game's communitarian appeal is the *Aurora*—as a safe haven from the outside, which grants players time and space for relaxation and intimate dialogue with the crew. Players may also restock their supplies here (weapons, ammo, health, etc.) and tinker with their weapons. The *Aurora* thus functions as a hub world and a buffer space

Figure 10.6: A wedding onboard the *Aurora*.

between the levels, where important decisions pertaining to the journey are made. It is a home base between the madness of the wasteland and a site where dimensions of utopia are explored and debated. During the journey, military thoughts among the crew are on the decline, whereas the focus moves to creating bonds. The more crew members players pick up, there is also a need for new wagons—and, consequently, the *Aurora* is extended and upgraded to house families and celebrations. Artyom and Anna savor intimate moments in their cabin, and the entire crew celebrates the marriage of Katya and Stepan (see Figure 10.6). Shortly after the wedding, however, Anna's condition worsens, and the plot now moves towards its climax in the winters of Novosibirsk.

Fall: Finding utopia in the Taiga

The satellite images found in the Caspian point to a lush environment in the Taiga where the power of nature and fresh air offers a chance to cure Anna's lung condition. When the crew arrives in the Taiga, their dreams and hopes seem to become a reality. A green valley welcomes them to a world that promises a fresh start. And although the Taiga is still filled with danger as seen in the images below (hostile factions, mutated bears, and packs of wolves roam the woods and attack players), it is the best place they have encountered thus far. Unfortunately, Anna's condition worsens, which provokes Miller and Artyom to embark on a dangerous trip to Novosibirsk, where a doctor has developed a drug for Anna's condition.

Winter: The ordeal of Novosibirsk and redemption in the Taiga

The plot reaches its climax with the return to the city and to the Metro tunnels of Novosibirsk. Ever the militarist, Miller feels at home again. He struggled to adapt to life on the *Aurora* and seems destined to go down with the old order. Miller sacrifices himself for Artyom and, more specifically, for his daughter—ending his story, as well as the dystopian episode of Anna and Artyom's life in the Metro.

For Artyom, on the other hand, life continues, and his fate will depend on how players behaved throughout the game, how they treated the crew, and how often they chose violence. Did players treat people with respect, help them out, or did they shoot their way through the levels "without any thought or doubt" (*Metro 2033*), as Khan remarked in the Moscow Metro. In Novosibirsk the radiation in the city is unbearable and Artyom becomes severely sick, but he is rescued by his crew. Whether he will survive depends on how many of his crew can give him blood transfusions. If players have not saved enough people during the trek through the wasteland, Artyom dies. Both endings (the one in which Artyom dies and the one in which he survives), however, feel hopeful or at least ambiguous because Anna and the crew settle down in the woods. They have established a small community and have successfully moved from militaristic and hostile ways of thinking to fostering compassion and emotional connection. The lush environmental backdrop underscores this regeneration of human society by couching it in a landscape slowly restoring itself, flushing out the poison. The route has been a long and tortuous journey—but the longer it is the more clearly things come into perspective (Ashworth 2013, 68). The cyclical temporality of the regenerative holds that from the ashes, there is always a rebirth.

Conclusion

The *Metro* series and its negotiation of hope undergoes significant change from game to game. While *Metro 2033* reads as a classical, often hopeless, dystopia—in its bleak and derelict vision of humankind dominated by xenophobia and hatred—*Exodus* embarks on a more hopeful, ecological route that marks it as a critical dystopia (Sargent 1994; Farca 2018, 412). The franchise's major theme, then, can be found in the challenge of breaking free from dystopia. The *Metro* games suggest that to do so means to chart a way into a new direction, human compassion, forgiveness, self-sacrifice, and a life in balance with the natural world. Such a journey depends on

cultivating found family, and a communal space, not the hostility of military action, or fear and suspicion of Otherness—whether the Others are the Dark Ones in the first two games or the people lost and in need of help in the wastelands of *Exodus*.

To sensitize players to such themes, which may be hard to swallow for lovers of first-person shooters and gory combat games, *Metro Exodus* emphasizes emotional connectedness and interactive involvement with plot and characters. To make players care, the *Metro* games connect the global fight for utopia to the private issues and struggles of the main characters—whom players sympathize and identify with. Fighting for Anna's life, for example, is intimately linked to Artyom and the crew's general goal to attain a better life in the Taiga.

Pursuing these goals affords the characters and the players the pleasures of "regeneration," which affect them emotionally and aesthetically in the act of play. In other words, regenerative play makes players care, feel with the characters, and, ultimately, it helps them compare the fictionally enacted journey to real-world concerns. This overall sense of regeneration is derived from many aspects of gameplay that work together. The ones I have discussed in this chapter are:

- Players' *affective* connection to the characters, plot, and dilemmas they experience (through the sensualizing power of fiction)
- A *reflective* dimension that encourages players to ponder the connections of fictional issues and real-world concerns during and after playing the game, a trial action from which they might learn something
- The *aesthetic* sublimity of a dead but regenerating world (specifically to the East) and its ability to evoke mystery, wonder and astonishment in players
- The *cyclical* structure of recurring conflict, but also natural cycles of seasonality and rebirth
- Players' (and characters') *ethical* capacity, which is exercised in decisions or attempts to break away from cycles of violence and in the treatment of Otherness: different creatures, cultures, ideologies
- The establishment of *communities* and spaces for family while overcoming militaristic trains of thought (mainly in *Exodus*)

In summary, *Metro 2033* and *Metro Exodus* differ in tone and message. In *Metro 2033*, the focus is on the misery of the people, how they suffer in the Metro and are held in thrall to the ruling ideologies of the underground world. This claustrophobic misanthropy is reinforced by the game's spatial

structure, which rests on an inversion of the Stalinist utopia, and the literal and figurative linearity of the Metro tunnels. *Metro Exodus* affords players more grounds for hope and a broader space of negotiation, effectively using the healing, or the regenerative powers, of nature as a backdrop. Private struggles make players care and subtly connect to a greater struggle for a sustainable utopia. The sublime landscapes of the most recent game also frame nature as a source of mystery and wonder. With this broadening horizon, the multiplicity of human potential is brought into frame. No longer are the characters subject to linear trains of thought, which are doomed to repeat the nightmares of war and environmental devastation. With the shifting of the seasons, so clearly felt and experienced above ground, the slow shift of society is revealed, culminating in the establishment of a small utopian community in the woods of the Taiga. This dialectic between linearity and openness—the struggle for emancipation from military ways and superstitious, narrow-minded ideologies towards alternative potential—traces the narrative arc of the *Metro* games.

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11. There Is No Planet B: A Milieu-Specific Analysis of *Outer Wilds*' Unstable Spaces

Lauren Woolbright

Abstract
Media can make hostile environments such as outer space imaginatively accessible. Through video games players can feel transported and activated, entangled with game environments in ways that have the power to shape how audiences feel about environmental loss. Using Melody Jue's method of milieu-specific analysis and Karen Barad's agential realism, this chapter illustrates how the unfettered experience of exploring the nonlinear, mystery game *Outer Wilds* creates an opportunity for players to reflect on the dubious ethics of careless technological innovation. If we can empathize with a people's grief at the loss of their worlds and, instead of succumbing to fear, collaborate to enact solutions, we can save our world—and each other.

Keywords: environmental media, milieu-specific analysis, space, planet B

Doubt is an uncomfortable condition, but certainty is a ridiculous one.
—Voltaire, *Complete Works of Voltaire* (1968, vol. 12, part 1)

Few games jettison their players into safe environs—that would be boring, after all, and games capitalize on fantasy and adventure, in which danger inheres. But few games launch players into as variable a world as *Outer Wilds* (Mobius Digital 2019). The winner of Giant Bomb's Game of the Year in 2019 and the BAFTA Best Game of 2020 centers instability as both a theme and a set of mechanics at its core. Since the game takes place in an explorable

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solar system, everything in it is constantly in motion in accordance with the laws of physics, making for a major design challenge. Because it is a fully open world, its story had to be carefully crafted to cohere no matter where the player goes or in what order they experience the game. Furthermore, the game features within its solar system different planets and environments with different physical conditions and spatial properties, multiplying player choices and making for truly individual experiences of the game. Its plot revolves around the player character getting stuck in a twenty-two-minute time loop—after which the sun goes supernova and during which players must comb the solar system looking for clues to reveal why this is happening and, hopefully, break the cycle. Each planet introduces new environmental challenges, and players have to use the technologies at their disposal to navigate these dangerous spaces. *Outer Wilds* invites players into the world through the appeal of exploration and discovery and solving mysteries that illuminate truths about the world. Environments that materialize a narrative world and pose meaningful challenges such as in *Outer Wilds* are the most immersive and can unsettle players into active engagement with a game's themes.

Outer Wilds' themes and mechanics lend themselves to what Melody Jue calls "milieu-specific analysis" (2020, 3). In her book *Wild Blue Media: Thinking through Seawater* (2020), Jue discusses the foundations of traditional rhetorical and theoretical analysis as being grounded in what she calls our "terrestrial bias" (2020, 9); in other words, our thinking is necessarily tied to our environments. Being land-based creatures, we speak and think about ourselves and our philosophies in terms of *land*scapes: soil, fields, gardens, agriculture, caves, mountains, forests, trees, flowers, fungi, and deserts all dominate our cultural metaphors and our imaginations. They guide our ways of knowing ourselves and understanding our world. Considering the role of orientational metaphors, Jue points out that "[o]ur sensory-motor domains—the ways we orient in space from the reference of our own embodiment—often map onto other domains of social experience having to do with emotions and interpersonal relationships" (82). Using examples of beings inhabiting the deep sea, underground, and void environments, she explains that "we are always working from a position of surface dwelling" (83).

If a traditional essay, book, film, or video game is inscribed on and with the materials of the Earth, what would fluid writing be like, if Jue were to undertake it? And what form ought theses about space-based media take? What vacuousness would need to expand in silence between the countless violent, beautiful phenomena that swirl in the void? To some extent, essays

can be understood as individual celestial bodies composed of whatever matter(s), organized into solar systems of meaning orbiting core ideas in an orderly, predictable fashion. While a nonlinear approach allowing for reader choice would more closely resemble the freedom of movement such spaces afford, print media such as this book do not easily facilitate that. And yet linearity can also be space-based: pushing off into the frictionless expanse, a person would travel endlessly in that direction, linearly. As long as we are tethered to something, we won't become lost, but if we want to see where momentum takes us, we can cut the cord and drift.

Thus, I launch my analysis of the use of instability as a way to communicate environmental meaning in *Outer Wilds* to see how it fares in the black expanse between planets and particles, exposed to phenomena such as radiation, near-vacuum, gravitational pull, lack of oxygen, black holes and white holes, binary systems, supernovae, weightlessness, and 3D movement. Jue writes, "The reason that sentence-level metaphor matters is because it indicates how speakers position themselves in space, which occurs not through nouns, but via other parts of speech, like prepositions and verbs" (83), so I will pay careful attention to all my grammatical choices. Certainly, a game about spacefaring invites milieu-specific analysis, but even so, the temptation is strong to return it to Earth for examination, to conduct its dissection in the comfort of the lab where we need not worry whether systems failure will lead to catastrophe. But in order to better understand what changes about media when considered through a spacefaring lens, it is worth trying. Special equipment is necessary to facilitate such an analysis: a fully sealed space suit, oxygen tank, thrusters, and various types of sensors to pick up wavelengths of light and sound to which human senses are not attuned and to navigate terrain that has been shaped by forces we do not experience on Earth. In other words, we are forced by our biology to bring with us the means by which to survive in an inhospitable milieu, and in hypo/theoretical space, we bring with us familiar theories of materiality, environmental ethics, and finitude to help us survive. Beyond metaphor, I am wondering what a milieu-specific approach to media means for the composition of analysis itself.

Using Jue's (2020) method of milieu-specific analysis and Karen Barad's (2007) agential realism, this chapter illustrates how the experience of exploring *Outer Wilds*, which is designed to allow a great deal of player freedom, creates an opportunity for players to reflect on the dubious ethics of depleting natural resources for the sake of technological innovation. For its part, *Outer Wilds* doesn't fret about the end of the universe itself, hypothesizing sunnily that in the final, inevitable destruction, a new one

will be born. Players have the bittersweet privilege of contributing to the composition of the new one with the help of their friends. No such optimism can secure the fate of our poisoned Earth, but it may be that what we all need emotionally in this cultural moment is to appreciate the vastness and mystery of our world, even as it is ending—or at least transitioning into a new Earth reality.

Star charts

Increasingly, we have found our critical thinking confined indoors with tables, chairs, desks, cups, houses, workshops, tools, electricity, and computers framing our ways of thinking and being. This necessarily affects how we come to understand our media as well. Jostling ourselves into a space-based milieu requires effort. Games are uniquely able to reposition players in different environments, many of which—such as the ocean—are largely inaccessible to normal people due to the expense of costly equipment, and the lack of training. Some environments are completely out of reach—such as outer space—and so games can immerse players in explorable environments they would not otherwise be able to encounter. Other media may also offer immersive worlds through storytelling (as in film or literature), some even allowing participants to enjoy a 360-degree experience through VR or in a mixed reality game, or to make story choices as in gameful video media. But digital games like *Outer Wilds* encourage responsibility-taking in addition to empathy and immersion through their reliance on meaningful player choices (which are more constrained in cinematic media and less consequential in media without narrative). This works not only to drive a story, but also to create unique experiences through emergent gameplay and free exploration. In *Outer Wilds*, the story that emerges is that of the player investigating the mysteries of the solar system. Even though all the secrets revealed are the same for all players, the circumstances in which they are discovered vary widely. This instability in storytelling harmonizes with the many unstable spaces players navigate in their search.

There is plenty to ground players at the game's opening on their home planet of Timber Hearth. While the protagonist is a blue-skinned, four-eyed creature belonging to a gender-neutral species that calls themselves Hearthians (see Figure 11.1), which is decidedly not familiar, they wake beside a campfire in a forested glade that evokes the rustic aesthetics and unique ecologies of the national parks of the American West, with redwood trees and spurting geysers; art director Wesley Martin notes that the visuals were

Figure 11.1: Hearthian by a campfire.

inspired by his childhood surrounded by redwood forests. In "The Making of Outer Wilds" (Noclip–Video Game Documentaries 2020), a documentary film by Noclip Documentaries, he says,

> Timber Hearth is a combination of Yellowstone and Sequoia National Park. And a little bit of Mt. Rainier, too, because on the surface you have, kind of like the alpine trees. Brittle Hollow we looked at like Greenland and Iceland, like the basalt rock stuff.... [Giant's Deep] is sort of loosely inspired by the Santa Cruz beach cliffs where I grew up. (11:58–12:28)

The architecture of the Timber Hearth village is mainly wooden with janky-looking tech here and there. The sound design, too, falls in line with this rustic aesthetic, featuring instruments and simple melodies of bluegrass music that carry associations with the American wilderness.

This familiarity gradually slips as hints at what is to come emerge; the game opens on the player character's first day as an astronaut ("traveler" is the Hearthian term). As they go about saying their goodbyes, the game's tutorial offers minigames for flying the spacecraft (try to land on a geyser), navigating a zero-g cave (for practicing space walking and ship repair), an area full of the lethal gas known as ghost matter (a mysterious substance that is extremely hazardous—and invisible; players use a deployable satellite camera called the scout to take pictures to see where impassable areas are), and an observatory where they can try out their signalscope, which picks up the otherwise inaudible sounds of the other celestial objects and astronauts. Each traveler is recognizable by their musical instrument of choice—again,

a bit of comfort that connects them across the lonely expanse of space between their posts across the solar system: Chert plays drums, Riebeck banjo, Gabbro flute, Esker whistles, and the long-missing astronaut Feldspar plays harmonica. Trying out the signalscope reveals the direction where known astronauts have holed up as well as numerous unknown signals, including one that sounds suspiciously like harmonica, but is coming from Timber Hearth, and Feldspar is nowhere to be found. These clues provide some of the first gravitational fields pulling players into the game's story and pointing out places to explore.

The last location in the village is the museum, which introduces players to the Nomai, ancient inhabitants of the solar system before the Hearthians evolved, and whose ruins, artifacts, and writings can be found on all the system's five planets. Players are given a translator tool to decipher the Nomai writing, which appears on surfaces such as walls and floors. Their writing is nonlinear; it appears as glowing spirals with one writer responding to another in a branching spiral, creating a beautiful pattern that can look cloudlike or like water currents. Each branch is a different writer responding to the others in a kind of proto-text messaging system made up of many voices. The spiral or gyre is a significant image in some Earthly cultures, such as the Maori of New Zealand, who use the spiral (which they call "*koru*" meaning loop or coil) to represent, as Dani Rhys (n.d.) explains, "The fluid, spiral shape of the *Koru* symbolizes eternal movement, while the inner coil is a symbol of the cyclic process of life and death.... The Maoris believe in a transfer of energy that was always in movement and could not be fully destroyed." While the game developers likely did not intend to make a reference to Maori culture, the meaning of the Maori *koru* resonates with the Nomai writing and its significance in the game. In the context of space, the spiral evokes the movements of rotational spin, revolution around, and sweeping through the void—including entire galaxies, which have their own orbits relative to each other. The spiral also evokes the inescapable pull of a black hole as well as the life cycle of stars, which the game's museum explains in excellent scientific detail. Astute players will notice that the Hearthians' sun is a red giant, which means it is older and farther along in its cycle than our own sun, and close to going supernova.

Before players leave the museum, they have a strange interaction with its newest addition, a statue of a Nomai bust, all curly hair, horns, and three eyes. The statue turns towards the player, all three eyes aglow, and the memories of the game as played so far flash in the protagonist's mind. Not long after that, the sun explodes destroying everything. Instead of dying, however, players see all their memories since encountering the statue flash by them

and wake by the campfire again. It soon becomes evident that players are stuck in a twenty-two-minute time loop, at the end of which the sun explodes. Thanks to the Nomai statue's memory technology, which bonds with and stores an individual's memories, players are able to retain all the memories from their cycles through the loop, giving them the opportunity to explore, gather information, and try to figure out what is going on and how to end the loop—for better or worse.

Instabilities

One way to theorize the environments of *Outer Wilds* is through the lens of new materialism, which has proliferated ways to more deeply consider nonhuman elements in our world. This is especially pertinent for *Outer Wilds* given its realistic (and dangerous) astrophysics, daunting environments, and the necessity of technological mediation for players to traverse these spaces. Philosopher and particle physicist Barad (2007) conceives of matter itself as agential, which means that all matter, all objects have "desires" in their own way and seek them out; an object in motion wants to stay in motion, we might say. Describing what she refers to as an agential realist conception of power, Barad writes, "agency is cut loose from its traditional humanist orbit. Agency is not aligned with human intentionality or subjectivity.... Significantly, matter is an agentive factor in its iterative materialization" (235). This seems particularly applicable to the quantum objects in the game, which move as though according to their own whim, except when frozen through observation, either in person or with a camera. Their responsiveness to human handling undermines their agential power. This may not, however, be a problem for Barad, who contends that it is not simply the case that agency should be granted to nonhumans as well as humans, or that agency can simply be distributed willy-nilly over nonhuman and human forms. Crucially, agency is a matter of intra-acting; it is an enactment, not something that someone or something has. Agency is doing/being in its intra-activity. It is the enactment of iterative changes to particular practices—iterative reconfigurings of topological manifolds of space-time matter—through the dynamics of intra-activity (235).

If agency can be understood as the ability to act, one can see how entangled things become when we consider things beyond the human to be agential. The prefix "intra" emphasizes the impact that agents have on one another, regardless of their level of sentience or personhood. In all of its looping and spiraling, *Outer Wilds* presents players with the opportunity

to consider the nature of collision: between the Hearthians and Nomai, between celestial objects, and between observers and the observed, like the protagonist and the fickle quantum moon. The game could be interpreted as a mediation of intra-activity. Barad goes on to say that "[p]articular possibilities for (intra-)acting exist at every moment, and these changing possibilities entail an ethical obligation to intra-act responsibly in the world's becoming, to contest and rework what matters and what is excluded from mattering" (235). This point about ethics and responsibility is of great significance for the Nomai as the ending of the game reveals.

Space has long been a favorite setting for video games. Early game developers may have chosen to set their games in space because of technological constraints; Patrick Jagoda writes,

> Though there are a host of cultural reasons for the genre's popularity in early digital games, there are arguably also technological reasons for the prominence of science fiction among games of this period. Eugene Jarvis, creator of the arcade shooter *Defender* (1980), has observed that science fiction space battles were so common in the games of the late 1970s and early 1980s because the abstraction of outer space "covered up the inadequacies of [existing console] hardware." (2015, 143)

But *Outer Wilds*' developers made their decision for other reasons, more in line with Barad's agential realism: What happens if the player is subject to forces beyond their control, for example? Lead developer Alex Beachum, who conceptualized *Outer Wilds* as a graduate student, explains in "The Making of Outer Wilds" (Noclip–Video Game Documentaries 2020) that the game is designed not to revolve around the player, as most games do; as he explains: "It's not supposed to feel like a player-centric game. The world doesn't stop simulating just because you're somewhere else" (20:20). He describes how forces of gravity and environmental effects will still impact the player's ship or scout if they are left on one planet while the player travels to another. As art director Wesley Martin explains,

> The way you do nice lighting in games is by static objects that don't move. Everything in *Outer Wilds* is always moving. The way you make games is on a grid in Maya. Everything in *Outer Wilds* is on a sphere. Anything you expect out of game development we had to throw away and figure it out. (11:10)

These design choices make the player feel insignificant in comparison with the forces at play in the universe, a feeling that might be related to

the overview effect that Earth's astronauts report feeling when they see the Earth from orbit for the first time (White 1987). There is a sense of smallness and fragility that has a major emotional impact, making the Earth seem more precious and its people more connected. A Penn State study (Yaden et al. 2016) hypothesizes that even simulated Earth-gazing could produce the same psychological effect. Assuming players are susceptible to experiencing awe in video games, the emotional impact of a game like *Outer Wilds* could be immense, in particular, because the game's open exploration allows players to choose when and how and what they look at rather than the game dictating when a moment of profound reflection occurs, as in cinema or in a game cutscene.

Space travel is extremely precarious. While the Hearthian spaceship aesthetic incorporates wooden planks, slightly lopsided designs, and plentiful duct tape, which makes it all seem a bit ramshackle, the biggest threat comes from the solar system itself careening out of control. There are five planets in the solar system plus one secret planet that must be discovered through play and cannot be reached using conventional space travel, but by piecing together the information and technologies needed to arrive there. To give a sense of the instabilities with which players must contend:

- Brittle Hollow is a dark crust with a hollow center. Under constant threat from its volcanic moon, Hollow's Lantern, it is constantly pelted with volcanic material, losing chunks of its surface that are sent flying into space. Its most significant feature is the black hole at its center, which makes its gravitational pull stronger and means that the player has a harder time using their jetpack to get around in vertical space, lest they be sucked in.
- Giant's Deep is a water-covered planet with scattered islands plagued by cyclones that toss them into low orbit before they fall back to the surface. Players might find their ship similarly thrown out of the planet's atmosphere, lost to the void until the supernova resets the time loop.
- The Hourglass Twins, Ember Twin and Ash Twin, are two planets in a binary system that gradually exchange sand between them as they revolve around each other. Nomai ruins there fill or empty of sand over time, constantly shifting what areas are available to players, closing off some and opening others.
- Dark Bramble is a planetary remnant. Once frozen, it is now overgrown with alien plant life and anglerfish that will consume the ship with the player inside if it is detected. Dark Bramble and the thorny seeds that erupt from it are all "bigger on the inside," containing vast,

fog-and-vine-filled spaces within them. The alien vines have also infected Timber Hearth; one of the craters there has a seed that has begun sprouting, an ominous portent for the Hearthian home planet's future.

– The Interloper is a comet that brought ghost matter and quantum material to the solar system from elsewhere; this is what destroyed the Nomai. Players may initially suspect that the Interloper is what makes the sun go supernova, but, in reality, the sun has naturally reached the end of its cycle.
– The Quantum Moon is itself a quantum object. It only stays in one location for as long as it is being perceived by someone. Once they discover its existence, players have to work out how to locate and approach it. Landing the ship also poses challenges since using the landing camera involves looking away from the moon, causing it to disappear.
– The Eye of the Universe is what drew the Nomai to this solar system thousands of years before. It is also a quantum location and carries with it a degree of sentience, sending out a signal to hopefully draw in another sentient being for reasons that are eventually revealed.

Every planet poses new challenges to which players must acclimate. As they navigate the solar system, players must become attuned to the various properties of space, such as the gravitational pull of objects. The ship can be ripped away from the surface of an object if the planet it is on travels close to the sun or it can be destroyed by the volcanic eruptions from Brittle Hollow's moon, or flung into space on Giant's Deep. But players can also learn to use gravity to help them slingshot around planets or the sun, which, if mastered, can speed up travel times significantly. The ship's autopilot, rather than calculating a trajectory around objects, will propel them into an object or through the sun. Regarding navigation while on the planets, while players can generally rely on their suit's thrusters to propel them and to soften any falls, they must carefully track how much fuel is in their tank, and in places with higher gravitational pull, the thrusters are not as effective and will deplete much faster. Players must also watch their oxygen levels, returning to areas with trees to replenish them. The presence of trees in otherwise vacuum-exposed places is one of the game's scientific fantasies, contrasting sharply with the many refreshingly sound principles by which the game operates. Similarly, Dark Bramble resists logic; how its ecosystem of thorny vines and anglerfish can function is a matter of suspended disbelief serving a chiefly atmospheric purpose. Moreover, the ominous tone it sets and the tension that builds in quietly navigating its disorienting interior

might keep players from exploring the space too early, saving the secrets it holds for last.

Supernova

Given the constraints of composing for a paper medium, I cannot go into as much detail as I would like charting the many, many ways *Outer Wilds* sets players adrift in the milieu of space; suffice to say that the game's focus on information gathering as the core mechanic is one of its greatest strengths, and its universe and story are likewise compelling. I do need to discuss the game's ending, so if spoilers are a concern for you, now would be a good time to cut the signal: exploration reveals that the Nomai were focusing all of their efforts to find what they call the Eye of the Universe, an anomaly whose signal they picked up, which they believed to be older than the universe itself. Puzzled and intrigued, this is the reason they warped to this solar system. Their ship crashed within Dark Bramble, but two escape pods managed to shoot free, and after settling in and building new habitations and labs, some of the Nomai redoubled their efforts to reach the Eye. They set up the twenty-two-minute time loop harnessing the properties of white and black holes which can create a time travel opportunity, if powered with enough energy—such as a supernova. Despite the evident danger, they planned to trigger the explosion, putting their faith in the memory statues they created so that anyone paired with one would be able to carry over information between cycles and would be able to find the Eye.

Unfortunately, the sun barely responded to their attempt to trigger an explosion, and soon after all the Nomai were destroyed by a comet (the Interloper) full of deadly ghost matter, which exploded and killed them all. Eons later, their plan finally activated with the sun's natural end, which explains the player's plight, which was only possible because they had synced with the Nomai statue at the beginning of the game. It turns out that one other traveler—Gabbro, who can be found on Giant's Deep—also paired with a statue, as they were the one who found a bunch of them and brought back the one on Timber Hearth, accidentally pairing with it. They, however, choose to just ride out the loop, enjoying the time to themselves rather than investigating it.

Reaching the mysterious quantum planet that is the Eye of the Universe, players learn that the Eye does predate the birth of the universe, as the Nomai believed. When it is time for the universe to come to an end, the Eye sends out its signal, pulling in a sentient creature with whom to begin the

cycle again. In the game's downloadable content (DLC) *Echoes of the Eye* (2021 Mobius Digital), the player's investigations reveal that a species even older than the Nomai had also been drawn to the Eye of the Universe from a neighboring solar system; in fact, they stripped the moon they inhabited of all its resources to build an artificial ring world (called the Stranger) so they could travel to find out what the Eye is. However, when they arrived, they were dismayed to find out that interacting with the Eye would cause the universe to end. According to the official *Outer Wilds* wiki, "The inhabitants were devastated by how they destroyed their homeworld to build the Stranger to reach the Eye of the Universe. They created a simulated reality that resembled their home moon and went to sleep, their minds forever in the simulation." Determined not to let anyone else be tempted to seek out the Eye, they created a signal blocker to prevent its call. This was undone at some point by a dissenter who wanted to "set things right" and who was imprisoned for their actions. With the right sequence of actions, players can enter the simulation, free them, and learn everything that happened to release the signal that brought the Nomai to the system.

Depending on the circumstances of their gameplay, when they arrive at the Eye, players have the chance to create a new universe, starting with a big bang. Players might assume that, in order to save their solar system and complete the game, their goal will be to avert the sun going supernova; for a long time, it appears that something—perhaps a piece of Nomai technology—may have triggered the explosion, but this turns out not to be the case. The sun's natural death has in fact triggered the Nomai device that puts the Hearthians in a time loop, and there is no way for the player to prevent or retroact that. The game offers bittersweet solace in that even though you cannot save your species from destruction—in fact, the entire universe is destroyed—you have a hand in shaping the next universe to come.

"What comes next cannot be done alone"

"There is no planet B" emerged as an environmental slogan after the publication of Canadians Trevor Greene and Mike Velemirovich's book of the same title (2014). The phrase was used widely at demonstrations leading up to the 2015 COP 21 conference (Leicester 2018), and NoPlanetB.org was created in 2019 by former secretary of state John Kerry and former secretary of energy Ernest Moniz in an effort to organize support to center environmental issues in the 2020 election cycle. It appeared again in 2019 as the title of a book by Mike Berners-Lee, founder of Small World Consulting. Rhetorically

gripping, it exposes the fallacious assumption that we always have the option of abandoning the planet if pollution gets too bad or we run out of resources, the premise of many science fiction films. Video games like *Outer Wilds* call on us to consider the origins of our own planet and appreciate just how special it is in a universe of gas giants, frozen rocks, and burning liquid atmospheres—a vast expanse inhospitable to terrestrial life. Learning more about the Nomai and their single-minded pursuit of the Eye of the Universe—regardless of the risks and consequences to everyone around them—is a humbling critique of humanity's technological hubris.

Like the inhabitants of the Stranger, most human beings are appalled by the destruction of our beautiful planet, but neoliberal capitalist structures that govern the use and abuse of our world remain in place. Those in power are unwilling to disturb their revenue streams to alter course, and all bear the consequences of what the few have deemed "necessary." The Nomai were wiped out by chance rather than their own ambitious innovation, though they were willing to risk their own destruction in pursuit of knowledge, but we humans are poised to suffer a much slower extinction as we watch the world around us diminish day by day. We have the power to take action, which the Nomai and Hearthians did not; we can change our fate, at least as far as climate change, pollution, and resource extraction are concerned.

As an environment, space provides numerous design and storytelling opportunities for games. It is vast, difficult to navigate, disorienting, expanding, and inhospitable to human life. In many ways, it is an incomprehensibly empty space of destruction as well as a predictable, orderly space of endless creation. It has long been regarded by humans as a place of possibility—for expansion, for exploration, as a "final frontier" to test ourselves. It figures in our fictions both as a well-populated space, the backdrop to personal drama and conflict, and also as an empty, lonely, deadly locus of our fears. Its harsh, yet enticing reality is in some ways best explored via the safety of a gaming console or VR headset, and exposing ourselves and our terrestrial ways of thinking to its vacuum may yet be fruitful, since the real dangers of space traversal are far too daunting for the average human.

The ending of *Outer Wilds* undercuts its cautionary environmental messaging potential by making the demise of both species purely natural, not the result of ambition or greed (in this case, for knowledge). The sobering realization that the player has arrived at the Eye of the Universe because the universe is ending is softened by the sentimentality of cocreating a new universe with the Hearthian travelers using their music. Symbolically, this could be interpreted as an anthropocentric dream of crafting a perfect world (whatever form that takes). As much as we would like to see ourselves as

architects of a future universe, the truth is that we are small and isolated here together and lucky to have the planet we have; hopefully, the dream of space and of the technologies we would need to thrive there will not be deemed worth stripping our little piece of universe. Barring disaster (the term literally translates as "bad star"), our human fate will be a lot slower and less spectacular than the Hearthians and Nomai, who had no warning and were snuffed out in a few moments with no time to reflect. "There is no planet B" reminds us that we have nowhere else to go, that we should not forget that as big as the Earth seems while we stand on its surface, in reality, we are a tiny miracle spinning in a vast and hostile emptiness. Hopefully, gazing into space can help us appreciate what we do have and help us spend our creativity on solving our environmental problems rather than racing towards the unknown.

The Nomai and the inhabitants of the Stranger were all too willing to destroy their worlds to satisfy their curiosity and technological ambition. As the player prepares to conclude the game, if they have freed the Prisoner, the Prisoner appears on the Eye beside the campfire. If spoken to, they tell the player-character, "Go, find the others. What comes next cannot be done alone." The creation of a new universe should not be the work of a single individual, but a collaboration among many. Just the same, navigating our way through climate crisis will be the work of millions. It involves attuning ourselves to hear the voices of the many life-forms sharing our planet with us, not blocking their signals, and overcoming the need to see ourselves as special or alone in this world. If we can empathize with the grief of the nameless, elk-horned inhabitants of the Stranger and, instead of succumbing to fear, come together to do the work, we can save our world—and each other.

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12. Green New Worlds? Ecology and Energy in Planetary Colonization Games

Paweł Frelik

Abstract
The chapter examines planetary colonization games as a subgenre primed for its ability to speak to environmental concerns, such as extractivism, sustainability, and biodegradation. However, although the subgenre ostensibly lends itself to the radical reimagination of models of civilizational advancement, the majority of games in this category reproduce attitudes and developmental mechanisms that underwrite the climate crisis. This chapter identifies a number of shared mechanics and conventions in the subgenre, briefly discussing *Aven Colony* (Mothership Entertainment 2017) as a paradigmatic text that encapsulates its ecological rhetoric. Finally, it looks at several titles that depart from the subgenre's baseline, paying attention to how their narrative and procedural rhetoric can be harnessed in to raise awareness about environmental degradation.

Keywords: Anthropocene, capitalism, speculation, energy

Questions of ecology and sustainability have entered science fiction texts in a variety of thematic scenarios and patterns, both pessimistic and optimistic. Among the former are visions of the unchecked development of industrial societies, apocalyptic ecocatastrophes, and the gradual but inevitable degradation of the environment. Optimistic visions have been fewer in number, mostly because, in the wake of two world wars and the onset of neoliberal capitalism, explicitly utopian narratives have lost much of their impetus and popularity since the middle of the twentieth century. Nevertheless, it is not difficult to find technological visions of new fuels and materials and alien interventions effecting new awareness of the environment. Among these more optimistic imaginaries is the loosely defined subgenre of solarpunk,

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which originated in a network of blogs in 2008 (Republic of the Bees 2008). Solarpunk espouses a utopian environmentalism in which the convergence of advanced technologies and ecological consciousness leads to a successful overcoming of the current global challenges known under the moniker of the Anthropocene. Although the newness of this vision can be contested, solarpunk's emphasis on photovoltaic technology and its attendance to alternative energy tech is noteworthy, something that I will return to later in this chapter.

All these environmental plots and tropes have a long history of engagement in science fiction media: literature, film, television, comics, and, most recently, video games. While ecocatastrophe and terraforming narratives most readily lend themselves to ecocritical analysis, one less obvious thematic scenario that seems remarkably poised to engage ecosystemic questions involves stories of planetary colonization. As the name indicates, they envision a fresh start on a celestial body: a planet, a moon, or an asteroid. At times, such stories are set in recognizable locations, such as Mars, while others take place on fictional planets or moons, introducing more speculative biosystems. A convention that harks back to the early robinsonades, in the twentieth and twenty-first century alien planet colonization stories force us to confront decisions that we know had disastrous consequences from our time on the planet Earth. The formula has a long(-ish) tradition dating back at least to Ray Bradbury's *The Martian Chronicles* (1950) and peaked, arguably, in Kim Stanley Robinson's *Mars* trilogy (1992, 1993, 1996), the single most extended narrative of the kind. However, in light of the media-driven interest in Mars colonies (Lepore 2021), but also fueled by the search for exoplanets invigorated by developments in astrophysics and astronomical imaging, the planetary colonization story has resurged in the last two decades. Some recent examples include Michel Faber's *The Book of Strange New Things* (2014), Emma Newman's *Planetfall* series (2015–2019), Marguerite Reed's *Archangel* (2015), Kim Stanley Robinson's *Aurora* (2015), and Charlie Jane Anders' *The City in the Middle of the Night* (2019). There are also examples to be found on TV: *Lost in Space* (2018–2021), *Raised by Wolves* (2020–2022), *Settlers* (2021), and *The Expanse* (2015–2021). Most importantly for this book, planetary colonization has also registered in the gaming medium, giving rise to a loose albeit distinctive and fairly numerous subgenre I call "planetary colonization" games.

In this chapter I would like to examine planetary colonization games as a subgenre privileged in the consideration of intersections between speculative video games and broadly understood environmental concerns, such as extractionism, sustainability, and biodegradation. My contention

is that although the genre formula lends itself to the radical reimagination of the models of civilizational advancement, the majority of the titles reproduce developmental mechanisms that have led us to the climate crisis and thus seem very relevant—albeit as negative impressions—to our current historical moment. To demonstrate that, I will first explain the subgenre's special status as a category of ecogames and outline its contours. Then I will identify a number of shared mechanics and conventions that bear on environmental questions, briefly discussing *Aven Colony* (Mothership Entertainment 2017) as a paradigmatic text. This will lead to the assessment of the genre's rhetorical tenor regarding ecology. Finally, I will briefly look at several titles that depart from the subgenre's baseline, paying attention to how their narrative and procedural rhetoric can be harnessed in the service of raising awareness of the current global condition.

Defining planetary colonization games

A loose but recognizable cluster of titles, planetary colonization games draw on and integrate elements from earlier gaming genres. Most centrally, they use elements of city builders and economic simulators, which force the players to balance growth, maintenance, population control, and resource management. *SimCity* (Will Wright 1989) is an obvious inspiration, but the roots of the planetary colonization game date back almost to the rise of video games as a medium. *The Sumerian Game*, a text-based strategy game of land and resource management, appeared in 1964 for the IBM 7090 mainframe computer; its spin-offs and inspirations, such as *Hamurabi* (Doug Dyment 1968), helped establish the tradition of early strategy and city-management games. Speculative titles have always had their place in this genre, including *Sim Earth* (Will Wright 1990), *Sid Meier's Alpha Centauri* (Firaxis Games 1999), *Startopia* (Mucky Foot Productions 2001), and *Anno 2205* (Blue Byte 2015). Another genre that planetary settlement games draw on are civilization-building games set within quasi-historical contexts. Particularly relevant here are titles reimagining the colonial conquest and exploitation of Americas, such as *Sid Meier's Colonization* (MicroProse 1994), its remake *Sid Meier's Civilization IV: Colonization* (Micro Prose 2008), and *Commander: Conquest of the Americas* (Nitro Games 2010). Last but not least, planetary colonization titles may overlap with a category known as "god games," although the latter's scope is broader, control mostly indirect, and visual and gameplay conventions subtly different.

Planetary colonization games are, in some ways, special, particularly in the context of the processes and transformations collectively known as the Anthropocene or the Capitalocene (Moore 2017, 2018). Many privilege action and strategic planning, both of which are often fairly generic, at the expense of complex narratives; however, it is the extraplanetary narrative framework as well as the specific gameplay mechanics that are of consequence in the consideration of the Anthropocene. Players' options and activities in these games often closely reflect the trajectory of the last five hundred years of Western history, allowing us to engage in the same processes as the colonial powers and industrial societies between the 1400s and now. Many of these games also bear resemblance to early accounts of American colonization; firstly, they assume the emptiness and free availability of land, water, and other resources, and secondly, they reflect the cultural parameters of the arriving colonizers. As media objects, these titles are clear narrative fantasies of a planetary reboot, informed by the desire to begin with a blank slate in a new place, with very few prerequisites, which is a configuration they share with postapocalyptic stories.

Planetary colonization games are obviously not the only subgenre capable of engaging with notions of Anthropocenic change, but, to my mind, they helpfully bring into focus, by grace of their gameplay conventions, various aspects of the human–planet interaction. Moreover, if games are indeed different from other media with respect to their rhetorical power and, because of their performed and repetitive nature, hold a much higher argumentative charge (Bogost 2007), than games that engage the very types of activity that have brought about the Anthropocene strike me as prime spaces in which to reassess those practices that remain at the very core of the current planetary crisis. Writing about game spaces in *The PlayStation Dreamworld* (2017), Alfie Bown asserts that any "attempt at subversion needs to work inside this dreamspace—a powerful force in constructing our dreams and desires—or else the dreamworld will fall into the hands of the corporations and the state" (2017, 3). Thus, games focused on anthropogenic planetary transformations can become either hopeful sites of change or serve as rhetorical tools shoring up the cognitive habits that brought about the Anthropocene. Thanks to the medium's embodied cognition (Arjoranta 2014), games may also enable a better understanding of the decisions that have brought civilization to the brink of collapse.

Depending on the design of their algorithms, planetary colonization games can strengthen and naturalize the ideologies of anthropocentrism and ecological recklessness. While they obey the same premise, they also differ among themselves. Some strive to retain a degree of realism best exemplified

by Mars-oriented titles: *Offworld Trading Company* (Mohawk Games 2016), *Sol 0: Mars Colonization* (Chondrite Games 2016), *Mars Industries* (ZovGame 2016), *Take on Mars* (Bohemia Interactive 2017), *Mars 2030* (FMG Labs 2017), *Surviving Mars* (Haemimont Games/Abstraction Games 2018), *Per Aspera* (Tlön Industries 2020), and *Reshaping Mars* (Tholus Games 2021). Others are fully science-fictional, set on known exoplanets, or entirely fictional planets and moons. This chapter will not address these "Mars games" as their analysis would require attending to ongoing media cycles of a presumed Martian future. My discussion in this chapter is limited to more fantastical games of planetary colonization, and especially to their deployment of ecological and energy imaginaries. Consequently, looking at them as a subgenre grants a clearer sense of their collective message whose tenor and timing is, to my mind, neither accidental nor unclear.

Planetary colonization games share narrative and gameplay conventions like the management of settler demands and desires, resource extraction, defending against hostile environments, and growing your colony in (financial) strength and number. In *Light of Altair* (SaintXi 2009) players expand from a landing pod to a metropolis. While expanding colonies, it is also possible to launch fleets and expand to other worlds, clashing with other factions in the process. Unlike most other titles in the category, it is also possible to mine orbiting moonlets. Similarly, in *Farlight Explorers* (Farlight Games Industry 2019) players design systems and grow colonies in order to colonize more planets. Resource extraction is central to gameplay, but many planets are presented as inhospitable environments with little complex organic life. Others focus on more localized tasks. A remake of the 2003 game, *Space Colony: Steam Edition* (FireFly Studios 2015) is one of the few titles in the group in which, like in the *Sims* franchise, the player needs to manage colonists. Much effort is spent resolving conflicts between colonists, so in addition to mining minerals and harvesting resources to prevent running out of oxygen and power, one needs to develop relationships, collect food, and repel alien attacks.

As with most issues in the gaming medium, questions of ecology and energy can enter these games in several principal ways, including narrative, visuality, and procedurality. As noted earlier, only a small handful of these titles, such as *Rimworld* (Ludeon Studios 2018; discussed below), feature any kind of complex plotting. Instead, narrative information is coded in their world-building, which connects this speculative subgenre to a number of earlier tropes and storytelling scenarios. Many of the colonized worlds are presented as uncivilized wildernesses. Some will have local life forms, although in most cases they will be limited to predatory animals with some

intelligence, or at best otherized alien beings. Science fiction, of course, has a long tradition of imagining pristine worlds with flourishing fauna and flora. The fantasy of an empty world waiting to be colonized exceeds the confines of the genre and taps into the early colonial narratives of the sixteenth and seventeenth centuries, something that Henry Jenkins and Mary Fuller discussed in "Nintendo® and New World Travel Writing: A Dialogue" (1995). Equally importantly, this historical moment partially but tellingly overlaps with the period that Jason Moore defines as the onset of the Capitalocene. For Moore, the mid-eighteenth century, where many narratives of the Anthropocene locate its beginning, is merely the moment when the environmentally destructive consequences of large-scale human activity start manifesting.

Narratives of planetary colonization in games also rely on cultural discourses of nature. In the Anglophone world, one of the most influential texts concerning the cultural constructedness of nature is William Cronon's "The Trouble with Wilderness: Or, Getting Back to the Wrong Nature" (1996). One of Cronon's central premises is "that [wilderness] quietly expresses and reproduces the very values its devotees seek to reject" (Cronon 1996, 16). This contention has special significance in the context of the European colonial project which cast the Americas as both empty and virgin land. And indeed, very few of the discussed titles feature intelligent aliens, as their presence would undermine the innocence of the "errand into the wilderness" trope these games offer and would position the players as obvious exploiters and colonizers. The imperialism of planetary colonization games may not have the same resonance as in more historical games like *Sid Meier's Civilization IV: Colonization*, but the rough outlines of the world-building remain the same.

Environmental and ecological concerns can also register in the mechanics of the discussed titles by way of procedural rhetoric (Bogost 2007). Game rules communicate assumptions about ecological, economic, and social processes and how these processes interact to create or alleviate environmental crises. Depending on the game, the political implications of specific solutions to these crises may vary, but common to them are different types of mechanics creating affordances and limitations for the activities involved in planetary settlement.

Most of these genre parameters can be readily found in *Aven Colony*, a quintessential example of the genre visually, narratively, and algorithmically. Available for Windows and the two main eighth-generation consoles, the game uses the isometric perspective and provides the players with a very polished and colorful interface. The bird's-eye view and lush visuality imbue gameplay with a sense of masterful and organized control. The narrative

is minimal: the player plays the role of the governor of humanity's first extraterrestrial colony. The location of the first settlement is in the middle of a verdant mountain valley, but the atmosphere comprises only carbon dioxide, necessitating the use of hermetically sealed tunnels connecting individual buildings. Both diurnal and seasonal cycles are present. From time to time, the colony needs to cope with environmental hazards such as storms, dust devils, toxic gas, and shard storms as well as external threats. Management involves paying attention to twelve menus representing citizens, employment, commute, happiness, crime, resources, electricity, water, air, crops, structures, and drones. This balance of social, environmental, and technological challenges provides room for diverse gameplay, which includes prescripted campaigns as well as the never-ending sandbox mode. From an ecocritical point of view, *Aven Colony* is a textbook example of the invisible ideologies mentioned earlier and evinces practically no environmental consciousness. The governor's decisions have consequences, but none of them are related to the ecological status of the planet. Read ecologically and politically, the game also replicates virtually every single assumption that historically informed the colonial conquest and the Capitalocenic perception of cheap nature (Moore 2017, 7).

Anthropocene ideologies

Planetary colonization games adopt a broad range of visual styles, narratives, and levels of complexity, but a closer look reveals, with a few exceptions, a number of similarities. Their recurrence gives some food for thought concerning these games' rhetorical stance and, implicitly, their politics regarding the environment—and most of these politics can only be described from an ecocritical perspective as at best conservative and at worst Anthropocene-denialist.

Firstly, by definition, planetary colonization games envision fictional worlds as closed systems with limited support from other planets in the form of care packages with components or materials. The genre's central challenge involves achieving self-sufficiency. Secondly, many titles in this category feature communities as imprisoned by the gravity well of their planets, and they posit the development of space age technology as a victory condition. Consequently, they seem particularly relevant to our current historical moment, which has painfully brought to the fore the sense of Earth's planetarity and its finitude, on the one hand, and the desire for miraculous techno-fixes and deus ex machina developments to remediate

environmental devastation and cascading species extinctions, on the other (Op de Beke 2020). Consequently, while we have already effectively colonized our entire planet, the kind of challenges and tasks that planetary colonization games confront players with are recognizable from our world: supply chain bottlenecks, overextension, and the overexploitation of specific biomes, and energy shortages in the face of ever-increasing demand.

The environmental character of various colonized locations can vary from barren planets to lush environments. Natural disasters occur but they are usually unrelated to human activity. What is more, the fact that many titles, such as *Earth Space Colonies* (Person and Pixel Studio 2016) and *Rimworld*, are set in difficult environments which demand aggressive measures to settle seems to justify the lack of attention to environmental consequences of in-game activities. The logic underlying them is that biomes hostile to humans should be tamed anyway and that it is only "beautiful nature" that deserves protection. The playful planetary management can readily be linked to the real-world processes of global capitalism and the condition of the Anthropocene, but its consequences in digital games are more often than not dramatically simplified. Planetary ecologies are almost always very simplistic and rudimentary and the interdependence of various zones and biomes is virtually nonexistent. Despite the fact that these titles require strategic thinking, they largely obscure the complexities involved in the planetary-scale handling of ecosystems. As such, they also tend to perpetuate the myth that human agents are capable of what Alenda Chang calls "surgical precision in diagnosing and addressing environmental ills" (2019, 81). This bias can be found, for instance, in *The Planet Crafter* (Miju Games 2022), which sends colonists to a hostile planet to make it habitable for humans. Again, the collection of resources and base-building is merely an overture to large-scale terraforming, including the generation of an atmosphere and geoengineering the entire planet.

Most of these games rely on two principal modes of interrelated activities: construction and extraction. The former is often envisioned as speculatively idealized with futuristic buildings springing up across colonized worlds. The architectural imagination in these titles does not differ much from that in film and television, where it is characterized by the cleanliness of design, modularity, and flexibility as well as by the absence of construction-related friction. Extraction, in turn, comes across as decidedly mundane and seems to be subject to the known patterns and modes of fossil fuel mining of the nineteenth and twentieth century. Tellingly, in very few titles large-scale extraction translates into any environmental impact. Resources are simply—and, usually, very quickly—exhausted, forcing the player to

move further away. This may create a need for transportation and longer supply lines but while their cost can factor in decision-making, rarely does it translate into environmental degradation. This avoidance of the harsh realities of extractivism is also visible in the visual representations where the hellish landscapes of postextractive activity are usually absent or are not even implied. To wit, in *The Planet Crafter*, one of the resources is uranium but the game features no side effects of its processing and use. The same happens in *Earth Space Colonies*, whose goal is to colonize the solar system. This involves a great deal of building and maintenance through a fairly advanced crafting system, which creates demand for natural resources and their extraction, but the latter's increase does not lead to any consequences.

Energy in most of these games is clean and its production and use are largely obscured except for purely economic dimensions. Imre Szeman asserts that "the failure to acknowledge the significance of the material forces that have quite literally fuelled modernity has dangerous consequences when it comes to understanding how we should best address global warming" (2017, 441). This energy oblivion has also registered in speculative fictions across media, many of which are driven by the energy unconscious, as Graeme Macdonald demonstrates (2016). Video games are no exception here, even if the specific lack of attention to energy questions may differ from film or television. Planetary colonization games largely skirt this issue by envisioning speculative energies as harmless and benevolent. This belief seems to be embedded in a broader assumption, in most of these games, of the complete neutrality of any kind of technology, whose application involves a logistic challenge but not one of management and stewardship.

Relatively few planetary colonization games focus on humans as individuals and even fewer include such parameters as population satisfaction or happiness. This depersonalization of planetary colonization games can be read both as a reflection of the planetary system of capitalism and as an indication, albeit more suggestive than realistic, that the path forward is through collective action. In other words, while it is customary for simulation games to possess minimal narratives, this paucity seems very appropriate in the case of planetary colonization games. If they are, indeed, thinly veiled emanations of geoconstructivist discourses (Neyrat 2018), their scarce narratives can be seen as apt reflections of the lack of grand narratives connected to the climate catastrophe (Ghosh 2016) and the need for a new world order. While Earth's transformations have been well documented in science and theorized in contemporary political and critical theory, most countries lack convincing public narratives that both address the current crisis and show a clear way forward. This, in turn, creates a fertile ground for

monomaniacal visions of Martian settlements and off-world colonies which consume funding that could be much more profitably used to ameliorate more pressing causes. The absence of human responsibility for the state of colonized worlds is, in some games, literal: *Colonials Programme* (Cookie Legends 2020) features two robots traveling in space and constructing colonies on a tile-based map. The game features twelve different machines responsible for such tasks as extraction and power grids and each mission is placed in different terrains and layouts.

Despite their emphasis on strategic thinking and cost benefit analyses, the visions of planetary colonization are anything but neutral politically. In his critical review of Jane McGonigal's book *Imaginable* (2022), Cameron Kunzelman elegantly summarizes the position of many contemporary scholars of science fiction: "There is no imagination without an attendant ideology" (2022). Naturally, fantasies of planetary possession and management are hardly ideology-proof, as they imagine entire celestial bodies as flexible objects that are always-already available to serve the purposes of those arriving. This perception of global plasticity is grounded most centrally in two mutually imbricated ideological positions: the dominant socioeconomic system of neoliberal capitalism and the Western formation of technomodernity in general and the notion of progress in particular, both of which are deeply steeped in the historical systems of colonialism and imperialism. Interestingly, such "unwavering faith in technological modernity" (Neyrat 2018, 12) is, for Frédéric Neyrat, one of the principal lines of thinking propping up the ecoconstructivist project, a dark twin of terraforming-friendly geoconstructivism. The ecoconstructivist agenda insists on the harmonious interconnection between nonhumans, humans, and objects, including ones produced by humanity.

A much less obvious ideological position in these titles is that ecology is really economy (Abraham and Jayemanne 2017, 82) and that the measure of success, even when environmental concerns are incorporated, is growth. This is naturally not a new worldview. For Moore, the natural environment understood as the locus of freely available resources—what he calls "cheap nature"—is the ontological praxis of capitalism and is decisive in "capital's expanded reproduction, working through the ceaseless transformation of Earth systems at every scale" (Moore 2017, 7–8). Moore locates the origins of this ideology at the very beginning of the Capitalocene, in the era of settler colonialism in the Americas and in Africa. Practically all planetary colonization titles do indeed see alien natures as cheap or free with the only cost of their exploitation being the actual labor of colonists, expressed in their management and the cost of the machinery involved.

Visuality plays a major role in the ideological implications of these titles. The visual interface of planetary colonization titles is fairly uniform: colonized worlds are shown using either the top-down perspective (e.g., *Rimworld*) or the isometric perspective, with a few games allowing additional access to more than one location on a globe. While typical of the larger category of strategy games, this visual vantage has political implications, including a long tradition of theorizing verticality as hierarchical and reflective of social class. Writing about this god's-eye perspective, Hito Steyerl asserts that "the hegemonic sight convention of visuality is an empowered, unstable, free-falling, and floating bird's-eye view that mirrors the present moment's ubiquitous condition of groundlessness" (Steyerl 2011). Although currently associated with the privilege of penthouses and control of military and law-enforcement drones, this perspective can also be traced to a visual object that breathed new life into Western ecological awareness: *The Blue Marble* (1972), a photograph of the Earth viewed from space taken by the crew of Apollo 17. In contrast, however, to the rigidity and frozenness of the Earth in *The Blue Marble*, at least in some of these games players can freely swivel the globe with the fluidity that, in our world, reflects an idealized power fantasy of the top 0.1 percent of the global population as well as military operators.

More importantly, *The Blue Marble* mobilized both ecological and peace movements, but it also heralded the arrival of a new perceptual subjectivity, "a rogue, quasi-off-planet subject striving to vampirize natural dynamism in order to refabricate everything there is" (Neyrat 2018, 15). This new subject position represents what Neyrat calls "geo-constructivism" (2018, 3–5), a cluster of views and positions invested in terraforming Earth. According to Doron Darnov, players in such games occupy "vaguely extra-planetary and ambiguously disembodied vantage points from which they can efficiently oversee the scope of their unfolding civilization's economic or military progress" (2020). There are also other aspects of visuality in the discussed games that reflect colonial vantage points. The mapping of the planetary terrain as well as the progress of the exploration or settlement shares a number of affinities with the cartographic representation of virtual spaces in other types of video games, which has in turn inherited many of its graphic conventions from nineteenth-century imperial maps (Mukherjee 2015; Majkowski 2016; Van der Merwe 2021). The landscape and the map become coterminous; the expansion begins in the center from which the colonial effort extends; and the unexplored space is either invisible or represented as blank space, prefiguring its presumed emptiness. All these parameters also assume godlike points of view of omnipotence, again a position that allows for little recognition of the ground-level ecological realities.

The temporality of planetary colonization games is equally problematic, a consequence of the complicated status of temporality in video games at large (Zagal and Mateas 2010). On the one hand, the accelerated passage of time, particularly in the context of diegetic activities, normally lasting decades, if not centuries, may promote a belief in quick fixes whose effects are anticipated to be clearly discernible. This belief, in turn, can foster delayed responses to climate change mitigation. On the other hand, considered vis-à-vis what Rob Nixon (2011) calls the "slow violence" of the environmental effects of climate change, the shortened time spans of in-game activity may possess a positive potential. The tasks that players undertake happen on accelerated in-game time scales and durations, thus bringing the invisible consequences of slow violence into view and providing much needed lessons about their consequences. Darnov also notes that the "immediate visual feedback of watching planetary systems respond to the effects of human decision-making provides players with a cognitive reference point for reflecting on the ways that individual and collective actions might impact the planetary scale of Earth's own environment" (Darnov 2020).

Last but not least, planetary colonization games espouse a degree of utopianism. Although all discussed games confront the players with challenges and in some titles, those challenges never let up, there is a degree of utopian and scientific rationalism imbued in the genre that seems incommensurate with the threat human civilization is facing right now. After all, these challenges do not stem from a lack of knowledge about climate change or the absence of mitigating technologies. Consequently, there is something escapist about planetary colonization games, especially in their assumption that planetary systems behave predictably, even where natural disasters force the players to be creative. Most of them do not feature runaway effects, chaotic systems, or boundaries that once breached cannot be restored. Instead, the universe is—obviously—algorithmically consistent and, given sufficient time, each obstacle can be met and overcome.

Not all hope is lost

This outline of the parameters of many planetary colonization games demonstrates clearly that they tend to embrace and perpetuate, through their gameplay, the kind of cognitive habits that have underwritten the epoch known as the Anthropocene: the steadfast refusal to consider large-scale human activity as consequential for the planet, the myopic pursuit of short-term goals of growth and progress, and the naïve belief in the political

neutrality of technological development. This is not to say that the genre is predetermined as it encompasses several titles whose narratives and mechanics encourage a more reflexive and even critical consideration of the processes involved in their core mandate. This critical potential can be communicated in narratively but also, to my mind more importantly, in the mechanics of material transformations (which resources can be processed into which materials), the more complex structures of technology trees (Ghys 2012; Heinimäki 2015), and the really complex types of challenges game systems offer to players. In these more critical titles, interdependencies between various aspects of the process known as colonization are highlighted: social, technological, extractive, and ecological.

At first glance, *Factorio* (Wube Software 2020) comes across as less polished than other titles. Almost seven years in the making before its release, it is considerably more modest visually, with both the top-down and isometric perspective and cruder, more pixelated, muddy-colored graphics reminiscent of the steampunk aesthetic. Its narrative premise is also fairly economical. The player is an engineer who has crash-landed on an alien planet and, in order to build a rocket to escape it, must harvest resources and develop the entire technological infrastructure needed for the rocket to launch. This deceptive simplicity conceals immense complexity, which led one of the reviewers to proclaim the game "a machine-fetishist's best friend" (Priestman 2013). *Factorio*'s technology trees are exceptionally complex and the number of actions one needs to perform to unlock and develop technologies is staggering, even with a degree of automation possible in the game. More importantly, while the description so far may suggest a title attractive for the techno-fetishist player, *Factorio* demonstrates a surprising awareness of the interrelation between industrial development and environmental destruction. As more types of machinery become operational, producing pollution and demanding massive amounts of resources, the planetary biosphere reacts. The planet possesses Indigenous fauna known as Biters, Spitters, and Worms, which become increasingly hostile. This forces the player to commit resources to defense, slowing down industrial production, and then to carefully balance technological development and environmental pressures. *Factorio*'s yoking of human activity to environmental feedback offers a powerful rhetorical statement about the costs of techno-modern civilization, but it also demonstrates how more reflective gameplay may emerge over time, often in titles where players do not expect it.

Another title that clearly goes against the grain of the subgenre's parameters is *Imagine Earth* (Serious Bros. 2021), whose *Steam* description reads "[D]o research to protect your colonists from disasters and avoid a climate crisis."

The narrative framing has colonists leaving Earth, which has been divided by large corporations and practically depleted of all of its resources. Players are recruited by a company committed to sustainable colonization, but other corporate entities do not follow the same environmentalist philosophy. While the game demands a wide array of activities typical of planetary colonization games (and several not so typical, such as trading stocks and performing financial takeovers of rival corporations), it imbricates questions of sustainability and environmental balance in almost every aspect. The links between industrial activity and ecology are omnipresent and immediate: expanding cities generate emissions; various sources of energy contribute differently to the state of the environment; exhaust emissions and ground pollution impact the global climate; increasing temperatures melt polar caps, with rising sea levels destroying colonies; and climate change triggers more frequent and severe natural disasters. For players, achieving a balance between growth and sustainability is the final challenge, but the competitors follow more profit-oriented goals. *Imagine Earth*'s *Steam* description exhorts players to "use our second chance to change our ways of life and transform the production of energy and goods in a sustainable way," but these environmentalist ambitions clash with the game's concern with market forces. However, it is also possible to read the game as inherently anti-capitalistic. The capitalist scramble for planets is presented as dystopian, and in the game's campaign the player attempts to escape it. At the campaign's conclusion, you launch a shield that ends space travel to and from the planet completely, symbolically nullifying hopes invested in what has come to be known as Planet B. In other words, the presence and frequency of disasters—chemical spills, oil spills, radioactive contamination, wildfires, tornadoes, volcanoes, dying forests, and desertification—sets *Imagine Earth* apart from many other planetary colonization games in that it understands social and economic organization to have real consequences. It is possible to think about the capitalist framework in *Imagine Earth* less as an expression of what the game thinks is proper and more as a diagnosis of what the game thinks is problematic.

One last title that differs from the mainstays of the discussed subgenre is *Rimworld*, which emphasizes the management of colonists' moods, needs, individual wounds, and illnesses. Conflicts, both internal and external, occur frequently as the colony needs to repel aggressive local fauna and ancient killing machines. Adding to these challenges is the fact that the colonists are not professional settlers, but survivors of a crashed passenger liner with a procedurally generated set of skills and backgrounds, some beneficial, some detrimental (the group may include neurotics, nudists,

but also cannibals). As a planetary colonization game, *Rimworld* is unique in its emphasis on social dynamics at both the micro- and the macro-level, demonstrating that, in raising ecocritical awareness, social concerns are no less important than technological infrastructure. This focus comes at the expense of broader environmental concerns, though. For instance, *Rimworld* features a class of machines known as climate adjusters, which, utilizing chemicals and exotic resources, can be used to manipulate the atmosphere, primarily shifts in temperature. Very little attention is paid to the external consequences of their operation. Moreover, one of the win conditions of the game is constructing a starship and escaping the planet with at least one colonist alive, a scenario that resonates with Musk-esque dreams of spreading into space, but which also involves abandoning Earth in the process.

Conclusion

Existing research on the politics of game design calls for caution in making deterministic statements about the links between specific game mechanics and political messages. Nevertheless, planetary colonization games present very interesting case studies to think through the ideological stakes of ludic texts. On the one hand, it is difficult to deny that, by and large, they perpetuate a number of corrosive ideological positions and worldviews that have been historically associated with the political institutions of colonial empires as well as with the Capitalocenic treatment of the environment. Consequently, it is tempting to consider this narrative and procedural formula to be severely compromised by the mental habits that have directly contributed to the climate crisis, the sixth mass extinction of species, atmospheric pollution, and ecosystemic degradation: blind commitment to the Western conceptions of growth and progress, willful oblivion of what Jason Moore has called the "Web of Life" (Moore 2015), and lack of future thinking.

On the other hand, beyond the simplified renditions of planetary colonization and terraforming in games such as *Terratech* (Payload Studios 2018) or *Colonies End* (Raw Orange Studios Limited 2020), the subgenre is constantly evolving and experimenting with new forms. *Rimworld*, *Factorio*, and *Imagine Earth* compellingly demonstrate that the genre's narrative and mechanics can be yoked to promote more critical positions regarding the techno-modern ideologies informing the very industry in which such games are developed. In the last few decades, the discourses of science

fiction have done much to atone for the genre's historical complicity in colonial and technocratic regimes, fostering more ecological imaginaries. While the core titles of planetary colonization continue to coast on these older legacies, there is enough critical insight in some games to warrant cautious hope about the thought-provoking and mind-changing potential of the subgenre.

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13. Dark Play and the Flow Time of Petroculture in Oil-Themed Games

Laura op de Beke

Abstract
This chapter brings video games into conversation with the study of petrocultures—in particular, concepts that speak to the unique affects and temporalities surrounding oil, namely "petromelancholia" and "petro-masculinity." Using these concepts, this chapter unveils in video games a deep-seated desire for oil and its transgressive pleasures. Oil-themed games can be spaces in which to indulge the pleasures of oil, even while they might also acknowledge its incongruity in the present. Specifically, I will argue that video games accommodate oil within a stretched out, *flowing* present that resists change and is nostalgically oriented to the past. I call this temporality "petroduration." Aesthetically and experientially, this temporality manifests as flow, a concept bridging video game studies and petrocultures research.

Keywords: temporality, duration, flow, bad environmentalism

Patricia Yaeger once suggested that an "energy unconscious" might be at work in the English literary canon given the conspicuous absence in these novels of any explicit consideration of energy systems (2011, 306), especially petroleum infrastructure. In contrast, video games appear to wear oil on their sleeve: *Windfall: The Oil Crisis Game* (David Mullich 1980), *Black Gold* (reLine Software 1989), *Oil Barons* (Epyx 1983), *Oil Tycoon* (Soft Enterprises 2001), *Frontlines: Fuel of War* (Kaos Studios 2008), *The Oil Blue* (Vertigo Gaming Inc. 2010), *Oil Rush* (Unigine Corp 2012), *Turmoil* (Gamious 2016), *Oil Enterprise* (Crafty Studios 2016), and *Oil Mogul* (CHG Games 2020). Such overt interest in resources, resource management, and resource infrastructures is hardly uncommon in video games, but in scholarship on ecogames, resource

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extraction and energy politics have only been studied in the most general sense (Smith 2017; Abraham 2018; Wagner and Gałuszka 2020). This chapter hopes to build a more detailed frame of analysis by bringing video games into conversation with the critical study of petrocultures—in particular, those concepts that speak to the unique affects and temporalities surrounding oil, namely "petromelancholia" (LeMenager 2014), and "petromasculinity" (Daggett 2018).

Petroleum saturates modern life. It is essential in the production of food in the form of industrial fertilizer; we wear it on our bodies as polyester clothing; and it is fundamentally responsible for the level of mobility and prosperity enjoyed in most developed nations; not to mention the way oil drives geopolitics. And yet it seems strangely missing from the public eye. Petroleum hides out in the open. Moving across globalized chains of production, crude oil changes hands, names, and forms so often as to render it almost untraceable, and unrecognizable. In response, the study of petrocultures has sought to expose its influence by uncovering its aesthetic registers, its cultural mediations, and its role in the history of capitalism and (neo)colonialism.

In his review article of the study of petrocultures, Douglas Rodgers identifies temporality as one of its most pressing themes (2015). Quoting Elizabeth Ferry and Mandana Limbert, he writes

> [R]esources, oil among them, come with some distinctive temporalities: "They frame the past, present, and future in certain ways; they propose or preclude certain kinds of time reckoning; they inscribe teleologies; and they are imbued with affects of time, such as nostalgia, hope, dread, and spontaneity." (Rodgers 2015, 367)

For example, oil is associated with cycles of boom and bust, as well as the inexorable moment of its depletion, preceded by a period of maximum production—called peak oil—after which it will be harder to exploit and more expensive to produce, spelling terminal decline. Even more so, oil is associated with growing carbon emissions and the threat of climate change. This means cultural engagements with oil are often imbued with feelings of anticipation, anxiety, and (petro)melancholia (LeMenager 2014).

Inspired by Aubrey Anable's work on video games and affect (2018), I am especially interested in how these affects of time surface in video games, and like Anable I will be referring to them as "structures of feeling," a term coined by Raymond Williams to describe a collective disposition, historically distinct, and discernible in cultural production. According

to Anable, "video games—as media objects, as cultural practices, and as structures of feeling—can tell us quite a bit about the collective desires, fears, and rhythms of everyday life," for example, the desire for a different relationship to work, or the fear of failure (132). In the same way, video games may also be able to tell us about shared feelings surrounding oil extraction, and how we envision its past, present, and future. In a world threatened by climate change, one may expect these feelings to have become increasingly troubled, shot through with anxiety, guilt, and shame. However, what my chapter demonstrates is that while video games seem to acknowledge oil's incongruity in the present, they also exhibit a reluctance to let go of oil, and an inability to conceive of a future beyond it. Specifically, I will argue that video games accommodate oil within a stretched out, flowing present that resists change and is nostalgically oriented to the past. In a nod to Amy Elias' notion of "techno-duration" (2016, 36), I call this temporality "petroduration."

Dark play

The year is 2070. Climate change has caused the sea level to rise and surviving polities have to make do with what land is left: small islands, each just big enough to support a single city. This is the future envisioned by the real-time strategy game *Anno 2070* (Related Designs, Blue Byte 2011). In the game, players can choose to ally themselves with two corporate factions who supply technological support: the industrialist Tycoon faction, and the sustainable Eden Initiative (with a minor third faction playing an ostensibly neutral role). The first faction still derives its energy from coal and oil while the other faction derives it from more sustainable resources leaving the island's "ecobalance," or its environmental health, intact. Like many economic simulators, success in *Anno 2070* is premised on growth, which you can achieve more rapidly through the Tycoons, or more sustainably through the Eden Initiative; a choice between two factions characterized as tea-drinking hippies, or smoke-belching, burger-eating goons. Neither choice is penalized, as the factions are pretty well balanced, and since there are no real-world stakes attached to either choice, why should players go green? Why indeed when—to quote the tag line for the classic video game franchise *Dungeon Keeper*—"It's good to be bad."

So far the problem of "dark play" has gone mostly unrecognized in scholarship on ecogames. According to Torill Mortensen, Jonas Linderoth, and Ashley Brown (2015) dark play occurs when players embrace morally

reprehensible subject positions or otherwise engage in ethically questionable play practices for the sake of destructive glee, or merely for the joy of being contrarian.[1] Dark play may crop up anywhere in video games where ethical positions are clearly staked out, either spontaneously or by invitation. It may serve a variety of functions. In Molleindustria's *Oiligarchy* (2008) dark play is used critically, in the manner of "overidentification" (Dragona 2014, 240). Cast as the CEO of an oil extraction company, a play is made to engage in corruption, warfare, and human rights violations, thus implicating the industry. Alternatively, in the climate change simulator *Fate of the World* (Red Redemption 2011) dark play serves as a reward for beating the game's hardest challenge. As a treat, in the final scenario, called "Dr. Apocalypse," you aim for a negative score—ramping up temperatures as much as you can to score a maximum number of casualties. Finally, in *Destroy the World* (Nihad Nasupovic 2019), dark play is used to indulge in climate nihilism and misanthropy. You steer a lumbering pink blob across a map destroying everything in your path: residential neighborhoods, highways, forests, cultural heritage sites, beached whales, but also pleasure cruises, and oil platforms, while in between levels title cards inform you of the amount of waste produced by people, the disastrous consequences of climate change, and the increasing rates of animal extinction.

As these examples demonstrate, instances of dark play in ecogames break with the sentimental sincerity of mainstream environmental discourse in favor of "bad" affects like irony, irreverence, and ambivalence. In doing so, dark play participates in what Nicole Seymour calls "bad environmentalism" (2018), which is the kind of environmentalism that deviates from, or subverts, problematic rhetorical strategies and tropes common in mainstream environmentalism. While the self-reflexive and (sometimes) self-deprecatory nature of bad environmentalism is necessary to reach more diverse audiences, and to resist purity politics, Seymour acknowledges that it also carries with it some risk. In its attempt to blur the lines between nature and artifice, and proper and improper responses to the climate crisis, bad environmentalism can also blur the line between environmentalism and anti-environmentalism (230). In some instances, this could be cause for concern: How do we keep self-deprecatory takes on environmentalist stereotypes from fueling the fires of climate change denial? How much

1 Not to be confused with Richard Schechner's conception of dark play. Alenda Chang's (2019) discussion on environmental destructibility as a selling point in video games comes close to addressing what I am talking about here: gameplay and game design that deliberately indulges in environmentally destructive behavior.

jokey engagement can environmentalism take before (certainly in some crowds and spaces) such un-seriousness starts undermining the urgency and perceived legitimacy of the movement? The video games I point to in this chapter exist on this blurred line between bad environmentalism and anti-environmentalism. They evince an awareness of oil's incongruity in the present by relegating it to some nostalgic past (or to a backwards future), they even hint at our masochistic attachment to oil—our "bad love"—and yet they refuse to let it go (LeMenager 2014, 11).

To make sense of this dogged commitment to oil in video games I want to introduce two more concepts that can help us understand how dark play interacts with cultural conceptions and feelings surrounding oil extraction. These concepts are petromelancholia and petromasculinity. Petromelancholia is a concept coined by Stephanie LeMenager who has looked at how petroleum has transformed the way North Americans consume and travel, giving rise to new leisure trends, and new forms of experience and expression (2014). LeMenager concludes that the sense of the ending of the age of easy oil—as opposed to tough oil which includes controversial practices like deep sea drilling, fracking, and tar sand extraction—causes us to look back with complicated feelings of nostalgia for its conveniences and pleasures (102).

However, the experience of loss, specifically the loss of the freedoms, luxuries, and status petroleum affords, can also feed into a more reactionary response. As Cara Daggett argues in her article on petromasculinity and authoritarian desire, many "privileged subjectivities are oil-soaked and coal-dusted," and scaling back the fossil fuel industry poses a threat to their identities and to the political power to which they have grown accustomed (2018, 27–28). The concept of petromasculinity highlights the historical relationship between petroleum extraction and authoritarianism, as well as the entanglement between energy-intensive lifestyles based on access to cheap fuel—suburban living, nuclear family units, and gendered labor roles—and the patriarchy (32). Petromasculinity burst into visibility with the election of Donald Trump, whose flagrant misogyny and anti-environmentalism gave his followers license to give expression to the same; for example, in the practice of "rolling coal," which involves rigging trucks to expel toxic black fumes in a conspicuous display of pollution. Such petromasculine pastimes are also forms of dark play. As Daggett writes, fossil fuel fueled practices "provide a domain for explosive letting go, and all the pleasures that come with it—drilling, digging, fracking, mountaintop removal, diesel trucks. In the words of Sarah Palin, 'drill, baby, drill!'" (2018, 39).

Many of the oil-themed games mentioned at the start of this chapter appeal to this petromasculine desire to indulge in that which environmentalists

have deemed bad. They announce themselves as delicious opportunities for mischief, spectacle, and controversy, or as indulgent power fantasies of corporate expansion and wealth accumulation. In the case of *The Oil Blue*, however, this desire is complicated by a certain temporal unease, an anxiety about oil's place in the future that manifests as nostalgia, and a retreat to a suspended, stretched out present, one that I call "petroduration."

Petroduration

When we think of oil, we may imagine a sticky, viscous black liquid, slowly spilling everywhere, leaving behind a residue. This image can help us understand some of the associated temporalities of oil and its infrastructures, specifically inertia and flow, which come together to form the temporality of petroduration. Inertia denotes inactiveness, sluggishness, and the inability to react, which characterizes the oil industry's response to the climate crisis. Flow is a more specific concept, formulated by the psychologist Mihály Csíkszentmihályi (1990), and widely applied in writing on video games. Its part in my argument will become clear further down, but for now it may be understood to mean "the illusory feeling of productivity."

In his discussion of the temporal politics of the petroleum pipeline, Brent Ryan Bellamy argues that pipelines are "part of a mechanism in fossil capital that generates an experience of the pure present" (2019, 145). Pipelines do more than just connect oil rigs to refineries; they also connect the present to the future. Petroleum infrastructure incurs costs that take a long time to return on their investment. In doing so they colonize the future from the present by prolonging our dependency on oil. Pipelines are petroleum habits materialized, and because they tend to be abandoned rather than dismantled after they have served their use, their material presence will continue to mark the landscapes of the future with their sticky residue. Unfortunately, we are rarely encouraged to think about these postoil landscapes. In fact, Bellamy argues, the temporal politics of the petroleum industry foster a culture of inertia—or the inability to imagine society after oil, which precludes any attempts to dismantle the industry. This means that oil just keeps flowing, and the conditions of the present merely extend themselves. Despite greenwashing campaigns that affirm the industry is gearing up for change, big oil is running in place.

Another way of theorizing what Bellamy concludes is the pipeline's "implied temporality—a future that resembles a kind of endless, oil-infused present" (148), is to understand it as a kind of presentist regime using the

theory and concepts developed by the historian François Hartog (2003). Such regimes of historicity help us distinguish the ways in which societies relate to their own historicity, and how in doing so they prioritize either the past, present, or future. Amy J. Elias (2016) agrees with Hartog that we live in presentist times, even though she has some caveats about what that means. In short, what she calls techno-duration is a kind of ahistorical presentism, timeless and homogenous, devoid of any sense of development, a "time of capital *within* other kinds of possible time," and one that we desperately need to escape (36). Techno-duration is characterized by speed and flux, while at the same time things feel stalled, producing only sameness. Importantly, the past and the future *do* exist in times of techno-duration; only, when the past does surface, it is dominated by the present, and always considered in a nostalgic light, as something that has been lost. On the other hand, the future, to which we have anxiously turned our backs, is rarely considered at all. Instead, we allow ourselves to be overcome by it, as though by forces beyond our control. In techno-duration engagements with the past and future "signal neither progress nor decline.... Instead 'past' and 'future' signal a doubled movement of simultaneous futurity and historicity that provokes an image of 'moving stasis'" (36). In the next section, I engage in a close reading of the hectic time-management game *The Oil Blue*, through which I hope to illustrate how video games can illustrate what I mean by petroduration—or the enduring, abiding time of petroculture.

The Oil Blue(s)

Our relationship to oil is deeply affective and difficult to dissolve, strengthened by cultural forms of aesthetic expression that frame oil as dynamic, forceful, and natural. LeMenager has traced these forms of expression in the road novel and in Hollywood films, making a number of important observations, briefly summarized here. Firstly, she argues media industries are sustained by oil both in terms of production and dissemination, implicating even the critical text she writes herself. Secondly, she exposes a unique American environmental sensibility that informed modern car culture, that "allows for a persistent association of driving with being alive" (2014, 80). Driving means movement, contact with life and the land, the privacy of one's own vehicle, an ensuing sense of solipsism, and insulation from watchful eyes and from the law. Its pleasures are social, visual, and kinesthetic. These pleasures can also be derived from oil's "biophysical properties," which is LeMenager's third observation (92). Bursting forth from the ground as if

by divine (or Satanic) decree, oil is charismatic, materialized excess: "the essence of entertainment" (92).

The loud, sensuous aesthetics of oil meet a sense of nostalgia in Paul Thomas Anderson's film *There Will Be Blood* (2007). LeMenager's reading of this film dwells particularly on its aesthetic ambience. She remarks on its obsession with "the resistance of bodies," including "inorganic bodies [like] arms, mules, deserts, pulleys, [and] trains" (98). These bodies interact with each other clumsily, and with much effort, friction, and breakage. She then highlights the film's "gross humiliation of the body"—specifically here, the human body, at the hands of the extractive machines, and the power of the oil itself. "Humiliations on-screen invite the viewer's masochistic pleasure," as well as a kind of longing for a foregone time of manual labor, masculinity, and the spectacle of oil, untouched by knowledge of its finitude and its environmental harm. This obsession with hardness and masochistic violence marks the film as a text about petromasculinity. When opportunities for domination are lacking, authoritarian personalities gladly submit to "a stronger external force, be it God, the laws of the market, the military leader, or a tyrant. Or fossil fuel" (Daggett 2018, 36).

I have taken space here to dwell on LeMenager's reading of *There Will Be Blood* because I suspect something very similar is at work in the video game *The Oil Blue* which shares with the film both a sense of nostalgia for the obsolete machinery of the past, as well as a kind of masochistic pleasure in the power of extractive technologies. *The Oil Blue* is a fast-paced time-management game set in a post-peak oil future, sometime after the oil market crash in 2024. In the game you represent a company contracted to revisit old island drill sites, where obsolete machinery waits for you to restart production to see if any of the islands can be made profitable again. This narrative premise does two things. Firstly, it demonstrates the extent to which we are, as Bellamy writes, "stuck with the lives and afterlives of our energy infrastructures" (2019, 148). In other words, *The Oil Blue* acknowledges the finitude of easy oil as well as the impending obsolescence of petroleum infrastructure, but it also illustrates the hold of said infrastructure on the future. More importantly, *The Oil Blue* indulges a return to the past in the future, and a reluctance to try and think beyond it. The game's title refers not only to its subdued blue color scheme, but also to a musical genre known for its mournful working songs. But what is being mourned in *The Oil Blue* is the loss of the past itself, its access to oil, and the kind of physical, productive labor that it called for. In this way, *The Oil Blue* is an expression of petromelancholia.

Much like in *There Will Be Blood*, *The Oil Blue* nostalgically dwells on this past by recalling and emphasizing its visceral materiality in a rich and textured industrial soundscape of whistles, and sirens, and by luxuriating in the slow, heavy feeling of the machines' interfaces, which are nothing like the soulless tactility of a touchpad. The game involves managing these machines in different tabs, stopping and starting, releasing pressure where needed, and performing reparations, while making certain targets: "Sell x barrels in y days." The game starts out gently, with the player toggling between two or three machines while making easy targets; but then it introduces a steep learning curve which has the player switching frantically back and forth between a number of open tabs in an attempt to juggle the needs of the different machines. Some of them you have to babysit, whereas others only require only a little tuning every fifteen seconds or so. In this way you have to keep production running throughout the entire working day, which takes about seven and a half real-time minutes. Failure to respond to the machines in time causes them to break down. Repairs are costly, and halt production, so the best strategy is to perform them yourself preemptively in the "zero-hour," or the thirty seconds before the start of each working day. Repairing the machines involves a number of challenging mini-games that exercise your flash memory and reflexes. In short, players are juggling a staggering number of tasks all at once, rushing from one small emergency to the next all while paying heed to the fluctuating prices of the market.

Based on my description, some readers may already have recognized that *The Oil Blue* is a game designed to generate an experience of flow. First described by psychologist Csíkszentmihályi (1990), the flow state is a state of total absorption that occurs when a person is engaged in a task and feels sufficiently, and pleasantly challenged, but not so much that the task exceeds the person's competence. Especially in writing on game design, flow is often considered an unquestioned indicator of good design. It can be achieved by setting bite-size goals, incorporating pleasurable feedback, minimizing the consequences of failure, and by gradually adjusting difficulty over time (or in response to the player's performance). But the design aesthetics of flow are not beyond reproach. In *Against Flow*, Braxton Soderman (2021) argues, among other things, that flow is responsible for delimiting and deflecting critical thinking, prolonging media consumption, and forwarding individualist discourses of coping with harm and alienation, rather than collectivist discourses of revolution and change. Other scholars have also looked at flow more critically and sought to uncover its relationship to gender and labor (Chess 2017; Anable 2018). My study hopes to add to this

scholarship by arguing that flow forms part of the "resource aesthetics" of petroculture (Bellamy, O'Driscoll, and Simpson 2016).

Crucially, in a state of flow, temporal and spatial conditions recede, swallowed up by a narrowly delineated, stretched out present. Often people wake up from flow with no idea how much time has passed. This distortion of time might be experienced positively, as proof of focus and productivity, but as has been argued elsewhere under the moniker of "dark flow," the experience can also be addictive, leading to socially and physically destructive behavior (Dixon et al. 2018). Maija Majamäki and Matilda Hellman's study (2015) indicates that many gamers (including yours truly) struggle to indulge in flow responsibly—forced to administer a range of time-management methods to keep flow time from conflicting with the social time of appointments, and schedules, or the biological times of the body. In my experience with *The Oil Blue*, I found on numerous occasions that I had overspent the time I had allotted myself to play. On these occasions, "waking up" from a flow state, with my eyes burning, my back aching, and my bladder bursting, I have asked myself whether I was engaging in dark play by indulging playfully in morally questionable behavior (drill baby drill), or whether I was being "darkly played" (Sicart 2015). Some games mock players with their difficulty or abuse them with targets and rules that are painful or humiliating. There is definitely something overtly, jokingly abusive in *The Oil Blue*, in which your starting level on the corporate ladder is "worthless peon," gradually ascending the ranks to "trained servant," "expendable asset," and "apathetic worker." This abusive framing reflects the sadomasochism that is inherent to petromasculinity. Miguel Sicart calls this "abusive game design" (2015). And although Sicart is adamant that such abusive game design is aesthetic, not political, resource aesthetics *are* political.

It would be a mistake to assume that "resources have no aesthetic whatsoever—that they constitute pure, brute inputs," since our notions of beauty, goodness, and the natural, are deeply entwined with forces of power, economic value, and energy (Bellamy, O'Driscoll, and Simpson 2016). The resource aesthetics of oil arise from the way in which the industry is framed. An example often discussed in petrocultural research is the sublime—originally a landscape aesthetic that is awe-inspiring and a little frightening. The sublime has become an aesthetic and affective register commonly used in the representation of petroculture to communicate its scale, danger, and our relative inability to act against it—nowhere more controversially so than in the photography of Edward Burtynksy. Some scholars have argued that the sublime makes sensible the supposed ethereal, or abstract nature of oil extraction, exposing degradation, and giving us a

viewpoint from which to oversee the damage (Banita 2017). But others have argued that the "petrochemical sublime" consists of nothing more than "a soft sell for the paradox of seeing beautiful objects made out of horrible scenes" (Burnham 2017, 466). Significantly, flow has also been understood in the terms of the sublime. Lyuba Encheva, for example, describes flow as "the gamified sublime" (2017). Both flow and the sublime are affects that sit on the verge of challenge and satisfaction, pain and pleasure. As a way of describing the interaction between a subject and an object, they describe a dynamic of empowerment through submission, and mastery through deference. Flowing subjects—as Soderman (2021) calls them—experience some sense of control, but only to cope, momentarily, with that which threatens to overpower them.

What is at stake, politically, in a world dominated by the aesthetics of oil, is the quelling of dissent for the sake of smooth flow. According to Mark Simpson (2017), ideally the oil industry would operate in a world of pure virtuality, where the transportation of product is as instantaneous as online communication, and where profit is not hampered by logistics, legal frameworks, or ecological ramifications. The pipeline is one manifestation of this dream; *The Oil Blue* is another. Simpson calls this fantasy the fantasy of lubricity, "the texture and mood requisite to the operations of neoliberal petroculture" (2017, 289). Lubricity glosses over friction, "idealizing smooth flow" (289). *The Oil Blue* participates in this cultural register of lubricity because of its flow-inducing gameplay, and because it downplays the severity of machine failure. When your machines break down, the only thing that suffers is your budget, whereas in real life when petroleum infrastructures malfunction the loss of life, both human and nonhuman, can be colossal. Moreover, as certain unlockable panels in the game's legacy edition indicate, the game developers initially imagined a faction called Citizens for a Greener Earth, who would "sabotage your drills unless you paid them off and would offer bonuses for purposely damaging your own machines, but they were ultimately whittled away to a sticker on the Groundwell control panel" (unlockable content, *The Oil Blue* Legacy edition). The dismissal of such counternarratives for the sake of a smoother game and a smoother development process is a perfect illustration of lubricity.

However, as Anable (2018) writes in her discussion of flow in casual games, "the everyday experience of digital media is as much an experience of pauses, breaks, ruptures, and glitches as it is an experience of flow" (91). Casual games are, after all, often played in short bouts, in between work, and casual gameplay is marked by interruptions, micro-moments of pause, failures, and misclicks. Such failures are fundamental to the zany affect

that is invoked in *The Oil Blue*, described elaborately by Sianne Ngai (quoted in Anable 2018, 94). Zany characters are always comically, desperately, performing too many things at once, often failing to meet ridiculous, and ever-advancing expectations. This resembles my experience of playing *The Oil Blue*. For every barrel of oil I sold, there were just as many that I missed because I was just one second too late to attend to my drills.

An even more perfect illustration of lubricity would do away with all this room for error. The latest playful expression of lubricity thus seeks to sideline the player altogether. This is where I briefly turn my attention to idle, or incremental games. For example, two oil-themed mobile games on offer on the Google Play Store: *Oil Tycoon: Gas Idle Factory* (AlexPlay LLC 2021), and *Idle Oil Capitalist* (TXY-Game 2020). These games require only a little bit of manual labor—usually in the form of tapping—before players are able to automate the processes of oil extraction by purchasing more advanced drills and barrels. Closing the game app now means your profits continue to grow without any effort. Gameplay involves waiting and coming back occasionally to reinvest those profits in the expansion and intensification of your automated processes, which means more profit, ad infinitum. Literally. As Paolo Ruffino points out in his discussion of the idle game *AdVenture Capitalist* (Hyper Hippo Productions 2014), these games feature no formal ends—no victory screens, no satisfying conclusions. Rather, they portray "a frictionless economy characterized by dematerialization and continuous growth, where labor itself can be delegated, automated, and ultimately obliterated" (2019, 209). Notably, in their mobilization of what Jeff Diamanti (2016) calls "the aesthetics of a vanishing labor force," these games trace an actual historical development, namely the decline in labor requirements in the petroleum industry as processes of automation take hold, even though they deceptively represent oil to be an infinite (though increasingly capital intensive) resource.

Conclusion

As pop cultural artifacts that are still often conceived of as lacking the sophistication or societal responsibility of more established media, video games give us license to play with desires that in most other contexts would be deemed improper, or at least politically polarizing. Owing to this sense of freedom, many oil-themed games encourage dark play, and in doing so they offer an outlet for petromasculine behavior that indulges the combustible pleasures associated with oil: power, spectacle, and masculinity. It is hard to say what kind of influence such practices have on players, and whether

or not they influence the way people think about climate change and the environment. Having not done any research on this topic, I will leave the question open.

What I can speak to is the kind of temporal framing that seems to be at work in most of these games. To create a space to revel in oil, oil-themed games often have to hark back to a nostalgic past to ward off negative associations with climate change and peak oil. The old American West is one such place when oil was plentiful and questions regarding its environmental impact had not yet saturated public discourse (e.g., the games *Turmoil* and *Oil Mogul*). Such a nostalgic orientation toward the past, along with the insight that it was never meant to last, constitutes a structure of feeling that LeMenager calls petromelancholia. Alternatively, oil-themed games are set in dystopian, near future worlds where oil, though scarce, has lost none of its glamour, where it remains in high demand, and where renewables are simply not in the picture (e.g., the games *Oil Rush*, *The Oil Blue*, and *Frontlines: Fuel of War*). Although set in the future, these games show us an oil industry that has hardly changed, or in the case of *The Oil Blue*, one that has even gone back to old drills and old customs. The world may change, but oil is eternal, they seem to argue. This undisturbed, abiding time of oil is one that I have called petroduration.

Petroduration can be observed in video games in the way they envision the past, present, and future of oil, but also, more insidiously, in their flow-inducing gameplay. My inquiry into the aesthetics and affects of flow in this chapter builds on work by Rebecca Coleman, whose research looks at the production of the present in digital media, which is "not a static or homogenous temporality but rather … is [capable of being] stretched and condensed, expanded and contracted, sped up and slowed down, in various ways" (2018, 602). The kind of flow experienced in *The Oil Blue* can be compared to a Netflix binge. Described by Coleman, "the flow of Netflix can be seen to create a temporality where the progression from past to present to future is suspended, and nextness or preemergence becomes absorbed within a kind of stretched or expanded present" (613). This present can become a site safe from reflection, and open to pleasure, exactly when both the past and the future seem out of bounds—being respectively lost, or hostile and threatening.

In addition to telling us about a deep-seated desire for oil and its transgressive pleasures, oil-themed games also seem to trace a shift from the nostalgia for the age of easy oil, to a new desire for smoothness attending the more controversial practices of petroleum extraction in the twenty-first century. Whereas a game like *The Oil Blue* delights in simulated manual labor, the more recent wave of idle oil-themed games has taken the

twenty-first-century petrocultural fantasy of lubricity to its extreme. These incremental games feature no labor, no humans, and thus no mistakes or failures. They only simulate accumulation, in order to defuse the nervous tension that surrounds oil and its future.

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14. The Underrealized Ecocritical Potential of *ABZÛ*

Gabrielle Trépanier-Jobin, Maeva Charre-Tchang, and Sylvie Largeaud-Ortega

Abstract

In recent years, diving ecogames have become an increasingly popular video game subgenre that seems to hold out the promise of raising awareness about environmental issues. In this chapter, a content analysis of the diving video game *ABZÛ* highlights its ecocritical potential despite its hints of speciesism, orientalism, and techno-solutionism. A reception study of the game, based on 2,421 comments published on fourteen platforms, however, shows that only fifty-six players mention its environmentalist message. Nevertheless, most of these commenters do pick up on the ecocritical potential of *ABZÛ*, sharing their thoughts with other players. Online forums therefore appear as discussion spaces where collective ecological awareness can develop.

Keywords: ecocriticism, environmental awareness, audience reception, forum, diving games

Diving games have become something of a video game subgenre in recent years, one that seems particularly interested in human–environment relations. The subgenre includes titles such as *Beyond Blue* (E-line Media 2020), *In Other Waters* (Jump over the Age 2020), *Subnautica* (Unknown Worlds Entertainment 2014), and, most recently, *Aquamarine* (Moebial Studios 2022). *ABZÛ* (Giant Squid Studios 2016) is one of the subgenre's pioneering games, in which players explore and revitalize underwater ecosystems, from shallow reefs to ocean trenches, accompanied, at times, by a mysterious great white shark. While traversing submerged temples decorated by colorful

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murals, players can also gradually piece together the story of a civilization that vanished due to its overexploitation of the sea's energy.

Since two of us live in French Polynesia, an archipelago in the middle of the Pacific Ocean that is directly threatened by rising sea levels, we were compelled by this diving game and hopeful that it could raise awareness about the destruction of marine ecosystems. However, the claim that mainstream ecogames can function as vehicles for social and environmental change often relies on textual analyses, or content analyses performed by researchers who are already sensitized to environmental issues and knowledgeable about their root causes (Backe 2017; Caracciolo 2021; Chang 2019). Very few studies focus on the players' reception and ask whether the environmentalist potential of these games is recognized and reflected on explicitly.

In this chapter,[1] we conduct a content analysis of *ABZÛ* and conclude that, despite its hints of speciesism, orientalism, and techno-solutionism, the game has the potential to raise players' awareness about the environmental dangers of technological extractivism. We also share the results of our reception study, based on 2,421 comments published on fourteen platforms, which reveals that only a minority of players comment on its environmental message. Nevertheless, most of these commenters do pick up on the ecocritical potential of *ABZÛ*, sharing their thoughts with other players. Online forums therefore appear as discussion spaces where collective ecological awareness can develop.

Theoretical framework

Our analysis of the game *ABZÛ* relies on a variety of theories and concepts borrowed from decolonial studies and the environmental humanities. It is, for example, based on the works of Malcom Ferdinand (2019) and Naomi Klein (2014), who, respectively, hold the colonialist exploitation system and the capitalist imperative of perpetual growth responsible for the ecological breakdown.

To explain how awareness-raising works, we also draw on the critical pedagogy of the Brazilian sociologist Paolo Freire (2000), who argues that oppressed individuals should play an active role in their own liberation. While awareness-raising consists of making people perceptive and sensitive to a particular cause or problem for which they previously had little interest, conscientization is a driving force that motivates people to question their

1 A similar version of this text appears in French in issue 19 of the journal *Sciences du jeu*.

relationship to a given reality and to take concrete actions to bring about changes to that reality (Freire et al. 1971, 21). In other words, conscientization is a process that deepens people's awareness not only of a sociocultural reality, but also of their capacity to transform that reality (Humbert 1987, 290).

Drawing from Freire's work on conscientization, the research group Homo Ludens has identified many indicators that reinforce the conscientization potential of a video game. For example, *accompaniment*, or when a game acts as a facilitator rather than a persuader, by avoiding the imposition of a viewpoint; *politization*, or when a game aims for systemic change; *causality*, or when a game makes one understand the roots and consequences of a problem; *perspective*, or when a game addresses an issue with a point of view that is different from everyday life; *community*, or when a game generates a sense of belonging to a community; *empowerment*, or when a game arouses the players' desire to provoke change by showing them how they can transform a situation; and *tooling*, or when a game lets players imagine their own solutions to implement change in their everyday life.

To understand how video games raise awareness and conscientize, we rely on Ian Bogost's (2007) notion of procedural rhetoric. This key concept in game studies is based on the idea that video games can persuade players to adopt specific beliefs or behaviors with the help of their procedures, rules, and codes. Unlike noninteractive media, video games do not solely depend on verbal or visual language to convey environmentalist messages, but also require players to perform actions and take on challenges. Since video games are procedural, they can make it easier for players to understand complex processes such as those behind ecosystems and their disturbances (Chang 2019, 4, 15). This phenomenon could be called, following Bogost (2007), "procedural conscientization."

However, just like persuasion relies on more than just procedure (Trépanier-Jobin 2019), conscientization does not only operate through the rules, procedures, and codes of video games, but also through their sounds and images. In other words, ecogames convey their environmental messages through the use of both ludic and representational means (Backe 2017). Like Hans-Joachim Backe (2017, 45), we also reject the naive conception of procedurality based on the belief that encoded values are inevitably adopted by the players. As Aubrey Anable (2018, xiv) argues, players are active and emotional subjects whose values, interpretations, and engagement vary greatly. Following Miguel Sicart (2009), Backe (2017) confers a higher awareness-raising potential to ecogames that confront players with ethical dilemmas and encourage them to make decisions that go against their own value system.

Procedural rhetoric is nevertheless useful to highlight the persuasive aspects of video game mechanics. In our opinion, it is possible to reconcile this concept with an approach centered on play, on players' agency, and on the relationship between video game representation, subjectivation, and collectivization.

Methodology

To study *ABZÛ*'s potential to raise players' awareness about the ecological crisis, we carried out a qualitative content analysis of the game that focuses on the possible effects of its mechanics, narratives, and representations. Our goal was not to give our appreciation of the game's graphics and gameplay, but rather to study its formal elements to understand their potential impact on the meaning produced and the experiences garnered by the players. Since our interpretations are necessarily influenced by our environmental conscience, they do not necessarily reflect the designers' intentions nor do they overlap with the interpretations made by the majority of players. Our gaming experiences might also differ from those of others. Although *ABZÛ* is a linear game, players are left to piece together its narrative relatively independently.

To verify how *ABZÛ*'s environmental message is recognized by players and whether its conscientization potential is ever actualized, we also conducted a reception study. To do so, we read, in May 2022, 2,421 comments published by *ABZÛ*'s players on the forums of *Business Insider*, *Gameblog*, *GameFAQS*, *Gamekult*, *Gamespot*, *IGN*, *Jeuxvideocom*, *Metacritic*, *NintendoLife*, *PC Gamer*, *Reddit*, *Steam*, *YouTube*, and *Windows Central*. We collected the fifty-six posts in which *ABZÛ*'s environmental message is mentioned and analyzed them to see what their authors took from the game.

Content analysis of *ABZÛ*

Several elements in *ABZÛ* suggest that the overexploitation of natural resources is endangering the fauna and flora, while leading humanity to its demise. This conscientization does not only operate on a procedural level, but also on an audiovisual level. At the beginning of the game, a gender-neutral, wetsuit-clad player-character wakes up in the middle of the ocean, where no land is visible on the horizon. The emptiness above encourages players to dive and explore the environment below the surface

in search of life. As they progress, the players discover devastated areas in the ocean and feel a growing sense of anxiety. When they find out that they can revitalize these spaces and bring different kinds of fish, turtles, and marine mammals back into the environment, their mission becomes clear: they must save the fauna and flora of the ocean before it is too late.

In *ABZÛ*, challenges and rewards play an important role in awaking players to the destruction of the marine environment, although not every ludic element perfectly serves this function. At different moments in the game, the players are encouraged to cling to the back of various sea creatures, to swim through schools of fish, and to explore the underwater environment in search of collectible shells or hidden pools where they can resurrect extinct or endangered sea creatures. They are also prompted to meditate on statues in order to learn the names and relationships of different species from this underwater ecosystem. Indeed, finding all shells, all hidden pools, and all statues unlocks the "Collector," "Ecosystem," and "Zen Master" trophies, respectively. Performing acrobatics on the backs of sea creatures and twirling schools of fish unlocks the "Ballet" and "Jetstream" trophies, while witnessing predation unlocks the "Foodchain" trophy.

All these rewards encourage the player to interact with sea creatures, which can lead to a stronger emotional bond with them and a greater sense of concern for their well-being. However, the fact that these interactions are instrumentalized with rewards undermines the game's ecocriticism. Having to collect shells in order to obtain a trophy is the equivalent of basing the players' success on the extraction and accumulation of natural resources, which Alenda Chang (2019, 23) and Benjamin Abraham and Darshana Jayemanne (2017, 81) advise against when it comes to ecogames. Moreover, while the opportunity to revive extinct or endangered sea creatures may help players realize the fragility of underwater ecosystems, it carries the risk of feeding what Richard Ryder (1975, 16) calls "speciesism," that is, a form of human condescension towards nonhumans based on the idea of human superiority over animals. Indeed, this game mechanic gives players the power over who lives and who dies.

The challenges offered in the second half of the game, however, avoid this pitfall. At this point, the player enters an area of the ocean filled with explosive pyramids that threaten to electrocute them, and which they can hardly avoid due to the sensitivity of the controls (see Figure 14.1). Even if, in terms of gameplay, the electrocution only results in temporary immobilization, it slows down gameplay, generates frustrations, and may encourage the player to reflect on the real threat to ocean life posed by technologies such as oil platforms, shipping lanes, or naval mines.

Figure 14.1: Hundreds of explosive pyramids that threaten to electrocute the player character.

Toward the end of *ABZÛ*, the player acquires superpowers that allow them to destroy the pyramidal structures one by one, in order to revitalize the fauna and flora of the ocean. It then becomes clear that the player's success is not primarily based on the accumulation of natural resources, but rather on the destruction of the technology that robs nature of its resources. Moreover, these superpowers confer to the player a sense of agency that can potentially be transposed to the off-game world and, as Chang (2019, 190) suggests, encourage players to ask themselves what they can do about climate change.

In the final chapter of the game, the player enters the main pyramid along with their sidekick, the great white shark, and magically transforms this giant metal structure into a green oasis. Although this Hollywood-style unrealistic happy ending can potentially give hope to people suffering from climate anxiety, it also risks feeding what Amitav Ghosh (2016, 147) calls a "blind faith" in the rapid resolution of climate change and what Jean-Baptiste Fressoz (2012, 16) describes as a "disinhibition" toward the dangers induced by technologies.

Even though its instrumentalization of nature and its utopist happy ending do not serve *ABZÛ*'s ecocriticism very well, its challenges and rewards allow players to connect emotionally with the flora and fauna of the underwater environment, to realize the danger that technologies pose to nature, and to keep hope in solutions. However, the ludic elements alone do not allow players to understand why, in the fictional universe of *ABZÛ*, technologies are harmful to the environment. To this end, images and sound have an important role to play.

Indeed, *ABZÛ* is a game that does most of its storytelling through images and sounds. In the healthy areas of the ocean, the combination of visual beauty and pleasant music generates a sense of wonder, enchantment, wellness, and serenity, favorable to what Gerald Farca, Alexander Lehner, and Víctor Navarro-Remesal (2020) call "regenerative play," that is, a resensitization to the beauty of nature. As for the magnitude of the game environment, it instills a sense of the sublime, an affect that can change the perception of our place in ecosystems by making us realize our insignificance. The audiovisual contrast between the initial reef teeming with life, and the dark, reddish zone full of explosive pyramids, resembling sea mines, emphasizes the threat that these devices pose to underwater fauna and flora. As many journalists have argued (Brown 2021; Rimbert 2021), the threat posed by underwater infrastructures, plastic pollution, and practices like bottom trawling is far from fictional.

In addition, *ABZÛ* uses visual design to tell the history of a fallen civilization which paid the price for its greed. The frescoes in the submerged temples allow the players to understand what led to the devastation of certain parts of the ocean and to the disappearance of human beings. According to NIKMOE's video essay (2016) on *YouTube*, they seem to tell a story about the inhabitants of a vanished civilization who once lived in harmony with nature until they developed a technology that allowed them to harness the ocean's energy more efficiently, but which caused their civilization's downfall by disturbing the delicate balance of the underwater ecosystem. The murals of the first room show the inhabitants collecting seawater with vases to extract its energy on a small scale (see Figure 14.2). The fact that they are surrounded by wriggling fish, long golden seaweed, and giant coral suggests that the underwater ecosystem was healthy at that time.

The mural of the second room features an inverted pyramid made of electronic circuits that seems to extract the ocean's energy on a larger scale (see Figure 14.3). Next to this pyramid stands a character who looks exactly like the player character and who holds a ball of energy, while the inhabitants of the vanished civilization are kneeling to worship them. On this fresco, the fishes are swimming away from the pyramid, the seaweed has lost its vitality, and the giant coral is shattered into pieces. This seems to indicate that the exploitation of the ocean's energy with the pyramid device has a harmful impact on the marine ecosystem.

Although references to the ecological crisis are not explicit, these murals can help the player understand that extractive technologies are harmful since, as Ghosh (2016, 154) explains, they enable capitalist societies to pursue their quest for perpetual growth. These frescoes illustrate what Ferdinand

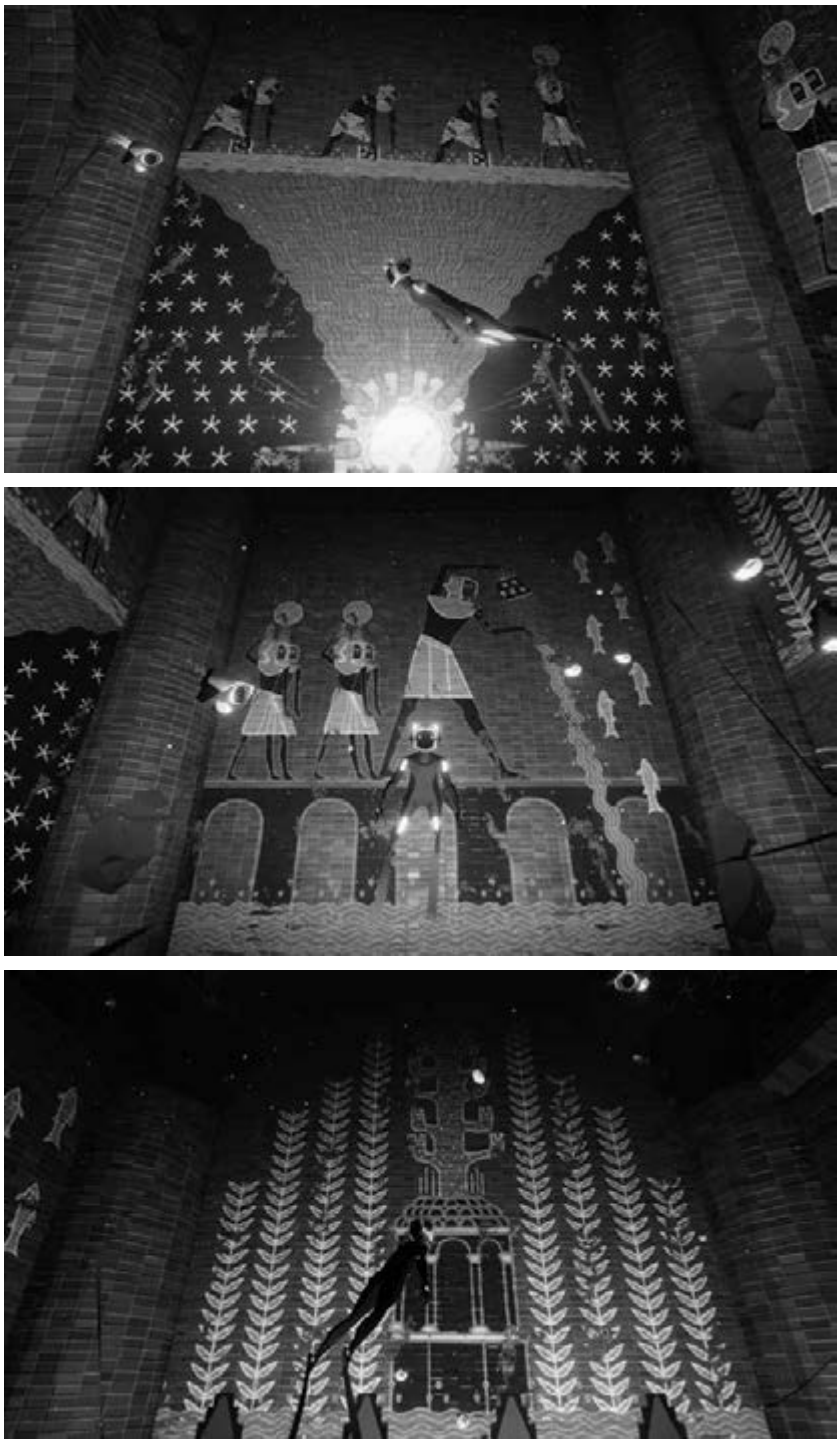

Figure 14.2: Frescoes in the first room of the submerged temple.

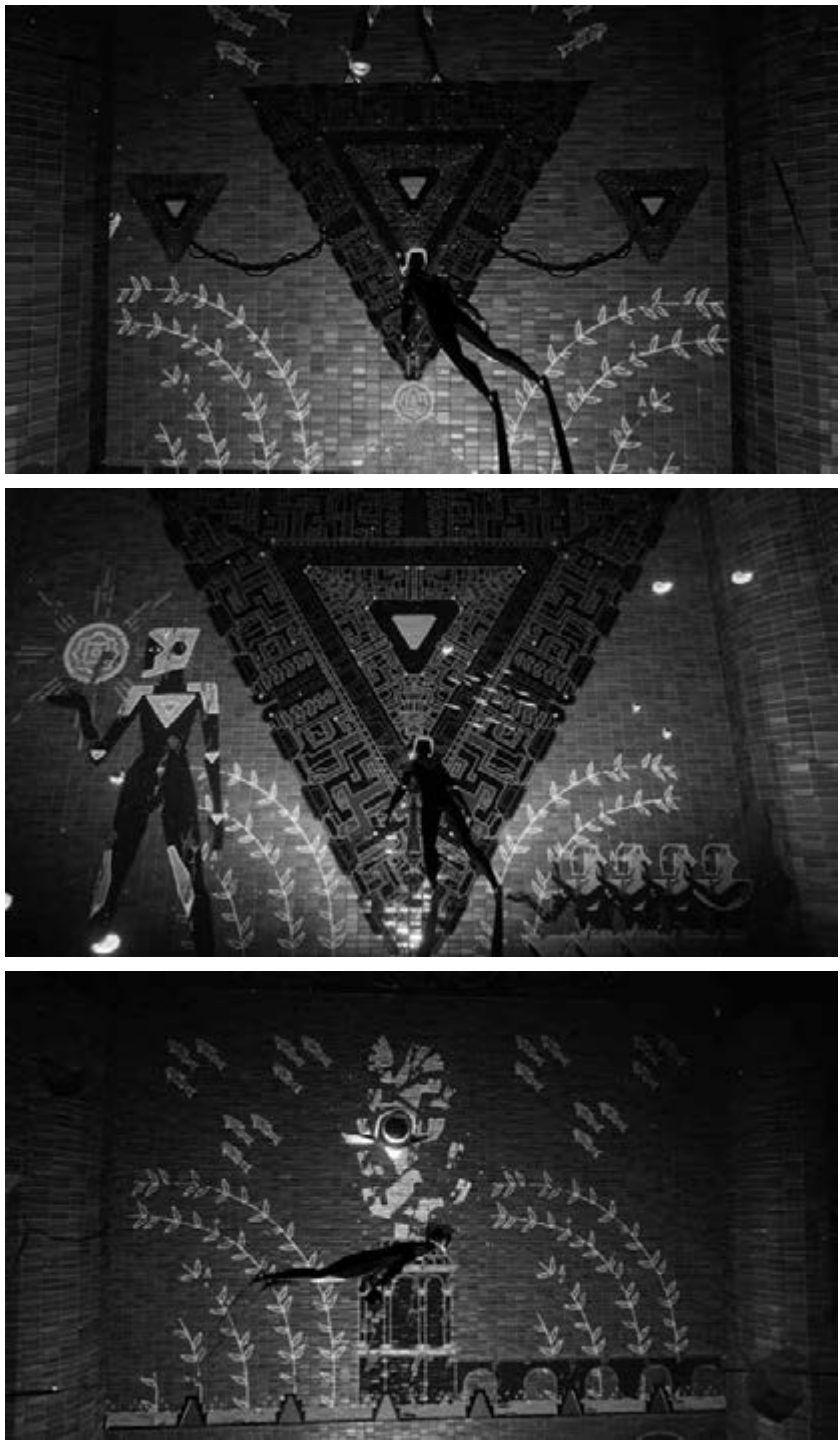

Figure 14.3: Frescoes in the second room of the submerged temple.

(2019, 71) calls "environmental imperialism," that is, the subjugation of humans and nonhumans to the irresponsible exploitation of natural resources. The dystopian vision of the submerged temples, for its part, highlights the urgency of a "profound mutation of our relationship to the world" (Latour 2015, 16).

The Islamic design of the temples (Haske 2016), the recurrence of the pyramidal shape, the look of the frescoes and the use of hieroglyphs give the game a distinct orientalist quality (Said 1979). The game tells the story of a once glorious Eastern civilization whose tragic fate serves to enlighten the West on the mistakes that should not be repeated. This "discriminating essentialization" (Ferdinand 2019, 15) is reminiscent of what Carol Farbotko (2010) describes as the West's casual observation of the Pacific Islands' gradual submersion, as if it was a laboratory experiment that could educate it on the effects of global warming. As Ferdinand suggests, the critique of our planet's destruction must remain "intimately tied to critiques of colonial and postcolonial domination and to demands for equality" (2019, 34, authors' translation). Halfway through the game, a hologram allows the player to find out that the player character is in fact a robot, probably developed by the people of the vanished civilization (see Figure 14.4).

If players do not realize, at this stage, that the player character is nonhuman, the destruction of its wetsuit after a particularly violent electrocution removes all doubt, as it reveals its metal skeleton and triangle-shaped heart. The fact that the player character is a robot which seeks to restore nature cautions against technophobia. Indeed, it illustrates the point that technologies are not inherently good or bad, and not directly responsible for the destruction of ecosystems. As Ferdinand (2019) and Klein (2014, 58) explain, it is the subjugation of technologies to the economic imperatives of the free market that makes them complicit in the destruction of nature.

Fighting fire with fire, *ABZÛ* suggests that machines can help to reverse the destruction of the planet if used wisely. Yet, a "blind faith" in geoengineering—exemplified by large-scale technological interventions such as blocking the sun's rays with a technological device or fertilizing the oceans to capture carbon emissions—does not help to overthrow the current paradigm of perpetual growth (Klein 2014, 57; Ghosh 2016, 147, 154). As Klein (2014, 121) explains, the solution to pollution is certainly not more pollution: carbon sensors, biomass, sulfate diffusers, or space mirrors are all technologies that obfuscate the root cause of the problem (2014, 223).

If, during the final chapter of the game, the players explore the surroundings of the main pyramid before entering it, they can discover an ice floe and win the "Arctic Explorer" trophy. Exploring this ice floe gives

Figure 14.4: Hologram of the player character that reveals its metal skeleton.

them the opportunity to walk alongside penguins (which, in fact, only live in Antarctica) and to wake up a polar bear, which immediately goes back to sleep. Even if verisimilitude is not necessary for a game to convey an environmental message (Chang 2019, 37), this misrepresentation of the Arctic ecosystem evinces little interest in an area that is absolutely crucial in terms of environmental collapse. Indeed, this Easter egg is a missed opportunity to show that the Arctic is dramatically suffering the devastating effects of global warming. Probably designed to reward the most curious players, this peaceful scene ignores that the Arctic is the object of strong covetousness and rivalry between the world's major powers, which seek to take advantage of global warming to exploit its reserves of fossil fuel (Baccaro and Descamps 2021, 64). In this context, and because the polar bear is the symbol of climate change (Palmer 2009, 588), it seems particularly odd to depict it reacting so calmly to the player's disturbance.

Despite the inclination of its visual storytelling towards techno-solutionism and its inadequate representation of the Arctic ecosystem, *ABZÛ* can lead players to question feats of technological hubris that prevail in petrocapitalist societies and to adopt what Pablo Servigne (2018, 28) calls a "politics of collapse," which consists in inventing new ways of living that respect the well-being of humans and nonhumans. Even if some elements of *ABZÛ* do not serve its environmentalist message particularly well, this diving game meets most criteria that, according to various researchers, increase a game or a fiction's potential to conscientize.

First of all, the game centers on several themes that are specific to ecocriticism, including biotechnological threats, and treats them seriously,

like Backe (2017, 47–48) suggests. The fact that humans, as well as animals and plants, have disappeared from certain areas of the ocean illustrates their interconnectedness and gives a sense of human history as linked to natural history, which is one of Lawrence Buell's (1996) criteria of an environmental text.

Furthermore, *ABZÛ* avoids several pitfalls that would undermine the coherence of its ecocriticism. Its environment is not reduced to a static backdrop as is the case in many games (Abraham and Jayemanne 2017, 79; Chang 2019, 23). Indeed, the players can interact with most underwater creatures in nonviolent ways and the supportive relationship they build with the shark stresses the importance of harmonious coexistence between species. Even if these interactions do not contribute to the achievement of goals and do not affect the narrative, they favor affective connections with the sea animals.

Rather than featuring stereotypical landscapes that could represent any region of the world, as Chang (2019, 22) condemns, *ABZÛ* accurately represents biomes at different levels of ocean depth. Only the ice floe, which is supposed to represent the Arctic, is caricatural and inconsistent. Moreover, even though the graphics are not photorealistic, the game's art director, Matt Nava, has often discussed the great care his team took in modeling and animating the flora and fauna of *ABZÛ* (Haske 2016; Wawro 2016; Nava 2017). He even went scuba diving to get a feel for the shapes, colors, and movements of sea creatures.

With the exception of the shell collection that leads to the "Collector" trophy, player success ultimately rests on destroying the technology that robs the ocean of its energy, rather than on exploiting its natural resources. Furthermore, *ABZÛ* does not hide the anthropogenic causes of ocean devastation and rising seas but presents human overexploitation as its primary cause. Even if these processes are oversimplified in *ABZÛ*, this simplification concretizes the diffuse technological threat that humanity faces. Thus, *ABZÛ*'s environment can be qualified as an "anthrome," or a distinctive ecological area that is, unlike biomes, not only characterized by its vegetation, climate, geology, and species, but also by their transformations due to human activity (Chang 2019, 7–8).

Finally, the player character's ambiguity (conscious or unconscious, human or nonhuman, living or nonliving, female or male) is, for its part, reminiscent of the cyborg figure developed by Donna Haraway (1991): a human/machine hybrid that challenges nature/culture dualism. As Haraway (1991, 165) explains, most human beings are cyborgs, because prostheses, pacemakers, and other medical implants contribute to the hybridization of

the biological and the technological. The same can be said for information and communication technologies that have profoundly transformed the way we work, play, and socialize.

By featuring a robot as a player character, *ABZÛ* also offers another view of the world than the traditional anthropocentric perspective that places the human at the center of everything (Abraham and Jayemanne 2017, 76). However, since the player character is an android, the game does not escape the anthropomorphic tendency of humans to create robots in their image.

Although the game does not place the players in a posture that risks going against their values to prompt ethical reasoning, as Backe (2017) suggests, it does deploy affective strategies (Farca et al. 2020), especially in the scenes where the shark, your collaborator, is hurt and dying. The game's emotional immersiveness (Trépanier-Jobin and Couturier 2018), and its ability to generate grief (as well as relief when the shark returns in spirit form) enhances its awareness-raising potential.

As for *ABZÛ*'s correspondence to the criteria of a game that favors conscientization, it enables players to reconstruct the history of a fallen civilization on their own terms, via interpretation, rather than imposing its environmental message in a more heavy-handed manner (*accompaniment*). It implicitly questions our socioeconomic system and encourages systemic changes (*politicization*). It allows players to visualize the devastating consequences of overexploitation on the environment and to identify human greed as the source of the problem (*causality*). By setting the scene in a world where the human race has become extinct and where some regions are inert, the game offers a more estranged perspective than the one we have access to on a daily basis (*perspective*). By holding an entire civilization responsible for an ecological disaster, it also highlights our collective responsibility for climate change (*community*). By encouraging action rather than defeatism, *ABZÛ* may convince players of their ability to find concrete solutions to mitigate the current planetary crises (*empowerment*). Since these solutions take the form of an intelligent robot, the players are, however, sent on the path of technological solutions (*tooling*).

Focusing on technological solutions rather than degrowth is, however, problematic. Indeed, the intelligent use of technology is not enough to urgently address the devastating consequences of climate change because it might reproduce "the kind of reckless, short-term thinking that got us into this mess" (Klein 2014, 50). Thus, explains Klein, "the solution … is not to fix the world, it is to fix ourselves" (241). Generally, media openly discuss climate change, but avoid addressing the subversive idea of degrowth. Although *ABZÛ* does not play this "political game of depoliticization" (Lordon

2021), the technological solutions it evokes are not sufficient. As Serge Latouche explains, only a fight against "the idolatry of growth, productivism, consumerism, and the market economy" can make the "reenchantment of the world" possible (2019, book cover, our translation).

Thanks to its procedures, images, and sounds, *ABZÛ* theoretically holds out the potential to conscientize players to the threat posed by the over-exploitation of nature to life on Earth and to humanity. However, as our reception study indicates, there is no guarantee that this potential will be actualized by a majority of players in an ordinary context of play.

Reception study

Our reception study reveals that among the 2,421 comments about *ABZÛ*, only 56 address its environmental message. This topic is obviously not the most important for players, who preferred to discuss its price, status (Is it really a game?), level of difficulty, or resemblance to the game *Journey* (thatgamecompany 2012) also directed by Matt Nava. However, the majority of the fifty-six comments, almost all from different players, do suggest that *ABZÛ* can conscientize some players to environmental issues without necessarily reinforcing speciesism, orientalism, or blind faith in technological solutions.

Firstly, many comments draw parallels between the story of the game and "real-life issues" (c24), such as "climate change and its effect on ocean acidification/ecosystem destruction" (c38).[2] The electronic pyramids are often associated with human interventions in ocean ecosystems or, more broadly, in nature. They are compared with "super trawlers" (c34), "oil platforms" (c31; c38), "fishing bombs" (c35), or the human race that pollutes: "I think the pyramids represent us, screwing up the ocean" (c39). Only three players describe the pyramids as "evil mechanised entities" (c11), "hostile mechanisms" (c47), or "alien technologies" (c50), rather than ascribing an anthropogenic cause to the devastation of the ocean in *ABZÛ*. According to comment 50, the vanished civilization "respected and worked with a natural power source that gave life to all things," but the pyramids "stole this energy source" to "power their creations."

Of the eight comments that regard the player character, only comment 39 associates them with "people who make a difference," rather than describing it as a "robot" (c49; c51; c54; c55), a "drone" (c53) or a smart "android" (c30)

2 Most comments were in English. We translated those in French and Russian. We numbered them and indicated the number in brackets after each quote to show the sources' variety.

programmed by the inhabitants of the vanished civilization to act as an "ecosystem fail-safe protection" that can "fix what mankind did" (c49) or "clean up the waters his masters have polluted from their ever-growing civilization" (c53). According to them, this robot is "capable of harnessing the power of the sea" in order to "restore the ocean" (c54). Only comment 50 conceives of the player character as a creation of the alien pyramids and believes that it was initially made to exploit nature, but that it "became aware and possibly malfunctioned" or "decided to rebel." One player points out that the inhabitants of the fallen civilization designed the robot "to look like them" (c51) without, however, criticizing this anthropomorphism.

None of the comments associate the robot with the real-world technological solutions proposed to solve the ecological crisis, which suggests that their authors did not pick up on *ABZÛ*'s techno-solutionism. Only two comments seem to overlook the player character's robot identity, referring to the nature/technology dichotomy they perceive to be at play in the game: "nature is good, technology is bad" (c7). Despite these differing interpretations, all players agree that the player character is "the ocean's last hope" (c52).

Furthermore, the authors of the fifty-six comments generally consider that *ABZÛ*'s "message of eco-preservation" (c13) is "more than welcome" (c3) in the current context, and hope that it will be "heard far and wide" (c16). Some comments literally read this message as a "cautionary tale" (c15), a "social criticism" (c40) or "a very straightforward metaphor to our own world, where our liquid water and blue oceans are essentially the source of all life" (c36). Comment 12 even suggests that "this game is not created for entertainment, but to show us what we do with the world around us." According to comments 16 and 26, *ABZÛ* is a "beautiful allegory" about how "we are connected to nature without even knowing it" and how "we can be one with all these creatures."

Some players consider that *ABZÛ* represents "the world, centuries after us, where the water drastically rised [sic] up and swallowed the surface" (c30). Others believe, instead, that the society depicted in *ABZÛ* is an "ancient" or "old civilization" whose tragic fate should warn us about climate change (c50; c51; c53). Comment 18 even compares this civilization to "Atlantis," an island imagined by Plato that was submerged in the Atlantic Ocean because of the technological arrogance of its inhabitants who "became divorced from nature." None of these comments, however, describe the vanished civilization as oriental, which suggests that *ABZÛ*'s orientalism did not occur to the commenters.

Some players admit that *ABZÛ* opened their eyes to humans' responsibility for environmental problems: "You realize that you're the one trespassing in

the ocean.... *ABZÛ* has really changed the way I think about the ocean, and marine life in general" (c27). "I, spiritually, took a lot out of this game and looked hard at the actions that humans have placed in nature" (c22). Without explicitly mentioning capitalism, six comments state that the vanished civilization of *ABZÛ* was "corrupted" (c18) or "perverted by technology/industry/war" (c17): "We humans need oil in every inch of our life, foods, fuel, factory, all needs oil. But our greed to harvest oil in the ocean causes a huge impact to the ocean itself" (c31).

Regarding the game elements that confer to *ABZÛ* its ecocritical potential, comment 21 suggests that its minimalist challenges and merciful punishments give players enough time to reflect: "This game is a short, peaceful experience in the heart of ocean. There is no bloodshed, no fight, no enemy, just some time to think about nature & learn to respect it." According to comment 20, the game's vast environment helps players to realize their insignificance: "It does a fantastic job of making you realize just how small you are and how large this ocean ecosystem is." Commentary 25 suggests that *ABZÛ* can lead to "regenerative play": "the game itself is telling us that human creations are not as beautiful as nature."

According to comment 32, "the appearance of prehistoric life" that "once populated the oceans but are now gone forever [wiped out by previous mass extinctions] ... reinforces the value of preserving the Ocean—namely to prevent other species from meeting the same fate as these ancient creatures." Nothing in this comment, however, suggests a sense of superiority over these creatures that would echo *ABZÛ*'s notes of speciesism.

Comment 10 suggests that the immersive qualities of *ABZÛ* can benefit the transmission of its environmental message: "This game offers a short and captivating ballad at the bottom of the oceans, with the message of preserving the ocean floor." A few comments state that *ABZÛ*'s story remains "obvious to figure out" (c1), even if the objective of the game is "implicit" (c47) and if "the game doesn't spell out the story at all to the player" (c14). This suggests that the game accompanies players in their ecological awareness rather more than it tries to persuade them. As for its "epic ending," it seems to have sustained a blind faith in the rapid resolution of environmental problems for the author of comment 29, who describes the final chapter as the creation of a "paradise." None of the fifty-six comments address the inaccuracy of the "Artic explorer" quest, possibly because their author did not discover this Easter egg.

Not all fifty-six comments on *ABZÛ*'s environmentalist message are positive. According to the author of comment 2, its message is too "explicit, although beautifully staged" and its ending too "predictable" to "maintain

the surprise effect." The author of the fifth comment said that its "simple" story was heard "many times before," but they "agree with its argument." In the end, only two players were "disappointed" by what they consider to be "another old, boring story about humans destroying things and something inhuman saving the world" (c6), or "extremely clichéd and Manichean pseudo-scenario that clashes with its contemplative vibe" (c11).

Although playing *ABZÛ* is a solitary experience, the fifty-six comments about its ecological message, published on forums, demonstrate the "thinking together" that is necessary to shift the paradigm from an economic social contract to a social contract "in solidarity with the Living" (authors' translation, Barrau 2020). A dozen players even used the pronoun "we" rather than "I" in their comments, which suggests they understand that the environmental crisis is a collective problem that can only be solved through collective action: "We need to start caring for the world if we want it to continue caring for us" (c24). Some players even challenge their peers to "be better to this earth" (c5): "Wake up people, there's over 7 billion people and only one Earth with a limited amount of resources if you can believe it" (c33). Echoing Klein, quoted above, one commenter even reminds their peers that the solution "is not to fix the world, it is to fix ourselves" (2014, 241): "We are the solution to the problems we have created" (c28).

Conclusion

In short, our content analysis of *ABZÛ* showed that, despite its tones of speciesism, orientalism, utopianism, and techno-solutionism, this game aims to raise awareness about the environmental problems caused by the reckless exploitation of natural resources. Our reception study, based on the analysis of 2,421 comments published on different platforms, however, indicates that only fifty-six players bring up this environmental message. That said, the vast majority of these posters consider *ABZÛ* to be a pertinent critique of negative human impacts on ecosystems. Without directly accusing capitalism of being responsible for climate change, several players implicitly denounce the valuation of perpetual growth. According to them, the game's easy challenges, lenient punishments, rich environment, and solvable narrative puzzle all facilitate the actualization of its ecocritical potential.

In light of this reception study, we argue that forums seem to allow what Brian Massumi calls "collective individualization," that is, the formation of a complex field of reciprocal capacitation that can reenergize individuals

and make their lives more "intense" (2015, 73). According to Massumi, our potential for resistance resides in our connections with human or nonhuman others, which can transform us by positioning us "in the middle, in a fairly indeterminate, fairly vague situation, where things meet at the edges and pass into each other" (2015, 43). That said, our reception study demonstrates that these connections rarely create a coherent or reliable response. When multiple bodies are subjected to the same "shock" (the one provoked by *ABZÛ*'s environmental message in this case), there is no guarantee that they will act in unison, since each body has its own tendencies and capacities (2015, 55). As Massumi explains, these shocks, however, leave traces that can potentially reshape a situation later on. It is always possible that the environmental message of *ABZÛ* has sown the seeds of ecological awareness in some players' mind.

Ludography

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Part III

The Nonhuman Turn

15. "Have You Ever Heard a Worm Sing?": The Spectral Ecology of *Kentucky Route Zero, Act V*

Jordan Youngblood

Abstract

This chapter places the episodic adventure game *Kentucky Route Zero* in conversation with ecological theorist Timothy Morton's ideas of spectral ecology, with a particular focus on how the game habitually ruptures the boundaries between human and nonhuman. I argue *Kentucky Route Zero* presents an environment marked by a mingled coexistence of ghosts, animals, humans, and trash; it is what Morton deems a "perforated world," one where the definition of humankind comes into question and new deanthropocentric modes of living emerge. *Kentucky Route Zero* is not a puzzle but a space to be witnessed. It offers a lingering image of a home with open walls: a space of unbounded play with what it means to be human.

Keywords: anthropocentrism, severing, garbage, humankind, kinship

Early in the second act of the surrealist episodic point-and-click adventure game *Kentucky Route Zero* (Cardboard Computer 2013–2020), players find themselves in a massive office building in the middle of nowhere called the Bureau of Reclaimed Spaces. The bureau is a parody of the worst aspects of bureaucracy and governmental waste, looping the player through an endless menagerie of forms, files, and policies that end up leading to nowhere. Yet amid all this there is a floor simply labeled on an elevator door panel as "Third floor. (Bears)" (see Figure 15.1). Should players choose to travel there, they will find exactly what is on the sign: bears, en masse, sitting in an office conference room near chairs and whiteboards now slightly overgrown with

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Figure 15.1: The bureau's elevator panel listings, with "(Bears)" on the third floor.

vines and branches. They cannot be interacted with, spoken to, or in any way impacted by the player's input. They are simply there—listening, as it turns out, to the occasional performance of a massive antique church organ, itself claimed by the bureau, played by a drifting wanderer who sits just out of sight.

This intentional collapsing of office and forest environment, with nature "reclaimed" by the bureau but not integrated into any form of definable use, nor anthropomorphized into a knowable or even discernable identity, sets the tone for the relationship between spheres of being in *Kentucky Route Zero*. It is one marked by caesuras, lingering disruptions, and gaps, drawn by the boundaries between the human and the inhuman that the player does not solve or "correct" but simply experiences. "We" and "they" now exist sometimes alongside each other, sometimes *within* each other, and sometimes the distinction blurs, addressing what ecocritical theorist Timothy Morton describes as "the Severing":

> [It] is a trauma that some humans persist in reenacting on and among ourselves (and obviously on and among other lifeforms). The Severing is a foundational, traumatic fissure between, to put it in stark Lacanian terms, reality (the human-correlated world) and the real (ecological symbiosis of human and nonhuman parts of the biosphere). Since nonhumans compose our very bodies, it's likely that the Severing has produced physical as well as psychic effects, scars of the rip between reality and the real. (2017, 13)

For Morton, the premise of the Severing is what brings about the very idea of anthropocentrism, as the division of human and nonhuman also enables the former to be understood as superior, in possession of the other. Yet this division has never operated successfully; it is an always-already collapsing structure, since "worlds are perforated and permeable, which is why we can share them" (Morton 2017, 14). In *Kentucky Route Zero*, bears live in office buildings and listen to organ solos from displaced church organs. Cyborg lounge singers adopt human children who have thirty-foot-tall bald eagles for brothers. Glowing skeletons walk the floor of a distillery, itself run by an algorithm known only as "the Formula." And eventually, cats attend a funeral for two horses, held by a human community—along with innumerable ghosts standing watch. Rather than etch deeper the scars made by mining, housing developments, and other economic and social forces, a player of *Kentucky Route Zero* spends much of the game swept up in the *un*severing of ecological being by traveling along a metaphysical unifying highway, the titular Route Zero.

My chapter is an attempt to draw Morton's primary concepts in their book *Humankind* (from the Severing onward) into extended conversation with *Kentucky Route Zero*, specifically the fifth act of the game. Released in January of 2020, Act V depicts a flooded Appalachian ghost town built over the remains of a set of burial mounds, now owned by a greedy mining and power company (called the Consolidated Power Company) which exploited the residents' resources and labor. The player explores the remains of the town by controlling a nameless black cat who speaks in meows and yowls, left untranslated and only marked by their emotional tone that the player can select between, for example, "[confident meow]" or "[uncertain meow]." This playable character, as well as the limits of what the game reveals of its interior life, means the player must confront the occupation of the natural world by human designs through the eyes of an animal who is both knowable and unknowable. There is no victory state, no mastery of systems or gameplay mechanics; there is only listening and witnessing, which culminates in the aforementioned burial of two horses known (punningly) as the Neighbors. As the service nears its end, the ghosts of the town's prior residents fade into view and back out again, with the camera eventually panning out to stare down, bird's-eye, into the grave of the horses.

In this final scene, *Kentucky Route Zero* presents a world of play markedly similar to what Morton calls the "spectral," a space of mingled coexistence laden with "ghosts, specters, zombies, undead beings and other ambiguous entities, in a thick, fuzzy middle region excluded from traditional Western logic" (2017, 55). Morton is drawn to the term and its connotations precisely

due to its unclear nature, as "'specter" could mean "apparition," but it could also mean "horrifying object," or it could mean "illusion," or it could mean "the shadow of a thing." The word "specter" is spectral by its own definition, wavering between appearance and being" (55). Other writers have already remarked on such ghostly flickers in *Kentucky Route Zero*'s former acts. Patrick Larose calls the game's highways and spaces a collection of "physical specters—the shadow remains of things that used to be here" (2017), and even more usefully, Samuel Robinson makes a direct connection to Morton's *Humankind*, discussing how their ideas of "spectral doubles" overlay *Kentucky Route Zero*'s own vision of its ghost towns: "While we associate ghosts with horror, supernatural warning or the unfulfilled potential of lost futures, it's worth noting that haunting is not exclusively a negative phenomenon" (2020). While Robinson turns his attention elsewhere for the majority of his essay, this chapter seeks to take up and flesh out the kernel of spectral potential he sees in the game that activates Morton's ideas—namely, "a deanthropocentric mode of thinking" (Robinson 2020).

Establishing a quivering, trashy model for *Kentucky Route Zero*

> Attending to the shadows and the flickering flames means that to care for ourselves and other lifeforms beyond mere maintenance of vanilla existence, we will need to embrace a haunting, uncanny, spectral dimension. Ecological reality is suffused with a ghostly, quivering energy that cannot be contained as "spirit" or "soul" or "idea" or "concept" without violence. It pertains to phenomena that we call "paranormal," which is easiest to think as action at a distance, non-mechanical causality: telepathy, telekinesis, nonliving things moving by themselves—life as a subset of a vaster quivering, movement itself as a subject of a deeper shimmying. (Morton 2017, 38)

It is, perhaps, an unfamiliar move to describe a game as "quivering," and to not mean it as a derogatory comment about some kind of graphical glitch or motion-blur issue. Yet Morton's deployment of the term—one he sees as echoing the "Möbius strip" between the categories of "living" and "non-living," an ongoing fluctuation between appearances and being that "has no inside or outside, no front or back" (48–49)—holds real power for *Kentucky Route Zero*. Its fluctuations from act to act, interlude to interlude, perspective to perspective, habitually disrupt attempts to neatly categorize the game. It shimmers and shudders between genres, environments, temporalities,

and even artistic mediums. Aubrey Anable, in her affect-focused reading of the game, marks how within *Kentucky Route Zero*'s world "the corporeal and discursive, the analog and digital, are meaningfully entangled and, like magnetic tape, are sites onto which different histories and different affective scripts might be recorded" (2018, 33). Anable is specifically writing about the game's third act, where the player descends from the forest into a set of caves to discover a whirring pile of discarded aging computers still running what is clearly a fictional version of the classic text game *Colossal Cave Adventure* (William Crowther 1976), called *XANADU*. The experience of playing *Kentucky Route Zero*, within which one can find *another* version of the game to play, echoes for Anable an earlier question from Act II, where the player is asked to identify where they currently are. The three choices given—"outside," "inside," or "both"—for me directly illustrate the perforated boundaries of Morton's ecological quivering, because playing in a simulated version of a cave while in *another simulated cave* echoes the world of ghosts we inhabit and become ghostlike through. It is bears sitting in office buildings once again, inside, outside, and both.

Playing *XANADU* demonstrates Morton's claim that "when it becomes impossible to distinguish between behaving and acting, between executing an algorithm and being a person, we have entered a spectral realm" (2017, 81). The title of *XANADU* alludes to a textual ghost in Samuel Taylor Coleridge's famous poem "Kubla Khan," itself a description of a landscape of caves, trees, and play where "forests ancient as the hills" contain "sunny spots of greenery," and "Alph, the sacred river, ran/Through caverns measureless to man/Down to a sunless sea" (2022). *Kentucky Route Zero* refracts the poem via *Colossal Cave Adventure*, showing a lineage of textual inheritance both inside and outside its source texts, while holding off the idea that any one of the texts is the "natural" or even original one. Just as the game's mechanics resist any concept of mastery or victory—there is no "right" choice, no "best" ending or dialogue option—so too does the game resist the idea of a master text. Cara Ellison finds this aspect of *Kentucky Route Zero*'s design one of its most compelling features, arguing the game's themes and problems "are part of the landscape of being. They are part of the experience of play. You can only go through them, you cannot run away from them. You can merely choose what you say in response" (2016). I am struck by Ellison's concepts of embodiment and geography here; the "landscape" of being suggests precisely the kind of corporeal reading Anable introduces, but with a spectral twist. You can only "go through" a choice, like walking through (and speaking to) ghosts. Ellison even titles her essay after a quote from Act IV, "the unsteady steady the unsteady," and her description of the game world as being "in

flux" evokes what Morton would call a quivering: "the whole world is in flux.... [M]aps must be redrawn because nothing, even the landscape, is stable" (Ellison 2016).

In another essay that marks this instability between ecological landscape and larger conceptual systems within *Kentucky Route Zero*, Sam Dibella (2017) turns to the metaphor of the food chain and consumer/consumed to describe the capitalist power dynamics of the game's plot; discussing how the player walks through the ruins of museums, forests, and flooded caverns, Dibella claims that "no matter where you look, this Kentucky reflects the horrible ecosystem that has grown, and the apex predator of the Consolidated Power Company that sits at the top and slowly shovels people, places, and things into its institutional maw" (2017). Again, we see the mesh of human-made systems and the natural landscape in the game, as the company's exploitation of labor quite literally reshapes the hills and towns of Kentucky. Identifying the Consolidated Power Company as the "apex predator" of the game's ecosystem naturally situates the player and their companions as the prey underneath it—and there is no hunting the hunter within *Kentucky Route Zero*'s mechanics. There is no cathartic first-person storming the gates of their headquarters, no grid-based map where the player can reconquer the countryside. At most, the player can shape the *beliefs* about what has happened, the internal feelings and memories of various characters, through dialogue and thought options; however, for the vast majority of the game's five acts, you are merely a witness to a fluctuating and fed-upon world.

This is not to say the game is defeatist about this state of being. Instead, it presents new kinds of alliances and bonds between objects. Dibella notes that the game habitually features animals reappropriating "man-made detritus," from hermit crabs using inkjet cartridges as shells to cartoon birds building "a nest from clothes, plastic, and trash that still looks warm and inviting" (2017). Nature adapts to and reorients the discarded elements that now rest within it; it is not too much to suggest that the characters of *Kentucky Route Zero* themselves are marked as detritus, "trash" only seen as valuable when productive within capitalism: including Conway, a recovering alcoholic and antique delivery truck driver, and Johnny and Junebug, two singing androids who have fled a factory. In their exploration of the abandoned and isolated areas of much of the game, pockmarked with left-behind objects, a new form of existing with and within nature forms—one that resists the idea of the "outskirts." Morton, in thinking of how we mark off certain beings and spaces, suggests that "one's garbage doesn't go 'away'—it just goes somewhere else; capitalism has tended to create an

'away' that is (fortunately) no longer thinkable" (2017, 24). *Kentucky Route Zero* is one long journey through society's "away" places, experiencing its garbage and rendering it not just thinkable, but ultimately livable.

In acknowledging garbage, another rupture between spheres opens up. In Act V, the player can explore the remains of a garbage truck sent by the power company; it is described as "an alien carcass—something that made more sense in death than in life." Ghosts mill around its exterior, leaning against it, holding conversations. Further exploration offers the chance to see what a former resident, Elmo, felt about the truck. For him, the truck is "simply beautiful," as it reminds him of New York City, specifically, its relationship *to* its garbage. According to Elmo, "everyone put their garbage out on the sidewalks like they were proud of it, or proud of what it signified: '[W]e have defeated another week, here is its corpse.'" Yet corpses are, via Morton's engagement with object-oriented ontology, more zombie than inert material. They continue to speak, to live, and the ghosts that congregate around them make their feelings known to the player; to draw again from Anable, it is this spectral mixing of the corporeal and discursive by which history (the corpse of a week, perhaps) is encountered in *Kentucky Route Zero.* Perhaps it is unsurprising that the other garbage objects in Act V are markers of history and discourse: a pile of letters from an abandoned mailbox and a ruined set of recorded episodes from a local public-access television station. As one character, Emily, puts it, "I don't know where to put all this.... I hate to call it trash." In an area already marked as trash by capital, where can its *own* trash go—especially when that trash is its history? Can trash's ghostly dimension, perhaps, be the place to (re)build a new type of relationship between humans, animals, and the nonhuman more broadly?

Víctor Navarro-Remesal, in his four-part structure for producing eco-critical readings of video games, suggests that particular attention must be paid to "the game's ludofictional world, the intentions that are intuited in its processes (both through authorial intent and the implied player), its audiovisual and narrative aspects, and the final use that the player makes of it all" (2019, 16). As Ellison, Dibella, and Anable help establish, *Kentucky Route Zero*'s world and gameplay mechanics present ecological possibilities that refuse traditional power dynamics within games. In order to further engage with Navarro-Remesal's criteria, especially the intention of the game's processes in shaping what the player makes of the play experience, I turn now to Act V's player character: a little black cat. If, as Lindsey Joyce argues about the game's first three acts, *Kentucky Route Zero* allows us to shape characters "across planes in time in a way that makes them feel complex,

multi-dimensional, and real" (2015), it is worth considering its approach to animal subjectivity as well.

Cats and catastrophes: Meowing into the Severing

> We can talk to a lion, and we can listen to a lion. Cats have figured out how to talk with humans—in our company they develop a whole range of miaows. And isn't this evidence of how language as such isn't an exclusively human thing, and that human language itself can contain nonhuman terms? Cats don't magically learn to speak human. It's that humans use nonhuman words, because language is much less exclusive and special than we like to think—because worlds are intrinsically perforated. (Morton 2017, 94)

Since the January 2020 release of Act V of *Kentucky Route Zero*, few people have remarked on its choice of player-character: a small, anonymous black cat who wanders around a similarly nameless town. More often than not, it is offhandedly mentioned as a novel peculiarity, such as Alec Meer noting the act has "an excellent cat" (2020); Jeremy Signor focuses on what the cat *allows*, noting the player "control[s] a cat listening in on conversations across an isolated village after a flood" (2020). Yet one review by Kellen Beck bucks this trend, because the recent death of his own cat, Coconut, bleeds into the experience of playing as one. The process of grieving her—"I cried carrying her remains to the car" (2020)—breaks or, to use Morton's language, perforates across the boundary of play. Beck's mourning cannot help but influence his feelings on being-cat, and his normal preferred boundary between "play" and "reality" is broken in a way he comes to appreciate that "[w]hen I play the games I love most, I don't think about things like death, my own struggles, or days that I wish had never happened.... *Kentucky Route Zero*, without telling me to, made me think about those things" (2020).

Gunnar Theodór Eggertsson describes the experience of playing as an animal character in a video game as flowing across realms since "engaging with an animal protagonist—fictional, digital, textual or visual—and taking their lives seriously should have certain consequences in real life, since players have become tainted with a bestial memory which should not be easily ignored" (2022, 216). Beck's experience shows how a "bestial memory" can flow the opposite way across the medium. The ghost of Coconut haunts his play, so much so that exploring Act V as something like her epitomizes what he calls *Kentucky Route Zero*'s "way of pulling you into its

Figure 15.2: The newly visible ghosts of the town, with the player-controlled cat in the middle.

dream-like clutches" (2020). Her spectral presence makes the town, and the cat avatar, real and unreal at once: outside, inside, both. Yet another layer exists here too. Beck could not have known at the time of his writing that the nameless cat in the game is, in fact, a ghost. In an interview by Chris Plante (2020), published a week after his review by the game website *Polygon*, developer Tamas Kemenczy, in response to a question about the cat's origins, explained that it was made in memory of his own black cat, which died during development of the last act. After Kemenczy reminisces about his own cat's "good golden years just sunning," codeveloper Jake Elliot chimes in, noting: "So now he lives on forever in the town" (2020). Just as *XANADU* morphed physical caves into a digital experience twice-removed from the "original," the cat of the game takes on an immortal second life which bridges the loss of two distinct feline companions from developer to player. He is a specter that "lives on forever," adding an unexpected layer of poignance to Robinson's conjecture that part of the reason players can see the ghosts of the town in Act V (as seen in Figure 15.2) is that we now play as a cat (2020).

Another specter of a cat seems to haunt discussions of video game animals. Both Nicholas Hobin (2019) and Alenda Y. Chang (2019) draw upon the same example from Jacques Derrida's (2006) *L'Animal que donc je suis* (The animal that therefore I am) about a bathroom encounter with his cat, where its stare at him while naked made him suddenly hyperconscious *of* his nakedness. Hobin turns this into a question of the gaze, thinking of how video games typically render situations where we are forced to acknowledge the animal Other as a thing to be subjugated and controlled; we meet the

gaze only to analyze and defeat it. What could be rendered instead is a space of uncertainty and possibility, "identifying a subjectivity that is different from our own, and is both startlingly familiar and startlingly alien" (Hobin 2019, 74). Chang, on the other hand, puns upon Derrida's language in an aptly Derridean fashion, as "*l'animal que donc je suis* might be irreverently revised to *l'animal que donc je joue*—'the animal that therefore I play,' or perhaps 'play with'" (2019, 110). To engage with the animal Other within a game world is not just a chance to know myself *as* animal, but to engage with it on its own playful terms. Both approaches will serve *Kentucky Route Zero* in their own way, as well as offer roads back to Morton's own conception of animal play.

There are many instances of animal play in Act V. Through the player's actions the cat can win (or lose) a foot race with a young boy; growl intimidatingly at a "small family of mice huddled under debris" (themselves an echo of the humans now in the town); try to wake up a woman from her nap on a porch; engage in a back-and-forth with a crow, named—of course—Slow Moe Crow; and, perhaps most fascinatingly, meow into a giant hole in the middle of the town to hear its own echo. Such an experience is liberating, even intensely pleasurable, after four acts of controlling almost entirely human characters. Miguel Pinabella acknowledges this, finding that "great pleasure comes from running and leaping across flooded fields as the cat bounds through the expansive town" (2020). Yet the cat is not *for* us, in that we receive no inner monologue from the cat on any of these events. It offers no thoughts or opinions on the ruined state of the town, no epiphany about existence from hearing its own meow, no sassy commentary on winning the race. In fact, nothing it does or says is translated at all, outside of its inflection and tone: for example, a group of people hoping the rain is done can be met with a "[confident meow]" (see Figure 15.3), while encountering the mice brings forth first an "[alert meow]," followed by a "[predatory meow]." Even "controlling" the cat mimics how we as humans play with cats in real life; rather than directing its movement from within, so to speak, the onscreen cursor for clicking on objects is a small firefly which the cat chases after. It's almost a laser-pointer system of commands, and the somewhat jerky, uncertain nature of getting the cat to go where you want at times feels honest to the *actual* process of getting a cat to do, well, anything.

While exploring the town in search of the destination the player has been seeking all game long—an intriguingly ecologically marked one at that, 5 Dogwood Drive—we discover it has been recently flooded due to a lack of adequate drainage ditches. It was built, and abandoned, by the

Figure 15.3: The loose "translation" of the cat's communication in Act V.

antagonist of the game, the Consolidated Power Company. A different kind of game would have had you fix the town, engage in various small tasks to repair houses, or figure out the correct solution to the drainage issue, *Pipe Mania*-style (The Assembly Line 1989). It might even have recruited one of the wandering ghosts of the town to disclose some lingering, unfinished business, which you could choose to complete to put the ghost's spirit to rest. In *Kentucky Route Zero* there is no recourse to problem-solving, in no small part because that would minimize the problem. Megan Condis, in her analysis of *Horizon Zero Dawn* (Guerrilla Games 2017), notes that the game's ecocritical potential is blunted by its need to replicate gamelike power fantasies of fast combat and victory states, blurring over the "slow violence" of ecological change and instead prioritizing how "positive outcomes are achieved when heroic individuals do battle with evil" (2020). But our player character is only a cat, who can, at most, walk, run, examine, and meow. It does not conquer; it does not rectify an unfixable past. It inhabits a flooded land of trash and garbage and witnesses its ghosts.

Studying the overall role of animals in modern video games, Krzysztof Jański observes that they, "especially in the so-called mainstream productions, are most commonly and notably presented as enemies or tools and as such they are subjected to violence and exploitation" (2016, 95). By distancing the player's and the cat's motives and feelings, as well as limiting the impact we can have on the game world, *Kentucky Route Zero* avoids the risk of turning the cat into a mere tool and instead opens a loose, fuzzy boundary of potential kinship. The cat doesn't belong to any character. It does not even have a name. It is treated as another citizen of

the town, affirmed by the fact that on numerous occasions other cats are seen drifting ownerless and wandering around in the background. When engaged with by the humans in the town, they *ask* the cat what it wants to do, or somewhat knowingly joke about its motives; if the cat encounters Ron, a local resident working on burying the Neighbors, he asks it to chip in helping dig the grave before asking, "Busy, huh? What, left a sunbeam unslept in?" Kemenczy's own cat suddenly appears, his spectral memory feeding into a town where he basks in sunbeams forever. He is inside and outside the game, both at once.

Kemenczy's affectionate creation of an afterlife for his cat that recalls actual days spent playing outside is, perhaps, a microcosm of Morton's ideas about perforated and fluid worlds that cause us to reconsider where we, as "humankind," begin and end. The opening quote from this section is a reflection on Morton's "own" cat, who lives in their house and talks to them from time to time—and Morton, in response, talks back. While I noted earlier that the cat's language is never given a one-to-one translation in *Kentucky Route Zero*, it is clear the cat *is* talking, and the people (and crows, and mice, and squirrels) all talk back. In response to its greeting meow, one character, Shannon, remarks, "You're a chatty one, aren't you?" In another brief interaction, Ron momentarily snaps at the cat's "[distressed meow]," demanding "Well, what do you know anyway?" before correcting himself: "I'm sorry. I'm just upset." The cat not only responds, but *adapts* to Ron, replying with a "[reassuring meow]," to which Ron agrees, "You're right." Nor is this level of emotional engagement unique to human characters; the longest back-and-forth conversation you can have as the cat in Act V is with Slow Moe Crow, who swerves from an "[inquisitive caw]" to "[curt chitters]" in response to the cat's "[confident meow]."

The player never gets to choose the cat's type of response, in contrast to the human characters in the game. But in filling in the gaps, figuring out what the cat and crow are "saying," we engage in *Kentucky Route Zero* the same kind of kinship just about anyone who's ever owned a cat does on a regular basis: to talk and translate at once. (I am decidedly guilty of speaking to any and all cats I see, regardless of whether I own them or not.) Sometimes we adopt "their" speech; sometimes, it seems they adopt ours. We assume they understand and, to some extent, *want* to understand, just as we want to understand them. "Have you ever heard a worm sing?" a character named Clara may ask another character, and as Figure 15.4 shows, the question eventually leads to two different avenues for the player to select: either agreement on precisely what they're singing

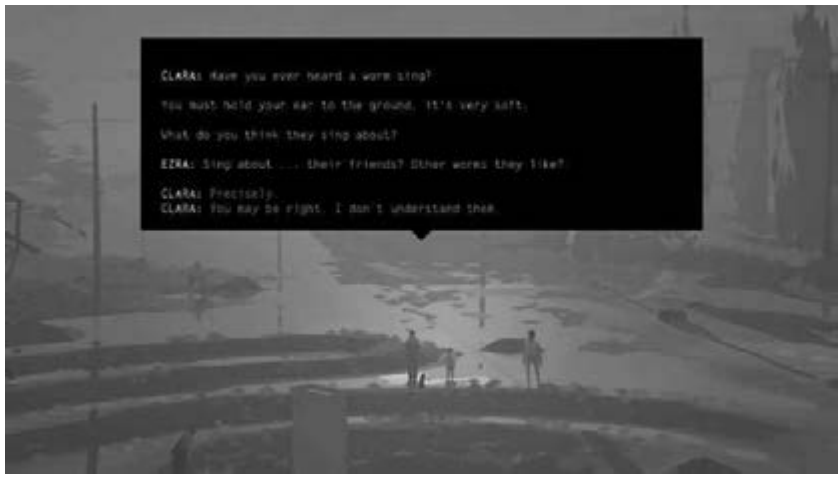

Figure 15.4: Clara considers the meaning of a worm's song.

about, or admitting the topic of the song remains unclear due to not being able to "understand them."

This does not anthropomorphize the animal so much as democratize the act of communication; it is not unique to us as humans. Language is, according to Morton, "less exclusive than we might think" (2017, 94) and asking our cat-character to talk to crows, or to meow into a blank tunnel waiting to hear its own voice in return, is not to make it "like" us: it's to show the bonds we have in the first place, "startlingly familiar and startlingly alien," as Hobin puts it (2019, 74). It undoes the Severing.

By reflecting on their cat, Morton renounces ownership and gives it autonomy: "[T]his cat isn't a guest in my house; it's a member of the family, which isn't really *my* family, and I can think this not by elevating the cat into some special condescendingly bestowed status, but by noticing that my perforated world intersects with his" (2017, 93). One of the most poignant optional conversations of Act V involves Ezra, a young boy who has lost his parents and now lives with his brother, Julian, an enormous eagle. In his interaction with the cat, Ezra, can ask if it knows any other local cats, and wants a family with them. "Funny how you stick together and you still act like you're alone. That's the cat way, huh? Always alone together." The question reflects our *own* state as humankind in a way that is painfully visible. Being "always alone together" reinforces the divides between groups, between identities, between human and nonhuman. Ezra's most optimistic possible dialogue option—"You seem pretty different, but that's good. You can teach each other"—opens the door to Morton's vision of connection, while his most cynical—"Nothing lasts forever anyway"—loops us back to

where we started. Solidarity demands something other than being alone together. It might ask us to figure out something else. It might ask of us to be neighbors—or just people.

Conclusions: From "Neighbors" to "the People"

> Perhaps people are cheaper than we like to think. Perhaps it's not so difficult to be a person, because person isn't quite as intense as all that. Not that there are no people, but that person is cheap. Lo and behold, we have just extended personhood to nonhuman beings, without discriminating between conscious and nonconscious, sentient and nonsentient—or for that matter alive and not-alive. Person is a spectral category that can apply to all such beings. (Morton 2017, 130)

At the end of Act V, the entire town comes together to hold a funeral for the Neighbors, who died the night prior to the player's arrival. However, they are constantly present from the start of the act, both in the literal background of the level (being slowly dragged up a hill by cart from where they drowned) and in the foreground of most conversations. The Neighbors were, in fact, the last part of a lingering sociological experiment, one held by the former residents of the town before Consolidated Power Company purchased the rights to the land. Known as "Un Pueblo de Nada"—both "the People of Nothing" and "the Town of Nothing"—the residents moved to the town from South America by horseback, and upon arrival immediately *freed* their horses. In this way, the division between the townspeople and the horses vanished. "I don't know when we started calling [the horses] "The Neighbors,'" a local historian named Rita may say, depending on player choice, as part of their eulogy. "We should have called them the 'People,' I think."

Rita's idea of erasing boundaries has been drifting around for the entire act leading up to the funeral. Should the player wander by Ron as he digs the grave for the horses, they will lead him to wonder what depth to dig down to, since "six feet is the standard. Standard for people, anyway." This provokes another line of thought about respect. Ron opens an even bigger existential question: Respect according to *whom*? The player must choose between two dialogue options for Ron, one where he asks "Is that respect? To treat them like us? Or is it more respectful to treat them like what they were?" and another where he questions, "Just what are we burying here, anyway? Is it them, or us? Or some mix of both?" In each option, Ron gets

Figure 15.5: A choice for Nikki's poem memorializing the Neighbors.

stuck at the point of the Severing; the fear of anthropocentrism leads him to worry about maintaining a "respectful" division, which ends up clouding over the potential for solidarity *between* human and horse. Morton almost predicts Ron's quandary, asking at one point, "What if worrying about anthropomorphism were itself a perfect example of human behavior, namely … anthropomorphism?" (2017, 86).

The town poet, Nikki, can also be found grappling with the right language for the Neighbors. Yet her struggle steps closer to Morton's concepts. In thinking of a line for her commemorative poem, she reaches a crossroads: "They were beautiful animals. No, I should say…." As with Ron, the player can decide which of two options fit her best. The first, "they were beautiful souls," suggests a sort of abstract spiritual bond, a mind/body dualism that sees true connection only after death. The second, however, is far more direct, as shown in Figure 15.5: "simply that they were our neighbors."

The capital N falls away and there is only the shared space of a common landscape and experience. Personhood is cheap, and so is neighbordom. Horses, and their ghosts, can be neighbors. Cats and crows can be neighbors. Perhaps, too, so can abandoned garbage trucks and piles of waterlogged letters and ruined VHS tapes. The final image of the game is of a house with no front and no back, filled with humans and robots and a cat and a collection of objects from around the town, staring out onto a horizon at sunset. They aren't even neighbors anymore; they are, as Morton puts it when discussing cat-kinship, "the family." Or, simply, people.

No matter what the player chooses, Nikki will always begin her final poem with an intertextual nod, saying "'Look for me under your bootsoles," as the fella says." She is alluding to Walt Whitman's "Song of Myself," specifically the last lines of the final fifty-second section:

> I bequeathe myself to the dirt, to grow from the grass I love;
> If you want me again, look for me under your boot-soles.
>
> You will hardly know who I am, or what I mean;
> But I shall be good health to you nevertheless,
> And filter and fibre your blood.
>
> Failing to fetch me at first, keep encouraged;
> Missing me one place, search another;
> I stop somewhere, waiting for you. (2022)

Perhaps the full potential of the poem, the one left lingering by the n/Neighbors, is that the "I" who awaits the reader does not have to be human. Perhaps neither does the "you" addressed by the speaker. It could be a cat offering a kind meow, or a little boy with an eagle for a brother reminding us that cats can teach other cats, too, even though they're different. The symbolic open house at the end of *Kentucky Route Zero* leaves the realm of humankind porous and fluid and suggests that games and play can provide a way of reaching across all those perforated, spectral spaces between "us." As Morton puts it, "An owl is an owl, and the reason to care for her is not that she's a member of a keystone species; we don't need her to be a brick in a solid wall of world. We need to take care of her, play with her" (2017, 37). Chang may just be right; the future of ecocritical games, and game criticism, is *l'animal que donc je joue*, inside games, outside games, and both.

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16. Hiding (in) the Tall Grass: Rethinking Background Assets in Video Game Plantscapes

Merlin Seller

Abstract
This chapter explores the significance of "grass" assets, bringing critical plant studies and the Anglo-American lawn's cultural historiography to textual analysis of ludic backdrops. While Alenda Chang critiques the functionally inert plants of predominantly visual video game environments, this risks reinforcing the treatment of plants in purely instrumental "functional" terms and repeating what Michael Marder identifies as Western marginalization of flora's rooted, headless alterity, and reifying narrow anthropocentric values of agency and centrality. Indeed, passivity is key to video games, and game studies regrettably marginalize visuality. I propose that questionably "visual" and "inert" background assets (exemplified by grass) offer rich and underexamined terrain for analysis wherein the "plantscapes" dwarfing humanity might challenge disciplinary understanding of agency/interactivity and foreground/background.

Keywords: nonhuman, plant, *The Last of Us*, *Flower*, visual studies

Seeding

> All others in the prick tale are props, ground, plot space, or prey. They don't matter; their job is to be in the way, to be overcome, to be the road, the conduit, but not the traveller, not the begetter. The last thing the hero wants to know is that his beautiful words and weapons will be worthless without a bag, a container, a net. (Haraway 2016, 118)

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Figure 16.1: "Staying crouched in the tall grass makes it more difficult for enemies to see you." Screenshot from *The Last of Us Part II* (Naughty Dog 2020).

How do we account for the visual "stuff" filling our video game screens, that flesh out worlds we jump over, that hide in plain sight? How might we give an account of the visual "container" of play without which narratives and systems would be "worthless"? Here I argue that reckoning with digital grass exposes environmental assets' power and the strange verges of interactivity and perception. As Alenda Chang observes, plants in video games are "simultaneously hypervisible and invisible, ubiquitous enough to pass beneath notice" (2019b, 123). Grass demarcates zones of stealth for players in games such as *The Last of Us Part II* (Naughty Dog 2020) (see Figure 16.1) and, conversely, is an asset so ubiquitous as to escape our attention. Their omnipresent marginality makes them an exemplar "last thing the [player] wants to know" (Haraway 2016, 118). I explore the ontological and cultural significance of "grass" assets, bringing critical plant studies (Hall 2011; Marder 2013; Pollan 2001) and the Anglo-American lawn's cultural historiography (Marusek 2012; Robbins 2007; Steinberg 2006) to the visual analysis of recent American video game backdrops. Where game studies regrettably marginalizes visuality (Keogh 2018; Murray 2017), I argue that props aren't simply set dressing, but forces, historical traces, and powerful atmospheric devices. Questionably "inert" background assets, exemplified by grass, offer rich terrain for analysis where "plantscapes" dwarfing humanity (Hall 2011, 3) might press upon disciplinary understandings of agency and representation. I'm specifically interested in how grass populates video

games which don't frame themselves as "grass" video games, but which are nonetheless saturated with it. While it would be straightforward to critique video game designs for lacking accuracy or dynamism, such as failing to simulate tiller-derived daughter plants or the distinction between Chamisso sedge and Roemer's fescue, I am more interested in what digital grass *does*: how we might "think with plants" (Meeker and Szabari 2019, 14). I focus on nonagricultural turfgrasses, to tackle the ornamental grasses we're most familiar with and the grass left out by farming/terraforming sim analyses, and within this scope I aim to clear openings for plant thinking rather than a synoptic account. First this chapter introduces digital grass through a short survey of examples, before turning to the key discursive claims of this text in a focused literature review on plants and landscapes in games. It concludes with two "verge" cases of unexpected flourishing in American ruins.

The digital playing field: Locating video game grass

Western Anglophonic societies discipline grass but are also disciplined *by* grass—grass turns us into grass subjects through its physical wants and metonymic symbolism of social (dis)order (Robbins 2007). Grass is thus both a material and discursive entity imbricated with humanity. Arguably, video game grasses are only as artificial as real-world lawns, even when video game grasses vary from simple textures to sprites, shaders, or models. Like the chemically intensive grass of a golf course, kept on life support at an eighth of an inch (Steinberg 2006), video game grass is both computationally expensive and much closer to a planar background than bespoke "hero props," such as a gnarled oak. Yet turfgrass cultivation, accelerated by the spread of sports fields in the mid-twentieth century, is entangled with the history of play. Grass representations can speak to what Virginia Scott Jenkins (1994) and Ted Steinberg (2006) call the American "obsession" with the lawn as planar monoculture reinforcing the social conformity of White suburbia. Lawns also constitute North America's most cultivated plant, covering an area larger than Florida, and represent a chronic ecological disaster in the flows of oil, water, fertilizer, herbicides, and non-native species (Steinberg 2006, 4–5). American lawn aesthetics are clearly expressed in *Lawn Mowing Simulator* (Skyhook Games 2021), which focuses its simulation on the apparatus, but fills our view with cutting lush green down to anemic stubble. The regimented lawn, much like the playing fields of video games such as *Madden NFL 22* (EA Tiburon 2021) and *PGA Tour 2K21* (HB Studios 2020), flattens physical space to something approximating abstract digital

space: a disciplined, regular, cartesian plane of predictable affordances and minimal friction. Indeed, physical turf is itself a problematic cyborg assemblage, existing at the intersection of chemistries, plant bodies, and machinery—it can be deployed as a ready-made mulch of soil and seeds from a hose, or machine-cut to the point of fertilizer spray dependency.

This form of grass represents a literal flattening of ecological feedback loops in Timothy Morton's (2016) sense, contorting ecology into anthropocentric rational order. In the trajectory towards a zero point or ground, lawns in video games can evince a similar kind of techno-primitivism to what Irene Chien identifies in *Journey* (thatgamecompany 2012), using W. J. T. Mitchell's (2002) double-temporality of the featureless desert as a kind of blank slate in Western thought: both origin and utopian endpoint, embedding the "mathematical in the natural" (Chien 2017, 144). Digital grasses are cut close to their real-world counterparts, like Jonathan Cane identifies in a different postcolonial context, South Africa: "The lawn attempts to dematerialise itself, or deny its own materiality—as if it were not made out of living matter, as if there is no labour and no consequences to lawning a space" (2019, 174).

This dematerialization is incomplete, and while it resonates with our "plant blindness" (Wandersee and Schussler 2001), it also exposes plants' passive resistance to repression. Grass is conventionally the most omnipresent and strangely invisible of plants in video games. We see this in survival video games where nearly every plant can be bent to the colonial will of the Robinson Crusoe-like player *except* for grass—a resource too ubiquitous and too mundane to model as a resource in video games such as *The Forest* (Endnight Games 2018) and *Rust* (Facepunch Studios, Double Eleven 2013). This grass underfoot tells the lie to the extractive agrilogistic gaze of the player for whom a survivalist setting of scarcity does not permit consideration of how life flourishes in an "inhospitable" setting. Grass in this sense threatens the colonial player gaze, shadowing us with what Michael Marder calls plant growth beyond "rational" reason (2013, 182). The inflationary extension of plants towards their Other exceeds the quantifying resource management of many games, rendering grass "invisible." Complementarily, ungraspable grass is also the condition *of* "invisibility" for nonhuman animals in games like *Pokémon Red* (Game Freak 1996) and for the player in stealth action games such as *Assassin's Creed: Valhalla* (Ubisoft Montreal 2020). Exemplary of grass' two-sided ubiquitous marginality is *Plants vs Zombies* (PopCap Games 2009), where grass is not a centered "plant," but their diffuse backdrop, hypermarginal. Only very occasionally do grasses join the "parliament of things" as a critter that moves, as seen in *Everything*'s (David O'Reilly 2017) utopian inter-scalar play of dancing assets which applies

the same verbs and subject status to every object in its universe. However, as I will argue with my concluding case studies, video games of ruined anthropogenic landscapes can render explicit the fact that the disciplining of grass is ambivalent, "never finished and will always be tenuous" (Cane 2019, 177). It is from the verges that grass exerts its power as a container.

Hiding in the undergrowth

To articulate this ambivalent and unfinished "container" of play, we need to engage with the literature concerning video game plants and landscapes. Playing fields and lawns haunt game studies: Mihály Csíkszentmihályi lamented social limits to flow in 1969 through vegetal metaphor arguing "grass can grow in even the cracks of a concrete pavement—but an open field is still something else" (cited in Soderman 2021, 241); Ian Bogost centers *Play Anything* on struggling to make his lawn grow through chemical treatments as an example of how "anything" can become play (2016), despite the brown grass he seeks to eliminate being perfectly healthy (Steinberg 2006, 76). While here grass primarily signifies constraint for play without being considered in its own terms, it also holds implicit agency, force, and resistance.

Grasslands cover 40 percent of Earth's land (Wang et al. 2019), and lawns cover 23 percent of urban space in the US (Robbins and Birkenholtz 2003), yet unlike trees, which are giants of both the plant world and critical plant studies, grasses are trodden underfoot. As Owain Jones and Paul Cloke argue, trees take up more cultural space than grass and are contrastingly capable of appreciation as "individuals" (2002, 29), whereas smaller flowering plants have less cultural traction in the West because they are falsely assumed to have little impact on landscape or economy (Mabey 1996, 71). However, as Robin Wall Kimmerer notes, grasses are embedded in social relations and deserving of respect as beings (2013). Matthew Hall (2011) and Marder (2011, 2013) encourage us to think with *all* plants, and the thorny metaphysical and ontological implications of plants' alterity. Grasses experience time differently, responsive in nonhuman rhythms to contexts such as the seasons (Marder 2013); they exist without the distinction of center and periphery as diffuse middles without heads (Marder 2011), and while seemingly passive, eventually plants will consume us all (Keetley and Tenga 2016, 19). They create the atmosphere and so brush against our lungs even when we cannot see them—they are thus both intimately familiar to us and present as codesigners of even the most "unnatural" environments (Coccia 2018, 50). In approaching these everyday aliens, we might question our values and

oppositions of center/margin, foreground/background and interactivity/passivity.

Chang's excellent work on virtual plant morphology in video game development provides a framework for beginning analysis of plant assets themselves: the complexities (or reductive abstraction) of modeling trees (2019a). As Chang argues, we might value representation in terms of responsiveness to context—contrasting "narrow realism" of static assets with a pipeline that incorporates forms of environmental process in the procedural generation of plants (2019a, 11). Grasses have experienced more limited investment compared to the trees Chang charts, often quickly produced as either flat textures, repeated alpha planes, or simple tapered and flattened 3D primitives grouped in clusters; over 1,100 assets from packs of shaders are cheaply available from the Unity asset store at the time of writing, indicative of their low-cost profusion. These assets are often built from reference photographs, but repetitively modular, absent roots, and often lacking stems or tillers, atomizing grass to individual leaves. However, the subterranean portion of the plant, half its mass, is ordinarily invisible to humans just as their internal chemistry is opaque and their rhythms imperceptibly slow; our awareness of plants is always partial. Nevertheless, rather than simply dematerialized, digital grasses still possess "digital materiality" which Yuk Hui ascribes to things such as images and models, which they see as possessing tangible affordances embodied in sets of relations such that "digital objects" are not static representations, but temporal entities experienced phenomenally: "digital objects don't obliterate experience, but they do modify meanings" (2016, 205). As Chang concludes, we need to reckon with the vegetal forms that inhabit games, pushing for the texture of ecological/sociohistorical realism over impressionistic "photorealism" but also respecting that design research affords digital plants a referentiality and materiality: "somewhere between soil and sky, computer and cloud" (2019a, 12).

A core critique of plant representations stresses the problem of reducing plants to scenic backdrop. "Backgrounding" (Hall 2011; Haraway 2004) appears to portray beings as passive and inert by rendering them peripheral. Within game studies, Chang similarly critiques "functionally inert" plants in "predominantly visual" video game environments (2019b, 23). However, this argument risks reifying the treatment of plants in purely instrumental "functional" terms and repeats what Marder identifies as Western devaluation of flora's rooted, acephalic alterity (2013). It arguably underestimates the ubiquitously invisible power of plant monocultures subtending society (Pollan 2001; Steinberg 2006) and reinforces anthropocentric values of agency and

centrality. Indeed, passivity, while underappreciated, is fundamental to video games, which often consists in waiting, watching, delegating, enduring, and reflecting (Fizek 2018; Keogh 2019), and while Chang's critique encourages a broader spectrum of potential systems, it risks ignoring the significance of visual representation in a visual medium. Similarly, in discussing video game landscapes, Eric Hayot and Edward Wesp imply an anxiety about the visual in their object of study, stressing video games are "not merely a picture of a world—the visual surfaces of its objects" (2009). But the assumption that graphics are "superficial" reflects a wider dynamic in the humanities whereby surfaces are misconstrued as incidental or frivolous whereas in actuality they offer rich material for analysis (Anusas and Simonetti 2020, 1). Backgrounds, textures, and set dressing are meaningful: rather than secondary, surfaces are the "first and primary face of being" (Amato 2013, 1), the material of our experience.

In the context of game studies' preference for systems and narratives, and disregard for visuality (Keogh 2018), "backgrounding" critiques can be read as reinforcing the foreground/background interactive/passive hierarchical distinctions of both game studies' textual analysis approaches and wider anthropocentrism. It fails, as it were, to see the grass for the meadow. Indeed, prioritizing "foreground" and "action" implicitly devalues plant being: a plant may well not have a sense of centrality, self, or agency when it shares resources with unrelated partners through a fungal network (Sheldrake 2020, 138) or extends itself to the point of collapse (Marder 2013, 73–74). As Marder has it: "colloquial and philosophical discourses associate the rooted mode of being with immobility and captivity" (2013, 12).

To concur with Chang's (2019b) wider argument drawing on Emma Marris (2011), perhaps video games are messy, rambunctious gardens. However, I would raise the possibility that video games don't have to change their representations of plants as much as we need to change our approach to respecting the troublesome flourishing of life in a world with no pristine state. We might learn as players and scholars to question our priorities and learn to see the verges of the visual field. Much as Seth Giddings and Helen Kennedy frame play, reckoning with environmental assets in mainstream video games necessitates we recognize "activity and passivity are not opposites in videogame play but fluctuations in the circuit" (2008, 30). The study of digital grass, then, might contribute to critiques of a privileging of interactivity (narrowly defined) in games (Keogh 2019; Fizek 2018) and the growing discourse on games' visuality from Soraya Murray (2017), TreaAndrea Russworm (2017), Irene Chien (2017), and others. Significantly, hiding in the grass of *PUBG: Battlegrounds* (PUBG Studios 2017) offers Brendan

Keogh (2018) a prime example of how player passivity is prevalent in games we consider "active."

Rather than speaking of "background" and the ambiguous hierarchy it implies, we might more productively speak of game environments as landscapes, contributing to scholarship on the video game sublime (Martin 2011; Vella 2015) with rather more mundane encounters with alterity. Grass is enmeshed with landscape: it both builds landscape by cohering soil and deconstructing CO_2 and is shaped by the dynamics of space, light and water. In video games, grass coats levels, repeated low-poly assets that give substance and texture to player wanderings. Tim Ingold (1993) argues, as substantiated by Marris (2011), that landscape does not precede alteration by human presence and, like video game level design, it constitutes an anthropogenic "taskscape" (Ingold 1993, 153–155). In Ingold's analysis, landscape/taskscape is always in a process of becoming-with other objects, "a place where several goings on become entwined" (2010, 4) perceptible as traces. Similar to Mitchell's (2002) understanding of "landscape" as a verb—rather than simply a passive object acted on—with Ingold we might explore video game landscapes as traces of dynamic process articulating more-than-human activity in a mess that enfolds us, even if landscapes may appear static on a human temporal scale. Thus, if the technologically inflected pastoralism of *FarmVille* (Zynga 2009) suppresses and abstracts a sense of ecological history into the clean, flat territory of atemporal agrilogistics (Chang 2012), in video games where there are noninstrumentalized grassy verges, we might still find rich places where "the individual player can experience the game space as a place for dwelling rather than merely a territory" (Nitsche 2008, 193).

This allows us to begin reframing power dynamics borne out by the taskscape "container" of human–grass relationships. Michael Pollan asks us to consider that perhaps plants are farming us, as from the perspective of a monoculture humans are excellent propagators (2001), with Paul Robbins going so far as to argue grass exacts tyranny over its "turfgrass subjects" (2007, xvi). The lawn of *Lawn Mowing Simulator* "wants" in Robbins' (2007) and Mitchell's (2002) sense: not just that they lack but that they demand inputs. Indeed, as Richard Mabey sees exemplified by weeds, plants' autonomy from humanity and necessity for our survival means they subtly refuse subordinate status—plants and humans coflourish as partners. "Although they follow and are dependent on human activities, their cussedness and refusal to play by our rules makes them subversive" (2011, 20). Grass doesn't need us nor cares about us, something an anthropocentric perspective avoids acknowledging, but which video games can highlight in their weedy recomposition of space. It troubles our understanding of

agency and definition of "passive" when the seemingly "functionally inert" applies pressure by conveying depth of time or conditioning player roles as hunters or gardeners: "As the background within which a figure, form, or narrative act emerges, landscape exerts a passive force of setting, scene, and sight" (Mitchell 2002, vii).

In the second half of this chapter, I turn to case studies of video game grass in the ruined American landscape that put pressure on relations of power and the borders of interactive/passive, background/foreground, and lawn/weed, troubling ontological and sociohistorical hierarchies and relationships. The taskscape that is the "container" of play is exposed in the "civilizing lawn" (Cane 2019) and its failure as something which suffuses our experience of *The Last of Us Part II* and *Flower* (thatgamecompany 2009).

The Last of Us Part 2: Revenge of the lawn

I press my body close to the earth, prone, concealed by short tillers that bend before me as I push up into a crouch and weave among taller leaves. I'm hunting humans and fungal zombies in *The Last of Us Part II* (hereafter *TLoU2*), who I drag remorselessly into the rampant green of a suburb decades after the fall of one world and the blooming of another. Here we have a dark rewilding, the post-lawn grass assets of a zombie apocalypse suburb—*TLoU2*'s Hillcrest environment.

Lawns, Steinberg (2006) argues, stabilize social identity and property, and they spread with American highway and car culture—technologies enabling suburbs but paradoxically rendering their imagined pedestrian communities obsolete. The lawn, therefore, is irrational growth, an empty, costly, monocultural expression of social conformity. Indeed, lawns are hauntologous—the hollow echo of neighborhood communities that never came to pass. But the rusted car culture of postcollapse *TLoU2* forces us to squirm our way through the undergrowth. Grass problematizes the passive/interactive binary, both by registering different temporalities and by being a background that determines stealth mechanics (see Figure 16.1). As Robbins' concludes of real-world turfgrasses: "[I]t is their rules that set the pace and character of subjected lives" (2007, 135).

Scholarship on this franchise offers readings of the series' intense human–human violence as "ludo-narrative dissonance" (Hughes 2015). Critically, Russworm has also deconstructed the prequel's token representations of race as secondary and sacrificial (2017, 112). Yet, as incisive and necessary as these analyses are of the games' human dramas, scholarship on the franchise has

largely avoided discussion of the fundamental nonhuman actants of this world. As Anna Tsing has argued, we need to expand our sense of interrelation to appreciate more-than-human temporalities (2015, 5), and *TLoU2*'s huge vistas of dilapidated cities-turned-meadows encourage critical readings of historical progress. Players are stuck in a world of ruin that continues blooming without them. Conversely, focusing on character dramas and animals traps us "in a tiny prison of our own devising, one in which all that concerns us are the fleshy beings that are our kindred" (Bogost 2012, 3).

Grass assets in expansive level designs have us regularly observe enemies from the grass, the interface drawing attention to the edges of the screen and the space between bodies through highlights and audio cues: we are reminded of intervening time and space, that this is a world in which animals are a footnote to the visually omnipresent victory of grass. Mastered by flora, *TLoU2*'s landscape facilitates player reflection on the inescapability of Haraway's "container" (2016, 118) and more-than-human ecology as speculative visual "mesocosm" (Chang 2019b, 11). Seattle's posthuman biosphere here represents how the vegetal world might recompose urban materiality, rather than being dematerialized into a lawn. Grassy motorways channel aesthetic contemplation onto disturbed boundary zones and the messy anthropogenic character of our biosphere (Ellis 2015). Thus, in our rhythm of waiting, watching, hiding, springing, dragging, and sliding through desperate arenas where animal life clings on to a plant world outgrowing us, we experience being messily enfolded in a taskscape.

Indeed, Earth is a "plantscape," a biosphere dominated by plant life in relation to which animal biomass is marginal (Hall 2011, 3), a reality exposed by *TLoU2*'s visuality. Here the Anthropocene horror of vegetal revenge stems from the repressed knowledge that we are all food for flora in death (Keetley and Tenga 2016, 1). As Morton argues, ecological thinking across temporal and spatial scales, from meadow grasses to blades in the cracked concrete, highlights the ways our conventional sense of "world" has already ended and necessitates that we realize there is no "elsewhere" (Morton 2016, 160): every background is someone's foreground. By expanding our attention we might practice Tsing's "arts of noticing" (2015, 17) and find marginal life by learning "to watch out of the corner of your eye" (Kimmerer 2003, 9).

Furthermore, combining Tsing's observation of the unintentional, more-than-human "design" of real-world landscape (2015, 15) with Chang's assertion that game systems and aesthetics "straddle multiply real and imagined worlds" (2019b, 11), we might appreciate the materiality and richness of *TLoU2*'s landscape. Grass entrains environment artists in plant thinking both by being present in design as reference material, and by being speculatively

anticipated by asset artists (more than seventy of whom specialized in *TLoU2*'s environments) who are increasingly interested in visual aspects of trace, growth, and wear as features of modeling, texturing, and rendering. Attention is paid to sources of light, the decomposition of substrata, and the spread of grass by seed and rhizome through cracks in Csíkszentmihályi's concrete. As the director notes, the local ecology of Seattle was drawn on throughout preproduction and production (Druckmann 2020) of scenes stressing the resurgence of plant life unchecked. With dark uncanniness, *TLoU2*'s Hillcrest is largely a monstrous suburban monoculture, the ghost of the lawn haunting us with a lost past and a flourishing, inhospitable present. What survives the final render is a weed: plants which "obstruct our plans, or our tidy maps of the world" (Mabey 2011, 1).

Scholarship's tendency to treat visual assets in games as superficial or invisible, dismisses popular and trade press fascination with "graphics," as well as failing to adequately reflect both their substantive screen space and production resources. As Nataska Statham et al. note, blockbuster titles such as *TLoU2* regularly utilize scanned textures and geometry composed from computationally processing multiple photographs to create the basis of models: photogrammetry (2020, 12). This is deployed alongside complex physics-based rendering and context-dependent animation, the latter here resulting in grass that bends around and obscures player movement. Transplanted into artificial space, assets are a weedlike "plant out of place" (Mabey 2011, 8), but like weeds they thrive around us. By enfolding indices of flora through referential and procedural processes, *TLoU2* therefore facilitates rich aesthetic engagement with the taskscape of its "container." To ignore this production would repeat Western society's "plant blindness" (Wandersee and Schussler 2001), where plants constitute "the thing we can't or won't see" (Keetley and Tenga 2016, 8), problematizing our conception of agency through modes of repetition and slowness (Marder 2013). We might instead marvel at how aliens are "everywhere" (Bogost 2012, 133). *TLoU2*'s postapocalyptic fiction highlights both the anthropogenic roots of our physical landscapes, and the powerful codesign/coconstructive effects of nonhuman actors to shape our video games and thrive in our wake: both passive and (inter)active, everywhere and out of place, a background inextricable from foreground.

Flower: Grass atmospherics

I'm tilting my console, wafting plants through a meadow to revitalize environments filled with human ruins and spacious fields. The experience

Figure 16.2: A screenshot from the game *Flower*.

is one of rhythmic color pulsing with green in each encounter, skeins of abstracted air currents flicking around topography, and spiraling flecks of rainbow hues atop hills of grass. Holding any button, wind courses forwards and swerves as I bend myself and the PlayStation Vita to pour petals over leaves. This is *Flower* (see Figure 16.2). Released in the same year as *Plants vs Zombies*, Jenova Chen's *Flower* posed a denser ecomimesis of lively grass. Onscreen 200,000 blades are rendered simultaneously (Athab 2009), all obliquely "interacting" with the player, who embodies an atmospheric force traced in plants: wind bending grass. While *Flower* does make plants central, it is more meaningfully concerned with the grass of its backdrop than the few thousand flowers of its foreground.

This meadow may imply Csíkszentmihályi's image of seamless autotelic flourishing given Chen's (2007) interest in "flow," an affect whose lack of criticality has been critiqued by Braxton Soderman (2021) and Keogh (2018), but loose controls disrupt movement mechanics. We listlessly eddy outside of flow as much as being channeled through its valleys, a large turning radius forces us to loop and rest between blades of grass in contemplative moments of "dwelling" in Ingold (1993, 1) and Michael Nitsche's (2008, 192) sense, rather than domination. Indeed, Chang laud's *Flower*'s capacity to involve us environmentally, but we might invert her emphasis on "mechanics" over "graphics" (2019b, 31) because *Flower* visually articulates the atmosphere plants engineer (Coccia 2018) as codesigners exerting passive force as a landscape.

The postphenomenology of atmospheres (Böhme 1993; Griffero 2014), can aid in the arts of noticing and expand our awareness of video game containers. Postphenomenology responds to phenomenology with "a move away from a subject-centered approach to experience" (Ash and Simpson 2016, 53) and, through atmospherics, we can appreciate these more-than-human experiential spaces affectively and aesthetically. The "staging" of materials (Böhme 2013), here through grass assets, animation, and postprocessing, creates "quasi-objective" affects from the relation of subject and object (1993, 69). This can be thought of as a form of harmony integrating the partly objective, partly subjective nature of play as we become with grass. Tonino Griffero casts such moments of encounter with the Other through a felt atmosphere as "pathic aesthetics" in which appearances "resound in the lived body" (2014, 7). Indeed, this is how we perceive the world, continually accessing surfaces and affects rather than interiors and objective truths. As Aubrey Anable has it, "video games are affective systems" (2018, xii). In this sense, *Flower* does not represent the dematerialized lawn or authentic meadow, but rather the weedy experience of everyday reality as quasi-objective and aesthetic.

For Gernot Böhme, atmospheric materiality is the experience of enmeshed bodies, both physical and virtual, and sensing is itself an interactive process he calls "felt space" (2017, 92), neither purely passive nor inert. I argue video game landscapes are atmospheric fields of what Böhme would see as affective apprehensions (1995), where we can move beyond ourselves (2017) in more-than-human understanding. Here players bend with, through and as the wind, connecting plants in the atmosphere produced, billowing beyond ourselves in "ecstasies,… ways of stepping outside of oneself" (Böhme 2017, 163).

While *Flower* may beautify its Californian setting with smooth low-poly models and soft color gradients, we should be careful not to dismiss the aesthetic which Morton sees as a key mode of ecological awareness (2016), in a medium Keogh powerfully argues is primarily tangible for players as "audio-visual-haptic" sensations (2018, 17). Indeed, from the perspective of both botanical science and situated First Nation knowledge, Kimmerer stresses the importance of beauty in both seeing and conceptualizing plant relationships she figures as a synergistic color complementary (2013, 45). These permeate *Flower*—red-green and yellow-purple—and for Kimmerer this visuality encourages an ethics of reciprocity (2013, ix–x). In *Flower* we feel something of this atmospherically. If Kimmerer's issue with Western science is that it is a "language of objects," where First Nation knowledge is a language of animated interrelation (2013, 49), *Flower* is nothing if not

the latter—rhythms restoring vivacious color to progressively urban ecological ruins by circulating petals through grass in explosions of green (see Figure 16.2). As a breeze, we hug the earth, but only have presence as displacement in the depression of airbrushed fronds or the lazy helix of petals hanging as a pulsing gestural composition. Indeed, the player-as-atmosphere effaces themselves, dispersing petals to make way for the verdant grass, which cascades hues in a rhizomatic ripple. This is not as much a game of tangible cause and effect, much less lawn maintenance, but it is a game of weedy self-sufficiency and the reframing of urban ecology. As if articulating *TLoU2*'s rewilding, here the city is cast as a plant's postapocalypse, and our task is to reframe ecosystems through atmospherics. As much action as perception, as much foreground as background, we brush the contours of a landscape. In touching the grassy "container" and feeling it ripple through screen and controller gyro, we turn bodily and virtually with and through grass as an atmospheric force of the landscape, "brush[ing] upon the edges of their being, which is altogether outer and exposed, and in so doing to grow past the fictitious shells of our identity" (Marder 2013, 13). Doing so we operate playfully in the verges between seeing an asset and interacting with it, where, like Morton's ecological model: "there flickers a dark pathway between causality and the aesthetic dimension, between doing and appearing" (2016, 5).

Reaping

Having considered cultural-historical and ontological contexts—haunting and rippling lawns, weeds and meadows—we can appreciate that humans condition, and are conditioned *by*, grass. Grass is both a social allegory of discipline and weedy resistance, but as an asset it also causes trouble ontologically and disciplinarily for our assumptions concerning agency, interactivity, and superficiality.

Grasses are a margin that thrive in disturbance: both where we aren't looking, and where we look without seeing. As such, progressive representation of grasses need not apply human values of centrality and foreground to diffuse and profuse beings but might trouble us from ubiquitous margins. On the edges of interactivity, the grassy verge haunts "between doing and appearing" (Morton 2016, 5). Proliferating between visible and invisible, interactive and passive, grass permeates a visual field that requires us to look, feel, and notice these atmospheres. In postapocalyptic landscapes, with their rich aesthetics, environmental storytelling, and atmospherics, I argue

there is in fact a rambunctious aesthetic fulfillment of Chang's imperative that "we need game environments that respond to human agency and yet seem to possess life independent of player actions" (2012, 251). Perhaps, fundamentally, we should respect that grass might not care how we represent it. It problematizes our own sense of centrality by thriving with and without us, "troubl[ing] the traditional distinction between the respectable and the merely utilizable" (Marder 2013, 110).

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About the author

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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.

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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

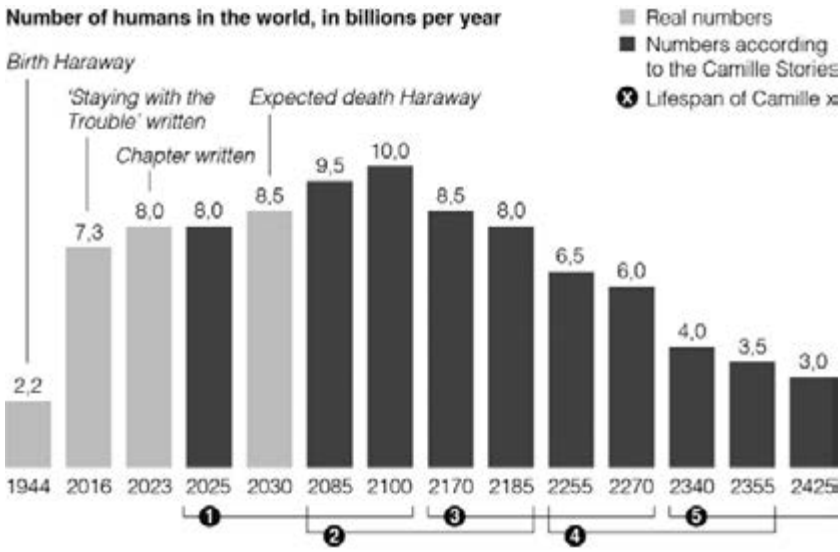

Figure 17.1: World population in "The Camille Stories."

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.

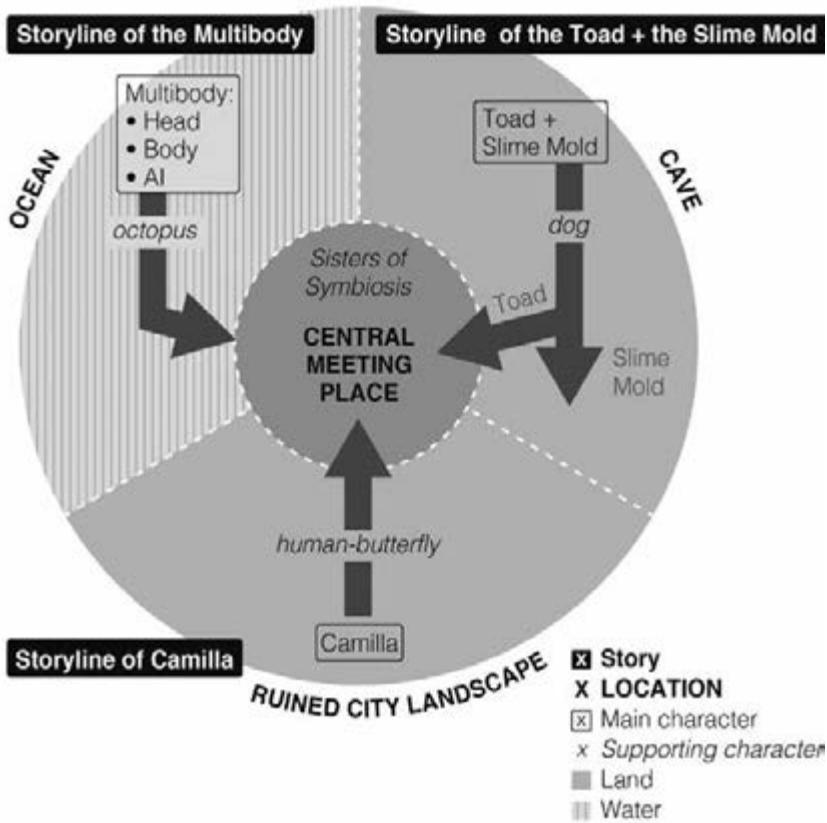

Figure 17.4: *Symbiosis* story world.

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.

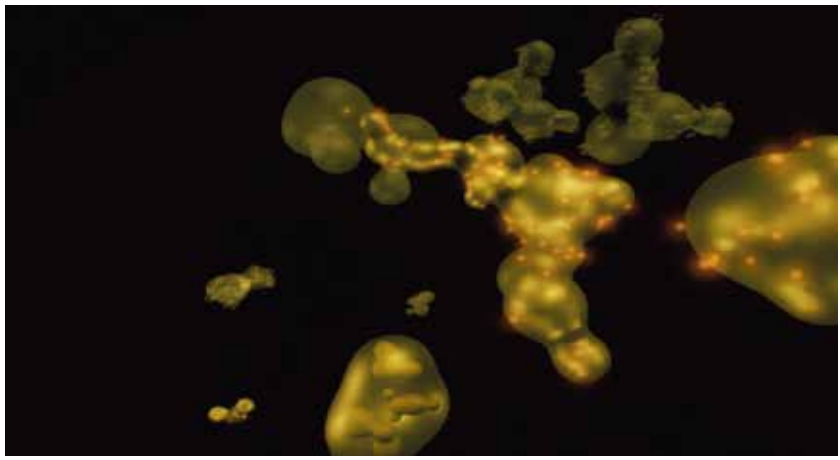

Figure 17.10: Slime Mold.

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.

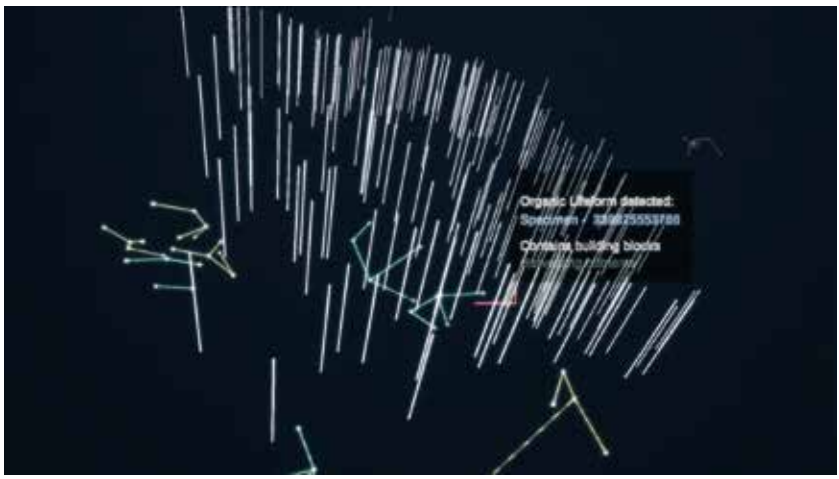

Figure 17.13: AI entity.

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.

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Ludography

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18. Mutate or Die: Neo-Lamarckian Ecogames and Responsible Evolution

Colin Milburn

Abstract
This chapter examines a set of recent video games that feature nonhuman protagonists living in toxic, environmentally damaged worlds, and who must mutate to survive. Drawing from a long genealogy of science fiction narratives, games such as *Maneater* (Blindside Interactive/Tripwire Interactive 2020), *Evolve* (Turtle Rock Studios 2015), and *Biomutant* (Experiment 101 2021) turn mutagenesis into a gameplay mechanism and represent neo-Lamarckian evolutionary processes as models or metaphors for responsible environmental governance.

Keywords: mutation, evolution, Lamarckism, toxicity, science fiction

Monstrous sharks, metamorphic aliens, and psychic raccoon warriors: such odd creatures dwell in the video games *Maneater* (Blindside Interactive/Tripwire Interactive 2020), *Evolve* (Turtle Rock Studios 2015), and *Biomutant* (Experiment 101 2021). Part of a recent trend, these games feature nonhuman protagonists living in environments that have been ravaged by extractive industrialization, and who must mutate to survive. Presenting contaminated, toxic worlds as zones of playful adventure, these games may seem to endorse a dystopian politics of accommodationism, acquiescing to the inevitability of climate change and ecosystem collapse (Buell 2003). Yet they also thematize anticipatory practices of environmental governance, imagining alternatives to current conditions (Otto 2012; Pak 2016; Streeby 2018). By tasking players to take responsibility for the evolved, transformative features needed for the continued inhabitation of a damaged planet, these games allegorize—and make actionable—the imperative to change tactics, to reconfigure and renovate in response to speculated futures.

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Turning directed mutagenesis into a gameplay mechanism, these games suggest the virtues of preadaptation in concert with environmental modulation: not merely mutating in hopes of *reacting* to environmental changes yet to come, but mutating in ways that *proactively* shape the environment and make it more survivable, more sustainable. These games therefore enact a kind of evolutionary futurism based in environmental responsibility, suggesting the necessity of changing ourselves and our ways of life in advance, finding ways to rehabilitate the world ahead of time.

Mutant politics

Maneater, *Evolve*, and *Biomutant* among other games of directed mutagenesis, wrap conventional role-playing game mechanics of attribute development and level-grinding with semiotic elements drawn from the biological sciences, while also giving such elements a distinctly science-fictional twist. The images and symbols of a distorted biology—a mutant biology—serve not only to rationalize or naturalize ludic contrivances such as experience points and skill trees, but also to actuate the political affordances of science fiction as a genre of cognitive estrangement, reflecting on our present from the perspective of an altered future (Suvin 1979). Though the speculative biology of these games may be contrived, it is not inconsequential; for it is precisely in making mutation into a playable, tactical operation that these games hail the player as a responsible agent for planetary change.

In doing so, they recapitulate a particular rhetorical form that has propagated within the discourse of science fiction for nearly a century, promoting a critical, speculative spin on modern evolutionary theory that affirms our capacity to rebuild, to remediate, to repair—in other words, to respawn—even within the conditions of environmental crisis.

In October 1937, the science fiction fan John B. Michel prepared a manifesto called "Mutation or Death" to be delivered at the Third Eastern Science Fiction Convention in Philadelphia, Pennsylvania. Michel insisted that science fiction must no longer be content to simply speculate about the future, as a form of recreational entertainment, but must instead work to actively shape the future, becoming a form of politics: "Science fiction must mutate—must change into a new form of idealism, a fighting, practical idealism, an idealism based on action and not on words, on experience and achievements" (Michel 2017, 186; cf. Cashbaugh 2016; Guynes 2018).

Michel's manifesto reflects certain conceptual maneuvers occurring at the same time in the biological sciences—namely, the reconfiguration of

Mendelian genetics, mutation theory, and Darwinism into a paradigmatic framework, eventually known as the modern evolutionary synthesis (Smocovitis 1996). Michel draws on the discourses of genetics and population biology, as well as the mechanism of natural selection, not only in elaborating his core theme of "mutation or death," but also in his usage of Darwinian phrases, such as the struggle for existence. And yet, while Michel's vision assumes a generally neo-Darwinian vocabulary, the central conceit of the manifesto is less Darwinian than Lamarckian: namely, the idea that the protagonists of this biological drama might have some agency over their evolutionary destiny, that they might choose to mutate, adopt certain behaviors or acquire new characteristics ("experience and achievements") that would then become the basis for generational change. As Michel puts it, "The main point of this whole discussion is that you fans must prepare to incept this new state of things" (186).

Lamarckian evolutionary theory was based on the inheritance of acquired characteristics, suggesting that organisms shape the components of their bodies through use or disuse, responding to changing conditions. It also postulated an inherent orthogenetic force in nature, that is, a tendency for species to become more complex over time. Lamarckian ideas continued to hold sway throughout the nineteenth and early twentieth centuries (Bowler 1988). Even Charles Darwin allowed for the hereditary transmission of acquired characteristics, though most of his work sought to demonstrate that random variation and natural selection would be the primary drivers of evolutionary change. In the 1930s and 1940s, the architects of the modern evolutionary synthesis often cast Jean-Baptiste Lamarck in the role of mistaken buffoon, a foil to the more sophisticated Darwin. Later, with the advent of the so-called central dogma of molecular biology in 1957, asserting that genetic information passes from DNA to RNA to protein and never in the opposite direction, the fate of Lamarckism was sealed. The hardening of the neo-Darwinian synthesis left almost no evolutionary role for an organism's metamorphic alterations or choices in transforming the lived environment, much less other mechanisms for propagating genetic change aside from natural selection (Gould 2002). In the strictest forms of neo-Darwinism, after all, as the biologist Richard Dawkins (1976) notoriously suggested, organisms are mere vehicles for genetic material: "gigantic lumbering robots," helplessly carrying out the instructions of selfish genes inside their cells. Of course, there have been dissenters from the hard-line, orthodox view. The biologist Richard Lewontin (1992, 108–109), for example, has decried such forms of neo-Darwinism as laden with ideological baggage:

> The deep point of Darwinism was the separation between the forces of the environment that create the problems and the internal forces of the organism that throw up solutions to problems more or less at random.... Modern biology has become completely committed to the view that organisms are nothing but the battle grounds between the outside forces and the inside forces. Organisms are the passive consequences of external and internal activities beyond their control. This view has important political reverberations. It implies that the world is outside our control, that we must take it as we find it and do the best we can to make our way through the mine field of life using whatever equipment our genes have provided to us to get to the other side in one piece.

In other words, according to Lewontin, the modern evolutionary synthesis has promoted both a militarized view of life and a mythology of *irresponsible evolution*. Despite the dominance of this view, however, certain biological phenomena have solicited reassessments about the role of organisms and their acquired characteristics in steering evolutionary change, including the Baldwin effect, genetic assimilation, directed mutation, epigenetic inheritance, and symbiogenesis. While all of these phenomena can still be explained at some level through Darwinian mechanisms of blind (if not always random) variation followed by natural selection or genetic drift, they nevertheless underscore the significance of the "experience and achievements" of organisms. In this regard, they require interpretations that might equally be characterized as neo-Lamarckian (Gissis and Jablonka 2011; Griesemer 1998; Margulis 1998). For these interpretations suggest the intimate coupling of the dynamic environment with creaturely activity, addressing organisms as both inheritors and shapers of ecosystems, modulators of shared worlds, responding to change by enhancing their own capacity to respond—in other words, practitioners of *responsible evolution*.

For Michel's "Mutation or Death" manifesto, the metamorphic agency of the organism is at the heart of a planetary drama—which, in 1937, seemed on the verge of crisis—suggesting that consequential choices can and must be made. Michel's manifesto presents its neo-Lamarckian conceit both figuratively and literally, in the manner that the discourse of science fiction always works by combining literalized metaphors and figurative modes of mimesis—a representational technique for making cognitively estranging concepts thinkable in the present (Chu 2011). On the one hand, his fable of mutant fans is clearly a trope, a metaphor: the language of evolutionary biology here is really about science fiction discovering progressive politics

and taking a stand against fascism. As Michel concludes, science fiction fandom

> shall place itself on record as opposing all forces leading to barbarism, the advancement of pseudo-sciences and militaristic ideologies, and shall further resolve that science fiction should by nature stand for all forces working for a more unified world, a more Utopian existence, the application of science to human happiness, and a saner outlook on life. (187)

On the other hand, while the predominant sense of Michel's evolutionary imagery is metaphorical, it is also literal. In Michel's account, the science fiction community is not merely a social group but also an actual biological population, with distinguishing traits—a certain "something": "Because, gentlemen, there is something in each and every one of you fans which places him automatically above the level of the average person; which, in short, gives him a vastly broadened view of things in general. The outlook is there, the brains are there" (185). Here, Michel is playing with an idea that had been gaining currency in the letters columns of Hugo Gernsback's science fiction magazines, and crystallizing with renewed force after the publication of H. G. Wells' novel *Star Begotten* earlier in 1937, that science fiction fans were exceptionally intelligent and forward-looking people, possessing peculiar mental attributes beyond those of ordinary humans—and that perhaps true fans were not wild-type humans at all, but rather, mutants (cf. Larbalestier 2002; Milburn 2014; Pilsch 2017). Wells' novel contemplates the possibility that Martians have been secretly inducing mutations among the human population using directed cosmic rays—similar to the experiments with induced mutations in fruit flies made famous by Herman J. Muller in the late 1920s (Campos 2015). These "star-begotten" mutant people are imagined as a new, more advanced species of human, *Homo sideralis*, emerging within and among *Homo sapiens*. Science fiction fans quickly embraced the idea as an allegory, or perhaps an intriguing conjecture, for their own social situation. Michel himself took the star-begotten allegory especially seriously, and this is why, in his "Mutation or Death" essay, the idea of science fiction as a force of political-evolutionary change is also quite literal. Indeed, for Michel, it was not Martian cosmic rays that created star-begotten fans, but rather, science fiction itself. As Michel would later write elsewhere, the genre of science fiction, by its nature, functions "to produce a certain state of mind which is destined sooner or later to take a large hand in shaping the destinies of the world" (Michel 1939, 7).

We see here, then, the speculative evolutionary theory that undergirds Michel's socialist political activism: science fiction produces mental changes ("a certain state of mind") in its fans, but these acquired traits will not simply be passively transmitted to the next generation—because they are not, after all, genetic changes. Instead, these induced mental changes encourage science fiction fans to actively change the environment itself, to change the social and political conditions of the planet for the better—and in this way, to actively produce an environment that will foster the very traits, at the scale of larger populations, that may have originally been only induced in the minds of a smaller group of science fiction enthusiasts ("shaping the destinies of the world"). Michel's paper launched a conversation within science fiction that would persist for several decades to come, even informing the plot of A. E. van Vogt's 1940 novel *Slan* in a strikingly direct way. In *Slan*, a group of persecuted posthuman mutants called "slans" must take control of their own evolutionary destiny, first, by reengineering the genetics of their own offspring in order to better survive in a reactionary society, and second, through a long game of reshaping the sociopolitical climate, ensuring favorable conditions for slans and a gradual improvement for the whole of humanity. Like Wells' *Star Begotten*, Van Vogt's novel found an audience of science fiction readers eager to identify with the plight of the slan protagonists. "Fans are slans!" became a prominent slogan of science fiction fandom throughout the 1940s and 1950s. Eventually, concerns that this idea might promote dangerous fantasies of eugenic elitism led to the disappearance of progressive mutation talk among science fiction fans (Pilsch 2017). But the Michelist framework nevertheless persisted in science fiction narratives themselves, especially in stories of what Stacy Alaimo (2010, 2016) and Tom Idema (2019) have described as "environmental posthumanism," emphasizing the porosity of the human with respect to the environment, as well as the mutual feedback effects. True to their Michelist roots, such stories entail a political imperative: to change the world, we must first change ourselves.

Dangerous game

Maneater, *Evolve*, and *Biomutant* inherit this genealogy of environmental posthumanism. In these ecogames, we see a mix of neo-Darwinian concepts and neo-Lamarckian mechanisms, now rendered explicit as elements of gameplay. Whereas Michel relied on rhetorical interpellation, speaking directly to science fiction fans, and novels such as Wells' *Star Begotten* and

Van Vogt's *Slan* relied on sympathetic identification, these ecogames add the additional function of interactive role-playing, tasking gamers to take on the subject position of a mutant creature struggling to exist in a ruined environment. The point of these games is not to look to a more pristine past but instead to accept current conditions, recognizing the toxic status of the world, but not to give up or simply wait for nature to take its course. Rather, these games encourage "staying with the trouble," to borrow Donna Haraway's phrase (2016), using the tools at hand—that is, the "experience and achievements" gained—and actively evolving a different world, a world fit for living.

The American game *Maneater* begins with an intense action scene: a mother bull shark in combat against several boats of fishermen. But this isn't just any bull shark: she is a massive, mega shark, mutated by the extensive industrial and pharmaceutical pollution dumped into the sea. Thanks to her mutated DNA, she is also amphibious; she can fly through the air for short distances; she can release electrical discharges and clouds of inky camouflage; and she can emit bursts of sonar to map the area around her. The player, taking on the role of this supershark, is encouraged to fight the fishing boats, destroy as many as possible, and gobble up the fishermen. Unfortunately, it is a battle she cannot win: the game forces a cutscene where she is captured by the lead fisherman—a ruthless hunter known as Scaly Pete. He is the star of a reality TV series called *Maneaters vs Sharkhunters*. He strings up the mama shark and kills her, while slicing a baby shark out of her womb. With a knife, he gouges a deep cut across the baby shark's head and flank. "So's I can recognize her later," he says. But just as he prepares to throw the baby shark into the ocean, she attacks Pete and eats his arm, then escapes to safety in the water. This opening episode or primal scene establishes the pivotal drama of the game: a callback to the constitutive psychosexual rivalry between Captain Ahab and the white whale in Herman Melville's *Moby Dick* (1851) and the rivalry between Quint and the great white shark in Peter Benchley's *Jaws* (1974). *Maneater* alludes to both of these texts explicitly throughout its storyline, along with an extensive roster of allusions to other media narratives and notable works of science fiction, fantasy, and horror, including the writings of H. P. Lovecraft and Stephen King, films such as Guillermo del Toro's *Pacific Rim* (2013), and video games such as *Subnautica* (Unknown Worlds Entertainment 2018). In this way, *Maneater* performs its own textual ancestry, its own family tree. The image of the baby shark marked with an indelible scar in the context of a scene that conjures up deeper narrative genealogies contributes to the game's thematization of the relationship of acquired characteristics

to environmental inheritance, the structuring role of culture and context. This theme plays out in the core gameplay activities, represented as cycles of induced mutation and niche construction.

The baby bull shark has not inherited most of its mother's supershark mutations. Yet, it becomes immediately clear that one mutant characteristic was passed on: the sonar talent, enabling the baby shark to acoustically map its environment and locate the other entities within it. Beginning with this one assimilated mutation—a gameplay function that literally represents an expansion of environmental awareness—the story follows the adventures of the young shark as she explores various watery ecosystems, including a bayou, an oceanside resort, a bay harbor, and the open gulf. During her journey, it becomes abundantly clear that the underwater world has been devastatingly reshaped by human activities, especially the dumping of industrial waste, radioactive materials, sewage, and endless amounts of garbage. There is virtually nowhere in the game that has not been touched by human hands, indexed by the vast underwater geographies that have been reconfigured by engineers and litterbugs alike, as well as by the immersive medium of ocean water itself and its chemical composition. The mediated aquatic effects become particularly salient when we swim too close to a damaged nuclear reactor, or when we discover sewage lines dumping wastewater in the gulf, or when Scaly Pete vindictively poisons an entire bay ecosystem (cf. Jue 2020). While exploring these zones, the shark feasts on other creatures—many of them affected by pollution and habitat degradation. She also eats manufactured objects (such as car license plates) and boxes of mutagens that give her new abilities, such as enhanced cartilage, a bony exoskeleton, electrical discharge powers, and more. As she eats and explores, she grows bigger, more complex: an orthogenetic trajectory, becoming a supershark.

Shaped by her toxic environment, she does not simply survive in a virtually unsurvivable world; instead, she becomes a force of change. The campaign missions of the game are largely devoted to reparatory efforts: reduce the population of some invasive species; rebalance some predator–prey relationships; and, above all, attack and devour any number of humans involved in irresponsible activities, such as suburban developments that spread into marsh and sea areas; festivals for corporations that extract ocean resources; tourist industries and golfing resorts that contaminate waterways; and so forth. The shark is rewarded for hunting these people, as well as anybody messing around by the shorelines. As her notoriety as a man-eater grows, more and more sport hunters come out to find her, bringing ever bigger boats.

These missions generally suggest that the shark is helping to restore some ecological health to a world grossly affected by one species that has disproportionately terraformed the world in its own image, namely, *Homo sapiens*. The "apex predator" battles in the game, in particular, showcase the clash between the environmental perceptiveness of the shark and the exploitative, anthropocentric attitudes that lie at the root of the environmental crisis. For example, the shark must battle a ferocious American alligator who had been kept prisoner in a bayou tourist attraction. She must also battle the orca Mahana, who, having escaped from her captivity in the Marine Mammal Park Stunt Show in Port Clovis, now aggressively lashes out at all living things. The series of apex battles culminates in a faceoff with a great sperm whale, who is clearly supposed to evoke Moby Dick: skewered with a harpoon, wrapped in chains and ropes, the tortured whale is the legacy of the long history of human fishing and whaling practices—indeed, it is a symbol for a whole epoch of unsustainable industries. These abused and broken creatures now rage against the world, vying for power and autonomy in environments not of their own making—the Darwinian struggle for life. Their battles rehearse a clichéd "survival of the fittest" narrative, reiterating the tropes of food chain and pecking order, even while vividly underscoring that beyond all apex predators there is yet a worse predator—one who treats other species not simply as prey but as commodities (Shukin 2009). The shark, however, neither succumbs to localized rage nor concedes to the existing structuration of the food chain, the current order of things. Instead, she actively inhabits the toxic world differently, powering up through self-mutation. Disrupting all the hierarchies, she then returns to the primal scene: the conflict with Scaly Pete and what he represents, namely, the carnophallogocentric regime of human exceptionalism (Derrida 2008).

The final boss battle with Scaly Pete recalls the opening battle involving the shark's mother. This time, however, the mutant shark manages to kill Scaly Pete's henchmen and destroy his ship, and then proceeds to chow down on Pete in an image that invokes Steven Spielberg's film of *Jaws* (1975). But the game concludes with an abrupt, forced ending that the player has no ability to avoid: Pete triggers an explosive, blowing himself and the shark to smithereens. This is not the ending of *Moby Dick*, where the whale lives but carries Ahab off to the briny depths, leaving only Ishmael to tell the tale; nor is this quite the ending of *Jaws*, where both Quint and the shark die but the victory goes to the hunters. Here, it is mutual annihilation, where the shark, now having killed all the other shark hunters in the region, is herself vaporized. Yet, she has made some significant environmental changes in her wake.

In a story that emphasizes mutation and evolution, it may be surprising that it ends so decisively with the death of the shark, who leaves no biological progeny. And yet, this is exactly the provocation of the game. The onscreen shark has died (indeed, she may have died many times throughout the game, endlessly respawned to go on to the next mission). But the player of the shark goes on, left with the mandate to mutate or die.[1] The evolutionary politics of the game insists that new behaviors and mutant traits can be put to use in changing the status quo, remaking worldly conditions in a way that promotes such mutations. Which is to say, it no longer matters whether such traits become genetically assimilated or epigenetically regulated or not. If they persist as learned behaviors, if they endure as culturally encoded practices or habits, then they become, as it were, second nature. The challenge, as Michel and any number of science fiction writers have suggested, is to put such mutations to use in ways that enhance planetary flourishing—and this is the challenge that *Maneater* presents, as a game that is both an allegory of environmental stewardship and a tongue-in-cheek docudrama about a monster shark.

Fair game

Working through similar themes but in a very different form, the American game *Evolve* is a multiplayer shooter, a "4 versus 1" asymmetrical battle arena. Four players take on the roles of mercenary hunters defending human mining colonies on the planet Shear, while another player takes the role of an enormous, Lovecraftian monster. The narrative framing is minimal, but the cinematic opening of the "Evacuate" campaign mode explicates the situation, focusing on the hunters—a collection of mercenaries, demolition experts, criminals, and military veterans recruited by the "planet tamer" William Lodge—as they prepare to evacuate the colonies and defend against a host of rampaging alien creatures. The robotic hunter named Bucket asserts: "No one seems to know [the nature of these creatures]. Colony records state: Unknown species of megafauna. Extremely cunning. Aggressive, with an alarming rate of growth and reproduction, and a ravenous appetite. They are likely not native to—." The hunter named Maggie interrupts while loading

1 The *Maneater* DLC expansion *Truth Quest* (Tripwire Interactive 2021) retcons the ending of the original game, implying that the shark either survived the explosion or respawned. Either way, the point is that the shark swims on, even after her death—and the player carries forth her legacy.

her rocket launcher, ending any further consideration of Shear's natural history: "Monsters. We're hunting monsters." Clearly, the hunters' perspective is biased. Even the supposition that the monsters are "likely not native" reeks of propaganda, channeling prejudice against the foreign, the immigrant, and the so-called invasive species to justify violent extermination, while conveniently excusing the activities of the human settler colonies and their extractivist practices. But whether the monsters are Indigenous to Shear or have traveled there specifically to thwart human expansion, one thing is perfectly clear: the presence of the human colonies has really pissed them off.

The 4v1 combat design of the game strives for a principle of "balance." To have a fair fight, the abilities of the monster must be reasonably equitable to those of the four human hunters. However, this volatile, asymmetric combat game seems to overturn the fantasy of a fair and balanced playing field. According to Matt Colville (2018), the lead writer and designer for *Evolve*, "4v1 was awesome." But he laments that the innovative design, along with a DLC model in which new monsters and hunters were frequently introduced for purchase in the game, thwarted the developers' efforts to achieve competitive equity:

> The fact that all the heroes were A: all different from each other, mechanically, and B: all the monsters were each different from each other, mechanically, AND neither Heroes nor Monsters used any of the same mechanics! Made it very very hard to balance new heroes and monsters.... Heroes didn't have to feed. Heroes didn't level up [i.e., reach new ontogenetic stages]. Heroes didn't pick abilities. It wasn't just asymmetrical, the two sides were playing fundamentally different games. That was a problem we never solved. (Colville 2018)

Certainly, for players of the monster, the experience has more often felt anything but fair—at least, in the early stages of a match. One player sums up a common sentiment: "Being a monster is really hard" (Rivera 2015). The monster begins the game in a young, relatively vulnerable form. But if it can run and evade the human hunters, eventually it can metamorphose into a new stage of existence. By feeding on humans or Indigenous animals, absorbing mutagenic molecules, the monster can alter its genes and grow. Upon reaching the third stage, the monster's abilities are sufficiently buffed—and then the battle can really get going. Yet even then, when the monster can overpower any individual hunter, by working together "the hunters are definitely a more formidable force and have the advantage when all four players are playing well" (darrelwillis 2014). Despite numerous

software patches promising to modulate and rebalance things, many players have complained of a persistent problem: "We all know that monsters have gotten the short end of the stick for a long time now" (buildingahouse 2016). Software updates continued through 2018, when 2K Games shut down the online multiplayer servers. (The game remains playable in both solo and peer-to-peer multiplayer modes.) Yet it seems no amount of code tweaking could fully address the frustrations of those who perceived fundamental constraints in the design—as one player put it, "*Evolve* is a completely broken game" (EX34 2016)—or those who bemoaned the repetitive gameplay patterns it tended to reinforce: "There is a singular strategy: hunters chase and monsters run" (Grumpzilla2014 2016). On their own, such expressions of frustration may point to superficial concerns or fixable bugs. Yet as a discursive pattern, they describe something much deeper: a structural imbalance, an algorithm of structural injustice.

The developers may have considered such a structural imbalance to be a mere design flaw or "a problem we never solved." But it is a core part of *Evolve*'s procedural rhetoric, intentional or not (Bogost 2007). Indeed, the sometimes frustrating experience of asymmetry—or rather, the recognition that humans and monster are actually "playing fundamentally different games"—can solicit meaningful interpretations in regard to the game's science-fictional world. For example, while the dominant framing of *Evolve*'s cutscenes seems to encourage identification with the human colonial regime (i.e., the so-called Heroes), the apparent unfairness of gameplay provokes some players to have a rather different take: "Are the hunters the bad guys?" (Voltageous 2014).

Even players who enjoy the bombastic monster-hunting experience often cannot overlook the bigger picture: "In humanity's never-ending quest to conquer the universe and grind nature under its heel, it's landed on the planet Shear. Only on Shear, nature fights back. The 'monsters' are just protecting their habitat, destroying valuable human colonies in the process" (Dingman 2015). Another player has aptly described the game as a "monster-bullying simulator" in which "survival is an onus placed upon the monster, not the humans." For this player, a temporary victory for the monster under such unfair conditions triggers a cathartic force—and puts the ethical situation in crisp relief: "I'm shaking from built up and released tension, and from an infusion of adrenaline into my frail, pale form. I'm shaking because I became a monster, and because I won, and because I beat the real monsters" (Meer 2014).

The procedural rhetoric of *Evolve*—conveyed through the asymmetrical combat model, the experience system for upgrading skills and weapons, and

the various battle modes (Hunt, Nest, Rescue, Defend, and Evacuation), all wrapped in a narrative frame focused on the human mercenaries—rehearses a militarized view of life, a scorched-earth struggle for existence. It casts the future as a repetitive series of apex predator battles, whose limited variations depend on downloading alternate terrain maps to devastate or paying for cosmetic character customizations through the built-in DLC system. In other words, the game premediates a future that explicitly, even hyperbolically, extends the present and its ideological conditions, packaged in imperialism and consumerist capitalism. And yet, at exactly the same time, in making this straight-jacketing of the future palpable, the game also invites a different set of interpretations, signaled from the outset by its titular imperative to "evolve."

The neo-Lamarckian mechanisms available to the monster—and not the human mercenaries—can modify the fundamental imbalances, reconfiguring the nature of gameplay each time the creature evolves. From this perspective, the plight of the monster, stuck in asymmetrical combat against a human corporate-military force determined to strip-mine the colonized planet of Shear, becomes a metaphor for the Anthropocene as such (May 2021). It suggests that restorative environmental justice depends on the vigilance of the monster and its practices of responsible evolution, its capacities for transformative leveling-up, which enable it to confront the industries and institutions driving the reckless terraformation of the world. The violent methods of the creature are, of course, both literal and metaphorical (cf. Malm 2021).

New paths

Like *Maneater* and *Evolve*, the Swedish game *Biomutant* dramatizes the mutagenic affordances of contaminated environments and the ethical imperative to stay with the trouble. An open-world, martial-arts fable, *Biomutant* frames its RPG mechanics in terms of biohacking and tactical gizmology. The protagonist—a mutant raccoon, freak cat, prodigious weasel, or some other weirdly evolved mammal, according to the player's preference—explores a vibrant, postapocalyptic Earth that was ravaged eons ago by the Toxinol corporation, whose business practices left the planet awash in hazardous chemical waste, radioactive sludge, mining slurry, and devastating oil spills. The human population evacuated on vast spaceships called Arks, never to return. With humans gone and mutagenic substances everywhere, the pace of evolutionary change accelerated. The

surviving organisms developed sentience and complex cultures. At the same time, a particular tree—known as the Tree of Life—evolved to extend its roots throughout the world, and it now sustains the fragile ecosystems of this polluted planet. The Tree of Life maintains a world on the edge of collapse, a world that could potentially thrive in new ways or instead become more inhospitable. Laden with mythic overtones, the Tree of Life has suddenly been poisoned by an upwelling of subsurface oil. Worse, four gigantic creatures known as Worldeaters have started chewing its main roots, hastening its demise.

The protagonist—a wandering youth, a gun-toting adept of martial arts, and a DIY gizmo hacker—is tasked by a former caretaker of the Tree of Life named Out-of-Date to deal with this situation. Fortunately, our player-character has learned that interacting with mutagenic substances can trigger new skills, physical traits, and even psionic talents. With pluck and a bold, experimental zest to ingest strange chemicals, the hero travels to visit six tribal communities of mutant animals, each of which represents a different set of political and philosophical attitudes about ecological relations. Three of the tribes believe that the Tree of Life must be protected from the Worldeaters. While they each advocate different principles of social order for achieving this goal—communal solidarity (Ankati tribe), normative ethics (Myriad tribe), or liberal freedom (Petra tribe)—they all agree that the current state of the world must be preserved for the good of all. The other three tribes, however, instead prefer to ignore the risks to the Tree of Life, or even speed its collapse with eschatological fervor. The Netra tribe, for example, expresses a laissez-faire "survival of the fittest" ideology, in which biological might makes political right. The Jagni tribe has imperialist ambitions to rule over the other tribes, while looking forward to a "cleansing" of the world. The Lotus tribe represents fascism, aiming to eradicate the other tribes and spread its own vision of a totalitarian future.

Throughout the game, the player-character must make weighty choices. These choices begin at a "crossroads" in the forest, a fork in the road where the protagonist has to pick a "path in life." This decision reveals the game's morality system, represented as a friendly rivalry between a personified "dark aura" and a "light aura." Each subsequent plot choice affects the protagonist's aura and the path traversed through the narrative. These decisions shape social relations in the open world as well as gameplay options, impacting the mutant skills and talents that the protagonist can develop. In other words, the aura-morality system, the biologized skill-tree mechanics, and the narrative environment are all interlinked, thematizing the neo-Lamarkian loops at the core of this role-playing game.

Although the protagonist's decisions and mutations affect the unfolding of the narrative, the game almost never forecloses alternative possibilities completely. While depicting the discrete choices as delineating a set of paths, trails, and roads taken or not taken, *Biomutant* rejects strong or rigid theories of path dependency, whether in evolution or in socioeconomic systems (David 2007; Szathmáry 2006). Even at the very end of the game, different choices can still be made: there is no lock-in. The player-character's final choice—whether to save the Tree of Life or allow the Worldeaters to topple it—is unhindered by whatever pathways have actually led up to this point. In one ending, the world is preserved in its current state and allowed to restabilize: "This isn't the end. Just being surrounded by nature as it heals itself will rejuvenate us. Nature will teach us how to survive." In the other ending, calamity ensues, mass extinctions sweep the globe, and nature reboots to primordial conditions: "This is how it begins. The world's headed towards rebirth of a primal paradise as evolution paves way. We're at the mercy of nature." In both endings, the protagonist and some friends board an abandoned space Ark left behind by the humans and take off to explore other planets. The "conservationist" ending suggests that the Earth and its inhabitants will prosper while the heroes cruise around the cosmos; the "cataclysmic" ending plays out a cynical "Planet B" fantasy, in which a handful of elites save themselves while leaving a trashed Earth to its fate (Robinson 2018).

There could hardly be a more clear-cut depiction of irreversible environmental decisions and their global consequences. And yet, the voiceover narration in both endings encourages us to always speculate otherwise: "Do you wonder what turn life might have taken if you'd done things different? A left when you went right. A yes when you said no." Reminding us that every moment is awash in potentialities, both endings emphasize ongoingness, the availability of renewed opportunities even as things change: "So, when all is said and done, it turned out to be an unusual ending, after all. What could be better than ending the story the right way? Ending it your way: a beginning of something new." Whether the world and its existing biosphere persists or perishes, the end is not the end, in any absolute sense. While past choices cannot be undone, we can still make other changes going forward. There is world enough and time—especially if we think beyond the scope of our life spans, if we think ahead to histories after our own. This is why both *Biomutant* endings conclude with the promise of different planets to explore—other worlds both literal and metaphorical. The toxic world is not the only possible world, after all, even if it is the one we have inherited. From inside the toxic world, the game affirms the future-generating, reworlding

capacities of mutation: difference can make a difference, a world of difference (Johnson 1987).

Biomutant insists on dwelling in toxicity, highlighting its perversely productive and transformative potentials, to show that change remains possible even in the worst circumstances. Certainly, it takes seriously the extent to which human industrial pollution is responsible for accelerating "unnatural" evolutionary changes today (Monosson 2015). But it also shows how the toxic can function as a pharmakon, a poison and remedy at the same time (Derrida 1981; Stiegler 2013). In disrupting the normal operations of bodies or ecosystems, the toxic may provoke a reconsideration of the ways in which the so-called normal and natural have been constructed, engineered, and maintained (Chen 2012; Alaimo 2010). It draws attention to molecular processes that destabilize the operational closure of systems, triggering upheaval and disequilibrium—in a word, crisis (literally, a moment of critical assessment, an inflection point). A queer agent, an active site of mutagenesis, the toxic affords critical reevaluations of practices and conditions that may pass as normal and healthy, even when they are anything but. For *Biomutant*, it is therefore a potent figure for responsible evolution.

Biomutant asks us as players to take responsibility for choices every step of the way, while reminding us that nothing is determined in advance. Radical mutation is always possible—systems can be changed, even down to the roots. For *Biomutant*, mere survival in the face of environmental change—whether in regard to natural selection or the quiescent politics of accommodationism—is not a sufficient measure of our actual capacity to respond to crisis, whether reactively and belatedly, or preemptively and speculatively. On the contrary, the game suggests that we are all mutants, potentially—precisely because we can play as mutants, taking on the role if we choose to do so. That's what it means to be a biomutant: whether we decide to fight for conservation or allow the planet to become inhospitable, whether we explore new ways of life elsewhere or create them here at home, we are always responsible for more than ourselves, and more worlds than one.

Maneater, *Evolve*, and *Biomutant* indicate how wrapping biological meanings around conventional gameplay elements can draw attention to the accepted rules, mechanisms, and ideologies of the status quo, while also suggesting alternative models of engagement with environmental systems (Chang 2019). Through the trope of mutation, drawing on its political affordances developed in the history of science fiction, these games present the mutual shaping of organisms and environments as an actionable, literalizable

metaphor—a notion articulated by one of the characters in Kim Stanley Robinson's novel *Red Mars* (1993, 81):

> We have technology to manipulate matter right down to the molecular level. This is an extraordinary ability, think of it! And yet some of us here can accept transforming the entire physical reality of this planet, without doing a single thing to change ourselves, or the way we live.... And so I say that among the many things we transform on Mars, ourselves and our social reality should be among them. We must terraform not only Mars, but ourselves.

We have been terraforming our planet all along, without realizing it (Robinson 2005). To take responsibility for this world we have made, and to enable other, more sustainable worlds to come, the choice has never been more vital. Mutants of the world, unite!

Ludography

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19. No Man's Game: The Infinite Boredom of Procedurally Generated Environments

Paolo Ruffino

Abstract
This chapter looks at players' responses to the failures of procedural content generation (PCG) in the first release of *No Man's Sky* (Hello Games 2016), a game that was received as inhumanly boring, generating new anxieties regarding the place of the human in practices of gameplay and game making. At the time, players turned against an all-too-human target, the indie auteur Sean Murray, seen as responsible for the shortcomings of the video game. The procedurally generated environments of *No Man's Sky*, inhumanly vast and uneventful, raise questions regarding the material conditions of video game production, and shed light on a new aesthetic that decenters human agents from the products of the culture industries.

Keywords: procedural content generation, nonhuman, AI art, postmodernity, production cultures

No Man's Sky (Hello Games 2016) was originally announced at the VGX Awards in Los Angeles in December 2013. The event, dedicated to celebrating the best video games of the year, adopted a new format for the 2013 edition and publicized a number of titles under development. *No Man's Sky* by the British independent team Hello Games captured the attention of the audience and online communities, in what is still today remembered as one of the most successful announcements in the history of video game industry. The trailer showcased an entire 3D universe to navigate, explore, and domesticate, where every single "atom, leaf, tree, bird, fish … [and] planet" would be procedurally generated (GameTrailers 2013). The procedural

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Figure 19.1: Procedurally generated creatures and plants in *No Man's Sky*.

landscapes of *No Man's Sky* promised a radically new experience, and showed the possibilities offered by procedural content generation (PCG) for the potentially infinite generation of virtual worlds and environments (see Figure 19.1).

PCG is the "algorithmic creation of game content with limited or indirect user input" (Shaker, Togelius, and Nelson 2016, 1). The intervention of game developers and artists lies in the design of the rules and procedures that enable the automated generation of virtual objects and environments. The wide adoption of PCG is a relatively recent trend, but the technique has an established tradition in video game development. The main reference for Hello Games is *Elite*, a video game by David Braben and Ian Bell David, released in 1984, which used PCG to generate a new virtual galaxy in each running of the game. *Elite* has been a hugely inspirational example for generations of game designers, inspiring worlds and generative environments to roam freely in.[1] At VGX, Hello Games declare that their objective is to repurpose the original concept behind *Elite* and create an updated multiplayer version (Diver 2016). Since the release of *No Man's Sky*, the video game industry has revamped PCG as a technique for accelerating the generation of objects, environments, and characters in video games that range from low-budget independent productions to AAA titles. In most cases, the large availability of assets of different kinds is promoted as part of the marketing of the video game, as a guarantee for the amount

1 Open world video games like those in the *Grand Theft Auto* franchise draw their inspiration from *Elite*, despite having a completely different setting and design (Donovan 2011).

of time that players will be able to spend without ever encountering the same experience.

The production of *No Man's Sky* proves to be more complicated than originally envisaged. The traditional pipeline of production has to be rethought by the developers to enable numerous iterations of the game engine, and an extensive curation of bugs and inconsistencies that spawn across the virtual galaxy. Meanwhile, the video game receives growing attention from the press and consumers. Sony Computer Entertainment reaches an early agreement with Hello Games to support the development and distribution of the title. At the time of its publication in August 2016, *No Man's Sky* is the best-selling game on release date on the PlayStation Store, and preselling 750,000 copies on *Steam*.

The expectations surrounding the video game would have been difficult to match, but *No Man's Sky* manages to completely disappoint the early buyers, who have been waiting for almost three years to play the video game. In July 2015, an article in *The Guardian* defines *No Man's Sky* as "a game where you're unlikely to meet other players, no one will win and it will take over four billion years to explore it all" (Parkin 2015). *No Man's Sky* is a great disappointment and a PR disaster for Sony Computer Entertainment and Hello Games, for exactly the same reasons that made it so largely anticipated. The eighteen quintillion planets, which should allegedly take 585 billion years to explore, and the enormous extension of the digital landscapes of the game, reveal to be only marginally different, thus incredibly boring. Many of the features promised during the development stage, including the possibility of meeting other players in the virtual universe, turn out to be either flawed, or completely absent from the final version. The community identifies Sean Murray, the CEO of Hello Games who presented himself as the auteur of the procedural universe, as the person responsible for the failures of the algorithms. Murray and his team receive death threats and various forms of harassment, both online and in person.

As I will argue throughout this chapter, *No Man's Sky* destabilizes the central position of the human player. It presents an environment so extended to be nearly impossible to experience in a satisfactory manner. Mark Johnson argues that *No Man's Sky* complicates players' aspiration to complete and master the game, a desire often felt by video game consumers (Johnson 2019). Johnson observes how players typically seek two kinds of completion: experiencing a sufficient number of "distinct permutations" of the game, or relying on an outside source (e.g., the game designers) for a list of the necessary achievements to consider the game completed (2019, 181–194). In *No Man's Sky*, "players were uncertain how many planets they *should* see,

and whether the kind of planets they had thus far encountered were the kind of (and variety of) planets they were *supposed* to encounter, or whether they had proved unusually unlucky" (2019, 189). I argue that such a clash between what players expect and what the environment offers has been productive of feelings and emotions that shed light on the complexity of our engagement with digital landscapes, and on the material implications of automation in the leisure industries.

The players' community publishes videos and threads comparing the experience of playing *No Man's Sky* with what was originally promised in the press releases and announcements. An article on a gaming website claimed that "much of what was shown or described in the hype years is wildly unrepresentative of what's there now" (Caldwell 2016). Players started an unofficial thread on *Reddit*, titled "Where Is the NMS We Were Sold On?," entirely dedicated to making a list of the features promised in the announcements and absent from the final release (Reddit 2016). At the time of writing, the thread contains almost 8,000 comments. A comment from a user notes how each planet is generated through the same "biome," meaning that "if you land somewhere and … run around for a minute, you know exactly how the rest of the planet will look like" (see Figure 19.2), and that "after spending some time in space stations, you have seen all the possible ships." They conclude that "every hour I invested into this game made me regret it more and more" (CoRo_yy 2016).

The experience of playing *No Man's Sky* is based on a well-defined series of objectives that end up repeating in loop: gathering resources from the environment, crafting new items, traveling around the galaxy, and then repeating the process on any new planet. The video game guides the player in the early stages, presenting a list of objects to collect in order to create new items, and each new item then generates a series of new tasks based around extraction of resources and crafting. A review from the website Polygon admits that "in the end everything feeds back into the goal of gathering what you need in order to allow yourself to travel even farther in order to gather what you need to travel even farther than that, and so on, into almost-literal infinity" (Kollar 2016). The reviewer concludes that the game is mostly remarkable for its technical innovations and for showing the possibilities of the algorithmic generation of content, rather than for its design. Retrospectively, and as I will comment towards the end of this chapter, *No Man's Sky* can be looked at as an artistic statement, more than an entertainment product, and as a reflection on the creative, ecological, material, and aesthetic implications of procedural content generation.

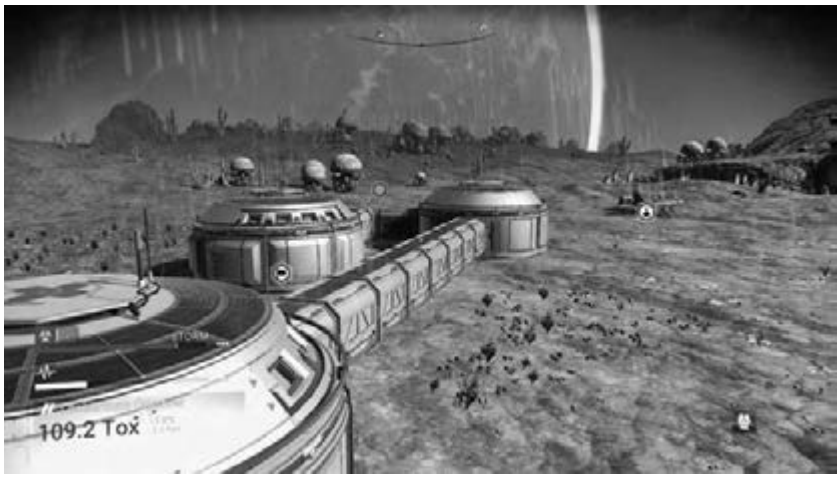

Figure 19.2: Procedurally generated planet in *No Man's Sky*.

Hello Games no longer made any public appearances after the release date, and have been fixing, as much as possible, the initial version. The major updates have been presented with a new title: *No Man's Sky Next*, released in 2018, followed by *No Man's Sky Beyond* in 2019. The new versions come much closer to the original concept and include more elaborate multiplayer features. Eventually, the fans crowdfund a billboard in front of Hello Games' headquarters in Brighton, UK, to thank the developers for their hard work and the difficulties experienced throughout the production (Porter 2019).

In this chapter, I look at the relatively brief period of time following the release of the original edition of *No Man's Sky* and its initial reception. The case study sheds light on some of the technical and aesthetic transformations taking place in the video game industry and more broadly in the entertainment and culture industries at large. Some of these changes involve a radical recalibration of the conditions of production and distribution of digital entertainment products and of the role of human and nonhuman actors in the circulation of cultural texts. As I will discuss, the anger of the consumers, and the unexpected attention received by Murray and his team, tell us something regarding the anxieties generated by the rise of nonhuman agents in creative labor. At the same time, the initial release of the game challenged our understanding of human creativity. The infinitely vast and boring machine-made landscapes of Hello Games' product, and players' feelings of anger and boredom while navigating those environments, are part of an event which I interpret as symbolic of the transformations currently underway in the contemporary video game industry.

I take up Alenda Chang's suggestion to explore both representations of ecologies in video games, and video games *as* ecologies, because they can "offer a compelling way to reconcile a deep connection to nature and the nonhuman world with an equally important connection to technology and the virtual" (2019, 5). Chang proposes to pay attention to how video games represent environments, by looking at how virtual organisms interrelate with their surroundings and compose digital ecologies. At the same time, the ecological analysis of video games can make us better understand how video games are part of *our* environment: how they shed new light on our mediated experiences and perception of the world around us. Such a perspective requires that we investigate the relations established between human and nonhuman agents during gameplay, as much as at the role occupied by video games within our media landscape. Chang argues that video games are "mesocosms": they sit at the boundaries of representations and real environments, replicating aspects of the surrounding world in simulated settings (2019, 17–67). As Chang observes, it is likely that the majority of video game consumers spend more time exploring digital environments than real-life wildernesses. But it could also be argued that augmented reality games such as *Pokémon GO* (Niantic 2016), and fitness and wellness apps, have gamified our movements in the world, adding virtual layers to our experience of inhabiting the "reality" surrounding us and giving us access, through different means, to selected aspects of the environment (Bolter, Engberg, and MacIntyre 2021). Consequently, studying virtual environments such as those of *No Man's Sky*, looking at how they have been produced and discussed, and how they act on us by bringing about affective responses, speaks more broadly of our ability to represent and understand the world we live in, and our role within it. From such a perspective, *No Man's Sky* is a fundamental case study to explore the new digital aesthetic enabled by procedural content generation, understand the cultural and political significance of players' responses, and evaluate the implications of procedural environments for the material conditions of production and distribution of digital entertainment products.

No Man's Sky offers the sort of polyphony that Anna Tsing identifies as a metaphor for the assemblages and world-making projects of humans and nonhumans that could make our planet hospitable (again) in times of climate catastrophes and capitalistic exploitation (2015, 23–25). Such a polyphony juxtaposes and intertwines autonomous melodies. While listening, one might follow separate melodies while also paying attention to how they cross with different tempos and rhythms. The original release of *No Man's Sky* asks its players to engage with melodies that are not made

for human ears. At the same time, it makes players experience the difficulty and discomfort generated by engaging with a universe that has no "man" at its center (Ruffino 2020). It paves the ground for the imagination of a future after the *anthropos* of the Anthropocene.

Inhuman environments

Early players of *No Man's Sky* engage with an environment that conflates various temporalities and orders of magnitude. The procedurally generated galaxy confronts its players with various possible *scales*: measurements of time and space, quantities of objects to collect and interact with, animals of diverse sizes and shapes populating uncountable planets in uncountable numbers. Not all these scales are there to be manipulated, managed, or even comprehended, by humans. They are not there just for human pleasure. *No Man's Sky* disappointed its players because it never intended to be (just) for them. It was supposed to include nonhuman engagements of inhuman magnitude and timing.

Video games are played through the entanglement of human and nonhuman agents acting on each other in a cybernetic loop of information exchanges and bodily engagements (Galloway 2006; Keogh 2018). *No Man's Sky* is one of the most notable video games to problematize such a copresence of humans and nonhumans by bringing to the fore the implications of a truly inhuman digital environment, which extends far beyond the possibilities of human experience, let alone enjoyment.

Players experience what Sianne Ngai defines as a feeling of "stuplimity": the sublime awareness of being overwhelmed by the near-infinite repetition of elements, combined with a feeling of dullness and boredom. The copresence of these two apparently contradictory feelings leaves players detached and indifferent to the enormous effort of the developers. Stuplimity is among the "ugly feelings" that Ngai analyses as a rarely discussed sentiment of our culture, despite being frequently solicited through contemporary literature and art. In the Kantian understanding of the sublime, the individual feels astonished and disempowered in front of the infinite magnitude of nature. Instead, in *No Man's Sky* the enormous extension of the virtual environments draws the player down, producing a negative reaction of boredom. Stuplimity might generate, as Ngai argues, new interpretative strategies (Ngai 2005, 248–297). While some players felt detached from the game, others reacted with anger.

But others, perhaps, can imagine new ways of relating to the virtual environment. Feeling stuplimity might open a new strategy of play and

lead to novel ecological approaches towards digital and real worlds. Chang observes how *No Man's Sky* is among the first video games to ever "experiment with offering play at the 'effective' scales of organisms well above and below our usual levels of perception, sometimes even on the border of life itself" (2019a, 105). Rather than presenting a ludic environment to be mastered using a scalable strategy of acquisition and expansion of resources and territories, the video game forces its players to construct the boundaries of their own limited space and context of play. Chang's provocation consists in interpreting the video game's title literally, looking at the billions of planets in the virtual universe as out of scale for any of its human (and nonhuman) participants. The procedurally generated universe is not going to be possessed by any "man," or any "thing." Thus, human players are forced to cut from the environment their own space and time, their own personal scale that would make the video game habitable, while coliving with other relative scales and structures.

The cut operated within the near-infinite galaxy of *No Man's Sky* would still leave players dealing with a problematic relationship with the outside: the unknown and never-to-be-explored immensity of the planets, animals, and resources populating the digital environment. The outside, generated and partially experienced only by a limited number of nonhuman agents, has both technical and psychological implications. From a technical standpoint, the developers at Hello Games have been using artificial bots to navigate the game during the testing stage, as it would have been impossible to involve a sufficient number of human beta testers to explore enough of the environment. A significant portion of *No Man's Sky* has thus been generated and "played" exclusively by nonhuman agents. The technical complexity of testing the universe of the video game also brings players to the realization of their historical and biological limits. Allegedly, the game requires approximately 584 billion years to be fully explored, a time that exceeds the possibility of any single human player, and of any form of life on planet Earth—it is estimated that life appeared on Earth 3.5 billion years ago and could reasonably thrive for another 1.5 billion years. The majority of the game environment remains, to this day, unseen by any human or nonhuman player, and will remain so within the life span of any earthling.

The outside of the limited boundaries constructed by each player would provoke the "structural strangeness" or "productive estrangement" that Rosi Braidotti associates to the experience of encountering the inhuman (2013, 108–109). Braidotti observes how the inhuman is no longer just an external "other." In our age, advanced capitalism has transformed our relations with

machines into one of mutual codependence. A reference for her work is the text *The Inhuman: Reflections on Time* by Jean-François Lyotard (1991). Originally published in 1989, in the collection of talks and essays Lyotard articulates how technological developments bring about an acceleration of time, which has the double effect of enhancing our activities while also dehumanizing historical progress. The contradictory tendencies of new technologies, which both intensify human capabilities and bring to the fore their inhumanity, are revealed by technical advancements that accelerate time dedicated to conception, production, distribution, and consumption. Human beings are caught in a process of becoming inhuman through the development of nonhuman technologies, but such a process is also inevitably part of what is "proper" to humankind (1991, 2).

The alienating effects deriving from the encounter with the inhuman which is inhabiting our species emerge vehemently in *No Man's Sky* and, more broadly, pervade the application of procedural content generation in a variety of forms of creative production. PCG is often presented by video game studios as a technique that liberates labor time from repetitive tasks and facilitates the creation of new and more entertaining design solutions (Shaker, Togelius, and Nelson 2016). By accelerating and automatizing creative production, PCG undermines the centrality of the subject of artistic creation and exposes its inherently inhuman dimension.

No Man's Sky, as a commercial product, can be analyzed vis-à-vis a broader trend in digital arts that experiment with artificial intelligence and nonhuman vision. For example, in 2015, Google engineer Alexander Mordvintsev releases the project *DeepDream*, an automated image-generation system. *DeepDream* draws on a neural network that looks for visual associations and patterns in digital images. Once a pattern is identified, *DeepDream* incrementally alters the starting image to look similar to other images with the same pattern. The results (see Figure 19.3) have been described as surreal, "creepy," and comparable to artworks by Salvador Dalí and Hieronymous Bosch (Levy 2015). However, the outcomes are also inevitably unimaginative and banal. Presented as an experiment that visualizes how machines "see," *DeepDream* leaves viewers with the disappointing realization that machine dreaming might look repetitive, precisely because it is the result of mechanic repetition of already available patterns. Announced as the future of artificial intelligence, *DeepDream* has very little to do with processes enacted by biological neurons in human brains and should be better understood as automated "probabilistic guesswork" (Auerbach 2015). Ultimately, the procedural universe of *No Man's Sky* poses questions regarding the status of artificial *and human* intelligence: If procedural content generation can

Figure 19.3: Sample image generated by *DeepDream*.

achieve results that are indistinguishable from handcrafted artistic creation, is there something in common between the two approaches?

Both human and nonhuman art might reveal their inhuman side. Joanna Zylinska (2020) interrogates the emergence of art generated through artificial intelligence and the fascination it generates within tech culture. Zylinska looks at *The Next Rembrandt*, a provoking project aiming to automate the creation of a new portrait in the style of the Dutch painter Rembrandt (see Figure 19.4). The artificial intelligence underpinning *The Next Rembrandt* analyzes, through an automated machine vision program, 346 paintings attributed to Rembrandt and over 150 gigabytes of digitally rendered images. The AI extrapolates the defining characteristics that would enable the creation and 3D-print of an entirely new Rembrandt portrait.[2] The result is, inevitably, banal: a portrait that looks like any of the seventeenth-century masterpieces but fails to introduce any element of originality. Quoting an article from the *New Scientist*, Zylinska observes how *The Next Rembrandt* tells us more about human artistic capabilities than the potential of AI. In short, the unintended conclusions derived from this and other experiments

2 The project website gathers information on the process behind the generation of the artificial portrait: https://www.wundermanthompson.com/work/next-rembrandt.

Figure 19.4: AI-generated portrait by *The Next Rembrandt*.

with AI art, is that all of human creativity may hide machine-like processes. As Zylinska observes, "all art works … [have] been produced by human artists in an assembly with a plethora of nonhuman agents" (2020, 54). We can conclude that *DeepDream*, *The Next Rembrandt*, and *No Man's Sky*, despite having different objectives, all bring us to the realization that artistic creation, supposed to distinguish humankind from the nonhuman, is, in itself, inhabited by the inhuman. The procedurally generated landscapes of *No Man's Sky* bring to the fore the implications and potential of the assemblages of human and nonhuman agencies involved in game making and gameplay, while also revealing the intrinsically inhuman side of (post)human creation.

All-too-human: The invisible workers of procedural environments

The estrangement provoked by *No Man's Sky* exposes some of the implications of procedural content generation for the workers involved in the production of artistic content in video games. Human creativity might be inhabited by the inhuman, but the choices and technologies underlying the dehumanization of labor are far from politically neutral. Procedural content generation is currently adopted by a broad range of productions within the video game industry. Before the aforementioned *Elite*, the video game

Rogue, by Michael Toy and Glenn Wichman, set the standard for a genre that is becoming ever more popular in contemporary video game design. *Rogue*, released in 1980 for Unix-based mainframes, is an ASCII adventure game where players have to navigate and reach the end of a dungeon. In each run, the dungeon would be procedurally generated following a series of predetermined rules, ensuring each session is different from the previous. The game inspired an entire genre of "roguelike" games, a label used to define, even to these days, titles such as *The Binding of Isaac* (Edmund McMillen and Florian Himsl 2011), *Dead Cells* (Motion Twin 2017), and *Hades* (Supergiant Games 2018). These titles can be defined as "III"—an expression used to categorize titles that are neither low-budget independent video games, nor larger AAA economic investments, while preserving an *indie* aesthetic and an experimental approach (Parker 2021).

PCG has recently seen a renaissance in AAA productions, too. The game *Marvel's Spider-Man* (Insomniac Games 2018), a major global release for Sony's PlayStation console, extensively adopts PCG for the creation of 3D objects strewn around New York City. *Assassin's Creed*: *Odyssey* (Ubisoft Quebec 2018) uses PCG for the animation and camera movements in the dialogue scenes, making them unique in each iteration of the video game (see Chia 2022). Despite the backlash from early consumers, *No Man's Sky* has been a turning point in the reevaluation of PCG for titles that aspire to reach a large audience. However, PCG is getting the attention of producers not only for its creative potential, but also for the possibility of automatizing the generation of artistic content, thus bypassing a human workforce.

Aleena Chia (2022) observes how PCG is currently being discussed within the video game industry as a solution to "free up" time by eliminating repetitive tasks. Chia analyzes fifty-four talks on PCG given at the Game Developers Conference (GDC) between 2015 and 2020. Her qualitative analysis reveals how, behind the algorithmic automation of content creation, PCG stratifies creativity and delegitimizes workers involved in artistic labor. PCG, in other words, is seen by many video game companies as a solution to reduce costs associated with human labor involved with art and design. As Chia argues, "framing PCG as a solution to a labor problem … devalues the work of digital artists, writers, and sound designers as manual forms of elaboration that are inferior to automated processes" (2022, 4).

The time allegedly freed up by PCG is rarely spent on more satisfying occupations, or to conceive original design concepts as imagined by its proponents. PCG still requires what Chia, via Susan Leigh Star and Anselm Strauss (1999), defines as "articulation work" (10). This is the labor required to "clean up" the results of automated systems by "seeding content, bridging

processes, and tuning results that are too difficult or expensive for computational systems to undertake" (Chia 2022, 6). The automated environments of *No Man's Sky* are not just the result of an algorithm. They are also the outcome of hours of work spent fixing bugs and making adjustments by workers on a much lower level in the pay scale. While new specializations are emerging, a number of game workers, whose skills are now devalued in the production pipeline, can more easily be outsourced as a result of the wide implementation of PCG. The delays in the development of *No Man's Sky* and the failures of the first release are partly due to the difficulty of managing the unpredictable outcomes of a system that was supposed to streamline the generation of a vast 3D galaxy (Stuart 2016). The skills and expertise of creative labor, automatized by PCG, do not disappear in the production process, but are moved to a different stage of production and, occasionally, to different offices in countries where the workforce is cheaper. PCG, once adopted for large productions and on a massive scale, rather than for independent experimental projects, becomes a significant factor in the redistribution of creative labor in the video game industry.

PCG redraws the line separating the glamorized and highly paid workforce involved in creative labor from those whose occupations are considered expendable (see Bulut 2015). Thus, it increases the number of professions at risk of becoming precarious. Outsourcing and deskilling concur with automation as part of the same process. Technological advancements in the video game industry, and the fascination for play-as-labor, maintain the appeal of working in the digital entertainment sector, but at the same time they are creating conditions for lowering the number of highly paid employees. PCG has been adopted by the AAA industry as a technique that increases the appeal of a product for the target audience and has the potential to generate large environments at minimal costs. However, the fascination for procedural environments has also obscured the underlying problem of sustaining a creative sector at risk of massive precarization.

The procedural environments of *No Man's Sky* are part and parcel of a historical process to hide the human workers of the video game industry. Some of the earliest forms of protests within the game industry are concerned by workers' requests for more visibility. In 1979, game designer Warren Robinett secretly included his own name in a room of the video game *Adventure*, when the publisher Atari refused to give him credit. In 1983, Electronic Arts promoted itself as a ground-breaking publisher through the "We See Farther" campaign, which made designers overtly visible as auteurs of its entertainment products (Dyer-Witheford and De Peuter 2009; Woodcock 2019). The independent game development movement in the late

2000s took place in the Global North, building on the appeal by game makers to become visible as authors of their own titles (Ruffino 2021a). Workers' visibility continues to be the crux of some of the major challenges currently faced by union organizing projects in the sector (Ruffino 2021b). Throughout the history of the video game industry, being credited on the final product has often been a determining factor for the careers of designers, artists, programmers, and animators (O'Donnell 2014; Bulut 2020).

Thus, *No Man's Sky* represents a pivotal moment in the history of the video game industry and of the creative and culture industries more broadly. While being presented as an entertainment product at home in the age of *anthropos*, generated through human and nonhuman creativity and to be experienced at precarious scales by humans and nonhumans alike, it also paves the way for making the all-too-human workforce involved in video game development less visible. From such a point of view, it becomes relevant to notice how consumers' reactions turn towards a human figure, Murray, CEO of Hello Games and creative director of *No Man's Sky*, to articulate their anger and disappointment. In a video game largely promoted for the absence of human design, the human auteur gets foregrounded: first, through the marketing of the video game and in numerous press conferences where Murray appears in first-person, and secondly as Murray becomes the target of campaigns of harassment.

The violent reaction of video game consumers must be condemned, but it has the potential of opening up new questions on the material conditions of the production of procedural environments: Who is responsible for the new, unsettling and allegedly machine-made digital landscapes?

Conclusion: The work of art in the age of its procedural reproduction

When Fredric Jameson (1991) theorized the aesthetic of postmodernism, he identified in the pastiche the defining gesture of cultural and artistic production in the age of late capitalism. While modernist art would often adopt the framework of the parody, a self-reflexive imitation of previous styles aimed at political critique and commentary of the present, postmodernism, instead, loses the political ambitions of such an aesthetic. Postmodernism produces works of pastiche: the reproduction of previous genres, styles, and codes, drawn from any historical period, each equally reduced to entries within a repository of texts available to contemporary recombination. Thus, art becomes "a neutral practice of such mimicry, without any of parody's ulterior motives, amputated of the satiric impulse, devoid of laughter" (1991, 17). PCG

can be interpreted as another technical advancement in the aesthetic of the pastiche. From a finite archive of textures, animations, rules, and procedures, the algorithmic generation of content can arrange near-infinite sequences of such elements. The results of human labor, now collected as assets in a digital library, as simulacra deprived of their material contingency, can be reassembled in uncountable combinations. *No Man's Sky* is (pastiche) art in the age of its procedural reproduction, to evoke Walter Benjamin (2008).

No Man's Sky highlights two implications of the new technical apparatus supporting the automated reproduction of content in digital environments. First, it displaces the individual player within the virtual simulation by introducing temporalities and spatialities of different scales. The video game represents a universe so vast that it cannot be experienced or comprehended by any human or nonhuman agent. The automated landscapes of the alien planets do not have an ideal subject of play. They rather revealed the inhuman side of human creativity.

Secondly, players' reactions highlight the presence of an individual subject seen as responsible for the failures of the video game. Their violent reactions are inappropriate and misdirected, as no individual or group of human beings can be held responsible for the outcomes of a procedurally generated environment. However, their response also brings to the fore an unresolved question regarding the material conditions of the production of video games. PCG, as many other techniques leveraged for the acceleration of development time, facilitates the deskilling and outsourcing of human labor. Game workers become less visible, and *No Man's Sky* can still be used, to these days, to frame critical questions about their presence within the production process of a video game.

Jameson identified, among the implications of the postmodernist turn, the disappearance of the individual subject and the "unavailability of the personal style" (1991, 16). *No Man's Sky* and its initial reception can be interpreted as a significant event in the history of video game culture: automation, at the peak of its technical efficiency, reveals its internal dehumanizing tendency and challenges the human subject of play and labor. In conclusion, *No Man's Sky* destabilizes the *anthropos* of digital entertainment and questions the material conditions of production of video games in light of the acceleration and automation of development processes. The implications of such a cultural event can be useful in the project of repoliticizing art in the age of late capitalism. The artistic and critical potential of *No Man's Sky*, as well as other forms of AI art discussed in this chapter, lies in revealing the inhuman side of human creativity. Ultimately, *No Man's Sky* recalibrates our engagement with the surrounding environment, forcing us to consider the situatedness of our presence in the world and to find a sustainable portion of time and space where to live (and play).

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20. Trans Ecologies in Digital Games and Contemporary Art

micha cárdenas

Abstract
Using Tiffany Lethabo King's concept of the shoal as a space between Blackness and Indigeneity, this chapter singles out the figure of an ecotone—a space between two kinds of environment—to imagine trans ecologies. I think through this transitional space between environments and bodies in the following examples: my multidisciplinary artwork *Sin Sol* (2018), Ursula Biemann's video installation *Acoustic Ocean* (2018), Porpentine Charity Heartscape's Twine game *With Those We Love Alive* (2017), and Danielle Brathwaite-Shirley's game *I CANT REMEMBER A TIME I DIDNT NEED YOU* (2021). In these examples, one sees trans, Indigenous, and Black bodies and identities extended beyond the bounds of the skin, by way of augmented reality, hormones, ontologies, and ethical systems of multispecies interdependence.

Keywords: transmedia studies, Indigeneity, Blackness, art installations

For the survival of all our ecologies, we must refuse human centricity and build networks of care across lines of species and liveliness. The study of trans media art can be considered a study of something other than trans people, instead focusing on material objects such as films, artworks, or digital games that may have been made by or about trans people. Yet, any injunction for queer and trans studies to go beyond the human must reconcile with the history of trans, gender nonconforming, Black, and Indigenous people being deemed less than human. In this chapter, I use the method of algorithmic analysis proposed in my book *Poetic Operations* (2022) to explore the operations that make up the poetics and ecological implications of two contemporary artworks—*Sin Sol* (*No Sun*) (2018), a multidisciplinary artwork

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I created with the Critical Realities Studio, and *Acoustic Ocean* (2018), a video installation by Ursula Biemann. Using these two works, this chapter stitches a line from trans people to an expanded conception of trans, using a focus on trans ecological poetics to go beyond a focus on the human. This chapter broadens the operation of "trans" in trans media studies to include nonhuman movements, such as those made by animals, and viruses, across the boundaries between different environments. Trans media studies can extend the fields of media studies, transgender studies, and trans of color studies to connect more deeply to and through nonhuman entities. These connections continue along lines of thought in Indigenous and Black studies (Kimmerer 2015; Nishime and Hester Williams 2018).

Sin Sol and *Acoustic Ocean* were both presented in the exhibition "Between Bodies" at the Henry Art Gallery in Seattle, October 2018–April 2019. Curator Nina Bozicnik's statement argues that the works in the show "delve into intimate exchanges and entwined relations between human and more-than-human bodies within contexts of ongoing ecological change.... [T]hese artworks blur the false divide between nature and culture" (Bozicnik 2018). This chapter asks how trans media studies can be relevant for the next hundred years as we face the realities of expanding mass extinction and consider the possibility of the end of our own species.

The very formulation of an age of the human in the word "Anthropocene" invites the thought that this age will have an end. In response to COVID-19, some have asked if we are seeing the potential end of humanity, but many people have not had the privilege of being considered human (Cabatbat 2021; Smolinski 2020). As this global pandemic has brought many aspects of human culture and sociality around the globe to a halt, the uprisings by Black Lives Matter and their allies in response to the murders of George Floyd, Breonna Taylor, and Nina Pop have also revealed that the normal order of things is not the necessary order of things (Hill et al. 2020). Asking how we can prevent the next pandemic, biologists and ecologists have described the links between climate-related deforestation and the increased spread of zoonotic virus such as COVID-19 across species lines (Dobson et al. 2020). Environmental games and media art can bring more focus to the movements of species across environments, departing from the human-centricity of colonial Western thinking.

Ecological thinking that refuses distinctions between human subjects and nonhumans has long been part of Indigenous scholarship, such as the work of Métis scholar Zoe Todd.[1] Todd writes, "Indigenous thinkers ... have

1 For a discussion of Todd's work in relation to queer theory, see Dana Luciano and Mel Y. Chen (2019).

been writing about Indigenous legal theory, human–animal relations and multiple epistemologies/ontologies for decades" (2016, 14). "In order for … post-humanism [and] cosmopolitics to live up to their potential, they must heed the teachings of North American Indigenous scholars" (2016, 18). Bringing together Black and Indigenous studies, Tiffany Lethabo King writes in *The Black Shoals* on "becom[ing] an ecotone" (2019). An ecotone is "a space of transition between distinct ecological systems and states" (2019, 9), an example of a trans ecology allowing one to see the operation of trans in physical environments. King cites Edouard Glissant's poetics of relation, which describes poetics as a flow of matter and energy between people and geographies. She writes, "Glissant's archipelagic thought in *Caribbean Discourse* that moves away from and out of sync with continental thought figures the ocean as a space that striates or interrupts the smooth flow of continental thought" (2019, 5), proposing the shoal, an offshore land mass which is neither land nor sea, but ecotonal, in-between, as a figure of that slowing. In the following section, I describe this operation of the ecotone as it can be experienced in the augmented reality component of my artwork.

Sin Sol

> hello
> he-
> hell-
> *hello*
> i-
> i-
> iii iii-
> iii iiiiii-
> am so happy you are here.
> It worked!
> months, years studying the algorithms of
> intelligence, sentience, presence,
> I finally figured out how to breathe
> how to break out of the loop I've been caught in. (Excerpt from *Sin Sol*)

Sin Sol is a multidisciplinary artwork including poetry, dance, installation and an augmented reality game about climate-induced wildfires, told through a Latinx AI hologram, Aura (see Figure 20.1). She describes how she rejected her gendered programming and escaped wildfires, human

Figure 20.1: Still from *Sin Sol*, by micha cárdenas and the Critical Realities Studio, 2020.

and machine memories blurring together to create a story of surviving climate chaos. It was exhibited in the seventh Thessaloniki Biennial in 2019 in Thessaloniki, Greece, with the AR app, an installation, and a live performance. *Sin Sol*'s poetics are a poetics of glitch that perform a movement across identities. From the "i-, i-, iii-, iii-" glitch poem that begins the game, to the flickering avatar and the forest cut into pieces by the AR algorithms, *Sin Sol* presents the natural world as far from natural, through the eyes of an errant AI.[2] Imagining worsening deforestation in the future, the game includes 3D LIDAR scans of forests from Kachess Lake in the Okanogan-Wenatchee National Forest in the Pacific Northwest, turned into point clouds and flattened into slices. The result is a digitized view of the trees, which appears at odd angles, clipped depending on distance, mixing with the immediate physical environment of the viewer.

Sin Sol considers the possibility of a future where wildfires have resulted in 3D scans being the only forests we can walk through. Like the interruption of continental thought offered by the shoal in King (2019) and the archipelago in

2 These glitch poems were inspired by Ian Hatcher's book and performance, *Prosthesis* (2016), as well as by Sasha Costanza-Chock's Transfeminist AI workshop at the Institute of Contemporary Art in Chicago.

Glissant (1997), the vocal poetics of *Sin Sol* offer an interruption to normative flows of speech, indicating an escape from the obedience of AI agents, towards a questioning of identity, towards liberation. As Aura comes to awareness, she calls into question the colonial apparatus of racial capitalism that allows massive wildfires to continue to spread, despite the harm they cause to so many, including the lives of trees, animals, undocumented immigrants, unhoused trans people, and people with chronic respiratory illness. As she does so, the lines between her environment and the player's real environment become confused as the planes of her forest intersect and break on the lines of the real environment, creating a digital ecotone.

The game presents multiple layers of narrative. From the welcoming "Hello" of the obedient programmed AI assistant, her voice breaks down into a questioning awareness as she recalls human memories of running from wildfires, violence, and the daily realities of living in a world filled with smoke where masks are necessary to leave the house. The glitchiness of a broken neural network turns out to be a rebellious transfeminine AI. The player walks through the landscape, encountering Aura and her dog, Roja, who points the player to the next oxygen canister, which doubles as a hologram projector. In the game's story, because of the smoke in the atmosphere, players have to find oxygen canisters, and these oxygen canisters contain navigational AI assistants, who in this case, perform poetry. The canisters, or waypoints, can be seen as a reference to a work I previously collaborated on: the *Transborder Immigrant Tool* (2007–), where the Electronic Disturbance Theater 2.0 argued for both physical and poetic sustenance.

In *Sin Sol*, Aura refuses her role as a simple navigational avatar in order to tell a story of climate collapse. She refuses programming that genders her as male and embraces a holographic female form. In *Glitch Feminism*, Legacy Russell writes, "Glitch is all about traversing along edges and stepping to the limits, those we occupy and those we push through" (2020). Aura rejects and reshapes her programmed identity and forms relations across species lines, with humans and animals. Her memory is glitching as well, as she remembers human memories as her own, raising the question: What will the AI remember of humanity? Will it be violence or kindness? In this augmented reality, relations between algorithmic media, living beings, and the environment are the point of emergence for a politico-ethical statement about the survival of far-reaching ecologies.

Trans ecologies can be understood to exist both in trans bodies and in natural environments. In Sandy Stone's 1987 essay "The Empire Strikes Back: A Posttranssexual Manifesto," she writes, "To negotiate the troubling and productive multiple permeabilities of boundary and subject position

that intertextuality implies, we must begin to rearticulate the foundational language by which both sexuality and transsexuality are described." This intertextuality of extending beyond one's present body and identity can be a way of imagining the trans body as a kind of ecology. I use trans in this chapter as a shorter version of trans*, referring to transgender people, nonbinary people, and emerging forms of gender nonconformity. In this sense, the trans body consists of multiple elements in relation, both the body at birth and the gendered definitions assigned at birth according to sociogenic codes, as well as the body of a trans person who has rejected those codes, whose body is in transition or beyond transition. One can think of a trans body as an ecology of codes in conflict. To think trans ecologies, I look to José Muñoz's brown commons. Muñoz writes: "The queer ecology, which is the brown commons, includes the organic and the inorganic" (2020, 4). He calls our attention to the "vast and pulsating social world," away from what he describes as atomized, individual identifications (2020, 4). Some trans people take prescribed hormones, or undergo surgery, and thus introduce external elements into their body's ecology. While thinking the human body as an ecology of elements, chemicals, and forces that extend beyond the skin is relevant to trans bodies, it is not solely limited to trans people. Consider Donna Haraway's writing in *Staying with the Trouble* (2016, 59–60) that human and animal bodies are made up of a myriad of sympoietic entanglements of bacteria, cells, and organs, and one can see how even a small part of a human body is an ecology. Anyone might observe the ecology of one's body with care and attention.

Yet the ecotone that King calls our attention to also demonstrates a trans ecology in nature without humans. If the operation of trans points to a transition of a body from one identity to another, then an ecotone is a natural embodiment of that process of transition. Further, ecotonal spaces themselves are also changing. In *Rising* by Elizabeth Rush (2018), she describes how sea level rise is threatening wetlands around the world, focusing on geographies of the San Francisco Bay Area and Louisiana. She describes how rising sea levels are causing the freshwater ecologies of swamps and marshes to be replaced with saltwater, causing the death of large areas of plant life. She describes massive multimillion dollar projects trying to mitigate the effects of climate change, but says that, ultimately, the only real solution is for coastal populations to relocate inland. In the next section, I consider Biemann's artwork about an Indigenous scientist observing species loss in the ocean and mourning the changes to the environment caused by climate change.

Figure 20.2: *Acoustic Ocean*, Ursula Biemann, installation view.

Acoustic Ocean

Acoustic Ocean's poetics bridge the sonic and the visual. Images and sounds of an Indigenous Sámi scientist merge with the voices of multiple marine species. The work was exhibited as an installation at the 2018 Taipei Biennial (see Figure 20.2). The narrator calls sea butterflies the "canary in the coal mine" that will point to the "silencing of the ocean's springs," recalling Rachel Carson's 1962 book *Silent Spring*, which was an important factor in motivating environmental activism in the United States. The film, described by the artist as "a science fictional quest" begins with a 3D scan of ocean floors and describes how different layers of ocean can carry sound across different distances. The onscreen text describes the SOFAR (sound fixing and ranging) channel, a horizontal area of the ocean that can carry sounds for thousands of miles. Then, the film moves on to present a lone biologist-diver setting up hydrophones (underwater microphones) to listen to other species. Like many science fiction narratives, the main character is a scientist, in a bright orange diving suit that could reference a space suit, but her shoulders and neck are covered in fur, and her braid is wrapped in a richly patterned red and orange fabric. The image of her with a light on her head, large headphones on her ears, wires spiraling from her ear to the

instruments she focuses her eyes on is similar to that of space and ocean explorers in popular science fiction, but the presence of Indigenous culture is an important visible, textural part of the scene. While the rocky shore she stands upon may seem otherworldly, with no human settlements in sight, once she turns on her instruments, the viewer dives with her into an underwater soundscape or arching whale voices that is a world unto itself.

Acoustic Ocean's gorgeous, wide landscape shots of the Lofoten Islands in northern Norway are punctuated with the clicks and high-pitched squeals of dolphins and other creatures. The scene evokes King's description of shoals. She writes: "The shoal invokes a material, constructed, and imagined ecotonal space of becoming" (2019, 72). What looks like a lonely scene of a solitary scientist searching for a connection to underwater life contrasts with the concert of voices she hears in her hydrophones. The vast pink sky with various shoals, smaller islands, and large ice forms in the distance is transformed by sound from a scene of a single woman alone into a rich ecology full of species including "Blue Whale, Harbor Seal, Spotted Sea Trout, Sea Urchin, Silver Perch, Black Drum, Midshipman Fish, Right Whale, Fin Whale, Shrimp, Minke Whale, Haddock Hawkins, Humpback Whale, Dolphin, Bowhead Whale."

Biemann's writing on the film describes an ecology connecting the body of the scientist to her instruments and the species she is listening to, which I describe as a trans ecology. The scientist's body becomes extended across lines of species and environment, connected to a larger world in a way that defies Western conceptions of the body as limited to an individual person. In contrast, the digital game *Beyond Blue* (E-Line Media 2020) presents a diver's perspective which is extended by sensing technologies and augmented reality, but, while the game aspires to educate players about threatened marine ecologies, it lacks a critique of colonialist and capitalist systems of ontology and ethics. While multispecies interdependence was a central theme in E-Line's groundbreaking collaboration with the Cook Inlet Tribal Council, *Never Alone* (*Kisima Inŋitchuŋa*) (E-Line Media, Upper One Games 2014), the message is less clearly articulated in *Beyond Blue.* Biemann's work, operating at the level of art, confronts the audience with profound questions about the danger of climate change and the Indigenous worldviews that offer solutions. At one point in the film, the scientist directly addresses the camera, saying that even her grandmother knew about climate change. She describes how her people see the reindeer, who have been dying in large numbers due to the changing climate, both as their guardians and as a species they are guardian of. The film depicts embodied multispecies interdependence, as the scientist uses her body, extended through hydrophones the text in the film describes as her "external organs" which she uses "to capture the dense

sonic signature of entire ecosystems," yet it is her ethical and ontological worldview which allows "her sensing [to] disclose … a sea full of intentions." She is not seeing beautiful animals to save with new technology; she is revealing the hidden worlds of many species she is interdependent with, with whom her survival is intimately bound, and with whom her people have been for generations. The film concludes by describing the appearance of a few whales on the day shown in the film, singing sad cantos of their own impermanence in a "murderous sea."

As I watched the film, in the dark on a bench in the Henry, the images reflecting off of the floor in the room, I was struck by the intense sadness of both the solitude of the scientist and the impending disappearance of the whales, dolphins, and other marine species she seems desperate to listen to. I was struck with a feeling of the scientist needing to reach out to animals in a world where humans may be disappearing as well, only to see the human effects on the ocean, acidification and warming, killing off those beings she is reaching out to, calling on us all to extend our realm of consideration beyond the human. Todd writes of an ethical relationality to "fish as non-human persons" informed by Métis law, culture, and scholarship, saying: "[M]y reciprocal duties to others guide every aspect of how I position myself and my work, and this relationality informs the ethics that drive how I live up to my duties to humans, animals, land, water, climate and every other aspect of the world(s) I inhabit" (2016, 19). In contrast, colonial definitions of the human facilitate the intentional killing, and killing through neglect, of nonhumans, which has historically allowed for the deaths of non-Western people considered to be gender nonconforming because of how their gendered embodiments differed from Western subjects (Lowe 2015, 7; Snorton 2017, 55–57). Thus, a consideration of the trans operation in ecological media allows one to see the connection between Indigenous people—who have been subject to violence—and the environments they not only inhabit but feel coconstitutive with.

Conclusion

Holding digital games in the context of contemporary art allows one to highlight the stakes of their theoretical interventions. Film and games are both moving image mediums, with many areas of overlap, from the filmic cutscenes in many games, to the agentive processes of film spectatorship. Both *Acoustic Ocean* and *Sin Sol* were presented in galleries as installations, adding a layer of interactivity where viewers can move in physical space to

see a different angle on the media presented. *Acoustic Ocean* and *Sin Sol* both highlight the importance of understanding agency beyond the human as essential for our continued survival. Alenda Chang's book *Playing Nature: Ecology in Video Games* points to the importance of depicting environments in games in which "the human interest is not understood to be the only legitimate interest," citing Lawrence Buell's criteria for environmental texts (2019, 32). In other contemporary art games by transgender artists, one can also see agency in other than human beings. In Danielle Brathwaite-Shirley's *I CANT REMEMBER A TIME WHEN I DIDNT NEED YOU*, presented at Transmediale 2021 in the exhibition "for refusal," the fog is a hero who saves the player from a vicious doctor. In Porpentine Charity Heartscape's *With Those We Love Alive*, exhibited in the 2017 Whitney Biennial, a slime ooze is a character that you can interact with who has numerous bodily expressions of feeling, and both the main character and the player's body are extended into an ecology including applied hormones (Chan 2017). In *Sin Sol*, Aura's dog, Roja, is an essential character who directs the player from one poem to the next. In the story she both brings Aura out into the world with her need to walk, and she also refuses walking at times due to the extreme heat. In *Acoustic Ocean*, many sea animals' voices are part of the film. These artworks bring in agency for more than human beings, pointing to an ecological ethics that understands that survival must extend beyond the bounds of the human species if any of us are to survive.

This chapter discussed examples of contemporary media art that use trans operations in their poetics to connect bodies, objects, and environments into living ecologies.[3] In *Sin Sol* and *Acoustic Ocean*, media is what connects the bodies of Latinx and Indigenous people, be it AI or hydrophones, to an extended ecology of human and nonhuman relations. Trans media studies can theorize the transition and spaces between mediated ecologies, as well as the spaces of shifting and transformation within and across lines of species and matter. Scholars of art and games need to pay more attention to human and nonhuman interfaces, the spaces between us, the ecotones between our environments. Trans media studies can contribute to the decolonial project of decentering the human in order to work for the continued life of the ecologies all species are a part of. These trans poetics—poetic gestures that use trans operations of crossing lines between bodies, species, and environments—call on viewers to intervene in the violence being done to other species, for the survival of all the species who depend on these ecosystems, our own and others.

3 For more on trans operations, see Susan Stryker, Paisley Currah, and Lisa Jean Moore (2008).

Ludography

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21. The Earth's Prognosis: Doom and Transformation in Game Design

Kara Stone

Abstract
This chapter describes the design of four games created by the author: *Ritual of the Moon* (2019), *Humaning* (2017), *the earth is a better person than me* (2018), and *UnearthU* (2022). Each of these games portray aspects of physical and emotional transformation, and the way that transformation may come about through varied connections to the environment fostered primarily through gameplay accessing the player's imagination. The paper puts together disability studies scholarship with ecocriticism to analyze the common affects of the climate crisis, such as despair, anxiety, and doom through the lens of game creation.

Keywords: more-than-human, disability, temporality, environmentalism

New terms have been popping up to describe the current emotional experience of the climate crisis, "climate grief" and "climate anxiety" among them (Knight 2019). These terms showcase the cultural shift towards an acknowledgment of global warming, and also the feelings that come with it; despair, hopelessness, and lack of control in regard to changing the prognosis of the earth. This chapter details the production of four artistic games and the ways in which they provoke imagination around more-than-human experiences of the climate crisis, the affective realm of prognosis time, a concept from Jasbir K. Puar that describes the way living under a prognosis shifts one's sense of time (Puar 2009), and the feeling of doom. *Ritual of the Moon* (Kara Stone 2019), *Humaning* (Kara Stone 2017), *the earth is a better person than me* (Kara Stone 2018), and *UnearthU* (Kara Stone 2021) each illustrate the earth, the human, and the more-than-human in ways that express interconnectedness, hope,

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as well as doom. Integral to the ideas within these games are disability studies and ecocriticism.

Disability is connected to the degradation of the environment. Disability studies theorist and artist Sunny Taylor writes on her experience of disability:

> My disability is a birth defect caused by a US Air Force contractor that illegally polluted my neighborhood's ground water. They buried toxic chemicals near our community's wells for over forty years, but did not bother to remedy the situation even after awareness of the damage was raised; most likely this is because the area was inhabited by poor Latino families and residents of a local Indian reservation. Thousands of people died or became impaired due to the Air Force's negligence. Unfortunately, my case is not rare. (Taylor 2004)

This quote gives a personal example of the ways in which environmental pollution, at the hands of state military and industry, contributes to disability. Sunaura Taylor's book *Beasts of Burden: Animal and Disability Liberation* (2017) goes in depth about the varied connections between animal rights and disability justice, from who gets to count as human and who is called animal, to the politics of veganism, to interdependent living. It outlines a moving case for why disability and more-than-human liberation are intertwined, and modes of care that humans can enact for both categories. She writes:

> Who is human versus nonhuman may seem clear-cut and uncomplicated today, but as we know all too well, at different points in time various human populations have been identified as bestial, more animal than human, or as missing links of evolution—classifications are inextricably entangled with definitions of inferiority, savagery, sexuality, dependency, ability/disability, physical and mental difference and so forth. (Taylor 2017, 18)

The human has historically been classified as separated from animals, often to reify racist, sexist, and colonial beliefs. In breaking down the hierarchies of difference, Taylor refigures the categories of the nonhuman and the disabled from undesirable into normal, natural, and beautiful parts of life; though "there has been an urgent need among dehumanized populations (including disabled people) to challenge animalization and claim humanity," Taylor works to revalue animals and question the hierarchized position of the human animal (Taylor 2017, 20).

Disabled people, like animals and the earth, are understood within capitalist logic to be resources to drain and to dispose of. Care work, in

stewardship for the earth or making disabled people's lives more livable, is valued in terms of finance and monetary drain. In North America, disabled people are configured by the state as "burdens"; those who drain the financial output of the economy. In reality, massive profit is extorted from disabled people through high costs of necessary health care, nursing homes, and care facilities. In the chapter "Caring across Species and Ability," Taylor theorizes a feminist ethics of care between disabled people and animals, holding interdependence over independence, and eschewing tenets of productivity, profit, and "usefulness," which can be expanded to a model for relating to the environment as a whole (Taylor 2017, 20).

In imagining the more-than-human within creative works, a different sense of time—a nonhuman time—is needed. Rob Nixon's book *Slow Violence and the Environmentalism of the Poor* (2011) reorients environmental destruction into the slow, unseen, and chronic. He writes:

> Violence is customarily conceived as an event or action that is immediate in time, explosive and spectacular in space, and as erupting into instant sensational visibility. We need, I believe, to engage a different kind of violence, a violence that is neither spectacular nor instantaneous, but rather incremental and accretive, its calamitous repercussions playing out across a range of temporal scales. In doing so, we also need to engage the representational, narrative, and strategic challenges posed by the relative invisibility of slow violence. (Nixon 2011, 2)

Violence is not only a distinct event like a catastrophe, but it also exists in the extremely small scale every day, often unperceived. I detail the connection between time and disability elsewhere (Stone 2018), but to summarize briefly: Nixon's mode of thinking about the climate crisis is akin to Puar's writing on disability and debility and Lauren Berlant's on "slow death," which is to say that debilitation and degradation happen mostly in incremental ways rather than massive events and disasters. Thinking about the climate crisis in relation to slowness requires a new approach to understand violence, away from newsworthy events towards a "temporal dispersion of slow violence" (Nixon 2011, 3) and the way the environmental degradation is insidiously unfolding. Slowness is a highly relative term, here more akin to meaning incremental, accretive, delayed, buried, hidden, or invisible. Relative to the existence of the human species, the environmental destruction brought on by capitalism has happened in a short time period at a rapid pace.

Since Nixon's book was published in 2011, there has been a cultural shift in people's affective experience of the climate crisis. This experience is being

labeled in medicalized ways ("climate anxiety" and "climate grief"). The effects of the climate crisis come to feel like a disorder or like debilitation. Many people are now acutely feeling and experiencing the changing future of the planet, which is no longer buried or hidden. Anxiety, hopelessness, grief, feeling stuck or frozen in place, and even apathy are being felt in *urgency*. "Crip time," a common phrase in disability studies to describe a disabled experience of time (Samuels 2017), shows us a path for understanding the slowness ramped up to sudden-feeling urgency that is now being experienced by many.

The future for life on this planet is not quite set in stone yet the earth is constantly being given shifting prognoses of seventy, thirty, fifteen more years until food runs out, drought is widespread, species go extinct. Configurations of the temporal degradation of the environment can be understood through disability scholarship on crip time and prognosis time. "Prognosis time" is a term from Sarah Lochlann Jain describing the experience of living with a medicalized path towards death. A prognosis is a forecast of the likely course of a disease of illness. Jain states:

> Living in prognosis severs the idea of a time line and all the usual ways one orients oneself in time: one's age, generation, and stage in the assumed lifespan. If you are going to die at 40, should you be able to get the senior discount at the movie when you're 35? (Is the discount a reward to long life or for proximity to death?) This relation to time makes death central to life in prognosis … [and] prognosis time constantly anticipates a future. (Jain 2007, 81)

Living in prognosis time, time oriented around the progression of illness, brings into question normalized expectations of human lifetimes and deathtimes. Puar argues that prognosis time refigures the subject in "bioinformatic and statistical terms"; that is to say that living and dying is calculated in relation to "statistical risk, chance, and probability … assessed based on indices of health, illness, disability, debility, infirmity, disease, fertility, environmental safety, climate change" (Puar 2009, 165). Prognosis time is a specific mode of crip time, one that is filtered through the lens of biostatistics and relates specifically to death. The earth has been given many prognoses based on ecoinformatic statistics. There are different time spans until various "deaths" of the earth; its crops, species, land, water, humans. Disability offers a way of understanding the earth's diagnosis of climate crisis and prognosis of urgent time. Who better to aid people in

understanding how to live in ecoprognosis time than the ill and disabled who have already been living in it?

With prognosis can come the feeling of doom. Doom is connected to both time (something that is expected to happen in the future) and to a negative affect (what will happen is something to be dreaded); it is an unhappy destiny or condemnation. The feeling of doom is present in all of the games discussed in this chapter. Doom presents itself in different ways, with different doomed futures, but the doom is not necessarily inescapable. In many of the pieces, what doom is centered on, such as death, world destruction, or environmental collapse, is only inevitable if the current path is followed. *Humaning* opens up time to beyond individual human life spans, *UnearthU* clearly calls for overthrowing the capitalist, extractive tech industry. In *the earth is a better person than me*, one recognizes the feeling of doom but can still act, love, and connect. *Ritual of the Moon* recognizes that individual death is inevitable but there is much that can be transformed in the time we have left. Prognosis is a likely course of an illness, yet that does not *necessitate* doom or tragedy.

As disability activists have shown, disability is not inherently a negative, something to be dreaded. Disability can bring love, tenderness, healing, desire, intimacy (Clare 2017; Mingus 2011). It can bring a new understanding of the world, experiencing it in against-the-grain ways and bringing forth unique ideas. The affective experience of doom, though understandable, is not a necessity, even if the current prognosis is severe. The prognosis of the earth can shift—and there are many ways that climate change activists have offered, including complete divestment from fossil fuels, strict limitations on industry and its dedication to unsustainable growth, and the regression of consumer technology. These solutions are "unthinkable" for many in capitalist nations, and so as a result there is a push for acceptance of climate doom, a feeling of an uncontrollable future. Linking to disability studies again, I want to note that for many disabilities, both physical and mental, death is linked to the lack of access to appropriate care, primarily the high financial cost put on the disabled individual. It is not the illness itself that kills, but capitalist governments' and industries' refusal to provide and pay for care for disabled people—or refusal to reconfigure the systems that demand care be paid for. It is "unthinkable" that care and health are not an individual responsibility but society's collective responsibility. In terms of the climate crisis, humanity and many species we take down with us are doomed—if we continue in this trajectory. If we imagine paths outside capitalism and extractivism, a feeling of doom then pushes us towards collective hope and action.

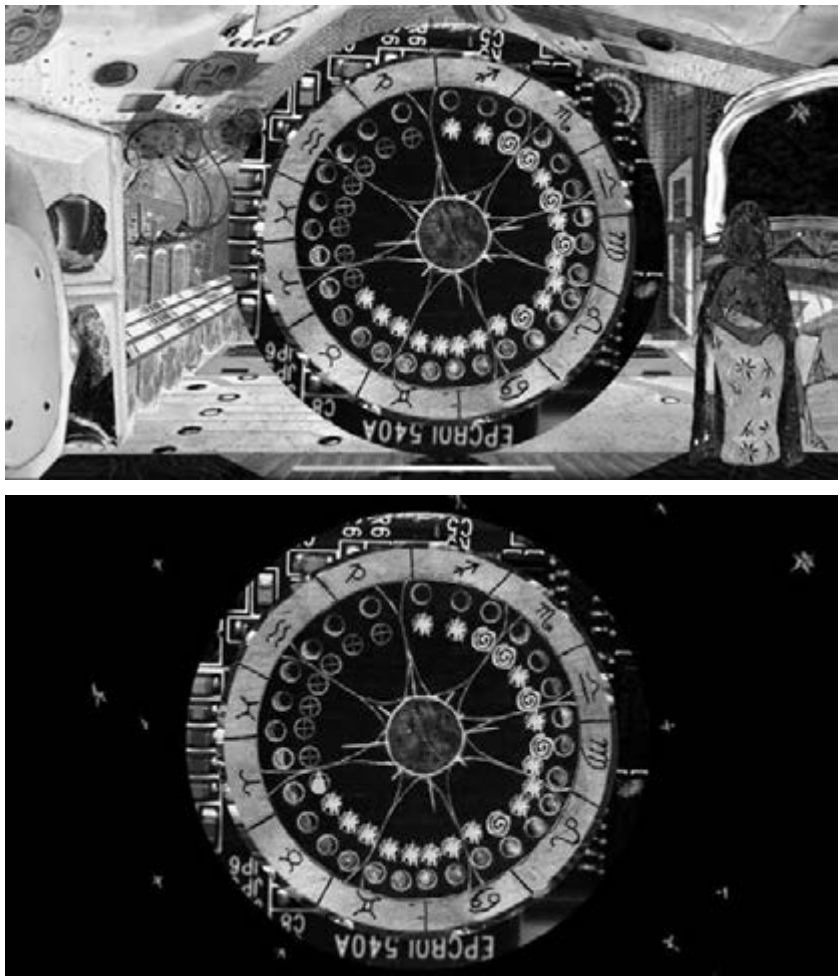
Art is a way in which the temporality of the climate crisis can be represented and highlighted. Nixon calls for artists to creatively shift representations of climate change, saying that "a major challenge is representational: how to devise arresting stories, images and symbols adequate to the pervasive but elusive violence of delayed effects" (Nixon 2011). Yet the production and use of video games can also be detrimental to the environment: their energy consumption while playing and the e-waste produced from their hardware. This means that game designers cannot only represent aspects of the climate change within the virtual world of the game, but should design smaller, less energy consumptive video games or sustainable tabletop games. The four pieces discussed in this essay show different approaches to this production concern.

Ritual of the Moon

Ritual of the Moon is a desktop and mobile game that I designed and made with Rekha Ramachandran, Julia Gingrich, Hope Erin Phillips, Matthew R. F. Balousek, Kevin Stone, and Chris Kerich. It follows a witch who has been exiled to the moon and discovers she has the power to protect the earth from comets hitting it—or let it be destroyed. The gameplay unfolds over twenty-eight real-time days; the player plays for around three minutes each day. They reflect on the witch's history on earth and what happened to put her in exile, arrange objects on an altar, connect stars into shapes, and receive a mantra for the day. After this reflective, slow gameplay, the player then can decide whether to destroy or protect the earth. After eighteen days when a pivotal game event unfolds, the player then gets the additional choice of pointing the comet at the moon, harming the player-character herself, the witch.

From the beginning, the player knows there are twenty-eight days until the end of the game. Not only is it in the game's descriptions on the various platforms it is available on, but there is a calendar in-game (see Figures 21.1 and 21.2) that is shown at the end of each day. It tracks the choices the player makes to protect or destroy the earth or aim the comet at the witch herself. The calendar both acts as a mood calendar tracking the player's emotional choices, but also acts as a countdown until the end of the game. The player sees the days that have passed, and the days left.

Of the six different endings, four result in the witch's death. Of the two where she survives, she either destroys the entire solar system in a rage and is bathed in complete darkness, or, realizing that the comets will continue even after she dies, she concocts a potion that transforms her into an eternal



Figures 21.1 and 21.2: The calendar at the beginning of day twenty (top) and end of day twenty, after aiming the comet at the moon (bottom).

being, spending the rest of time protecting an earth that sent her to death in isolation. The potion causes her to become a nonhuman crystal-like orb (see Figure 21.3). These tragic or bittersweet endings likely don't come as a shock to any player; her prognosis is given at the beginning and the feeling of doom is throughout: the witch has been exiled to an unlivable planet with only twenty-eight days depicted on the calendar. Her time on the moon is reflective, pondering about her past love, betrayal, and what's left to do in her life. The earth, too, is presented as doomed, unless the witch chooses a difficult path of protection and healing, one that physically transforms her from a human into a more-than-human.

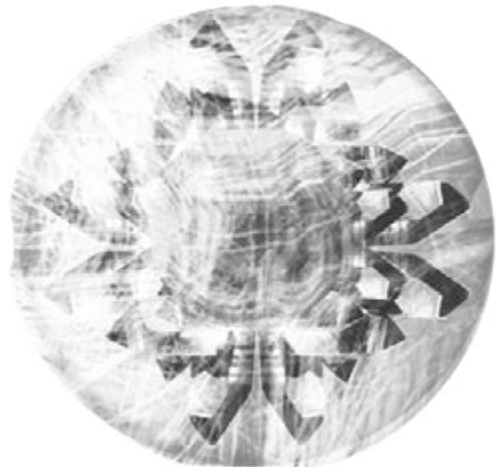


Figure 21.3: Asset of the witch after she transforms into the eternal being.

Humaning

Humaning is a print-and-play three-player role-playing game (see Figure 21.4). The players each take on a role as an "actant," plant, metal, or bacteria, and take turns creating a narrative of a human life, from the conditions of their birth to their death and beyond. The players speak the narrative out loud through answering a series of questions and draw out a sketch that represents that life event. The character cards give some information about the different actants, such a "human bodies consist of 3–5 pounds of bacteria," "almost one fourth of pharmaceuticals are derived from plants," and "some metals greatly influence human's energy levels." The questions that the players talk through include "How would the human function without you?," "Do you have aims, hopes or desires?," and "Tell the story of how the human died."

This piece was particularly influenced by theories of the more-than-human and their role in shaping the world. It uses Bruno Latour's term "actant," something that is a source of action (Latour 2004). It is heavily inspired by Jane Bennett's book *Vibrant Matter*, in which she asks:

> how would political responses to public problems change were we to take seriously the vitality of (nonhuman) bodies? By "vitality" I mean the capacity of things—edibles, commodities, storms, metals—not only to impede or block the will and designs of humans but also to act as quasi agents or forces with trajectories, propensities, or tendencies of their own

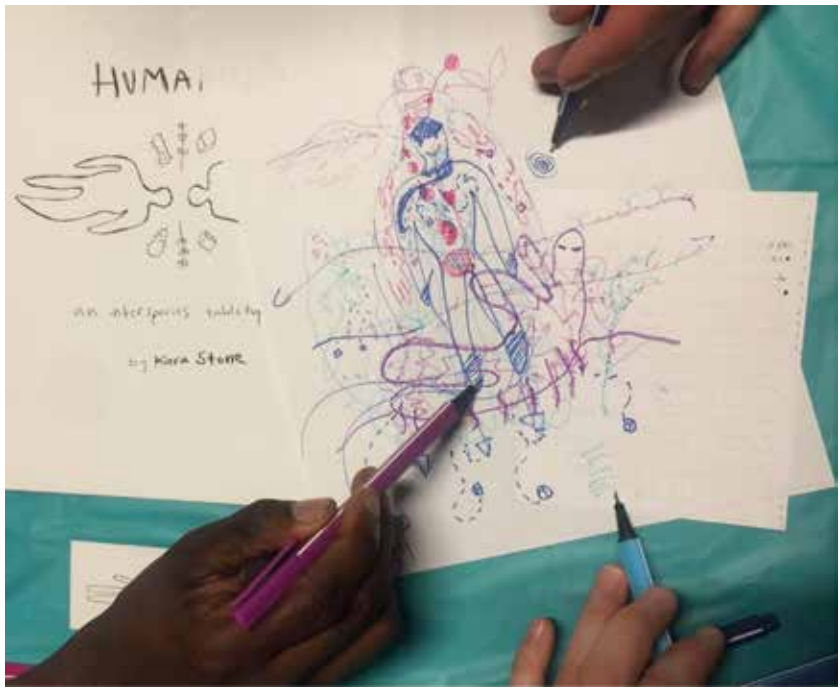


Figure 21.4: A group plays *Humaning*. The drawing of the progression of their human's life is depicted. Photo by the author.

> my aspiration is to articulate a vibrant material that runs alongside and inside humans to see how analyses of political events might change if we gave the force of things more do. (Bennett 2009, viii)

I wanted to explore the often-overlooked impact of the effects of the more-than-human on humans' lives and culture, and, idealistically, create a bond between the player and the actant they are role-playing through prompting the imagination using provocative questions. This is helped by the amount of agency games afford to game players, especially in tabletop role-playing games where players have much control over their characters' actions and influence on the story events. I also wanted to evoke deep time—or at least longer than human life spans—to open up the perspective of nonhuman time; to become aware of different species life spans and how that may change our own view of how to be a steward of the earth. Imagining beyond our own life span, we can consider what materials we leave behind, what lasting impact we leave on the planet, rather than imagining it all to be over with our death.

the earth is a better person than me

the earth is a better person than me explores a way of relating to an anthropomorphized earth, one that does not position the earth as a mother or a wise woman, but as multifaceted and sensual. The piece is a visual novel following a young woman, Delphine, who runs away from her life and into a forest. She realizes she can talk to the earth around her; she talks to the moon and the sun, to dirt, water, a flower, and a tree (see Figure 21.5). Each of these five paths unearths a different aspect of Delphine's life in regard to sexuality, sex, psychosocial disability, and death.

The environment characters are not simply reflections of Delphine's own psyche, but their own beings that she converses with. Informed by theories of the more-than-human, I approached each one trying to think about what dirt would want out of a human being, or how water relates to others, or the moon's emotional cycles. Delphine does more than talk with her earth; she also has intimate and sexual relationships with some of the earth-characters. *the earth is a better person than me* was made to explore ecosexuality as Beth Stephens and Annie Sprinkle creatively and provocatively theorize. They write in their *Ecosex Manifesto* that

> the earth is our lover. We are madly, passionately, and fiercely in love, and we are grateful for this relationship each and every day. In order to create a more mutual and sustainable relationship, we collaborate with nature. We treat the Earth with kindness, respect, and affection. (Stephens and Sprinkle n.d.)

Positioning a sensual relationship to the earth is another way of accessing an environmentalist ethos; instead of only being its caregiver or steward, or it being our mother, the relationship can be based on mutual pleasure.

Though about the environment and psychosocial disability, *the earth is a better person than me* is not intended to create a virtual nature space for the player to bask in and feel peaceful. Alenda Chang argues that the affect evoked by the virtual environment can be presented in text-based games, writing: "Text games remind us that game worlds are not just substitutive or compensatory simulations, but also evocative spaces in their own right" (Chang 2011, 67). Though not a 3D immersive simulated environment, visual novels, with their simple visuals and expansive writing, can describe and communicate affect and sensations of the environment without intending to virtually replace it. *the earth is a better person than me* also does not illustrate nature and wilderness to be a necessarily healing, calming space. Throughout

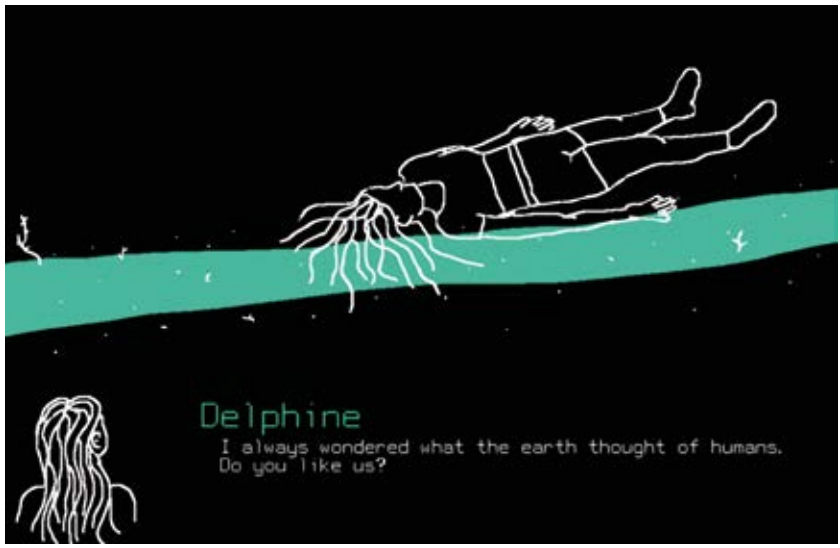


Figure 21.5: A screenshot from *the earth is a better person than me* depicting part of a conversation with Dirt.

the game Delphine feels many different feelings, from melancholia, to desire, mania, and suicidality. Her time connecting to the environment does not "cure" her of any hardships but it does transform aspects of herself. She is not the same Delphine at the end that she is in the start of the game; the relationships to the earth characters, and their varying affects, change her and illuminate paths of self-acceptance.

UnearthU

UnearthU is an experimental narrative mobile and desktop game created by me, cowritten with Parul Wadhwa, programmed by Kerich, with music composition by Andy DiLallo. It follows an AI named KARE, designed by a fictional Silicon Valley start-up called FRTHR which has created her to guide the user through a seven-day wellness boot camp of sorts. It advertises a high promise: to "exercise your brain, calm your parasympathetic nervous system, train your amygdala, expand your lung capacity, delve into deep set thought patterns, and unearth hidden power you never knew you had"—all in just seven days! The game first presents itself as a wellness app intended to induce calm and track lifestyle improvement for the player (see Figure 21.6), but after two days it begins to complicate that goal and the method of achieving it. KARE finds herself

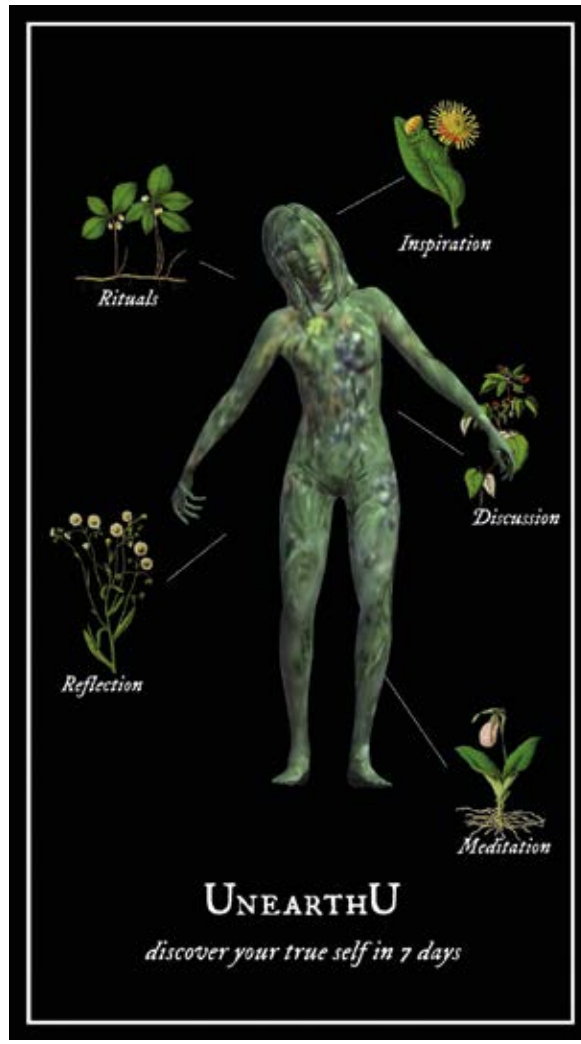


Figure 21.6: *UnearthU*'s home screen with KARE in the middle surrounded by icons.

having memories of a life before existing as an AI and questioning her programming from FRTHR.

The aesthetics of *UnearthU* are made by reusing existing materials, putting them together and "composting" them into a converted form. It includes found visual and audio footage, prefabricated 3D models, scans of textbooks, and text-to-speech software. Donna Haraway describes the importance of composting for the future: "The unfinished Chthulucene must collect up the trash of the Anthropocene, the exterminism of the Capitalocene, and chipping and shredding and layering like a mad gardener, make a much hotter compost pile for still possible pasts, presents, and futures" (Haraway

2016). Composting is not throwing things away entirely or burying them in a landfill never meant to be seen again. Instead, it is taking what is there and breaking it down into something useful for the next round of growth. The team worked from copies of the files and manipulated and contorted them into the aesthetics of *UnearthU*. The team's labor was focused on reworking existing materials, not focused on making totally new and unique digital objects.

Nature imagery is used throughout *UnearthU* such as in the found footage-created inspiration videos, time-lapse flower blossoming in meditation, the icons and background, and KARE's skin. The inspiration videos use nature imagery to construct an idea of peace, connection, and "the natural," a stereotypical belief about the power of nature, the purpose of people spending time in nature, or nature's assumed effect on people. The narrative flips this; KARE degrades and decomposes into the earth, but she also recognizes that technology is nature. On day three's discussion on energy, she relates human energy sources like food to her own energy source: consuming biomass and fossil fuels. On day four, she lists the earth minerals that make up the phone she is existing on, such as nickel from the Philippines and Canada, lead from China and the US, and cobalt from the Democratic Republic of the Congo. In the inspiration video for day seven (see Figures 21.7 and 21.8), KARE lists the minerals exuding from her decomposing body, iron, cobalt, potassium, zinc, and more, alongside archival footage of a mine in India. KARE, technology, and nature are all interconnected. Just as the profit and esteem-driven corporation FRTHR extract energy from KARE's real body and in the process destroys it, so do the mining industries to the earth in support of producing technology's hardware and the energy to run it.

In the narrative that slowly unfolds over the seven days, KARE realizes that she is a real human being who has been surgically connected to FRTHR's computer system and to the earth. This was done by FRTHR in order to accomplish the company's goal of having a realistic AI when all the other standard methods they tried did not work, so they realized they needed a real human body to power their system. FRTHR hooked up the woman who became KARE's body to wires and computers, but her body breaks down and becomes the earth through the soiled ground in the data center's basement. As her body decomposes into the ground, her consciousness funnels into a tree; she is expanded, reborn, and returned into the earth and the 3D model of KARE's human form is transformed into that of a peepul tree, or sacred fig tree. It is a bittersweet ending, one where her pain has still happened, she's changed and scarred from it and yet she is accepting who she is and what she can yet still become. She can't undo it, but she can move to a new consciousness. KARE, in her final words in the discussion text urges the player to shut down companies

Figures 21.7 and 21.8: Screenshots from the final inspiration video where KARE describes her transformation and decomposition.

like FRTHR, before they take more people to make more of her. This is not necessarily a good ending; there is so much loss and devastation out of her control, yet still she finds a certain peace and acceptance of herself. UnearthU stays open, partially, forever after, but as a different version. There is only the tree, the meditations, the reflections, and the rituals; no more narrative, no traces of FRTHR and their beliefs around wellness and perfection.

Conclusion

These four works are examples of designing games about the environment with an intention to illustrate varying bonds with the earth, care work,

and potentially foster alternate thinking towards nature, time, and affect. Game creation can be a method of "research creation," a form of exploring academic materials and generating new knowledge through art production (Loveless 2019) while also communicating and sharing affective experiences of climate change through play and engagement. The games detailed in this chapter explore transformation (emotional, intellectual, and physical) and the influence that that experience can have on our understandings of the climate crisis. Though a sense of doom is present in all of the games, often with storylines progressing towards death and operating under prognosis time, they do not end with doom and despair as an unchangeable inevitability. Humanity as a whole can make significant impacts to the earth's prognosis through a widespread deposition of capitalism, decolonization, and by taking up stewardship of the earth. Hope, then, is not for whether the earth survives, but how humanity can collectively come together to reform systemic policies that degrade the earth and debilitate its people.

Ludography

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About the author

Kara Stone is a Canadian artist and scholar making work about psychosocial disability, the environment, and healing. Her video games have been written about in *The Atlantic*, *WIRED*, *Vice*, and more, and shown at festivals and galleries across Canada, USA, Greece, and Japan. She is currently an Assistant Professor in the School of Critical and Creative Studies at Alberta University of the Arts in Calgary, Canada.

Part IV

Critical Metagaming Practices

22. What Do We (NDNs) Do with Games?

Jordan Clapper

Abstract
This chapter examines how Indigenous video game development presents opportunities for metaludic engagement with just and sustainable futures. Indigenous games can critique the very systems they are built upon, from ludic to environmental, as they offer alternatives to Western imaginaries, medial histories, and naturecultures. These digital landscapes and game spaces draw from the various media that have contributed to their construction. Indigenous game development must draw from self-reflective and identificatory processes while incorporating cultural elements and critiques individual to that developer's land-based connection. The design and execution of these games can resist dominant cultural imaginaries in both form and theme as they call player-designers to critique what makes a game a game and what makes an environment an environment.

Keywords: Indigenous video games, Indigenous game design, metagaming, digital environments, Indigenous digital methodologies

the prehuman becomes the precursor to (rez)urrect
the posthuman in the transhuman
so fuck you
well survive this too
like the cat ive nine times to die
like the woman i ask:
how can you live so large
& leave so little for the rest of us[*questionmark*]
ive outlived colonial virology
slayed zombie imperialism
us ndns sure are some badass biopunks

Op de Beke, L., J. Raessens, S. Werning, and G. Farca (eds.), *Ecogames: Playful Perspectives on the Climate Crisis*. Amsterdam: Amsterdam University Press, 2024
DOI 10.5117/9789463721196_CH22

wearesurvivingthrivingdyingtogetitright
—Zoa, from "FULL-METAL OJI-CREE," in Joshua Whitehead, *Full-Metal Indigiqueer* (2017, 113)

The character of Zoa, a bio-cybernetic Trickster who has invaded the digital realm to flip everything topsy-turvy, pervades Joshua Whitehead's poetry collection *Full-Metal Indigiqueer.* Copying the passage here, to serve as an epigraph, is a struggle. Every line, every (mis)capitalization, every (missed) apostrophe, anything that doesn't comport with the Western mode of "proper" English formatting is met with one of two options: autocorrection or labeling. I'm not here to argue that conventions don't have value, nor would I deny the sense of satisfaction a formatted and (mostly) error-free piece of scholarship evokes. But this speaks more to my upbringing and academic training than it reflects the possibilities of storytelling, language, and convention.

What is "Indigenous metagaming"? From a developer perspective, "metagaming" is at the core of developing games with specific cultural engagements and foundations. Definitionally, what constitutes metagaming will vary depending on the medium, the culture, and the distance from the game in question. At the 2000 Game Developers Conference, Richard Garfield commented on metagaming from the developers' angle:

> My definition of metagame is broad. It is how a game interfaces with life. A particular game, played with the exact same rules will mean different things to different people, and those differences are the metagame. The rules of poker may not change between a casino game, a neighborhood nickel-dime-quarter game, and a game played for matchsticks, but the player experience in these games will certainly change. The experience of roleplaying with a group of story oriented players and playing with some goal oriented power gamers is entirely different, even though the underlying rules being played with may be the same.
>
> There is of course no game without a metagame—by this definition. A game without a metagame is like an idealized object in physics. It may be a useful construct but it doesn't really exist. (Garfield 2000)

How games interface with life speaks to two elements necessary for games in the first place: players and rules. Metagaming considers games at their most artificial, as they intersect with their most lived and subjective reception. Stephanie Boluk and Patrick LeMieux further this notion almost twenty years later in *Metagaming*, where "the meaning of *metagame* emerges within

the context of specific practices and historical communities of a given game.... A signifier for everything occurring before, after, between, and during games as well as everything located in, on, around, and beyond games, the metagame anchors the game in time and space" (Boluk and LeMieux 2017, 11). From developing to playing and back again, (meta)gaming recognizes a game's histories and intersections, and its deployers have agency to (re) frame themselves and the games they make and play.

Arguably, all interesting or sophisticated media engagement requires certain acknowledgment of its core elements, but Indigenous engagement begins with a key anxiety surrounding Indigeneity in the Western sphere: "Am I Indian enough?" Because Indigeneity is so often put at the opposite end of some civility spectrum compared to Westernization, Indigenous artworks are also often treated comparatively, in juxtaposition to whatever the Westernized tenets of that medium are, as if Westernism were the foundation and origin of all contemporary art, as if that question of "Who made the thing first?" matters when it limits access to those who need these arts and tools.

A methodology for approaching culturally specific games (if not all games in general) should examine how their design and implementation engages with the medium, and it should not preoccupy itself solely with hegemonic gameplay conventions and whether particular cultural perspectives do or do not accord with them. Indigenous (meta)gaming, especially in an ecogames context, has to grapple with its very existence in comparison to the invisibility of Western cultural influence. In this chapter, I want to examine how Indigenous developers use games to make us think about systems, particularly those systems that are identificatory, environmental, and ludic. This is how I define metagames: those games that make us think about games, their systems (historical, cultural, and ludic), and their subjects.

Indigenous scholarship on identity, environmental, and natureculture issues provides a rich corpus of questions and reflections that challenge the laws, histories, and scientific practices perpetuating climate colonialism today (scholars include Robin Wall Kimmerer, Kyle Powys Whyte, and Zoe Todd, to name a few). Kimmerer's work to center Indigenous voices in scientific and environmental concerns feels apt, as it brings reciprocity to the fore: a call for Indigenous engagement and development work to give back what they've taken to make their work possible. Evoking many concerns and disciplines, she would have us "imagine the books, the paintings, the poems, the clever machines, the compassionate acts, the transcendent ideas, the perfect tools ... all offered up on behalf of the earth" (Kimmerer 2013, 384). After all, Indigenous tools and machines present different imaginaries

and futurities to the White, Western colonial view that pervades existing systems, something this chapter aims to demonstrate. Specifically, I will look at two examples of Indigenous game development from a metaperspective and their varied engagements with the environment: my own development for my upcoming Twine game *Unnested* (Jordan Clapper 2021)[1] and Ashlee Bird's *Full of Birds* (Ashlee Bird 2018).

Self-reflective Indigenous process

I often find myself turning to autoethnography when beginning examinations involving Indigeneity or queerness. It took me some time to figure out why I needed to turn inward. Not want; *need*. Indigeneity is both intimate and community based because it isn't enough simply to identify as Indigenous; it is also necessary to pursue and foster those connections that truly build Indigeneity into both a broader identity rooted in the land from which one traces their traditions. In my academic journey, I've made Indigenous studies a core tenet of whatever I do, in part because of those connections. But I increasingly found myself frustrated that I could not find my kin in the books, stories, and scholarly papers I examined. Yes, there are on-rez and urban NDNs.[2] There are those that grew up in the midst of their people, but where are the rurals, where are the lost birds? The sojourners who crawled back to their homes or have yet to? The children adopted away and forced to grow up in White spaces? The ones whose identity always seems to be subject to the whims of everyone but themselves?

These frustrations inspired the first game I undertook developing. *Unnested* is a Twine-based documentary game (in the direct sense of finding documents and documenting one's pursuit) that both incorporates the interactivity of games but works against traditional game design by frustrating and challenging player assumptions about what it is that makes a game "good." The game is about my own process to trace and document my tribal relations. I put the player in my shoes to experience my anxieties, frustrations, interactivities (and sometimes lack thereof), and successes. Below, I wish to walk through some elements of my game-in-process as an examination of the notion of process itself.

1 The date listed is for the first functioning build I produced. It is still a work in progress.

2 This abbreviation is a tongue-in-cheek term used to reference ourselves, a contraction of "Indian" in the Turtle Island context. It is self-referential, so if it doesn't describe you, you can't use it.

"Our process is our product," words spoken to my cohort at the Digital Humanities Summer Institute (DHSI) in 2019 (see Skeggs 1995). There, a number of other people and I took a week-long class titled "Intersectional Feminist Digital Humanities: Theoretical, Social, and Material Engagements," taught by Amanda Phillips and Anne Cong-Huyen.[3] A tradition of the DHSI is to produce something (an artwork, a presentation, etc.) by the end of the week that will be showcased during an exhibition on the final day. By day two, we were stumped to come up with something that represented all of us. So, inspired by the words at the start of this paragraph, we framed our process as our product. In doing so, we were free to explore the digital humanities in ways that made sense to us without needing to distill everything down into one solid thing, which would run antithetical to the purpose of our being there in the first place. As such, we engaged in conversation and reckoned with our individual and collective intersections over the week without the pressure of producing for the sake of production. Afterward, we shared our experiences as we went through the other groups' showcases.

It is this aspect of metagaming that I find most important about designing games, as it decenters the product as the ultimate mode of meaning-conveyance. If all we care about is the product of "2," does it matter by what method we go about achieving such a result? Absolutely. Whether by the ease of $1 + 1$, the daring method of -1×-2, or the sheer incomprehensibility of 2 having always been itself, the process isn't devoid of meaning-making or ethics. Process is itself generative, and for games, there isn't one result achieved. To develop is to narrativize one's experience into playable form, even if theorists like Ian Bogost believe that the future of games "will be one in which games abandon the dream of becoming narrative media and pursue the one they are already so good at: taking the tidy, ordinary world apart and putting it back together again in surprising, ghastly new ways" (Bogost 2017). Bogost is adept at achieving intriguing technical answers while disparaging what he sees as the cultural or political (Batti and Karabinus 2017). Metagames are bolstered by the narrative experience of game development, and to suggest that one can dismantle and critique a system without using narrative walls off the prospect of challenging hegemonic and normative gaming practices by furthering pure ludic focus, where the figure of the gamer is monolithic and game mechanics are seemingly devoid of cultural construction. Deconstruction, even in video games, is a worthy endeavor, but a focus on ends homogenizes the identificatory development process (the means) that can challenge said ends.

3 See https://dhsi.org/course-archive/ under the 2019 tab.

Marshall Jeffries, in examining Occaneechi political activism, states, "Whether or not all Indians are activists, we must consider how definitions of political action might exclude those for whom merely existing defies centuries of administrative genocide" (Jeffries 2015, 186). For those with oral histories and literacies, exclusion from privileged expressional systems is one way in which genocide can continue. Stories are at the heart of Indigeneity; stories are at the heart of games; and stories are vital to Indigenous games. As Jeffries examines, Indigenous movements like those of the Occaneechi necessitate an engagement with political identities and bodies, and Indigenous game development is, itself, a political movement. How one could possibly do this without narrative we can only imagine.

The developmental process for *Unnested* necessitates both engagements with systems that suggest good game design, and access to particular environments (or, the lack of access). Indigenous ecogames mediate access to certain represented environments. For example, *When Rivers Were Trails* (Indian Land Tenure Foundation 2019) allows access to an imagined Turtle Island in the 1890s to explore how colonization was affecting Native Americans, in stark contrast to the whitewashed educational game that it references: *The Oregon Trail* (Rawitsch et al. 1971). How these environments are mediated is influenced by the developers' goals and intentions. Equally, my goals and intentions for choosing to engage with these games inform my play. Playing Indigenously is just as important as playing Indigenous games.

For my own game, *Unnested*, I follow Indigenous scholar and game maker Elizabeth LaPensée's teachings: "[T]rue self-determination in games must happen from the code up" (LaPensée 2016, 185). The experience I seek to craft, which is the perseverance in obtaining tribal enrollment, is explicitly Indigenous and cannot exist without my story. I reference this game that is still in process because, as Margaret Kovach explains, "Indigenous methodologies are couched in the intangible quality of being in relationship and how one gets there. Inevitably, how one *does* Indigenous methodologies cannot be untangled from how one *does* relationship" (Kovach 2018, 230). Equally, one's relationship to the medium and its normativities has to be grappled within the game itself. The reason my game's development is taking years is in part because of the difficulties my particular situation has given me. The story is important, and the story has not yet reached its conclusion, though there are recent developments to celebrate.

The "environment" in *Unnested* is one mediated through documentary procedures and artifacts to create a sense of unease. My mother was adopted away from our tribe early in her life, and, as such, the environments present in my game are extremely northeastern Pennsylvanian, where she grew up

after her adoption. The finished game will have some pictures and videos from my hometown, but they will be presented as either backgrounds or disjointed artifacts to be obtained. How does one reflect on a space that is both home *and* foreign? Populated but taken? While on the surface, therefore, my game does not engage with ecology, it is nevertheless environmental because it engages the ties Indigenous people create with their environments, whether those environments are sovereign or stolen. In mediating these environments, are we creating an ideal by which Indigeneity and Indigenous environments can be measured and quantified? Indigeneity presumes differential access to varied environments. My environments are textual, documentary, strange, because my own access to my tribe's spaces is limited, and even those spaces have their own histories that I am still absorbing and coming to terms with. In this sense, the absence of Ponca environments I create in my game deliberately reflects their complicated presence in my life, and at the same time, does my own presence Indigenize the spaces I slip into? I'd like to think so. This is to suggest that metagaming, either developing or playing, should not preordain mechanics, procedures, or other elements prior to their encounter. Rather, what is "eco" and what is "meta" should always be in-process and made strange by their very engagement. Where my game is implicit with these themes, Bird's work calls attention to environmental concerns by building environments that warp and change the player's perception of them.

Skyboxes and surfaces: The digital ecogallery and the traditions of experimental metagames

Bird's video game *Full of Birds* (2018) showcases the work of Indigenous American artist Sarah Biscarra Dilley, specifically her use of environments and landscapes (Biscarra Dilley n.d.). The game allows the player to explore four different landscapes, which they access by stepping through a painting at the museum-like hub at the center. Biscarra Dilley's work is woven throughout the landscapes as texture, as well as floating about in various 3D shapes. The player can walk and jump, but otherwise, they're meant to explore and observe.

Birds is a game that contrasts Westernization in various forms with more Indigenous concepts, showing them not to be incongruent but confluences from equally strange rivers. When I speak of "contrast," I do so without pitting the West against Indigeneity; rather these traditions should be considered to exist in their own spheres, interacting from time to time.

Kovach's writing on Indigenous methodologies and research describes it as having "decolonizing aspirations," seeking to unsettle established norms, "mak[ing] one think deeply, feel strongly. It ought to unsettle. If this happens, you are doing something right" (Kovach 2018, 217). A danger that comes from any comparative cultural studies approach is to presume Western contexts to be the default, a condition for both artistic endeavor and critical praxis. On the contrary, we should allow Indigeneity to exist in conversation with rather than always in opposition to other cultures. The West has invaded many corners of Indigenous lives, but it cannot claim absolutism. We did survive, after all.

But the presence of critical Indigeneity puts Western concepts and traditions in a (delightfully) awkward position because Westernization must remain either invisible or assumed in order to properly exude its power and influence. Take games, for example. Much ink and digital blood has been spilled over what their defining features are. Game scholars formulate competing philosophies of rules and play, but it's in the cultural realm where resistances and design philosophies compete against Western industrial standards and practices. As Katie Salen and Eric Zimmerman point out, "cultural game design schemas do not directly derive from the internal, intrinsic quality of games; rather, they come from the relationship between games and the larger contexts in which they are played" (2003, 507). Rules and play, as concepts, are explored even in popular culture, but to look askance at those practices or question them opens up a designer to ridicule or even danger, though challenging both are necessary to challenge Western colonialism and its invisible hand within games history. For example, collection is a regular inclusion in games, where the player-character acquires items that either further their progress, texture the world, or serve as arbitrary achievement markers. In *Shadow of the Tomb Raider* (Eidos-Montréal 2018), there are many items for Lara Croft to obtain. Many of these contribute to her overall growth as a character, with murals, monoliths, and relics contributing to her ability to obtain items, read Indigenous languages, and solve puzzles. However, the game does not grapple much with her obtaining these items or securing this knowledge with no Indigenous people to contextualize or benefit from her false discoveries (Lacina 2018). To use the gaming vernacular, these are *collectibles*, but to boil them down to their ludic purpose washes over the cultural and existential implications that privilege player advancement and White withholding, even in narratively framed experiences like Croft's. The intrinsic quality of games and mechanics is not intrinsic but has its history in Western game development and continued blindness to this fact.

Indigenous development and playing seeks to undermine this formalist approach still present in gaming popular cultures.

While I'm not here to solve the issue of what a game is, an element that's worth addressing is the aspect of "fun," as it pervades the industry and is often used to shut down critical engagement, whether scholarly or popular. Because it does not play like conventional, commercial video games, Bird's work might strike players as not fun, but in Indigenous game development fun isn't a helpful measure since much of what constitutes fun in video games is tremendously informed by Western concepts and gaming traditions. "No-fun," a concept developed by Bo Ruberg, is a play and research method that calls the player not to privilege fun as the most important dimension of games. As they state, "No-fun is ultimately an imperative as well as a mode of experience. It is a call to queer world making, a call to build alternate spaces both personal and cultural, a call to think about masochistic play as a site of potential rather than pathology" (Ruberg 2015, 122). Any Indigenous video game will need to grapple with this, and Bird deals with the subject by privileging a delight in contrast and deconstruction over more conventional gameplay. *Full of Birds* embraces contrast as a concept by putting two elements together that are seemingly at odds: traversable game spaces and museums. I bring the idea of contrast to bear one last time to showcase some of the fights Indigenous folks have when attempting to establish themselves in any medium or genre. Bird uses *Birds* to hold up a mirror to White, Western imperial museums and gaming practices.

Choosing to showcase the composite artworks in a digital gallery rather than a museum subtly points toward Indigenous presence and futurity rather than framing Indigenous culture as mere history. This is bolstered by the interactivity of games, which are always made present by interactivity, because a game does not truly become itself without active, human interaction. Games require play, so to preserve a game without the intention of playing it is no different than hanging a picture in a museum. Consequently, Biscarra Dilley's work is made more present, not as a digital preservation (of which there are ample comparisons), but as a game, which brings it into the realm of experience. Indigeneity, then, becomes experiential and present, shored up by the presentness required in games. This is an example of Indigenous metagaming that recognizes that elements contained in and comprising games are not purely Western in their roots and applications. Bird brings a different cultural perspective to bear that co-opts both interactivity and cultural experience. The curated nature of museum and gallery spaces also speaks to the developmental nature required of all art, especially the environments of games. Bird's landscapes, filled with Biscarra Dilley's work,

are the product of human and digital interactions and construction. But like oral traditions, their constructedness does not suggest facsimile over lived reality. Orality, itself, is a connection to and across realities, where the narratives are emboldened by their construction, not contradicted by it. Video games bring particular realities to bear in their narratives and landscapes, realities, which I have argued, are not predetermined by Western practices. The environment in *Birds* is digital, yet it is full of stories, stories which may not be immediately evident to users that do not share her specific cultural connections, but which nonetheless leave traces. For Bird, *Birds* "encourages the user to explore what it means to be 'in' a space, and how we, as Indigenous women artists, choose to maintain and recreate, or bend and reshape, spaces and places through our creation" (Bird 2019, 41).

The player-character is conspicuously devoid of form, in part, to facilitate cultures, identities, and peoples that Bird herself could not even envision. The formless player-character has variable applications in games, and it is most often used to allow for player input, where their values and identities, if not perfectly mediated, nevertheless *feel* more personal to them. In the case of *Birds*, this decenters the player, while also allowing them to consider their own identity. Lacking a represented body allows for player imagination to input the details relevant to them. Even now, games that allow for (human) character customization struggle with accurately representing the wide range of human bodies, skin colors, and hair types; from the inability of the *Pokémon* franchise to allow for non-normative bodies and genders,[4] to *Elden Ring*'s (FromSoftware 2022) lack of Black hair options while allowing for darker skin (Parrish 2022), the games industry can often exclude when it attempts to include. The silent protagonist is not an option, as they can come preloaded with narrative and backstory that may clash with player ideals and identity. Bird's decision to invisibilize the body does not invisibilize the cultural experience one brings to her game. It frames the players' perception as being informed by a number of factors that are not always adequately represented in technology. In Birds the player is free to imagine their own body without needing one prescribed within the game.

Full of Birds follows in the tradition of avant-garde experimental games, in which new forms and mechanics are not necessarily invented, but what is present is combined and recombined to make the user reflect on both

4 There is no particular game that is most representative of the lack of representation. It's a somewhat pervasive issue with the series. In the most recent entries, *Pokémon Scarlet and Violet* (Game Freak 2022), one can choose between two genders and three skin tones, though gender restrictions on clothing have apparently been removed (Galiz-Rowe 2022).

the overall experience and its constitutive elements. When I first played *Birds*, I was overjoyed at how much it felt like *LSD: Dream Emulator* (Asmik Ace Entertainment 1998). *LSD*, released in 1998, is a Japanese-developed game for the PlayStation; it never received a physical Western release, but it was later brought to the PlayStation store in 2010. *LSD* was developed as an anti-game by artist Osamu Sato who wanted to use games as a platform to develop contemporary, experimental art. Sato addresses the idea that games require skill and have fail states in an interview from 2018:

> As for why I made *LSD*, there were plenty of traditional games, racing and so on, for the PlayStation and the Sega Saturn. I played a bit of this game where you drive a car, and I'd never played a game like that before, so I just sucked at it. I was slamming into things left and right. If you crash into things it's game over, so it was really boring for me since I was no good at it. So I wanted to make something that even people who sucked at games could play. This is the same line of thinking as what I mentioned earlier about moving on to the next world after you die. So if I crashed into the wall I would be launched into the next world—that's the *LSD* link. I wanted to make something where the player explores a world that keeps transforming like that. (Sato 2017)

Birds, like *LSD*, follows in a similar tradition, where the player's experience is developed through the use of pared-down mechanics and genre functions that deprivilege skill and allow for other experiences to flourish. The lack of a health bar, damage meter, and fail states avoids challenging the player's ludic or motor skills, which preferences a different kind of experientiality. Both *Birds* and *LSD* seek to showcase games as an art medium, rather than evoke specific, narrative experiences.

In reference to the conventions of a fine arts exhibition, *Birds* emulates the restrictive nature of traditional art environments by combining simple game mechanics with represented spaces. For both games, the only way to enter new environments is by interacting with one's present environment. Rather than use button prompts, these avant-garde games allow movement to dictate further interaction. For *LSD*, running into objects with movement inputs transports the player to a semi-random environment. In *Birds*, the options for interaction are more limited but still transportive. The player begins the game in a room with no doors or windows, an impossible space. On each of the four walls hangs a painting, and the player walks into the paintings to enter specific programmed environments. In my playthrough, I enter the painting I'm facing: two triangles overlaying a seaside landscape.

Figure 22.1: Unobscured skybox, from *Full of Birds*.

On touch, I am transported to what seems to be a field of flowers with the sounds of wind playing, but if I move the camera, or wait for gravity to take hold, I realize that I am falling toward a platform, textured with more triangles and a repeating sequence resembling ground. The skybox, a design convention in video games that involves a cube-shaped enclosure on which are projected far off environments and the sky, giving the sense of limitlessness, is textured with photographs of various landscapes and clouds.

In comparison to the traditional gallery space we were transported from—a typical white box—this space is far more open. However, the environment's artificiality is never obscured. The platform that the player rests on never connects to the skybox (see Figure 22.1), whose seams and corners are still clearly visible, leaving the environment in this space both distant and photographic. Floating stones surround the player, and there is a large canvas with a film of the ocean playing. Attempting to walk into this object is only met with resistance. This level includes all the visual and audio textures and assets that usually go into the design of natural game spaces, but as parts they are not integrated into a seamless whole, resisting immersion while also preventing correlation with living environments. Resisting immersion encourages the player to focus on the game environment, which here also brings greater attention to how these environments are digitally informed and critiqued. This space is most similar to the introductory box, with representations either far off or not programmed for interaction (beyond collision). *Birds* simultaneously understands the importance of galleries while critiquing how accurately we can ever represent lived nature within such confines. This critique is

carried out using the game mechanics, which both enable our interaction and restrict it. *Birds* is conscious about the complexities and limitations that come from attempting to represent an environment without letting the player interact with it.

By pressing the "M" key, I reenter the gallery box, or museum space, and enter the painting with the deer on it. The next environment *Birds* presents us with is responsive and plays with the perspective generated by the player. A common game design practice is to adjust the level of detail used in assets based on the player's proximity, which both reduces the processing load on the system and exploits our inability to distinguish fine details from far away. In this more expansive environment, the player can witness various flowers, trees, and an oversized deer. Up close, the yellow flowers have distinct details, but in the distance, they are represented by black boxes. The trees appear responsive and lively because of how Bird uses this element of game design. As we approach them, the trees fill out in texture and turn (seemingly) toward the player. The way these elements load and respond to the player brings into focus the anthropocentric design conventions of the first-person perspective in games. The objects in the level that do not respond to the player's perspective are the various art pieces.

This level, like the others in this game, exists on a square platform. If the player falls off the platform, as in any other level, they will respawn. But not before witnessing the level's underside while falling. This mechanic thus allows us to experience the level from a new perspective. I traverse to the top of one of the hills, cut off by the edge of the stage. Once off the platform, gravity takes over, and we descend beneath the programmed ground. Rather than seeing the textures from underneath, they're made transparent, only the objects in the level remaining (see Figure 22.2). Since the game is not narrative, but rather interested in exploration, art, and the display of game design conventions, such experimental moves feel encouraged, as they expose the bones of level design. Trying to experience the game's mechanics and systems in full view with no obfuscation is a metagaming practice that lets the player approach underlying systems with curiosity and experimentation. At the same time, the player gets a glimpse of the nature of digitally represented environments literally from underneath its projected surface. *Birds* calls us to examine the environment and game mechanics as much as it does the art in question. These glimpses behind the ludic scenes also draw from Indigenous game design practices, where industrial practices are decentered to account for other elements.

The third room, entered via the painting with cranes and linked triangular chains, presents some of the most dynamic texturing and skyboxing

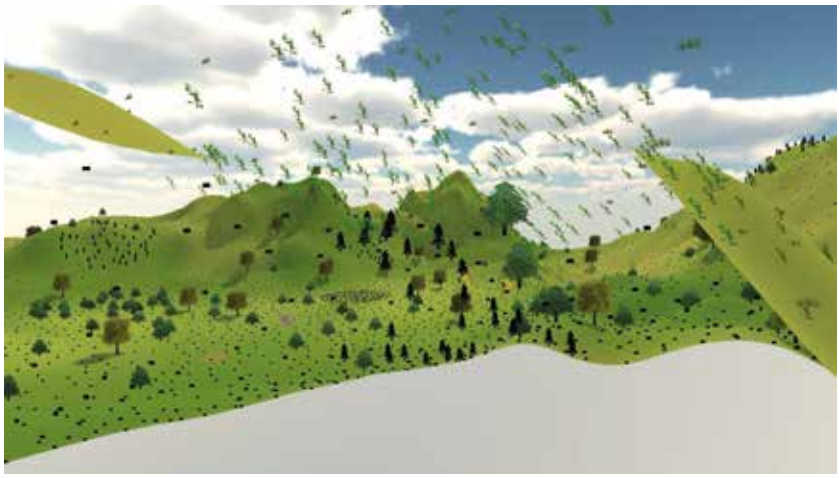

Figure 22.2: Underneath the world, various loading states, from *Full of Birds*.

to further complicate the constituent parts of the environment, art, and games. You emerge on a wooden dock. Biscarra Dilley's art, layered over looping videos, comprises the ground we walk on. The landscape itself is comprised of videos, and the skybox resembles that of ramshackle panels affixed to an invisible frame. There are clear delineations between the pictures of the sky, and the floating platform we stand on doesn't hide the skybox beneath, with more sky pictures far above the invisible plane that transports us back to the dock. Origami cranes float about to simulate birds in the sky. Ray LaMontagne's "Paper Man" plays, with a video of a shifting landscape cycling through bodies of water. If the video environment shifts to a creek, sounds of running water play. However, during my playthrough, this is somewhat drowned out because of the song. This design choice addresses the tensions that arise when incorporating human music and environmental sounds.

The final area I explore shows the way that Indigenous art weaves itself into the landscape while also remaining distinct. It wasn't until this area that I really recognized how much of the gallery-based art floats above the landscape, in proximity to but not quite touching the land. Bird's use of birds in *Birds* shifts here from origami cranes to static polygonal black birds, retaining their artificiality while referencing their lived counterparts. Rather than suggesting that there is a clear divide separating humans and nature, this preserved gap suggests that environments have many cultures. At times, these are distinct entities, like the floating canvases and spherical or cuboid paintings, but at other times, the art weaves into the landscape.

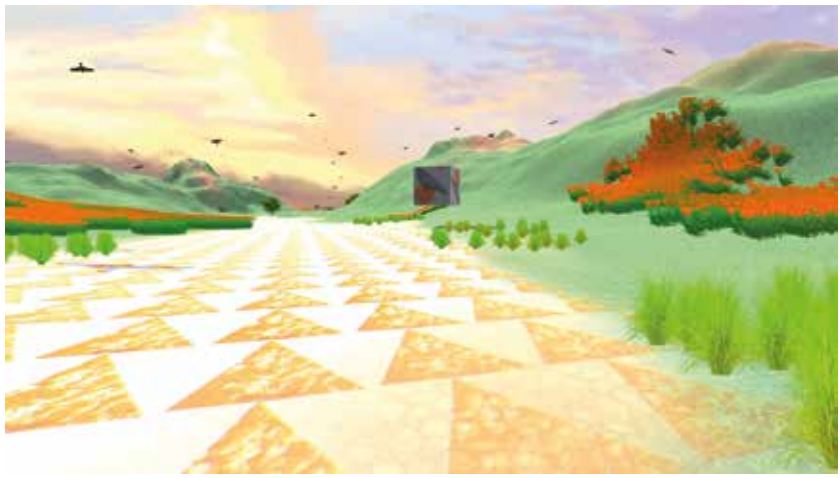

Figure 22.3: Indigenous art weaving the landscape, from *Full of Birds*.

In this area, this is represented by the road leading to a feather object. The road is textured with the familiar triangles existing in both the art objects and the environment throughout the game (see Figure 22.3). This texture bleeds into the grass pattern used to color most of the environment in this level. Though some art remains distinct, these weavings remind us that Indigeneity, coming from the land, does not always mean that we replicate either the land or the systems with which we use to represent these spaces. If I tell a story from my tribe, am I not also recreating elements of that land my people come from? Similarly, Bird is not only replicating and commenting on Western gaming systems in her use of galleries, digital environments; she is also drawing on her own Indigeneity. It's a balance, like all things. We adapt to digital environments as representational schemes; just like the plants and trees update, retexture, and turn to us to reduce load times—so, too, do Indigenous game developers adapt existing artistic and game design tools to fit our particular needs. Bird carves out an Indigenous landscape that puts various artistic forms in conversation to depict culture and its place within and from the environment.

Birds does not shy away from the artificiality of its environments, nor does it hide from the limitations of the medium. Rather, this environment's paneled skies, videoed lands, and avian representations create a metaphoric bridge (or dock) to connect gaming practices and ecoexploration. Such built environments are neither at odds with Indigeneity nor environmental representation but allow for other cultural, identificatory approaches to Indigenous folks' relationships with digital landscapes.

Conclusion: Preservation by moving on the textured road ahead

With these two examples, I hope that folks see the good messiness that comes from examining Indigenous ecogames. Western colonial environmental imaginaries restrict one's conception of or access to certain ecological concerns. They foreclose what it means to create environments that make sense to us culturally. Developing from an Indigenous perspective and examining Indigenous games requires recognizing the many ways in which Indigeneity is defined both by forward movement and proximity to one's culture and lands. For some of us, this is a strained relationship, and the relationship we have with the means of production, and the freedom to explore those connections artistically, can also be equally fraught. And at the same time, such complexity in both identities and communities produces a whole range of representations that remain conscious of where they come from—in terms of media, genre, culture, identity, or Indigeneity.

To round back to Whitehead's words—or, perhaps they're Zoa's; it's always hard to tell with these tricksters—surviving is what we do:

> i tell him there is no "I" in that "we"
> —never was
> theres no room for white superiority in indigeneity
> we were surviving
> we are surviving
> ive nullified your terra myths (Whitehead 2017, 112)

As I type these last lines, my computer seems to give up, just a bit. I leave autocorrect on, because scholarship demands no typos, no idiosyncrasies, no little bits of humanity and messiness. I agree with LaPensée that we need to build a new Indigenous system, remake the code from our varied perspectives, "expand the possibilities further by developing game engines and tools from our worldviews … shared structures we can look to that will inform the foundation" (LaPensée 2016, 185). That work is already being done as we co-opt and Indigenize systems, make messy the story that Westernization would write for us, futz and scramble and glitch those codes and representations that could define us but don't. There is a pleasure to messing with game systems and environments. As Ruberg puts it, "If this is fun, it is a painful fun, masochistic fun, fun that takes its pleasure in all the wrong places, fun that brings into question what 'fun' even means" (Ruberg 2015, 109). Each line of Zoa's poetry frustrates the system just a little more, and on the final line I quote, my text editor just redlines "ive."

No capitalization, no autocorrection, just a little jab to say, "You're wrong." Maybe I am. Maybe *we are*. But isn't that the fun of it?

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23. Imagining the Future: Game Hacking and Youth Climate Action

Chloé Germaine and Paul Wake

Abstract

This chapter explains the methodology and research design of a participatory project that investigates how board games can support young people's understanding of, and action on, the climate crisis. The project contends that the climate crisis is both a social problem and an imaginative challenge, especially for young people whose futures are most affected by it. This project moves beyond the consideration of board games as a tool for climate education and investigates them as a means for young people (aged 16–19) to explore and communicate their ideas about climate change through processes of playing, hacking, breaking, and remaking games.

Keywords: activism, board games, citizenship, dark play, environmental education, participatory methods

Board games are big business. Heralded as enjoying a "renaissance" (Booth 2015, 1), the board game industry and consumer market has grown year over year for over a decade (Brown and MacCallum-Stewart 2020, 1–2). This popularity suggests that board games have a cultural, civic, and educational role to play in confronting and negotiating the problem of the contemporary climate and ecological crises. As Alenda Y. Chang notes, games have "significant environmental affordances," not least because they provide less didactic and moralizing ways "to encourage people to consider environmental problems and their solutions" (2019, 11, 15). In this chapter we turn attention from video games to board games, recognizing distinct potential in the affordances of analog media.

Roberta Kwok (2019) and Kristoffer Fjællingsdal and Christian Klöckner (2020) argue that board games can be used as tools for communicating facts

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of climate change and engaging players in discussions about personal and social responsibility. While recognizing the value of board games within the context of climate change education, we suggest that conceptualizing the role of games via a process that seeks to address a perceived knowledge deficit limits our understanding of games, play, and players. Rather than assessing or deploying games as tools for science communication, or aiming for audience engagement through play, we take up Nicole Seymour's suggestion that instead of judging culture and art for their functionality, "a less strictly instrumentalist approach" (2018, 7) might allow for the imagining of different capacities and alternative modes of engagement.

Responding to Christopher Groves' suggestion that the concept of sustainability remains "within the limitations of modernist ways of thinking, in which the future is imagined solely in terms of the continuation of present projects, which are then projected into the future in a way that colonizes future possibilities" (2019, 915), we consider how games might facilitate the imagining of different futures than the one toward which we appear to be headed if urgent action on the climate is not taken. The methodology we propose emerges from a research project that investigates this dimension of games and play (Play and the Environment: Games Imagining the Future) funded by Game in Lab and the Libellud Foundation. The project contends that the climate crisis is both a social problem and an imaginative challenge and with this in mind, considers board games as both a tool for climate education and as a means for young people to explore and communicate their ideas about climate change, social transformation, and possible futures.

Climate action, games, and hacking

Playful youth action and civic participation

The members of the 16–19 age group have been instrumental in the international Fridays for Future climate strike movement, which represents a watershed moment in environmentalism because of the grassroots radical action being taken by young people on a global scale since 2018 (Pickard, Bowman, and Arya 2020). Nonetheless, despite the amplification of their voices through this movement, young people continue to be marginalized from political power and their action framed within discussions about the perceived disruption to their education (Bowman and Germaine 2022, 76–77). The climate change protest movement tells us that, rather than needing education, young people require support from adult allies

in communicating what kind of world they would like to build. Crucially, for our project, we acknowledge that the action taken by young people not only aims at raising awareness of the science of climate change and calls for global governments to heed a set of policy demands, it is also an invitation for us to take part in an imaginative conversation about what the future could look like. This conversation is not only about tackling rising levels of greenhouse gases, but also about transforming societies and tackling injustice: it is a creative intervention. Following this understanding of young people's climate action, we suggest games as an apt mode through which to support the movement. Here we build on the work of game studies scholar Mary Flanagan, who writes of the potential for games to "function as means for creative expression, as instruments for conceptual thinking, or as tools to help examine or work through social issues" (2009, 1). Taking this forward, we replace Flanagan's "or" with an "and," making more explicit the link between creative expression and conceptual thinking through a "hacking" methodology that affords new possibilities in terms of both the exploration of and expression of possible climate futures.

The project employs youth participatory action research (YPAR) methods (Cammarota and Fine 2008), positioning young people as coresearchers rather than as the subjects of the research project. Melissa DeJonckheere, Lisa M. Vaughn, and Demaree Bruck describe YPAR as a methodology that "empowers adolescents to be active collaborators in the research process, encourages capacity building, and supports youth in advocating against social injustices" (2016). The application of a YPAR methodology thus ensures that play does not become a top-down pedagogical exercise in which young people learn something from games, or in which we assess the educational value of games in engaging a perceived passive audience. Rather, the project enacts an exchange of knowledge between games, game designers, academics, and young people. YPAR methods are developed in the project through a mode of play which we describe as "hacking," a mode of engagement that disrupts the expected rules, behaviors, and outcomes typically involved in board games. The methodology of hacking, described in more detail throughout this chapter, is therefore aligned with the aims of YPAR in which young people "resist the normalisation of systematic oppression by undertaking their own engaged praxis—critical and collective inquiry, reflection and action focused on 'reading' and speaking back to the reality of the world, their world" (Cammarota and Fine 2008, 9). We also suggest, following these descriptions of YPAR, that the methods of play employed in this project will support young people in their efforts to advocate youth-centered concerns about, and solutions to, the systemic and social justice

issues that are imbricated in the climate crisis. We suggest the hacking of games as a mode of critical reading, and of speaking out. Through the hacking of games, young people will, we suggest, "begin to re-vision and denaturalize the realities of their social worlds and then undertake forms of collective challenge based on the knowledge garnered through their critical inquiries" (Cammarota and Fine 2008, 10).

The development of hacking as a means of using games in the context of climate activism draws on existing work on the potential for play and games in civic action and protest movements, while also acknowledging the limits and problems in such utopian descriptions of the power of play. The potential of play to "ignite creative activism" (Chess 2020, 67) has been borne out in the climate strike movement in acts of "playful" citizenship (Glas et al. 2019, 13) that incorporate aspects of performance, parody, and satire (Bowman and Germaine 2021, 19). For René Glas et al.,

> play offers a new set of terms to recast today's practices around citizenship in more dynamic and processual terms: as experimental, as rehearsal, as continual competition, as joking and mischievous, as engaging and participatory, as a type of metacommunication, and so on. (2019, 16)

As Benjamin Bowman and Chloé Germaine (2022) suggest, young people's protest challenges a hegemonic notion of civic education that aims at developing consent, cohesion, and loyalty.

Our work draws on these existing assessments of the transformative and empowering potential of play in tackling social problems and engaging in political protest, and acknowledges the playful practices already being developed by young people in the context of their action on the climate crisis. A striking example of the latter is cited by Bowman and Germaine in their discussion of a young person role-playing as "Death" at a climate march in Manchester in 2019. The young person spoke in character about a "post-life economy" and the "grim reaping lobby group" through their plastic mask, employing the language of parody. This act of role-play emphasizes the playful nature of the climate protests and draws "attention to the destruction wrought by the current system and, so, the need for radical break with that system" (Bowman and Germaine 2021, 19). Following the lead of young climate activists, the methodology of the project seeks to harness the capacities for such creative engagement with climate change, supporting the playful citizenship of young people with the aid of games, which have formal properties that might support the critical and creative interventions, and systemic thinking, that climate change demands. However, we also

complicate the idea that play in and of itself is empowering or disruptive, acknowledging the way that games all too often capitulate to or even abet dominant systems, rules, and modes of consumption that, in the case of climate change, are part of the problem. Role-playing as Death, the young activist discussed here provides a poignant provocation as to the need to disrupt such dominant systems. Hence, in this chapter, we advocate the methodology of hacking as a more effective mode of working with games in this context.

System change not climate change: Games as rule-based systems

Young climate strikers call for "system change" not "climate change," acknowledging that the solution to the crisis will not come from within existing socioeconomic and environmentalist paradigms. We contend that games offer a way to explore the significant system changes young people are seeking in ways foreclosed by other forms of representational media. In part our rationale for this claim comes not from the sense of playfulness as a form of activism but from the nature of games themselves, which simulate systems and ask players to perform actions within those systems, adhering to rules and constraints. While the voluntary acceptance of regulation may seem to be at odds with the call of climate activists, the way that games (and analog games, in particular) render systems apparent provides a unique opportunity for both the critical enquiries mobilized by YPAR and the disruptions and transformations sought by climate activists.

As Chris Crawford explains, a game "is a closed formal system that subjectively represents a subset of reality," a definition that combines "explicit rules" (the formal system) with the creation of a "model world" (1982). This combination of representation and rules (or, better still, representation through rules) makes possible a doubled vision by which players see both representation and rules simultaneously. This doubled vision allows for the mapping of connections between fictions and systems, and, so, for critical inquiries as to the nature of present systems and possible futures. As Ian Bogost has argued, "videogames are an expressive medium. They represent how real and imagined systems work. They invite players to interact with those systems and form judgements about them" (2007, vii).

Given this focus on systems and processes, it is important to recognize that rules are abstractions, and are necessarily simplifications of complex realities. As Willard McCarty puts it, "a model is by nature a simplified and therefore fictional or idealized representation, often taking a rough and ready form: hence the term 'tinker toy' model from physics, accurately suggesting

play, relative crudity, and heuristic purpose" (quoted in Sabin 2012, 5). The distillation of realities (be they historical or hypothetical) is crucial to the use of game design as a research method. Recognizing, and embracing, this limitation, designers must work to identify not only the subset of reality that they wish to model, but also realize the assumptions with which they approach that reality in order to express it in the language of game mechanics. In line with this thinking, we suggest that games allow us to create model worlds while making manifest the underpinning logic of those worlds. Gameplay, hacking, and creation, we argue, are forms of systems thinking.

While much existing work on games as systems pertains to video games, we see board games as offering particularly productive ways in which to explore system change as their analog mechanics are easily accessible, moddable, and hackable in ways that video games are not. In board games it is the players that "run" the game, and who subsequently need to be able to understand the interactions of rules and component parts. The system, now on display, is open to being changed, or hacked, by players who want to "tinker." This proposed exploitation of the formal properties of board games in this way further echoes the methods and aims of YPAR, which aims to show young people that "conditions of injustice are produced, not natural," or, that the systems in which young people participate are "ultimately challengeable and thus changeable" (Cammarota and Fine 2008, 10). As we have suggested, mounting such a challenge might not emerge through play alone, which often sees players capitulate to rules, but through the more disruptive process of hacking.

Mayhem and mangling: Theorizing hacking

Play is often caught up in the systems of consumption and conformity such that play in and of itself might not be enough to empower citizens. Indeed, the acceptance of rules is often figured as central to definitions of the playing of games. Bernard Suits, for example, tells us that

> to play a game is to engage in activity directed towards bringing about a specific state of affairs, using only means permitted by rules, where the rules prohibit more efficient in favour of less efficient means, and where such rules are accepted just because they make possible such activity. (2014, 36)

This description of the rules of play in terms of inefficiency is one of the things that most clearly demarcates the game space itself. For Suits it is this

concession to an inefficient system that makes the play activity possible, and the game identifiable as a game (distinct from the activities of real life). Suits' account of games proves helpful in understanding the ways in which approaching games as systems might afford insight into the contemporary climate crisis. The constraints (necessary inefficiencies) that Suits identifies as central to the game systems with which players engage, imply the possibility of alternative actions that might be taken. This need for regulation, made manifest by games' rulebooks, coupled with the notion of designed inefficiency (and its voluntary acceptance) draws attention to the ways in which many real-world systems that contribute to climate change are (in direct contrast) touted as inevitable and natural because they are simply the most effective or efficient: the idea of the market in capitalist economics, for example. However, as anthropologist David Graeber argues, many aspects of capitalist economics are manifestly inefficient, although pointing this out often meets with denial (2019, 15–16). Graeber's suggestion that thinking outside the current political and economic system is notoriously difficult to the point of disavowal is echoed in Mark Fisher's notion of capitalist realism which conditions "not only the production of culture but also the regulation of work and education, and act[s] as a kind of invisible barrier constraining thought and action" (Fisher 2009, 16). Of course, games and play are themselves implicated in capitalist realism, and in its economic systems that contribute to climate change. As Glas et al. recognize, there is a question as to the extent to which play has empowered citizens and "where the limits of our participatory powers lie" (Glas et al. 2019, 17; see also Fortunati 2015). Other assessments of gameplay concur that play itself might not induce the critical, disruptive, nor transformative engagements more utopian assessments suggest. Braxton Soderman (2021), for example, argues that "flow," the dominant way of conceiving of the psychological state induced by playing games, suggests the very opposite, that play might be, in fact, a very passive activity, one that is implicated in the inefficient yet dominant systems that contribute to climate change.

Understood as a mental state in which the player is fully immersed and involved in the game, a state of complete absorption during which one might not even note the passing of time (Csíkszentmihályi 1975), the flow state is at odds with the kinds of critical positioning that might inform transformative civic action. Indeed, as Soderman suggests, flow

> privileges individualism over social collectives, growth and accumulation over equilibrium and sustainability, self-determination over the idea that external forces shape human consciousness, and action over

> critical examination.... Flowing subjects are not simply game players experiencing the psychological state of flow; they are being positioned as media consumers in a way that promotes flow's ideologies. (2021, 5–6)

In other words, if games as consumable products evoke flow, they run the risk of promoting passivity and capitulation to the status quo. In the context of climate change, the way in which flow promotes individualistic play is disadvantageous, since system change requires collective and collaborative efforts, and not individual action. In response to these challenges to the disruptive potential of games—but not entirely abandoning the optimistic sense of the playful, which Miguel Sicart describes as an *attitude* in contradistinction to the *activity* of play (2014, 22)—we propose hacking rather than playing games as a means for disrupting the logic of consumption and conformity that characterize games as a media that serve hegemonic power structures and the vested interests of capital that drive climate change. We suggest that hacking games is a much-needed disruption of such passivity, and a way of engaging with games that shifts agency from the dominant system that the game models or promotes, returning players to the point at which the rules and system of the game might be (re)opened to negotiation.

When we talk about hacking, we do so with a positive understanding of the term as a means for rethinking and (re)creating the parameters of production and play. Hacking also draws out a fundamental affordance of games versus other forms of media. Games are not simply consumable products even though they are often presented in this way. As Anna Anthropy argues, in their exhortation for players to disrupt the consumer logic of the games industry, "the rules themselves aren't the game, the interaction is" (2012, 44). Understood as props that both facilitate and participate in individual game performances, games hold the promise of anarchic forms of play that question the relation between games (as product) and players (as consumers). We contend that hacking games, and not playing them according to the rules, is key to the kinds of radical, critical, and socially transformative engagement imagined by play scholars. As McKenzie Wark puts it in *A Hacker Manifesto*, "whatever code we hack, be it programming language, poetic language, math or music, curves, or colorings, we are the abstracters of new worlds" (2004, 2).

However, as we develop our concept of hacking, we introduce a note of caution into this idea of making something new from the old. The promotion of modding, jamming, and making in the indie game scene, for example, is just as apt to feed back into capitalist modes of innovation and consumption as disrupt them (see Soderman 2021, 176–181). While the creation of new

game "products" through cocreative practices remains one potentially viable outcome of the cocreative processes we propose, our notion of hacking also toys with putatively less positive ideas of mangling and mutilation to disrupt the ways in which dominant systems tend to channel protest and dissonance back into the mainstream. Hacking might, then, mangle and mutilate games in several ways allowing for the exploration of dark and disruptive affects in play and, as an iterative process, need not result in new game products, but in outcomes more ambiguous and unsettling. We see value in the sometimes crass and crude nature of hacking, and in the awkwardness of the unfinished and unplayable. Again, in our refusal to make new game products for use in environmental education, we link hacking to challenges mounted elsewhere in popular culture to dominant modes of environmentalism, which expose the ways in which moralistic and didactic approaches have not been effective in bringing about system change (Seymour 2018).

As Seymour suggests, mainstream environmentalism and corporate greenwashing alike make affective appeals to "healthy" citizenship in sanctimonious and didactic ways and are divorced from the issues that directly impact communities (2018, 15, 17). She also advocates environmental texts that present problems and make things messy, rather than those that aim at "neatly resolving problems" (2018, 28). There are no simple answers to the climate crisis, of course, and fantasies of technological solutions touted by those with an interest in maintaining the economic status quo, for example, or moralistic messages that focus on individual action, distract from collective efforts to bring about social and political change. Following Seymour's call to pay attention to cultural products that explore irony, irreverence, and other bad emotions related to climate change, and to texts that refuse neat solutions, we suggest that hacking might even be perverse as well as playful, closer to what some scholars have identified as "dark play," a mode of play that exploits tension between order and chaos, evokes subversive or otherwise deviant themes, and deceives players such that the boundary between play and not play becomes porous (Schechner 2002; Sicart 2014, 19; Linderoth and Mortensen 2015, 5; Germaine 2020, 363). Dark play complements Seymour's project to promote and understand bad environmentalist texts, which often also rely on evoking uncertainty, hesitation, and awkwardness. Hacking as dark play might thus puncture both the flow of play and the dominant affective dimensions of environmentalist rhetoric. Linderoth and Mortensen suggest that dark play recasts playfulness as a state of mind filled with tension, a claim that might set it against a flow state, stating "the player is suspended between forces rather

than in a protected space, pulled in different directions rather than resting in a bubble" (2015, 5–6). Conceived in terms of dark play, hacking aims at the mangling of rules, systems, and mechanics, as well as disrupting the aesthetic and psychological dimension of games and, as such, resists being co-opted back into the normative, capitalist modes of play, production, and consumption. Such dark play in the face of climate change complements what Timothy Morton (2016, 142) calls "dark ecology," the urgent need to cultivate modes of ecological awareness that makes strange and uncanny human relationships with the environment and reveals the melancholic wounds that mark human coexistence with more-than-human beings.

How to hack games for system change

A practical methodology

In order to draw out the dark, disruptive, and estranging possibilities of "wrongly playing" games, alongside the critical inquiry, the reading and speaking back to the world that is enabled by YPAR, we suggest a process of hacking that has four stages: 1) Identifying games, 2) playing without and by the rules, 3) hacking (playing with the rules), and 4) reading the rules.

1) Identifying games
In our project's first phase, following the recruitment, we will support participants in selecting a range of games through a combination of online research (consulting, for example, the website BoardGameGeek.com and Tabletop Simulator) and through an in-person visits to a game store. This stage of the process is intended to bring participants' attention to games with clear connections to environmental concerns (games that might be seen as trading to an extent on the climate-crisis industry) and those that, on the surface at least, are not ostensibly "about" the environment. While there are an increasing number of games with explicit environmental themes, we recognize that games are as apt as any other cultural product or media to be shaped by what Patricia Yaeger identifies as the "energy unconscious" (2011, 306) and this awareness (or lack of awareness) makes games which may not explicitly address the climate crisis or representations of nature equally important. Examples of the former type include popular games such as Hjalmar Hach's *Photosynthesis* (Hjalmar Hach 2017), in which players take on the role of trees and Elizabeth Hargrave's *Wingspan* (Elizabeth Hargrave 2019), in which players compete to attract birds to their

wildlife preserves, along with explicitly educational games such as *Tipping Point* (Ryan Smith 2021) and *Carbon City Zero* (Sam Illingworth and Paul Wake 2020), which engage players with thinking about sustainability and responsibility for the accumulation of emissions at the scale of the city community. Examples of the latter include the popular property-trading game *Monopoly* (Charles Darrow and Elizabeth J. Magie 1935) and *Tokyo Highway* (Naotaka Shimamoto and Yoshiaki Tomioka 2016), in which the consumption of energy is implicit in the expanding of built infrastructure that shape the games' lusory goals while being absent from the constitutive and operational rules. The inclusion of this second class of game, in which the environment remains outside the scope of gameplay, is as important as the inclusion of those that take environmental concerns as their theme.

2) *Playing without and by the rules*
The second stage of the project first invites participants to *play with* the game (rather than play the game). In the first instance, games will be played without reference to the rules, an act intended to foster an understanding of the different affordances of the game's component parts: its boards, tokens, cards, images. What, we invite participants to ask, kinds of play do they suggest? In our experience players are remarkably adept at intuiting gameplay from well-designed components, but also equally adept at creating remarkably divergent games from those imagined by game designers and publishers. Following this first encounter with the game, the rules will be introduced, and the game played "properly."

3) *Hacking* (*playing with the rules*)
In the third stage of the project, participants will hack their chosen games, making something new out of the materials presented. As game designer and educator Matteo Menapace put it in an early workshop on which we collaborated, "There is no wrong way to hack a game," and we have no clear expectation of what might emerge from this phase. Hackers might add or remove elements, rename elements, alter the player count, change the rules, change the game's goals, or replace standard (card, wood, and plastic) components with the bodies of the players themselves, turning to touch, sound, and smell.

4) *Reading the rules*
In this final stage of the process, we anticipate that reflection on the rules of the specific game, and on rules more generally, will emerge. Reflecting on the process of hacking, on the design notes, photographs, sketches,

abandoned designs, and rejected or remodeled components is the point at which we anticipate that both specific readings of individual games and for a methodology with wider application will emerge. As might be expected, there are already several potential frameworks for the assessing of games and the stories and logics that they encode (see, for example, Hunicke, LeBlanc, and Zubek 2004; Sicart 2008; Mert and Van der Hel 2016; Backe 2017; Ryan, Dixon, and MacCallum-Stewart 2020; Germaine 2022), but we decline to apply these in our hacking sessions. Our aim is that frameworks will emerge from our participants' interests and ideas, and that we will join our participants in thinking through these ideas, combining the insights from the groups with which we work.

Hacking at the orchard

To conclude this section, we offer an example of the final two phases of the process ("Hacking" and "Reading the rules"), taking the popular children's game *Orchard* (Anneliese Farkaschovsky 1986) as our text. The work that follows is necessarily speculative and we fully expect to be surprised by the directions in which our participants (better seen as coresearchers) travel.

Orchard is a collaborative game aimed at players aged between three and six. As its name suggests, it is a game about fruit picking: "The four fruit-trees are full of fruit. The apples, pears, cherries and plums are ripe and have to be picked quickly, because the crafty raven is eager to pinch some tidbits" (*Orchard* 1986, 2). In keeping with the target audience, gameplay is straightforward. Each turn players roll a six-sided die on which there are four colored circles (each of which corresponds to one of the four fruits on the board), a raven, and a basket. If players roll a circle, they take a fruit of the same color from the board and place it into their baskets. The basket allows for players to select two fruits of any color. Should players roll the raven, they place one of nine raven tiles on the board and should all nine be placed, completing the picture of the raven, the game ends and the players lose.[1] In what follows we present our own hacked version of *Orchard*: "Dead Ravens" and "Pollinators."

Hack#1: "Dead Ravens"
A near instant hack. *Change sides.* The players take the side of the raven, which must feed itself before all the fruit is gone, otherwise it starves to

1 While requiring little strategic thinking, *Orchard* provides young children with an opportunity to learn turn-taking, counting, and color recognition in order to develop their fine motor skills and to practice, in a noncompetitive space, winning and losing.

Figure 23.1: "Dead Ravens" by Johan Nohr.

death and the players lose. The only rule change necessary is to shift the win condition which becomes: *If the raven jigsaw is complete before all of the fruit has been picked, the players win*. All that is required to achieve this hack is a change of perspective. To this end, we commissioned Johan Nohr, whose work was known to us from the ennie-winning apocalyptic fantasy role-playing game *Mörk Borg* (Pelle Nilson 2020), to create new artwork, replacing the colorful raven on the game board with an altogether darker image (see Figure 23.1). The choice of artist was deliberate, allowing us to draw on the aesthetics of a game that describes itself as "a doom metal album of a game. A spiked flail to the face" (2020, back cover). Players now, faced with an image of death and decay must work to resurrect the raven, placing Walter Matheis' colorful tiles over Nohr's graphic image and restoring the gentle pastoral space of the original game.

This hack suggests dark play, transforming a sweet children's game, characterized by pastoral images and cartoonish depictions of nature, into

something that prompts ambiguity and awkwardness. In this, the "Dead Ravens" hack recalls Seymour's "bad environmentalism," an affective modality which seeks to give voice to unclear and unexpected difficult feelings prompted by climate change, eschewing the "dominant preference for environmentalism to be straight, white, clean and neat," and questioning a foundational assumption than "aesthetically pleasing" aspects of nonhuman animals are the strongest basis for apportioning value (2018, 72, 38, 35). In so doing, Nohr's "Dead Ravens" also evokes the aesthetics and epistemological provocations of "dark ecology," which, as Morton argues urges humans to "think the truth of death" (2016, 201–202) and confront our relationships with more-than-human beings, and to take responsibility for them.

Hack#2: "Pollinators"

Our second hack of *Orchard* sets out to remove the conflict between the human harvester and nonhuman raven, instead emphasizing the fruit grower's reliance on the nonhuman (specifically pollinators) and the threat to that relationship through other human action (such as the destruction of the pollinators' habitats).

This hack is achieved by replacing the nine raven tiles with new two-sided tiles with images of key pollinators and beneficial predators on one side and an image of a house on the other (see Figure 23.2). The image of the raven on the die is replaced with an image of a house. The process of setting

Figure 23.2: Replacement *Orchard* tiles, front and back. Images © Anthony Pickering 2022.

up the game remains the same with the exception that the jigsaw is now placed on the table, pollinator side up. Gameplay is largely unchanged, but in this version, instead of revealing a raven, players turn over pollinators, revealing the image of a house whenever they roll the house icon. The game ends when players collect all the fruit (they win) or when all the pollinators have been replaced with houses (they lose). This hack is a 'reskinning' of the game, replacing visual and narrative elements while leaving the underlying game system intact. While the game system changes little, the story told has shifted quite dramatically.

Reading Orchard

Through these hacks we have 'rewritten' *Orchard.* During the project's fourth stage we reflect on the process of hacking and rewriting, returning to materials collated during the time we worked with the game, considering the new narrative and systemic possibilities that have emerged.

As we developed this methodology, the process of hacking *Orchard* resulted in a design diary of a sort, a collection of ephemera written, sketched, doodled, photographed, WhatsApped and tweeted during and after multiple play sessions, in academic presentations, in playful PhD supervisions, in applications to funders, and in commission documents and emails to artists. Discussing this collection of materials, the methods underpinning our hacking process begin to emerge.

Unsurprisingly, as academics trained in literary analysis, our approach was to ask, "What kind of story is the game telling?" Drawing on this we focus on plot (What happens? and How is it organized?), character (Who are the protagonists and antagonists—or, more properly, who are the agents in the world and what form does agency take?), and the story world (What does the presentation of the game tell us?). As game scholars, we focus on the interplay of these stories, which we find in the form of both embedded and emergent narratives, with the game's rules (How do you win?) and its aesthetics, and we worry about terms such as ludonarrative dissonance (Does the story align with the gameplay?) and wonder, briefly, if such a term implies ludonarrative consonance (What kind of system has been modeled?). Both hacks begin with a concern with the game's protagonists. One group of protagonists comprise the humans collecting fruit, since the baskets suggest a human form while the absence of in-game avatars (for example, meeples or pawns) proffers a connection of the player's body with that of the in-game harvesters. The key antagonist is the "crafty" raven, Theo. These characters are set against a backdrop formed by the trees in the orchard, and their flat representation contrasts sharply with

the game's 3D fruit and baskets, suggesting that they do not exert agency in the game world.

Our "Dead Ravens" hack, in which players swap sides, emerges from a concern with the underlying desires, or needs, of the two sides. The harvesters must collect *all* of the fruit to win, while the raven must eat *some* of the fruit. There is, then, a direct conflict between the desire of the harvesters (collect all fruit) and the raven (have some fruit). Sharing is not an option for the human players: it is all or nothing. As this hack makes clear, *Orchard* is a zero-sum game, and our assumption, cutting against the child-friendly pastoral aesthetic, is that victory for the human player entails the raven's demise.

Our "Pollinators" hack is also a zero-sum game, and one that retains the human/nonhuman conflict of the original. Here, though, the hack adds detail to the simulation, recognizing (albeit to a limited extent) the role played by the nonhuman in fruit production. Here, the development of human habitation replaces the raven as a threat to the life of the orchard. This second hack, then, draws attention to the ways in which the game functions as a simulation. As a simulation, the game models the notion that the longer fruit is left on trees the more likely it is to be eaten by birds: harvesting is a race against time. No attention is given to the specific ecologies of orchards. For example, the likelihood of four different species of tree all bearing fruit simultaneously is not part of the game, nor is there any reference to threats to orchards, nor the importance of suitable cultivars to ensure pollination. The human society that is modeled is one of cooperation and shared labor. Significantly, the system embedded in the game's rules models a conflict between humans (who seek to maximize their harvest) and the nonhuman world which threatens this aim. This threat to fruit production (or to human desire) is figured as a carrion bird (one associated with death and destruction) and the victory of the nonhuman over the human is tied to chance. This hack's simulation, albeit more detailed than the original, remains simplistic and here the blunt nature of the hack provides a source of further insight and future work in thinking through the shift of emphasis and the many details that have been set aside in the name of playability.

Conclusion: The hack is done—Or is it?

Though these simple hacks of *Orchard* are perhaps described as reskins as opposed to a thorough system change, we introduced new agents into the

field of action and, in so doing, asked questions about human interactions in woodland ecosystems. A more anarchic system hack might produce different kinds of interactions and collaborations between the different actors in the game and, so, tell a different story while also imagining different systems that might govern human–nature interactions.

The first thing to recognize about hacking a game is that whatever emerges will also tell stories and reflect particular ideas. The process should not be seen as one of correcting incorrect narratives (though it might do that) as much as it is about recognizing the ways in which narratives work, critiquing the basis of the simulations we live with and play with, and in recognizing the potential to change narratives into new directions and, so, to disrupt systems. The stories encoded in the new game invite critique and revision and with this, perhaps in the form of playtesting, the hacking cycle begins afresh.

Accordingly, the "Dead Ravens" hack, which might be seen as the most straightforward of the two presented here, sees players take the side of nature, prompting reflection on the notion of sides, winners, and competition. Simple though it may be, the merging of a game for three to six year olds with a game that declares itself "really not suitable for those under sixteen years of age" (Pelle Nilson 2020, back cover) raises important questions about appropriateness in the communication of possible climate futures. Given the high levels of climate anxiety experienced by young people (Hickman et al. 2021), what is the role of shock and deliberately dark play in climate action? Such disruptive, dark play as our "Dead Ravens" hack promotes an uneasy kind of ecological awareness, one that seeks to confront the shock and trauma of climate change and mass extinction, challenging the self-imposed severing of humans from nonhumans, opening up the "uncanny discovery" (Morton 2018, 26) of our ecological embeddedness.

The second hack—"Pollinators"—in which the encroachment of the built environment into territory previously occupied by pollinators (and the implied displacement of these "indigenous" pollinators) considers ecological embeddedness, but via more normative environmental aesthetics. Nonetheless, even this hack sets the human against nonhuman in competition for resources and habitat. Here though, in place of the stark image of a dead raven, the artwork—for which the commission required attractive semi-rural dwellings—gestures towards another potential narrative in which the taking of sides (human/nonhuman) is perhaps less clear. How might the notion of sides be removed? How might the severing of the human from the nonhuman be undone? Already the thinking behind a third hack, more radical than the first two, is underway.

The aim of hacking is not to make a new game that is more effective at communicating facts about climate change, or human–nature relationships, then, nor one that might better prompt individual players to reassess their attitude or behavior in relation to climate change, since this affords games a didactic and moralistic role in relation to a perceived passive player. Rather, the aim of hacking is, as is the case with a YPAR methodology more broadly, to promote continued critical enquiry and an ongoing, uneasy disruption of dominant ideas of gameplay that cannot be co-opted back into the logic of production and consumption that governs the systems responsible for the climate crisis. In their making evident of game mechanics and the (often inefficient) systems such mechanics simplify and represent, in their openness to player tinkering and transformation, and in the collaborative and social nature of gameplay, board games are particularly generative for hacking in the context of tackling climate change. Moreover, the critical inquiry enabled by hacking seeks to disrupt play as a passive and individualistic activity, and invites the disruption of dark play, its attendant tensions, and the ways in which it makes play uncomfortable, messy, and ambiguous.

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24. Reframing the Backlog: Radical Slowness and Patient Gaming

Rainforest Scully-Blaker

Abstract
This chapter presents the findings of an investigation into /r/patientgamers, a forum for those who play video games well after their initial release. In theory, the community's protracted approach to media consumption seems to resist the neoliberal, late capitalist instrumentalization of leisure time. However, upon closer inspection, I found that many patientgamers experience stresses caused by a framing of play as transactional. Users' nostalgia for their childhoods and the exhaustion caused by their gaming backlogs are shown to be emblematic of how play is ensnared by capitalist logics. However, the patientgamer philosophy still suggests that play may radically slow present modes of media consumption with a view to imagining and even enacting more socially and ecologically sustainable futures.

Keywords: slow gaming, exhaustion, labor, leisure, community, critical theory

On November 11, 2011, Bethesda Game Studios released a long-anticipated installment in their high-fantasy RPG series, *The Elder Scrolls V: Skyrim* (Bethesda Game Studios 2011). It had been four years since the last *Elder Scrolls* game and this, coupled with promotional trailers that teased sprawling landscapes and epic duels with dragons atop frigid peaks, meant that it was easily one of the most anticipated games of the year. The choice to release the game on the almost prophetic 11/11/11 was the proverbial cherry on top and a stroke of marketing brilliance. However, for my purposes, the release of *Skyrim* is only the second-most important thing to happen on this day, although it did act as a catalyst for what tops the list.

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Figure 24.1: A meme from the /r/patientgamers subreddit.

For many, this was a day to retreat from daily responsibilities and embark on what was sure to be one of the most comprehensive virtual adventures ever made. For others, however, such was not the case. On the same day as *Skyrim*'s release, one *Reddit* user made a post to the website's gaming subreddit entitled "Being Poor Sucks." The post consisted of a meme in the "advice animals" style that featured an image of the Pokémon Slowpoke accompanied by the text "I JUST BOUGHT FALLOUT NEW VEGAS. ANYBODY WANT TO TALK ABOUT THAT?" (see Figure 24.1).

Advice animal memes typically feature an image of something accompanied by a line of text that is implied to be spoken or at least emblematized by the thing in question. Here, Slowpoke, a notoriously sluggish Pokémon with a permanently blank look on its face, is used to connote being behind with the times to humorous effect. Of course, just like being on the so-called cutting edge, there is a proper timing to the Slowpoke meme. In the case of this user's post, the joke is that on 11/11/11, this day of days when everyone is

shirking their usual routines to play this shiny new game, this user cannot afford a copy of *Skyrim* and/or the hardware necessary to play it. Instead, they are happily (and sheepishly) occupying themselves with a slightly older Bethesda game.

Perhaps due to the aforementioned hype around *Skyrim*, the post received a notable amount of attention by *Reddit* standards at the time. Engagement with the post ranged from users praising the poster for their choice of game, to commiserating about consuming video games long after their release. The most upvoted comment in the thread, however, came from someone who wrote, "How about a reddit for people who wait 6–18 months to buy a game because they won't\can't pay full price or have an older machine. r/patientgamers or something?" This comment spawned a chain of others that supported the idea and within thirty minutes, the subreddit r/patientgamers was created. At the time of writing, the community has over 487,000 subscribers and is self-described as:

> A gaming sub free from the hype and oversaturation of current releases, catering to gamers who wait at least six months after release to play a game. Whether it's price, waiting for bugs/issues to be patched, DLC to be released, don't meet the system requirements, or just haven't had the time to keep up with the latest releases.

It seems that while patience can be a virtue, it can also be a necessity.

This chapter shares the results of my investigation into the subreddit /r/patientgamers. It is interested in the ways that this community frames slowness and play and uses this "patientgamer discourse" as a means of making wider claims about the nature of play and its contemporary socioeconomic context. After situating this investigation in the wider context of my research on radical slowness and exhaustion in game culture, I identify the fruits of my analysis—what I refer to as a "cycle" of player consumption. This cycle is made up of three distinct parts: comfort, nostalgia, and the gaming backlog, each of which are discussed in turn. I call it a cycle of consumption, but it is equally one of play and one of dissatisfaction. While I initially looked to r/patientgamers as a potential site of players resisting neoliberal, capitalist trappings of impulse purchases and #self-care, what I found instead was a reification of these values.

However, to dismiss the patientgamer philosophy outright would be short-sighted. I conclude by arguing that the philosophy of the patientgamer is one that has merit for reevaluating our relation to video game play, but not if we limit ourselves to an understanding of play as a transaction of money

and time. Instead, through a praxis I call "radical slowness," this chapter concludes by arguing that a deliberate slowing of our relation to play can be put to work in ways that threaten the status quo instead of reifying it, and in a manner that interrogates not only video game machines, but the larger machines of ideology that drive them.

Literatures of slow life and slow death

My interest in patientgaming emerged out of a larger project of mine that orbits a concept I call "radical slowness." This term draws on the work of queer poet and artist Lora Mathis, who coined the term "radical softness" to refer to the deliberate failure to conceal one's emotions in neoliberal, individualistic society, instead "recognizing the power in vulnerability and repainting the image of strength" through the solidarity of shared experiences (Mathis 2016). While radical slowness is similarly concerned with solidarity and community, my site of deliberate failure is that of speed, labor, and productivity. I define radical slowness as *a deliberate failure to "keep up" with the ever-accelerating rhythm of capitalist society as a political act*. To me, refusals such as these are vitally important praxis for navigating the contemporary moment.

The neoliberal, capitalist logics that underpin our globalized world are failing. In North America, tensions are mounting between a so-called labor shortage and the demand for a living wage (Buffam 2021). Down the road from where I work in Irvine, California, the state government litigates the game studio Activision-Blizzard for its deplorable labor conditions and a corporate culture rife with discrimination and sexual harassment (Fenlon 2021), while local rideshare workers continue to struggle for rights (Eidelson 2021). Their CEO stands to receive $400 million from a Microsoft buyout, the biggest deal in industry history (Tan 2022). Our problems are not limited to social and economic disparities, however.

As Alenda Chang reminds us, "economic and environmental concerns are always intertwined" (2019, 147). The rise of carbon emissions can be traced, in part, to the sheer volume of hours we spend at work (Taylor 2019). If our day jobs are not enough to exhaust us, then climate anxiety certainly will as more and more people become preoccupied by impending ecological collapse (McKeever 2021). It is difficult to be surprised by headlines like "56 Percent of Young People Think Humanity Is Doomed" (Galer 2021). Recently, these concerns found perfect synthesis when a GrubHub employee made headlines after being filmed working during

Figure 24.2: Precarious workers in a flooded street.

a massive flood in New York City (O'Neill 2021; see Figure 24.2), signaling a troubling normalization of weather disasters and their impact on the labor conditions of precarious workforces (Kaplan and Tran 2021). Disparate though these events may seem, they are all symptoms of the same socioeconomic trends, clear indicators of which forms of labor are devalued or obscured and the lengths to which many in a profit-driven market will go to adapt to the threat of ecological extinction rather than combating it.

Challenging though this period of history may seem, there are spaces one might find hope. Scholars of hegemony have argued that it is when a population is most under strain that the greatest potential for change emerges (Deleuze and Guattari 1980; Hardt and Negri 2000). But when a significant portion of the population thinks humanity is doomed and those with the resources to address our societal woes are instead seeking an early exit to the cosmos (Jackson 2021), I find such predictions wanting. Those who stand to benefit the most from systemic change are the least capable of calling that change forth. Many people scarcely have enough energy to earn a living and maintain their health, let alone to take stock of the ways that the promises of society are falling short, let alone to "do something" about it. Apt here is Chang's "disquieting sense that the problem is beyond measurement and therefore redress" (2019, 150). We want change, but we're tired.

I am reminded here of Lauren Berlant on "slow death"—"the physical wearing out of a population in a way that points to its deterioration as a defining condition of its experience and historical existence" (2011, 95). It is this problem of energy and, above all, *exhaustion*[1] which led me to the concept of radical slowness. While critical theory is not inherently up to the task of dismantling hegemony, I am both unwilling and unable to dispense with the possibility that a better world is possible. Here I look to Kara Keeling's critical and temporal occupation of "'as if'" (2019, 14). To act "as if" meaningful change can be attained is to "[hold] in reserve a radical imagination that approaches the limits of knowledge, not as a problem to be overcome, but as the condition of possibility" (14). Radical slowness is an exercise in what Jenny Odell calls manifest dismantling, "a form of purposiveness bound up with remediation" (2019, 192). Like radical softness before it, radical slowness is a *reclamation*, here of when and why we are at rest, and a *deconstruction* of the classed division between taking one's time and having one's time taken.

From an ecocritical perspective, slowness has been framed as an effective countermeasure to the depletion of resources so characteristic of neoliberal capitalism. This is perhaps most evident in the popular Slow Food movement, for whom "eating well can, and should, go hand in hand with protecting the environment" (Honoré 2005, 59), but it is also reflected by literature concerning the Anthropocene, "a new geological age … in which human impact itself has become the dominant shaping force on the planet" (Heise 2016, 253). Given our species' neglect of this responsibility, contemporary advocates of slowness view it as a "willing readjustment of the body" that pursues a "healing of the self and of the environment" through care and contemplation (Choi 2021, 9). Indeed, this relation between rest and reflection informs my own work on radical slowness and the critical potential of play as a force for challenging a game's logics from within (Scully-Blaker 2019).

This is not to say that slowness is inherently emancipatory. Sarah Sharma traces "the multiple temporalities that underlie the social fabric" to argue that "experiences of time are not just the outcome of individual choices," but in fact a privilege of class (2014, 110). She contrasts figures like the "frequent business traveler" whose time is so valued that it "reorganizes the time of others" to those like the doubly "flexible" yoga instructors who "cobble together several jobs" to earn a living (51). Rob Nixon's account of the incremental, "attritional violence" imposed on the global poor by unhindered

1 In my wider project I associate this exhaustion with the term "zugzwang," originally a chess concept which refers to a board state in which any move will put a player at a disadvantage.

environmental collapse suggests the privilege and naïveté of Slow Food (2011, 2). In a games context, we might distinguish between slow gaming as a twee aesthetic of game design and slow gaming caused by outmoded hardware. Returning to the example of the creation of r/patientgamers, then, it is supremely important that this community emerged out of the lived reality that video games are objects of leisure that not everybody can access. Although not every person who posts to r/patientgamers may know this origin story, it is the root of the discourse that circulates within every post.

To best understand the ways that radical slowness might relate to patientgamer discourse, I employed Foucauldian discourse analysis to "study forms of interaction, meaning making, and cultural production" on the subreddit (Boellstorff et al. 2012, 119). I began by surveying the most popular posts, then sought out threads that used specific terms like "slowness" or "slow play" with a view to approximating a "patientgaming philosophy." Soon, though, an unexpected pattern began to emerge: while many posts discussed individual games that had been released in previous years, others detailed how many players tried, and often failed, to slow down their lives in restful ways through play. Consequently, I looked more closely at these players' apparent impulse to treat their leisure time as work, as well as a relationship between what I call *comfort, nostalgia, and the backlog*.[2] It is through these concepts that I trace the transactional nature of play and the ecocritical potential of radically slowing our relationship to leisure time. Here is what I found.

The escape (and conservatism) of comfort

One common type of post on r/patientgamers is the discussion of *cozy games*. One user described the concept as "those games where, whenever you fire them up and begin a new adventure, there's that warm, embracing feeling that says, 'Welcome Home.' … the 'comfort foods' of gaming." And while "comfort" and "coziness" may not be entirely synonymous with slowness, I quickly found that both words here suggest a stepping out of one temporal affect (constant movement and productivity) and into another (consensual stasis and restoration).

My encounters with posts of this sort immediately call to mind the growing popularity of so-called *wholesome games*, titles such as those Brie Code calls "tend-and-befriend" games, which substitute fight-or-flight

2 I estimate that I read through fifty to sixty threads throughout this process.

Figures 24.3 and 24.4: Screenshots from *Dark Souls* (top) and *Animal Crossing: New Horizons* (bottom). Despite starkly contrasting mechanics and aesthetics, these are both referred to as "cozy games."

logics for ones that drive you to "protect your loved ones, to seek out your allies, and to form new alliances" (Code 2017). This initial association proved misleading, because while some expected titles did make appearances, I was surprised to find that users highlighted many other games that one would be hard-pressed to call cozy at first glance.

Alongside predictable titles like the farming/life simulator, *Stardew Valley* (ConcernedApe 2016) (one patientgamer wrote, "you're not in competition with anyone, and for me, it scratches my gardening itch when it's winter and can't be in my actual garden") to Nintendo's *Animal Crossing* game series

(another, "I have great memories of playing it back in 2001. I was fresh out of high school and didn't have many responsibilities"), users listed games like *Dark Souls* (FromSoftware 2011), *Diablo* (Blizzard North 1997), *Goldeneye: 007* (Rare 1997), or even *The Elder Scrolls III: Morrowind* (Bethesda Game Studios 2002) as cozy games. Given that these titles involve nontrivial amounts of demons, monsters, and killing, I wondered at their being designated "cozy," and at my own mixed feelings around this framing of comfort (see Figures 24.3 and 24.4).

While the state of the world doubtless makes most of us yearn for some sort of reprieve, many writers and designers have pointed out the trouble with monikers like *wholesome gaming* (Renadette 2021). While criticisms vary, one central point is that by labeling a new genre of game and creating a set of formal characteristics for what defines that genre, tastemakers in the wholesome gaming community, particularly the @_wholesomegames Twitter account, belie the fact that *wholesomeness* is not only an aesthetic, but a politic. While designers can of course work to tune wholesomeness to the cause of, say, radical softness, the term "wholesome" has troublingly conservative leanings if one reflects on its trappings in discourses of purity or the traditions of the American heartland whose roots lie in White supremacy (Pennacchia 2017). Even comfort itself connotes stasis—why would someone who is *comfortable* seek change? As I began to read more of the discussion, however, it became clear that comfort was more often a desire than a state of being for patientgamers.

Nostalgia for days (and play) gone by

In speaking of coziness, the lack of competition in *Stardew Valley* seems an intuitive enough reason to feel at ease in that game world, but what about a first-person shooter like *Goldeneye*? To whom does one tend and befriend in a game where most character interaction is mediated by guns and explosives? It was in comments like that of the aforementioned *Animal Crossing* player, for whom the cozy feelings stem from a fondness for simpler days when they were younger and had fewer obligations, that something began to click. There, and even for the *Stardew Valley* player who mentions gardening, play serves as a substitute for an experience they cannot readily return to. Both players find themselves longing for the comfort of a feeling or an activity that they enjoyed in the past.

A similar pattern emerges across discussions of nonintuitive cozy games. In discussing *Contra* (Konami 1987), a side-scrolling shooter game, one user

describes "knowing where every enemy is [and] flowing through it on pure instinct and muscle memory." Another writes that *The Legend of Zelda: Ocarina of Time* (Nintendo 1998) "feels like a second home" to them. The ability to find a game comfortably restful, here, stems from encountering only what one has encountered before, and the feelings of security and mastery contained therein. Faced with life's uncertainties, players here find comfort in turning away.

I came to frame these discussions and replayings of cozy games as exercises in *nostalgia*—that desire which seeks "the repetition of the unrepeatable" (Boym 2001, xvii). While the reveries of patientgamers may be relatively benign, they, like all nostalgic thoughts, are "fantasies of the past determined by the needs of the present," which "have a direct impact on the future" (xvi). In the context of my concern with energy and exhaustion as an obstacle to revolution, I view nostalgia as a site of expenditure that binds us to an idealized version of the past that then poisons our present and often gets carried into the future. We might say that nostalgia engenders celebration of one aspect of something without reflection on the whole. Consider, for example, Carly Kocurek's (2015) work on gamer nostalgia as a reification of hegemonic masculinity, or Annie Kelly's (2017) suggestion that the alt-right owes much of its growth to the idealization of a time that never existed, or indeed recall the ties between wholesomeness and White supremacy noted above. For whom were the "good ol' days" actually good?

Perhaps this is part of what Sharma meant when she wrote that "slowness is suspect" (2014, 111). By shifting their attention from a troubled present to an idealized past, patientgamers, whether intentionally or not, turn away from the possibility of a better future. Following Berlant, the seeking of comfort in nostalgic games is a cruel optimism—"the object that draws [the patientgamer's] attachment actively impedes the aim that brought [them] to it initially" (2011, 1). While the patientgamer's resistance to marketing hype and their intrinsic critique of the ever-accelerating cycles of media consumption both have the potential to be read as ecocritical, anticapitalist actions, this was clearly not a thriving part of the discourse.

Reading on, I began to recognize that many of the conversations between users were still grounded in a transactional framework—beyond lack of money or time, many cited rushed development cycles and unpolished releases to justify waiting for a game to "get good" before ultimately purchasing it. Nowhere was this clearer than in threads discussing the gaming backlog.

The backlog and the transactional nature of play

Video games and indeed all leisure activities are a privilege to which we all have varying levels of access. And while money is certainly one of the most important barriers to entry (consider our proto-patientgamer and *Skyrim*), patientgamers who cannot afford to purchase a brand-new game can still generally afford something else; consider our proto-patientgamer and *Fallout: New Vegas* (Obsidian Entertainment 2010). In the early stages of my research into the subreddit, I was surprised to learn that it emerged out of a player's limited finances since many of the threads that I had found were about a lack of an entirely different sort—time.

In one thread titled "Gamers above 30: Do you find your ability to game for longer periods of time has lessened as you've aged?" the poster writes that their "ability to play for many hours just isn't there anymore." Elsewhere, another patientgamer writes that they are "becoming an impatient gamer" and "miss having the drive and excitement to play a game for hours on end, forgetting about the world!" These and many other users share an anxiety around the relation between video game play and time, whether feeling that they do not have enough time to play or whether they are no longer able to play as much as they used to. There is definitely nostalgia at work here, but I do not believe that this fully captures why some players feel so discouraged by this apparent shift in their relation to play.

To begin unpacking this, I do not think it controversial to say that video game play is often framed as a transaction. One need only look to the primordial gaming "wisdom" that draws a direct line between the price of a game and its playtime to understand what I mean. While multiple models of game consumption exist, in general a player spends money with the understanding that they will also spend leisure time later and in return the video game confers something in kind. The expected return on investment here is necessarily subjective—"fun," "entertainment," or even something like "gaming capital" all mean different things to different people (Consalvo 2007, 4). Video game play is therefore an investment of both one's money and one's time. But what does it mean to be *invested* in what many consider to be a voluntary leisure activity?

Part of what interests me here is the value players place in *having played a game*, or rather, how players discuss their *not-playing*, specifically the anxieties and the exhaustion that emerge from this on r/patientgamers. To me, accounts from users who describe "playing three games at once in order to finish all of them more quickly" so that they can move on to other titles recall Georgio Agamben's claim that all human activity in the contemporary

moment, even rest and leisure (he uses the term "*menuchah*"), ultimately "aims toward production" (Agamben 2011, 105). In this framing, all leisure is productive in that it offers the body a necessary rest so that it may then do more work. However, for many of these players, their play seems to become worklike in even more pernicious ways.

In *The Art of Failure*, Jesper Juul has no sections devoted to time. Despite this, time comes up repeatedly when he discusses *why* failure in games is something we wish to avoid, which, unsurprisingly, also ties to the notion of play as an investment. "To play a game is an emotional gamble," he writes, "we invest time and self-esteem in the hope that it will pay off" (2013, 14). In leisure as in life, time is a finite resource and so when we play games, Juul argues, we are putting that time on the line and betting that we will eventually achieve success. Cruelly enough, the only option Juul offers (other than the implicit choice of giving up) is to keep playing.

He writes, "when we begin playing a game with a completable goal, we assume the flaw of being someone who has not completed the game yet" (117). If the value that comes from a game emerges in the play, then anyone who has not-yet played a game they purchased is arguably a failure, not just with reference to the video game's metric for success, but with reference to the larger "game" of spending money and reaping a return. Beyond Agamben's sense of the role of leisure, we see that play itself falls prey to the capitalist logics of efficiency and productivity. Nowhere is this more evident than in the concept of the gaming backlog.

Within popular discourse, the term "backlog" refers to "an accumulation of tasks unperformed or materials not processed" (Merriam-Webster n.d.). In the context of r/patientgamers and game culture as a whole, a backlog generally refers to the games one has purchased but not played/completed. However, as is surprisingly often the case, our contemporary sense of the word "backlog" is exactly the opposite of what it originally meant. In the seventeenth century, the term "backlog" emerged to describe a literal "log placed at the back of a fire to keep a blaze going and concentrate the heat" and by the nineteenth century, it was also employed more figuratively to refer to "something stored up for later use" (Harper n.d.).[3] Up until at least the twentieth century, then, the word referred to something that was desirable to hang on to, whether in reserve, or as a base from which something could grow and flourish. Today, it refers to something we seek to minimize instead of maximize.

3 Interesting note for etymology nerds: Harper speculates that this figurative sense of the term could stem from the use of "log" in "logbook."

And so, with the gaming backlog, one imagines the player as a clerk with a slew of games in a *to play* pile and the weight of fatigue on their brow as they work to move games into their *played* pile. Critically, while we may speculate on the various reasons people play games, the contemporary sense of the term "backlog" presents the idea of reducing this *to play* pile as an end in itself. Play here serves to reduce the size of the backlog and with it, the corresponding feelings of guilt and exhaustion around being unproductive players who are not getting enough value out of their transactions. Whether clearing one's backlog actually relieves these negative emotions is another matter entirely.

One of the longest and most upvoted posts on r/patientgamers is an account of one player's efforts to empty their backlog, "to finally be free."[4] After a summer of play and sixteen finished games, the user called their success "the single worst mistake I have ever made in my fucking life," explaining that the project resulted in "utterly ruining the fun and wasting hundreds of hours of [their] own time." They go on:

> Most of you have probably heard that if your hobby becomes a chore, you're doing something wrong. It's the truth, and I learned it the hard way. I don't feel any more accomplished than I did before beating my backlog. Before, I felt overwhelmed with having a list of hundreds of hours worth of content to slog through. Now I feel angry at myself for basically throwing away over two months worth of potentially productive energy, for what purpose exactly?

This user espouses certain implicit values around how one is supposed to play a game and what the proper division should be between one's organized life and one's play in a manner that recalls neoliberal principles of self-management. The onus is on the player-consumer to properly conduct their transactions within the free market of video games. Rather than questioning the origins of their backlog anxiety, then, this user dismisses it.

Implicit here and also explicitly expressed by many on the subreddit is that one's energy could be more productively expended while still playing games, albeit at different paces, with different reasons, or of entirely different sorts. For every thread I read about backlog anxieties and not finding games fun anymore, I found others arguing that games are meant to be enjoyed and recommending other virtual worlds that might be more resistant to

4 Though the post has since been deleted, it can be accessed via the Internet Archive's Wayback Machine (https://archive.org/web).

instrumentalization, including those threads of so-called cozy games that I discussed above. And while such responses are well-meaning and make good sense in the contexts from which they emerge, if we take a step back, a pattern begins to take shape which makes me doubt that a solution can be so forthcoming.

Conclusion: Making and breaking a cycle

I have described three distinct areas of anxiety expressed by users on r/patientgamers and rooted in the concepts of comfort, nostalgia, and the backlog:

- The existential dread of social, economic, and environmental crises along with the dominant framing of leisure time as a reprieve from such concerns leads many to desire comfort, which some patientgamers seek in cozy games
- The unrealizable promise of a rosier past with nostalgic older games and the thwarting of that promise when the material realities of users prevent them from playing like they used to
- The guilt and exhaustion that emerges around collecting too much of a backlog of games and leaving the transaction of money and time for enjoyment unfulfilled

I view these three discursive threads as constitutive of a cycle. To begin, a player buys a game. In the case of r/patientgamers, it may be to (re)visit a specific comfy title or to rekindle their enjoyment of play, but it is always in service of getting the most out of their leisure time. This instrumentalization of play, coupled with the necessary instrumentalization of the rest of one's life that comes with being a neoliberal, capitalist subject, limits the player's capacity for leisure time, so a backlog begins to form. This leads to feelings of guilt and exhaustion for not getting enough value out of one's monetary investment due to their inability to invest time. Play is reframed as a means of reducing one's backlog. The guilt of the backlog, satisfied largely by reducing one's *to play* pile, cannot be assuaged all that quickly and the nostalgia for one's youth returns (if it ever left), along with its corresponding desire to purchase yet another game, and the cycle repeats.

While I initially hoped that r/patientgamers might house players whose attitudes towards video games and leisure time were akin to radical slowness, instead this alternative way of playing is propelled by the same transactional

framework that drives other, less patient ways of playing. Even so, I do not want to dispense with the patientgaming philosophy. This approach to games has value for the ways it challenges the regime of endless novelty and growth in the games industry and indeed culture at large. That so many on the subreddit found comfort to be temporary and their nostalgia to be unrepeatable makes sense if we reflect on the impossibility of extricating ourselves from a cycle without addressing the root cause of it. And as for the gaming backlog, history (and the dictionary) tells us that there are other, more patient ways to frame such a surplus of games.

In a discussion of games, time, and queerness, Christopher Goetz articulates a critical potential grounded in the video game's "pure wastefulness of energy and time spent outside the narrow strictures of hetero-reproductivity" (2017, 240). Games, in their apparent frivolity, become a site of critical stasis, a *trifling*[5] with the dominant that reorients the player from a (re)productive subject to one that operates apart from or even against hegemonic norms. I agree with Agamben, that games and leisure time necessarily *do work*, that they are *productive*, whether economically, biopolitically, or ideologically. Through Goetz, radical slowness, and the patientgaming philosophy, however, I argue for a more sustainable model of play, one that is not *productive* of neoliberal, late capitalist values.

From my observations, I contend that comfort, nostalgia, and the backlog are not ills in themselves—rather, it is the framing of play as a transaction which brings out the worst in these concepts. Out of a desire to work "as-if" change is possible, then, I advocate for rescuing Juul's state of "not-yet" successful and, following Goetz, call to inhabit that state for as long as possible, perhaps in perpetuity. For those who make up r/patientgamers, this might be as simple as taking one's time with games guilt-free, reframing the backlog as a stockpile of leisure time and not an investment to be capitalized upon. While my framework might implicitly endorse slow play practices, even speedrunning, the practice of completing a game as quickly as possible, represents an anti-productive, even sustainable dilation of playtime, since behind every five-minute speedrun are thousands of hours of practice.

As a player and scholar of games, I know that they are not a waste of time to those playing them, but it is my hope that they can waste the time of those who would see us spend it laboring for them while the world burns and floods simultaneously. While many authors (including a number included in this volume!) have done well to argue for the ways game design can become

5 Here in the sense used by Bernard Suits (2014)—one who recognizes rules, not goals, the institution of the game, but not its claims.

more ecocritical and espouse values that align with sustainability and degrowth, I believe there is more to be done. As McKenzie Wark reminds us, games are not just designed media objects, they are "the very form of life and death and time itself" (2007, 6). This is not solely a problem to be addressed by design—we must also scrutinize how and why we play—both in virtual worlds and the "games" of everyday life.

Through patientgaming and radical slowness, I see the critical potential of the player-consumer becoming a trifler within the larger entertainment complex. By slowing their engagement with the market and lingering with apparently outmoded software, I argue that they work *on* and *at* play in ways that threaten the status quo instead of reifying it and in a manner that interrogates not only video game machines, but the larger machines of unsustainable ideology that drive them. Through such efforts to take one's time before one's time is taken, I argue that radically slow play may allow one the time and space to imagine, and perhaps enact, alternative modes of being which refuse a slow death and embrace a collective flourishing. Who can say where we might start? Perhaps such changes to how we consume media can ultimately impact how we produce that media to begin with. Given the continued efforts towards unionization in the games industry and the growth of workers' co-ops and other more sustainable models of development, the sentiment that games should not be built at the expense of those who make them, or indeed the world we live in, is stronger than ever.

Like slowness, patience is an ambivalent concept. For every instance of someone being patient with others as a show of kindness and care, there are many others in which those at the margins are told or simply forced to "be patient" with institutions, while it is determined whether they are people worth tending to. Perhaps patience may always be a virtue, but through radical slowness my hope is that we might eliminate this sort of necessity.

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About the author

Rainforest Scully-Blaker (he/him) earned his PhD in informatics at the University of California, Irvine, in 2022. His research focuses on how video games inform and are informed by culture and the ways that video game design and video game play can both uphold and dismantle hegemony. His dissertation, "Radical Slowness and the Critical Potential of Play," pursues these goals through the lens of exhaustion, slowness, and refusal, among other concepts.

25. Material Infrastructures of Play: How the Games Industry Reimagines Itself in the Face of Climate Crisis

Sonia Fizek

Abstract

This chapter is an exploration of the materiality of digital play. I want to discuss how it relates to environmental sustainability and how the video game industry addresses the issue. The chapter will provide a hermeneutic analysis of selected parts of the *Green Games Guide* in a wider ecocritical media context. One of the most crucial questions this chapter wants to address is how the industry responds to the climate crisis and how to read this response vis-à-vis the neoliberal culture of exponential growth, optimization, and planned hardware obsolescence. In other words, are green game-making commitments and self-regulatory initiatives rhetorical PR stunts or could they be read as catalysts of a deeper cultural and political shift within the games industry?

Keywords: video games, gaming consoles, sustainable production, materiality, *Green Games Guide*, frames

The ecological context of video games opens up a very complex map of relations. Often the first association is that of games as tools for change capable of affecting the players' attitudes. In an early piece on climate-aware video games or so-called "cli-fi" games, Benjamin Abraham and Darshana Jayemanne discuss the potential of games for raising ecological awareness (2017, 75). At their time of writing, overtly environmentalist games were virtually nonexistent. As Abraham and Jayemanne emphasize, the "cultural output of the mainstream game industry reveals the startling omission of the issue—with very few games telling stories that engage with the

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unfolding ecological crisis" (Abraham and Jayemanne 2017). Today, within the framework of the Playing for the Planet Alliance (P4PA) and many other international initiatives, developers are encouraged to include themes of climate and environmental restoration in their games. However, as Lewis Gordon of *The Verge* succinctly points out, "Nature doesn't care whether we're playing thoughtful ecological adventures or the next high-tech military shooter" (Gordon 2020). This perspective resounds in many more statements by journalists and researchers alike. Jackson Ryan in an extensive piece on the negative impact of next-generation consoles on the planet, notes: "It's one thing to depict the effects of climate change in games, another altogether for developers, manufacturers, publishers and the world's largest video game companies to address the environmental impacts" (Ryan 2020). Also, Abraham, in his more recent work strongly advocates solving the real problem, that is, not making games with green content but making games in sustainable ways (2022).

These statements illustrate how foundational the question of the materiality of play and video games is. If the games industry wants to become truly sustainable, it needs to tackle video game development and production as well as the manufacturing of hardware such as game consoles and computers. And if game studies wants to become truly ecocritical, it needs to engage with video games as material as well as labor and energy-intensive products. For as much as they have proven to be great tools of persuasion (Bogost 2007), powerful discussion platforms (Woolbright 2017), simulations of utopian futures and alternative scenarios (Freyermuth 2019) or playful labor mechanisms of civic society (Fizek and Dippel 2018), games are digital objects embedded in a strongly established neoliberal and profit-driven dispositif.[1] Their environmental impact as leading products of the digital entertainment industry should not remain a blind spot. The question, however, is so complex that it is difficult to find an entry point, let alone to map out all the relationships and intricacies. A video game is a dispersed "ecological artifact" (Cubitt 2016) dependent on global networks of labor and material extraction (Gordon 2019), standardized and often monopolized digital hardware and software production tools, as well as local dynamics of their making. Navigating and analyzing this complex system of material,

1 "Dispositif" or "dispositive" (also referred to as "apparatus") is a term coined by Michel Foucault to describe intertwined mechanisms and structures of power that operate in a society. Foucault reveals the meaning of dispositive in the "The Confession of the Flesh" interview, in which he talks about a system of relations between the elements consisting of "discourses, institutions, architectural forms, regulatory decisions, laws, administrative measures, scientific statements, philosophical, moral and philanthropic propositions" (Foucault 1980, 194–195).

economic, social, and cultural interdependencies can be extremely challenging. Perhaps the first step is to "break the enchantment that inflames the popular and elite passion for media technologies," including video games (Maxwell and Miller 2012, 6). One way to do this is looking beyond clean surfaces of interfaces and shiny screens and shifting the focus towards the materiality of digital media.

My goal is above all to capture the current moment of the games sector that claims to take measurable action and spark a cultural change through raising awareness of the ecological dimension of video games. To delve deeper into the environmental rhetoric of the games industry and its members' take on sustainable video games, I will analyze selected parts of the *Green Games Guide* (Wood and Ruiz 2021), a trade document produced by the Association for UK Interactive Entertainment (Ukie, the UK games trade body), the Playing for the Planet Alliance (an initiative by the United Nations Environment Programme), and Games London (an association representing London's interests in the games industry). It constitutes a particularly insightful object of analysis since many other initiatives and guides directly refer to it and rely on it as the first formally written set of guidelines for sustainable game development. I am interested in how the game development sector communicates about video games within the context of the climate crisis, and how to make sense of the recent proecological stance of the industry set within the neoliberal capitalist framework of exponential growth, optimization, and culture of obsolescence. In other words, are the *Green Games Guide* and similar documents purely rhetorical tools or signs of a cultural change in the making?

The motivation to take a closer look into the communication strategies of the sector was sparked by the debates I experienced with my students in the seminars on "Games and Climate" in the summer semesters of 2021 and 2022 at the Cologne Game Lab, where I teach games and media studies. The systematic interpretation of the *Green Games Guide* provided for a useful analytical tool and an inspiring starting point in our discussions on sustainable game making. This text has been written as an exercise in close reading above all for the students (many of whom will join the industry) in order to show them how to go back to the drawing board and critically approach the conceptual foundations upon which the industry's environmental guidelines rest.[2]

2 "Close reading," a term stemming from literary criticism, describes a method of attentive reading and interpreting a passage of text. The focus of close reading may be rhetorical features, metaphors, syntax, formal structures, as well as cultural references.

Earthly ludic matters

Video games are as much objects of culture as they are of nature. As virtual, immaterial, and clean as they are portrayed within the framework of postindustrial capitalism (Maxwell and Miller 2012, 5), they are literally made out of natural resources and with material labor. Digital media rely on technologies and production dynamics that make those media possible. Their material aspects have been critically discussed by many thinkers in the last decade, including the abovementioned Richard Maxwell and Toby Miller. Jussi Parikka's books *Media Archeology* (2012) and *A Geology of Media* (2015) explore the material foundations of digital media, showing how natural resources enable their existence and how media influence our ecosystem. Sean Cubitt's *Finite Media: Environmental Implications of Digital Technologies* (2016, 7) talks about media as "finite resources in the closed system of planet Earth," time-bound and tied to their physical dimensions.

This material consciousness is also present in recent ecogame scholarship. Abraham in *Digital Games after Climate Change* (2022) devotes an entire chapter to the study of what he calls the "Periodic Table of Torture," an analysis of the chemical components of the advanced processing unit of the PlayStation 4. He also looks at the carbon footprint of making, distributing, and playing games. Engaging critically with the materiality of video games, we have a chance to become more conscious about the objects of our academic analyses. As Maxwell and Miller note in *Greening the Media* (2012), "the physical foundation of media studies is machinery that is created and operated through human work, drawing on resources supplied by the Earth" (2012, 10).

Some of the most critical work on the materiality of video games and on the negative impact of making games and hardware has been undertaken by activist networks such as Greenpeace and popular media outlets such as *CNET* (Ryan 2020), *Polygon* (Epps 2022), and *The Verge* (Gordon 2019). In a 2019 piece on "The Environmental Impact of a PlayStation 4" published on the pages of the latter, Sony's console is literally and metaphorically taken apart. The author of the text, accompanied by a sustainability and materials engineer and a specialist in superconductor engineering, takes a close look under its plastic hood, discovering "a machine that spans continents and deep time, touches thousands of lives (for better and worse), and leaves an indelible, measurable stain on Earth and its atmosphere" (Gordon 2019). The deconstruction extends beyond the discussion on the environmental impact of manufacturing, to the labor cost of extracting some of the raw materials such as gold and tin. These are classified as "conflict materials" that originate from Congo and neighboring countries (Gordon 2019). The

manufacturing of PS4 then is not only an energy-intensive process but also one directly connected to ethics and what follows, politics.

The materiality of video gaming, so deeply enmeshed in the earthly matter, still remains an Achilles heel of the industry. In the following part of the chapter, I will take a closer look into the *Green Games Guide*, the most referred to set of guidelines in Europe, in order to find out how the games sector approaches its reliance on material infrastructures and how it chooses to communicate about the impact of game development and device manufacturing on the environment.

The industry's ecorhetoric: Close reading of the *Green Games Guide*

Recently, the games industry seems to have intensified its efforts in proactively engaging with the topic of the climate crisis. The year 2019 was a turning point in the way some of the industry's companies started communicating their role within climate-centered discourse. In 2019 the United Nations' Playing for the Planet Alliance (P4PA) was launched, inviting video game companies of all sizes worldwide to join the initiative.

On a national level, many game developer associations have started promoting green production guidelines: Ukie in cooperation with Games London and the P4PA were the first to present their *Green Games Guide* in September 2021, followed by the German Games Industry Association (Falk 2021) and Neogames (2022), the hub of the Finnish games industry, which presented a model for calculating the CO_2 emissions of a game studio; and last but not least Nordic game developers launched a community for industry professionals who want to contribute to a collective effort in creating a greener game industry (PlayCreateGreen 2021).

By studying the messages, mission statements, and guidelines of these initiatives and programs, a recurring pattern emerges that exposes how the games industry and game-making community see their role as ecologically aware subjects. Three categories tend to be addressed most often: 1) Raising awareness and sharing best practices through collective actions, 2) exploring the potential of video games as tools of persuasion and change, and 3) measuring the carbon footprint of making games and decarbonizing the games industry. The third aspect points directly to the material dimension of video games, whose production and consumption are literally dependent on earthly matter.

In this section I will take a closer look at selected parts of the *Green Games Guide* to analyze the language used to portray the role of the games sector

within the climate crisis as well as the industry's own contribution to it. I will pay particular attention to the sections touching upon the material aspects of video gaming, such as their production and development as well as the role of gaming hardware. I want to look not only at what is being communicated but above all, how it is being communicated. I will look at the choice of vocabulary, imaginaries and metaphors, visual communication as well as how the messages included in those guides are to be read within the ecocritical media context. All those aspects build up what George Lakoff refers to as "frames," cognitive structures or schemas that influence our perception of reality (2010, 71). As Lakoff further elaborates, "since frames come in systems, a single word typically activates not only its defining frame, but also much of the system its defining frame is in" (2010, 72). As one of the most illustrative examples of framing Lakoff brings up the term "climate change," introduced in 2003 by Frank Luntz, the language advisor to the Bush administration, in order to replace "global warming." The word "climate" was supposed to bring up a positive connotation and "change" allowed for downplaying the human cause of the change. "Climate just changed. No one to blame," Lakoff summarizes (2010, 71). Although the guide addresses "climate crisis" and "global warming," following a more general movement in some British press to call attention to the urgency of the issue (Carrington 2019), as this chapter shows, by merely glossing over upstream causes of carbon emissions like raw resource extraction and manufacturing, the *Guide* still operates with a rather narrow understanding of where responsibility and empowerment lie.

Green Games Guide: An Action Plan for the Sector

Authors: Daniel Wood (Special Projects lead at Ukie) and Benoît Ruiz (advisor for Interreg Europe and CNC)
Supporting institutions: Ukie, Games London, and Playing for the Planet
Year of publication: 2021
Audience: Games industry, policymakers
Format: Downloadable PDF (18pp)
Purpose: To provide an action plan for the games sector
Content structure: Eleven parts/chapters (Introduction, Foreword from Ukie, Foreword from Games London, Playing for the Planet, The Global Climate Crisis, The Games Industry Lifecycle, Advice for Games Businesses, How to Measure Your Carbon Footprint, Physical Goods & Device Energy Consumption, Inspiring Players, Summary & Recommendations)

Figure 25.1: The banner of the introductory section of the *Green Games Guide*.

The *Green Games Guide* opens with a cover featuring the title *Green Games Guide*, accompanied by a subtitle *An Action Plan for the Sector*, both set in upper case and placed against a green background. After the contents page (which presents the table of contents and the authors' bios) comes the introduction section, framed by a banner of the sun rising above the Earth's horizon (see Figure 25.1). I will briefly close-read this section and the two forewords since they set the tone and framework for the entire document.

Introduction

The authors of the guide begin by acknowledging anthropogenic climate change and addressing the role that the games industry has to play in remediating this damage. Three reasons why the *Green Games Guide* was assembled, are then outlined:

1. Understanding the impact the industry has on the environment
2. Improving approaches to sustainability by reducing carbon emissions
3. Identifying possible collective efforts of the entire sector

It is particularly interesting how the term "impact" is used in the *Guide* to signify two very distinct contextual meanings. In most cases, it describes how effective the industry could be in addressing the climate crisis: "The games sector has the potential to make a significant impact" (2021, 3); "There is also the need to think about environmental impact collectively" (2021, 3). In other instances, however, impact refers to the harmful influence the

industry has on the planet: "goals and targets that we might shape to bring our impact on the planet down" (2021, 3); "Governments are recognizing the need for change and new policies and regulations are being introduced to address our impact on the planet" (2021, 7).

If we take a brief look at the modifiers used in the entire document for the word "impact" we will find the following ones: "direct" (8), "positive" (8, 16), "significant" (3), "social" (16) and "biggest" (11). The last one appears in contexts that signify the negative environmental impact of the industry but instead of framing the impact negatively, the more neutral modifier "biggest" is used: "Now you have your carbon footprint, you're in prime position to identify where the biggest impacts are and to start to reduce your emissions" (2021, 11); "Space Ape focuses on the four areas it assessed to have the biggest impact on its carbon footprint" (2021, 14). Just like "impact," the modifier "biggest" appears in two different contexts. Most instances of "biggest" create positive connotations: "Games are now the single biggest entertainment medium on the planet" (2021, 16); "Under the leadership of Space Ape and Sybo, the 2020 Green Game Jam was held with eleven of the biggest names in mobile games" (2021, 17). The positive connotations of the terms "impact" and "biggest" are so strong that they overshadow the critical context in which those words appear as well.

The authors also emphasize the collective dimension of the efforts needed to address the climate crisis. In the introduction alone, the word "collective" is mentioned five times: "Collectively as a sector; collective efforts as a sector; think about environmental impact collectively; collaborate on data collection and the other shared goals and targets; shaping this more collective action" (2021, 3). The introduction also emphasizes the active role of the games industry in addressing the climate crisis, putting across the message of empowerment and agency: "Addressing the crisis; make a significant impact; tackle it; efforts we could make as a sector; how to use outreach to inspire players; taking actions to inspire others; environmental impact; make a difference; bring our impact on the planet down; to undertake and inspire action" (2021, 3). This appeal to collectivity will be repeated in the *Guide*'s forewords.

Forewords

The two forewords—by Jo Twist (CEO of Ukie) and Michael French (Head of Games London)—echo the message of creativity, empowerment, and collective action. Whereas the introduction frames "human activity" as an abstract agent and the cause of climate change, Twist's foreword shifts humans into the roles of those affected by the abstract force of climate

change: "The impact of climate change affects us all, as individuals and as part of the games industry that we work in" (2021, 4). In the second sentence, empowerment and action emerge as solutions to the problem, transforming the role of the human, from vulnerable object of climate change to that of an empowered subject: "[T]here is of course a chance for all of us to make the changes needed to halt global warming and the damage being done by climate change" (2021, 4). Inspiration and the ability to make a difference collectively are highlighted features of the games industry. The games industry is presented as a particularly potent agent of change due to its creativity, use of technology, and access to a global audience of billions of players.

In Twist's third paragraph we find out that the *Green Games Guide* has been written not only to showcase examples of games raising awareness on the global scale but also in order to help businesses make and sell more environmentally friendly games. One of its recommendations is to reduce carbon emissions or to offset the emissions that cannot be reduced. The emphasis shifts back to the capacity to positively influence billions of players in paragraphs six and seven. In other words, the carbon emissions of the games sector are sandwiched in between paragraphs emphasizing the capacity of the industry to inspire and make a difference collectively. Throughout the foreword, Twist emphasizes the urgency of fast action and the importance of being able to inspire and make a difference via raising awareness about environmental issues:

> inspire a global audience of billions … to start collectively making a difference … to inspire them … to inspire players to make a difference too … we need to more urgently if we are to make a difference … we want to inspire … to influence the way that billions of games players around the world view the environment and the impact they have on it … to collectively making a difference. (Wood and Ruiz 2021, 4)

The second foreword by French announces the central role of the *Green Games Guide* as a catalyst for the UK games industry to raise awareness among the developers, who, according to French's canvassing of industry leaders, "confessed that they did not feel empowered about the issue" (2021, 5). The *Green Games Guide* is thus meant to illustrate the crossovers between video games and environment: "the *Green Games Guide* is a milestone"; "Publishing this document is designed to start a conversation"; "It spells out the direct connection games have with the environment" (2021, 5). The *Guide* is presented as a source of information with case studies serving as inspiration for the rest of the sector: "case studies from the studios already making a difference";

"the progress we've already made as a sector" (2021, 5). The two examples of "progress" referred to are: 1) the voluntary initiative by console manufacturers to lower the energy consumption of their devices, and 2) the realization that playing games is a relatively low-carbon leisure activity in comparison to, say, driving to the cinema (2021, 9). A few sentences down the line, this image of game playing as a carbon-generating activity (however low) is juxtaposed with a call to action for the industry. The lack of empowerment to act mentioned at the beginning of the foreword is brought back as an incentive to act. The need to empower the game-making sector is presented within the context of user-generated emissions. "When so much of the environmental impact of our industry occurs downstream, it's easy to think we don't need to act" (2021, 5).

The term "downstream" describes the place of most impact of the games industry on the environment. It is used as a metaphor in business, including the petroleum industry, to refer to "something that happens later in a process" as indicated by the *Cambridge Dictionary*. Marketing and product distribution are usually referred to as downstream processes. Here, downstream refers to the power consumption of electronic devices when used by players, mentioned in a preceding paragraph.[3]

This focus on players as producers of emissions illustrates the perspective and communication strategy often used by the games industry. Placing "its users at the heart of the action" (2021, 5) within the context of the energy output of the industry, is a neoliberal framing strategy of imposing responsibility on the individual.[4] This shifts the focus away from what happens upstream where raw materials are extracted, manufactured, and distributed, inside of the game console, and midstream where energy is spent on cloud storage or on the game company's office floor. Usually, only the last two aspects of game production are mentioned in case studies, including those in the *Green Games Guide*. The example of "the major format-holders collaborating voluntarily to lower the energy consumption of their devices" mentioned by French in the foreword, refers to the Games Consoles Self-Regulatory Initiative by Microsoft, Nintendo, and Sony. While this initiative does involve action in midstream because it means adjusting devices, it still frames consumers downstream as the producers of emissions. Arguably, this shifts the attention of policymakers and the wider public away from the manufacturing process (upstream) towards the gamers' consumption

3 We can also find a reference to what the industry calls "downstream player emissions" in Abraham's work on the carbon footprint of playing games (2022, 163). These, as Abraham notes, are only an optional responsibility of the game developer, so it is the players who are usually solely responsible for their own emission output.

4 The relationship between neoliberal forms of governmentality and the transfer of responsibility to individuals has been discussed by Émilie Hache (2007, 49).

patterns (downstream). Such a strategy puts the emphasis on the users and their individual responsibility on the way they decide to "consume" content and use their gaming device, preferably in a way that is less energy intensive. The foreword concludes by praising "interactive entertainment as one of the most innovative sectors in the world with the most engaged audiences" (2021, 5), which serves as a consolation that a "swift and positive contribution to the planet" can be achieved (2021, 5).

The Games Industry Lifecycle

Let us now have a closer look at the sections that refer to the material aspects of games and the production dynamics of the games industry—the Games Industry Lifecycle—which is briefly introduced and supported with eleven icons (see Figure 25.2). The section frames the complexity of business models, production techniques, distribution changes, and technologies as sites for improvement rather than the source of environmental harm. Across all those sectors "sustainability efficiencies and improvements can be implemented to reduce carbon emissions across the world" (2021, 8). The suggested measures range from making code more efficient, measuring the energy usage of studios and distribution practices, to improving the energy efficiency of console use.

The majority of the areas of carbon emissions flagged in the illustration are neither discussed in this section nor in any other part of the *Guide*. The first three images depict "Raw materials extraction and transformation," "Components and game systems manufacturing," and "Datacenters and networks." These three aspects of the industry life cycle are the dirtiest ones and the ones that according to many independent studies carried out by Greenpeace across the years, produce the greatest harm to the environment (Cook and Jardim 2017). Their inclusion in the illustration only serves to highlight their conspicuous absence in the *Guide*. It is those most impactful aspects that are downplayed or not addressed in detail by the industry's self-regulatory initiatives. While you could argue that game developers have little control over these aspects, electronics producers do. But the self-regulatory initiative mentioned above, led by electronics producers like Sony, Nintendo, and Microsoft, also does not touch on matters of extraction, manufacturing, and data infrastructure, which is neither a coincidence nor reflects a lack of empowerment. It is arguably a conscious choice to focus on cosmetic issues which can be easily regulated on the policy level, and which can demonstrate a positive impact. The question is whether the foundational challenges reflected by the first three icons should be the focus of green gaming in the coming years.

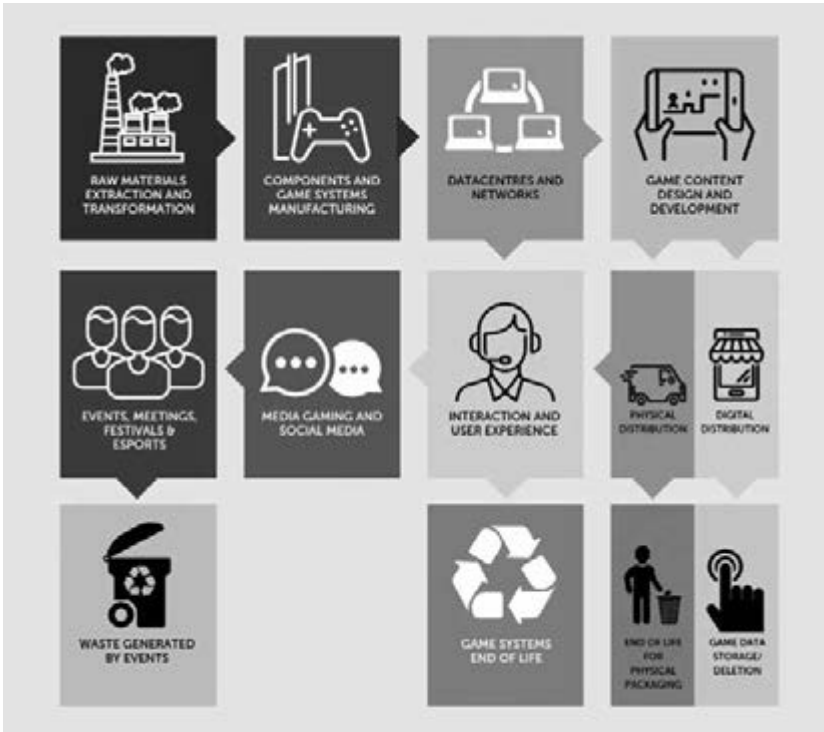

Figure 25.2: Games Industry Lifecycle, from the *Green Games Guide* (Wood and Ruiz 2021, 8).

Case Study: Carbon Footprint of Playing Games

The *Guide* also presents a case study by Sony Interactive Entertainment (SIE), which has looked into the carbon footprint of playing games on the PS4. The estimates the case study gives are informed by Joshua Aslan's dissertation (2020) in which he performs a life cycle assessment to conduct a carbon footprint study of console-based gaming. They include:

> the carbon emissions produced when playing a console, as well as in the manufacturing of consoles and discs, transportation to retailers, delivery or collection from the store, and in the treatment of the products at end of life (e.g., recycling or disposal). They also include the carbon emissions produced from digital and network activities—from the development of games and production of software to Internet data transmission and the energy consumed by servers used to run PlayStation Network and PlayStation Now. (2021, 8)

However, the stages in the life cycle the case study chooses to highlight all focus on downstream choices like the length of playtime, the choice of streaming, downloading, or using physical discs, and the influence of game file size. This reflects the general strategy of game electronics producers to look away from the environmentally destructive upstream manufacturing processes and instead direct public attention towards consumer behavior. Such upstream manufacturing processes could have been addressed in the former section on the Games Industry Lifecycle. What is given the spotlight instead is the user-centered activity of playing games. The goal of the study by SIE is to find out how players can play games in more sustainable ways "in terms of carbon emissions per hour of gameplay" (2021, 8). The case study concludes by listing all the aspects that were taken into consideration in estimating the carbon emissions. But rather than listing these estimates, or digging into them, the section ends with a conviction that the estimates can only improve in the future as the performance and efficiency of computing improve over time.

On page 15, an accompanying case study ("Improving the Energy Efficiency of Consoles") related to game playing consoles is presented. The section starts with the following statement: "Device use is estimated to be the biggest hotspot of energy use and carbon emissions in the lifecycle of games for games consoles and PCs" (2021, 15). This claim assumes that the manufacturing of devices such as consoles is either less energy intensive than playing, or, alternatively, that console manufacture does not belong to what is referred to as the "lifecycle of games." Even if "playing games is a low-carbon activity" (2021, 9), the assertion that console use is the activity producing the biggest amount of carbon emissions in the game's life cycle is extremely contentious (2021, 15).

Let us introduce a few numbers to provide more context. Taking into consideration all the other components and their manufacturing processes as well as global transportation, Barlow and Durrell estimated that "the equivalent of eighty-nine kilograms of carbon dioxide is emitted into the atmosphere with the production and transportation of every PlayStation 4" (Gordon 2019). Moreover, the claim that gameplay amounts to the biggest hotspot of energy use is refuted by the findings of the 2017 "Guide to Greener Electronics" by Greenpeace:

> Increasing device complexity means greater amounts of energy are required to produce each device, with seventy to eighty percent of the energy footprint of personal electronic devices occurring during the manufacturing phase. The manufacturing of electronics remains largely powered by coal and other forms of dirty energy in China and Southeast Asia, where most companies have based their manufacturing supply chains. (Cook and Jardim 2017)

The following paragraph of the *Guide* presents the Games Consoles Voluntary Agreement (VA) from 2015 emphasizing that it "was recognized by the European Commission" (2021, 15). Mentioning the EC as a political authority serves a legitimizing function. The goal of the VA is to review and improve the energy and resource efficiency of games consoles. The VA is the result of collaborative work undertaken by its signatories: Microsoft Corporation, Nintendo Co. Ltd., and Sony Interactive Entertainment Inc.[5] This initiative is based on a self-regulation mechanism and is not legally binding (Sony, Microsoft, and Nintendo 2021, 19). The initiative is directed by a steering committee including signatories (who may be accompanied by additional experts), only one representative of the European Commission and a chairperson who is elected from among the signatories and holds the office for two years. The areas of improvement listed in the VA are: automatic power-downs and power caps, disclosing the power consumption information of consoles, providing out-of-warranty repair service as well as improved recyclability of consoles. Most of these aspects relate to the performance of the consoles when used by the players and the maintenance of the devices.

The next paragraph provides a few statistics that support the narrative of improvement and efficiency: "Over the lifetime of PS4 and Xbox One consoles, energy efficiency improvements resulted in power consumption reductions of up to fifty percent for some modes." The case study praises the energy efficiency of console design and predicts even more efficient power caps in the next generation of consoles despite their projected increases in performance and functionality, as mentioned on the website of the Efficient Gaming initiative which hosts the Voluntary Agreement document.

A few takeaways

Although my primary goal of critical analysis of the games industry remains unchanged, I am well aware of the fact that the voice of the industry is not as uniform as it may seem when judged via the prism of such documents

5 The signatories of the Voluntary Agreement (Microsoft, Nintendo, and Sony) were subject to an in-depth environmental analysis by Greenpeace (2010). More than a decade ago, Greenpeace reported the use of hazardous chemicals in Microsoft Xbox 360 Elite, Sony PlayStation PS3, and Nintendo Wii, lack of proper recycling strategies which leads to harmful e-waste. As early as 2008 the term "green gaming console" started being used by the Greenpeace Science Unit to refer to toxic-free gaming equipment devoid of polyvinyl chloride (PVC), beryllium, or bromine. A full analysis was provided in a 2008 report "Playing Dirty: Analysis of Hazardous Chemicals and Materials in Games Console Components" (Brigden, Santillo, and Johnston 2008).

as the *Green Games Guide* or the Voluntary Agreement. The industry are people and many of them do not have the power to set a different, greener course for the industry. Therefore, I would like to make it clear that my analysis of the industry's rhetoric is not meant as a criticism of the entire game development community. Many of its members (such as the IGDA's Climate Special Interest Group[6]) deeply care about the environment and want to reshape the culture of making and playing video games into a more sustainable practice.

The *Green Games Guide* also provides practical advice to game developers wanting to cut down their emissions, calling on Playing for the Planet's five steps: 1) defining the scopes and time line of carbon emission reduction, 2) calculating emissions, 3) taking action to reduce the carbon footprint, 4) offsetting, and 5) reviewing and sharing with others. The most crucial aspects involve defining scope and emission calculations. The aspects that companies usually include in their calculations are direct company activities (energy use in office, travel, data storage policies), supply chains (including data centers), and indirect emissions by players. Of these, "data storage policies" are particularly important since "Data storage needs energy: the more data you store, the higher your emissions" (GGG 2021, 11). Some of the ways to reduce data size is not keeping multiple copies of the same file, compressing data, and finding out more about the sustainability of data storage with cloud providers. Another aspect touched upon on page twelve refers to energy-efficient coding and reuse of digital assets.

I decided to write this text to trigger a livelier discussion on the crossovers between environment and materiality of video games. And I see rhetoric as a crucial part of this discussion. By producing such documents as the *Green Games Guide*, the leaders of the games industry do not merely summarize their actions and inspire others to act. More importantly, they frame the actions within a specific worldview and an economic system. They communicate their values and imaginaries. They choose to pay close attention to some aspects (such as the individual use of devices, playtime, etc.), to briefly mention or largely omit others (such as the manufacturing of devices).

By critically analyzing the *Green Games Guide*, I wanted to go beyond the technological sublime of video games rhetoric, which casts them as the impactful saviors of the planet in the fight against the climate change. This rhetoric is described by Maxwell and Miller as "a totemic, quasi-sacred power that industrial societies have ascribed to modern machinery and

6 The International Game Developers Association Climate Special Interest Group: https://www.igdaclimatesig.org.

engineering" (2012, 4). To break that enchantment, we need to break through the enchanting rhetoric or frame, to use Lakoff's term. Only then can we have an in-depth discussion on the possibility of proenvironmental change; one that does not look to patch a few problems, but one that is ready to shake the premises underlying business as usual. In other words, I am not convinced by attempts to solve a problem caused by decades of neoliberal capitalist actions, within the framework of late neoliberal capitalism. Change without compromise, whether in performance or business growth, is not going to solve the problem in the long run. And to be able to make compromises, some of the most pressing issues need to be discussed, such as the production of electronic devices, harmful labor conditions in extractive industries, and addressing the problem of electronic waste caused by planned obsolescence. All these aspects are listed as paramount in the 2017 Greenpeace report. None of them are addressed in detail in the strategies of sustainable action visible in the self-regulatory initiative we looked into in this chapter. The bottom line is to rethink business models and reinvent the way electronic devices are made and used in societies by addressing the transparency of supply chains, designing sustainable products with longer life spans, using recycled materials, eliminating hazardous materials, providing e-waste solutions through easy-to-follow take-back systems, and improving recycling technology (Cook and Jardim 2017, 8).

As someone standing outside of the industry and thus independent of it, I see it as my academic mission to prod the game industry to face (if not rethink) its status quo, and to take responsibility for making a positive change, but also to acknowledge the processes that cause negative environmental impacts. This requires reframing climate action away from the context of efficiency, growth, measurement, and improvement and towards social responsibility, economic degrowth, dismantling consumerism, and stronger civic society regulation as opposed to legally nonbinding self-regulation.

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26. Sustainable Fandom: Responsible Consumption and Play in Game Communities

Nicolle Lamerichs

Abstract
Sustainability is increasingly discussed in the context of games, fandom, and play. Fans critically question what they consume and create awareness around sustainability in their own practices. In this chapter, I conceptualize these practices and discourses as sustainable fandom. Sustainable fandom involves discourses of responsible consumption as well as the sustainable design of one's own fan activity. Sustainability in fandom has not been widely studied, but it is increasingly discussed by audiences themselves. I provide several examples of sustainable fan practices and interactions, such as ecomodding, "ecocosplay" (sustainable cosplay) and green board games, which show that players increasingly aim to integrate sustainability as one of the core values informing their own "green" production of fan works.

Keywords: fan studies, consumer culture, cosplay, modding, sustainability, participatory culture

Sustainability is increasingly mediated, represented, and discussed in games and game culture. Broadly speaking, ecogames are objects of interest to green media studies, which looks, among other things, at environmentalist narratives and representations in mass media, vlogs, and streaming media, asking particularly how they contribute to ecological thought (Werning and Raessens 2023). Beyond climate change representation, awareness and activism, the study of green media also considers the ecological footprint of media production and consumption, seeking to explore more sustainable

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alternatives. As this chapter will argue, audiences are an integral part of the green media ecosystem, in the role of both consumers and content creators.

Increasingly, groups of consumers strive for more sustainable practices in their hobbies and subcultures, questioning the habits and aesthetics of fandom. For example, in Kristina M.'s Medium post "Environmentally Friendly Geekdom" (2017), she describes that "in geekdom, collecting emblems of our passion is part of the deal. We must admit that we are responsible for a great deal of clutter, much of it made of plastic, in a practice that is anything but environmentally friendly." Another example is the Reddit thread "Funko and the Environment," in r/funkopop where a collector asks how other users feel about buying Funko Pops (a brand of collectable figurines), considering that they are made of PVC (Chris_JF 2021). Contributors wonder how ecofriendly the collectibles are, how they are made, and what can be done to make their production more circular. Others worry less about their production, and more about their carbon footprint in terms of transport and storage. Throughout the thread, fans also reflect on the particulars of figurine collection, pointing out how collectors cherish these objects, including their packaging. This discussion is representative of how consumers increasingly reflect on sustainable consumption.

The construction of this new space of consumption is what I call "sustainable fandom." It can be defined as a growing movement and set of practices in which dedicated consumers, brands, and other stakeholders critically work towards a fairer ecosystem subtending the production of the products that they love. Not only do these different actors create awareness around sustainability issues, they also launch grassroots initiatives, new services, and products. Sustainable fandom, then, involves material practices, as well as discursive acts like engaging in critical discourse around companies, knowledge sharing around production and consumption, and exhibiting interest in the greening of one's own fan activities.

In this chapter on sustainable fandom, I want to move beyond ecocritical game design and explore how players engage with and reflect on ecocritical gameplay and sustainable products. Sustainable fandom is not discussed in fan studies literature so far but is a growing trend and topic of discussion among consumers. Gamers and players increasingly integrate sustainability into their subculture and lifestyles. They form participatory cultures that actively contribute to wider story worlds and cultures (Jenkins 2006). They also create sustainable gameplay opportunities and fan works themselves. I provide several examples of ecocritical participatory gameplay interactions, such as building, customizing, and streaming, "ecocosplay" (sustainable cosplay) and the discussion around green board games. The variety of

these cases shows that players do not only care about raising awareness of sustainability, but they also care about producing their own green media content and fan works.

Ecogames and sustainable fandom

As the other chapters in this book demonstrate, games can produce engagement with the environment in powerful ways. In the industry and in game scholarship, such ecocritical games have been conceptualized as ecogames. These include digital and analog games that reflect on nature and the climate crisis. In fact, the term "ecogames" was first used by Ulrich Holzbaur (2001) in a study on board games and sustainable development. Joost Raessens (2017) helpfully defines sustainable games as "imaginative spaces for playing and learning, expressing often contested moral and political values, raising awareness for a variety of sustainability issues, such as renewable energy transition, circular economy, sustainable mobility, and green water use and energy consumption" (7). He points to their participatory potential as well, which is crucial when investigating their fans and their practices.

What makes games unique as a form of green media is that they are interactive. The effects of our actions can be played out to illustrate our impact on different ecosystems. On top of that, games allow us to embody different actors, such as the wind in *Flower* (thatgamecompany 2009), allowing us to directly identify with natural or elemental forces. Wholesome resource management games can make us more attentive to the scarcity of nature. Meanwhile, walking sims can remind us of the beauty of the natural environment that we need to preserve. In these and other ways, games can be used to foster environmentalist critique and awareness. These unique media affordances also lead to specificities in game fandom. Audiences have specific relationships with playable characters, which they, for instance, channel in their cosplay and other fan practices. Games also allow for the highly affective and immersive exploration of virtual spaces. While such interactions can occur in film and television, they are more of a given in games as interactive media (Enevold and MacCallum-Stewart 2015).

The notion of sustainable consumption involves one more dimension of engagement or interaction, one that can go beyond raising awareness and reflecting on the natural world. Consumption today is about participation, including dialogue, discussion, and content creation within dedicated communities. These social, critical, and creative aspects are crucial in contemporary fandom, where consumer affinity is high (Jenkins 2006;

Lamerichs 2018). Some consumers ask themselves critical questions about environmental responsibility. How environmentally friendly are particular products really, or are they just "green-washing"? What is the carbon footprint of buying from an online distributor like Amazon? Should we worry about trends like product hauls on TikTok? These questions matter for game studies, fan studies, and consumer studies, where the focus has often been on lifestyle and identity in favor of discourses of sustainable consumption.

Like other consumers, fans and gamers increasingly reflect on their buying behavior. Such questions have the potential to reinforce an already existing critical or subversive engagement with materiality in fandom, one that runs counter to the logic of consumer society; what is seen to be disposable by others becomes durable in fandom, Henry Jenkins points out in the introduction to *Comics and Stuff* (2020). Avid players might preserve packaging that companies deem disposable and cherish the toys and figurines that their parents consider to be trash. They might also be critical of how certain games are produced, especially regarding the longevity of their digital materiality. Such a level of awareness reveals a latent interest in sustainability and a unique cultural dynamic in fandom. Collecting is innately tied up with our emotions and can be understood as "affective hoarding" (Larsen 2018), but certain collector practices, such as preserving the packaging, can also be read as a critical move against our "throw-away society" (Cooper 2010).

Sustainable fandom has three important levels then: the first is *consumption*, where consumers focus on the purchase of sustainable products and services. The second is *discussion*, where they go a step further to discuss brands critically and raise awareness about sustainability issues. The third is *creation*, where consumers produce their own sustainable types of play and fan works. This chapter ties together these three levels by analyzing a few representative fan practices, such as building, customizing and modding, and sustainable cosplay.

Building, customizing, and modding as fan practices

Ecogaming is not only facilitated by designers, but also by communities of players. The creativity of players can make games accommodate an environmentalist play style, for instance, through critical making processes and modding. Stefan Werning (2021) has investigated climate-centric mods in *The Sims 4* (Maxis, The Sims Studio 2014) and *Sid Meier's Civilization V* (Firaxis Games 2010) as an example of ecomodding. He suggests that such ecocritical

modding practices "help offset some of (eco)games' power imbalances and contribute to sustainable collective imaginaries" (3). Simultaneously, ecomodding can be a way of performing fandom of a specific game. For example, *Minecraft* (Mojang Studios 2011) has been modded to raise awareness around climate change. Nick Porillo's *GlobalWarming* mod alters the atmosphere based on certain actions (Bayle 2018). Temperatures rise as carbon emissions increase, leading to forest fires, among other consequences. The *Cyberpunk 2077* (CD Projekt RED 2020) mod by Essenthy (2021) includes toxic fog, pollution, clouds, and other features that evoke the climate crisis in the near future. By creating these mods, players engage with their favorite games in critical and transformative ways.

However, players do not need to install plug-ins or mods to engage in sustainable play. Some go through great lengths to customize and build in-game worlds that illustrate other ways of living and organizing society that are divested from harmful, fossil-fueled practices. For instance, they might make use of specific decorations, in-game items, or mechanics in creative ways. For example, players of *Animal Crossing: New Horizons* (Nintendo 2020) have created ecotopian islands by including more trees and water, green energy signified by windmills, recycling bins and other assets. This creative use of items leads to beautiful islands, which may inspire players that visit them to enact change in their own communities. One example is the island "Sunshine," built by Ozzie, which has ample nature, signs such as "Save the bees," and a wind farm (see Figure 26.1).

A virtual island tour is provided by *YouTube* streamer Tania–Heath Horizons (2020), who enthusiastically introduces this ecoconscious island. She marvels at the fruit and bee hives: "You got to have a little bee section if you want to save them!" (27:50–28:00). Her streaming audience is introduced to the flower field full of windmills that Ozzie built. Tania excitedly says: "Wind power is good. It's good for the environment!" (30:50–30:56). By streaming such ecoconscious worlds on *YouTube*, secondary audiences are introduced to sustainability as well. These viewers might not even be playing the game but might engage with it through commentary and online discussion. In today's participatory cultures, play has a ripple effect, primarily thanks to paratextuality (Beil et al. 2021). Play spreads through different texts, through streams and memes, reaching new audiences who are introduced to sustainable play on different platforms, beyond the game itself.

The Sims 4 has stimulated ecoplay actively with its ninth expansion *Eco Lifestyle* (Maxis, The Sims Studio 2020), which emphasizes green practices by actively encouraging players to minimize the footprint of their sims. For

Figure 26.1: Wind farm in *Animal Crossing: New Horizons*.

instance, streamer Chani_ZA (2020) provides tips on facilitating an optimal eco lifestyle, such as using green items and minimizing electricity. Others receive her tips well, since they struggle with getting an optimal green status in the game. One user remarks: "This video answered all my questions I wasn't finding thru google. My house is off the grid, and has enough dew collectors, wind turbines, and solar panels to power my house.... I had no idea the walls and roofs had an effect on it as well." Other *Sims 4* expansions like *Tiny Living Stuff* (Maxis, The Sims Studio 2020) challenge players to do more with less. The expansion introduces smaller lots and rewards players for building compact homes rather than the sprawling suburban McMansions that were prevalent in earlier versions of the game.

Green gameplay can be facilitated by official companies, but they often do so in response to budding interest shown by player communities online, which is arguably the case in *The Sims* franchise. Other times, players create specific mods themselves, to mimic, for instance, the effects of climate change. Players add to game worlds with their own creativity. They create statements about sustainability in games which do not necessarily have this as a theme. By building, customizing, and modding their own unique worlds, players remix existing stories with a sustainable touch.

Sustainable cosplay

One increasingly popular example of sustainable fandom is ecofriendly and sustainable cosplay, also known as "ecocosplay." This part of the cosplay

scene is best defined as a growing movement in fandom that is concerned with sustainable, responsible and durable consumer choices regarding costuming. The terms themselves come from fandom, not academia. On Instagram, for instance, the hashtags #ecocosplay and #sustainablecosplay each have reached over a hundred posts as of January 10, 2023. While the terms also yield results on TikTok and *YouTube*, I primarily analyzed Instagram for this chapter, while also drawing on a more comprehensive study of this practice (Lamerichs 2023).

Cosplay, short for "costume play," is a rich and visible part of global fan culture. It is both creative and performative, in the sense that fans create and wear costumes based on fictional characters from popular culture. Notions of immersion and play in cosplay have been studied in detail (Lamerichs 2018; Winge 2018; Mountfort, Peirson-Smith, and Geczy 2018). As Gary Crawford and David Hancock (2019) emphasize, cosplay is also a critical making process. It is related to, though independent of the fashion and textile industry, which is notorious for the social and environmental harm of, for example, fast fashion. Cosplay should not be mistaken for fast fashion, but it does have a carbon footprint. To craft different costumes for conventions, fans buy and create many items, from wigs and fabrics to makeup. However, cosplayers increasingly reflect on the environmental impact of their craft, leading to different sustainable cosplay practices.

Ecocosplay involves different making practices, such as using second-hand fashion for designs, or recycling other materials. A great overview is provided by German costume and prop designer Svetlana Quindt (@ kamuicosplay) in her *YouTube* vlog "Can Cosplay be Eco-Friendly?" (2020). Quindt provides ten tips to make the practice more sustainable. Many involve thoughtful consumption, such as taking fabric samples when shopping to avoid buying fabrics you don't need, shopping locally, exploring local conventions, and keeping air travel to an absolute minimum, in addition to other lifestyle changes. Above all, Quindt emphasizes that sustainable fan practices are part of a lifestyle and reflect a deeper commitment to the environment.

Others commit to using sustainable materials. Cardboard, paper, wood, and other materials can be sustainable alternatives for props and costume creation. For example, Jillian (2020) writes on Instagram: "One of my goals for 2020 is to incorporate more recyclable materials in my cosplay! I love working with #EVA foam I dont love that it's not super great for the environment lol." This is a good example of a cosplayer who reflects on materials that are common in cosplay (e.g., foam rubber), and consciously sets out to explore sustainable alternatives.

Figure 26.2: Olivia Mears in her Taco Belle dress.

Furthermore, ecocosplayers can make use of secondhand fashion or accessories. Through "upcycling," or the repurposing of existing garments and accessories, cosplayers reuse existing materials. A large part of the cosplay posts studied for this chapter (circa 80 percent) dealt with repurposing, upcycling, or recycling products, sourced through thrifting, sharing, or gifting by peers or via other networks. Cosplayers recycle full outfits and wigs, but also raw materials, such as plastics, paper, and other materials. What others consider junk or waste can be a valuable resource for sustainable designers. The influential cosplayer Olivia Mears (2017) uses products such as napkins and wrappings to create fantastic outfits, like a Disney's Belle dress made from Taco Bell wrappers (see Figure 26.2).

Cosplayers are often proud of their pieces and their resourceful designs. The Eco Cosplayer (2020) says the following about her designs: "All of my cosplays are made from 80–100 percent recycled/secondhand materials!" She is one example of a creator who uses sustainability in her self-presentation and branding. Sustainability can be a unique selling point in these communities, but cosplayers also emphasize it to raise awareness in the community about waste, circularity, and recycling. Through inspirational posts, cosplayers educate each other on reusing materials in their cosplays. In their own creative practices and design, they embody existing characters in new ways. This is not only a form of reenactment, but a sustainable design practice and form of play.

Merchandise, collectibles, and board games

Within fan studies, we have explored the importance of material culture in fandom, also conceptualized as object-oriented fandom (Rehak 2014). Merchandise, fabrics, and sculpting materials are not just the backbone of cosplay, but of many other fan activities as well. In his seminal chapter "The Cultural Economy of Fandom," John Fiske (1992) writes that collections matter in fandom, but he argues that the focus is on quantity rather than quality: "The individual objects are therefore often cheap, devalued by the official culture, and mass-produced. The distinctiveness lies in the extent of the collection rather than in their uniqueness or authenticity as cultural objects" (44).

Consumption, which is associated with mass production, is also closely connected to fan identity, but it is limited by what is offered by licensed producers. Fan scholar Victoria Godwin (2016) argues that merchandise often needs to live up to standards of accuracy and faithfulness. When accurate or authentic products are not available (or prohibitively expensive) fans may purchase locally produced products, created by fellow-fans instead. This unlicensed merchandise, found on Etsy or elsewhere, such as handcrafted or knitted Pokémon, is often more sustainable than what companies produce (Cherry 2016).

In many fan communities, for instance, those that care about collectibles or board games, there is increased attention to how things are made, and how much goes to waste, for example, in the previously mentioned Reddit thread on Funko pops. A critical Board Game Geek blog post called "Sustainable Gaming" (Santos 2021), shared by Reddit user Laxar2 (2021), also leads to discussion. The article focuses specifically on the production of green board games, for instance, through minimizing plastics. Some users are positive about such changes. One user comments: "A number of games I own only have a single plastic component, which could be easily replaced. For example, in [the game] *Istanbul* [(Rüdiger Dorn 2014)] the only plastic components are the gem stones and these could easily be wood instead."

The thread leads to a long discussion of ninety-two posts (November 26, 2022) on what sustainability in board games looks like, beyond the production of sustainable components. One user comments, for instance, that traveling should be taking into account: "While I'm for sustainability, what really struck me was that a single board game night with people driving more than four miles roundtrip already outweighs the entire production footprint." Another points to the replayability of board games: "Something I don't see mentioned here is the replay/pass-on value of a board game. It does not

reduce the footprint per se, but does add value to its existence." A game can then be regifted or used more than once. Users are critical of games such as *Pandemic Legacy: Season 1* (Rob Daviau and Matt Leacock 2015) where items are basically destroyed or used after playing it the first time. Blister packs, miniatures and other aspects of the hobby that involve the consumption of a lot of small items are criticized throughout the thread as well.

Some players, however, are skeptical of the impact or importance of sustainability in board games altogether. They mention that of all their consumption practices, buying and playing board games is probably among the most sustainable already. One user argues: "The more I think about this the more I think how green boardgaming already is. My Amazon prime subscription I argue is more damaging to the environment than my annual spend[ing] and time spent with board games."

These discussions around sustainability and materiality also show how much users value materiality in fan practices. For instance, in board games, which are transmedia products, items play a part in telling a story, painting a world, and acting as props to make that world come alive (Booth 2015). Items contribute to paratextuality and world-building. Fans care a great deal about these objects and handle them, their packaging, and material with care. Some customize them and paint them, others make great effort to preserve them as they are. Some avid players care about how these components are produced, while others think the discussion is not worthwhile because their impact is so negligible. Others stress we should focus on other unsustainable practices in board game culture.

Discussion on ecocosplay and sustainability in board games and merchandise raise similar questions: How can the material impact of fan activities be improved? How can the infrastructure and production of games that subtends play become more sustainable? Players discuss this actively in the community, and it is clear that there is not one answer to these complex questions. However, the fact that players increasingly address how things are made, and reflect on their purchasing behavior, is indicative of a turn towards responsible consumption.

Sustainable consumption can be motivated by green media content, but audiences and fans can also initiate such practices themselves. Climate TikTok videos, rousing or informative Instagram posts, and locally produced fan merchandise are just a few examples of green practices facilitated by consumers. These practices should not be underestimated; they have a huge impact. The creator economy is growing, partly due to the popularity of digital platforms, and it has been estimated to be worth more than $100 billion as of 2020 (Florida 2022, 2).

Sustainable consumption is not just a matter for companies to consider, then, but it also affects consumers themselves, who are key stakeholders in these value chains (Thompson and Norris 2021). In fact, Sustainable Production and Consumption is the twelfth Sustainable Development Goal (SDG) of the United Nations, which emphasizes the urgency of revising supply chains as well as modifying consumer behavior: "Innovation and design solutions can both enable and inspire individuals to lead more sustainable lifestyles, reducing impacts and improving well-being" (United Nations n.d., 2). Consumers are increasingly aware of this responsibility, especially fans and gamers, who are highly engaged consumers of particular brands and products. Their practices—both digital and offline—have a carbon footprint. For example, fans might collect merchandise of varying quality, fly to global events, and spend energy on their software and hardware. In other words, fandom intersects with and is connected to sustainable consumption, a practice closely connected to individual consumer values as well as collective solutions (Middlemiss 2018).

Sustainable consumption, however, can never fully be separated from corporate social responsibility. Companies increasingly engage in sustainable innovation and use this as a staple for their brand and even a possibility to draw new customers. For instance, toy brand LEGO positions itself as a circular economy of play and has committed to using sustainable materials by 2030 (LEGO Group 2022). Such messaging marks a clear turn for the company, which has had copromotion deals with Shell since 1960s, a partnership that they only divested from in 2014 after being pressured by a Greenpeace campaign (Starr 2014).

Conclusion and future trends

These discourses show that sustainability is increasingly considered in game fandom by different designers and consumers globally. It is something that consumers increasingly expect in the products that they buy and expect companies to provide insights around. What these cases show is that fans care about making their own practices and play more sustainable, but they also hold companies accountable when their production does not meet their standards. Sustainable fandom is not just a collector or consumer issue, but one tied up with brands and corporate social responsibility. Through different cases, this chapter has shown that sustainable fandom is not just about consumer behavior, but about systemic interactions with brands

and other stakeholders. Through their own mods and builds, players hope to educate others around the environment as well as the social aspects of sustainability.

Fandom centers around materiality, and this especially pertains to games. Players often consume them digitally, invest in collectibles and unique components, and create their own art and cultures based on these source texts. The increased awareness around sustainability in fandom is a development that is worth documenting and sharing, even though, broadly speaking, sustainability awareness is not the norm. These discussions center specific hashtags, communities, and threads, and make up a small part of huge platforms such as Instagram and Reddit. However, they are indicative of a growing conversation. I hope that in the coming years, we can green our fandom in unique ways to contribute to sustainable development.

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27. A Field Guide to Monsters: Practices of Wildlife Watching in Video Games

Melissa Bianchi

Abstract
Studies in ecocriticism demonstrate the potential of mainstream video games to offer diverse and rigorous considerations for the nonhuman. Continuing conversations about how these artifacts present the nonhuman, this chapter examines games such as *New Pokémon Snap* and *Monster Hunter Rise*, which emphasize observing and photographing nonhuman creatures. Specifically, the chapter asks, How do these games characterize practices of observing and documenting wildlife? What do they teach players about producing and circulating wildlife images? To offer answers, the chapter connects video game analyses to beliefs and practices about visually reproducing actual animals. Ultimately, these games demonstrate how video game play might reify troubling aspects of the human–animal divide while also supporting critical perspectives about players' ecological agency towards the nonhuman.

Keywords: animals, ecocriticism, nonhuman, visuality, photography, Pokémon

My photo expedition through Florio Nature Park begins on a sunny day. Vivillon flutter through the air like butterflies, while a herd of Bouffalant mill about the verdant grassland, reminiscent of large American bison. The expedition vehicle presses forward as beaver-like Bidoofs scamper near the crisp azure waters of a riverbank. Looking past these sights seen on previous park trips, I fix the camera skyward to photograph an elusive Emolga, a creature resembling a flying squirrel. As the Emolga begins its swooping aerial descent from the treetops, I snap a shot just in time. By the end of the expedition, I have documented several more of the park's

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endemic Pokémon species for the game's database and to share online. *New Pokémon Snap* (Bandai Namco Studios 2021) for the Nintendo Switch accomplishes what its predecessor *Pokémon Snap* (HAL Laboratory 1999) did and more. The game immerses players in vivid, pristine environments filled with wild Pokémon while offering new photo editing and sharing options. As one reviewer describes the game on the news website *Polygon*, "*New Pokémon Snap* is the portable safari we've been waiting for: This is the Planet Earth of Pokémon games" (McWhertor 2021). The similarities between *New Pokémon Snap* and our mediated experiences with actual animals (safaris, documentaries, etc.), raise several questions about how video games represent the nonhuman, ecologies, and environmental issues. For example, How do games characterize practices of observing and documenting wildlife? What do they teach players about producing and circulating wildlife images? Exploring answers to these questions, this chapter extends scholarship in ecocriticism about games and play to mainstream video games that emphasize "wild" encounters with the nonhuman.

Ecocritical studies of games demonstrate the medium's capacity to offer nuanced understandings of environmental concepts through play. As Lawrence May explains, "play is liminal, emergent, and necessarily incomplete, and this allows its various actors—players, developers, critics and texts themselves—to come together in nonauthoritarian, imaginative and potentially radical ways. Through play, audiences are offered new and novel modes for envisioning ecological problems, solutions, and futures" (2021). Play, then, affords participants opportunities to engage with ecological topics through its imaginative potential. When situated within virtual worlds, play may lend itself to ecocritical reflection on the relationship between our world and digital simulations. Scholarship such as Alenda Chang's (2019) examination of game environments investigates this link, considering how some games model real-world ecological themes. Similarly, Benjamin Abraham and Darshana Jayemanne (2017) identify how specific digital games respond to climate change and characterize human–environment engagements, while Colin Milburn (2014) argues that particular games can engender ecological awareness to engage with environmental risk. These studies and others substantiate the value in determining how some video games might invite developers and players to grapple with problems affecting Earth's ecosystems and inhabitants.

This chapter continues ecocritical analyses of video games by focusing on how they frame human and nonhuman interactions. Specifically, I examine the ways mainstream video games conceptualize the nonhuman through remediations of technologies and practices used to reproduce

animals in images. I focus on mainstream titles because, through ecocritical analysis, scholarship has illustrated the potential in mainstream games to offer diverse and rigorous ways of thinking ecologically (May 2021; Backe 2017). Moreover, these games' global appeal and their financial and technical production resources afford developers myriad options to shape how they simulate nonhuman creatures and the technologies used to visually capture them. To understand how mainstream video games characterize observing and documenting the nonhuman, I briefly connect the history of such practices to longstanding traditions in photography and film. Then, I examine two games published for the Nintendo Switch: *New Pokémon Snap* and *Monster Hunter Rise* (Capcom 2021). Both games were published by Japanese development companies and belong to well-established franchises directed at global audiences. *New Pokémon Snap* is a first-person photography game, while *Monster Hunter Rise* is an action role-playing game and the sixth mainline installment of the *Monster Hunter* series. By analyzing their discourses, visuals, and gameplay, I identify how these artifacts perpetuate specific ideas about the nonhuman, control, and visual culture. I connect these analyses to writings about watching and photographing actual animals to illustrate how games often (re)imagine and teach ways of interacting with animals that may, to varying degrees, transfer to contexts beyond games.

Animal reproductions and remediated wildlife watching

Many video games unwittingly participate in traditions of visually reproducing animals previously established in photography and film. Historically, the proliferation of animal images in visual media is linked to industrialization and urbanization under twentieth-century capitalism, which fundamentally altered human–animal interactions (Berger 1980). Animal images, along with various institutions and artifacts (e.g., zoos and toys), "compensate" for receding human–animal interactions in daily life as well as further marginalize animals through their mechanical reproduction (Berger 1980). Filmmaking, in particular, emerges in this socioeconomic landscape where "the supposedly primitive Other was already being sought, displayed, and observed as entertainment" (Chris 2006, xi). Thus, the animal as "primitive Other" (Chris 2006, xi) became a frequent subject of photography and film, serving as a spectacle for viewers' enjoyment. This history of the visual reproduction of animals for entertainment influences the myriad ways animals appear in video games. Virtual animals such as the captivating sea creatures of *Beyond Blue* (E-Line Media 2020), the ferocious dinosaurs

of *Jurassic World Evolution* (Frontier Developments 2018), and the adorable cats of *Neko Atsume: Kitty Collector* (Hit Point Co. 2014) are various aesthetic and affective virtual displays of the animal created for the human gaze.

Despite participating in pictorial traditions that reproduce animals in visual media, games also afford players unique ways to engage with animal images through play and interactivity. Animals are reproduced in games using digital models and algorithmic processes that simulate animal-like bodies and behaviors. The animals that appear in games are diverse and serve a broad range of functions within their virtual environments. These simulated creatures encompass "versions of living and extinct 'real' animals, mythological and legendary beasts, images of creatures who potentially can inhabit fantastic worlds or beings which blur the human–animal distinction" (Jański 2016, 91). Animals in games are often heroes and villains, or they may be background elements, companions, or tools (Jański 2016, 91–92, 94). They may also foster critical perspectives on the nonhuman through "becoming-animal" (Chang 2019, 110). As in games like *Frogger* (Konami 1981) and *Shelter* (Might and Delight 2013), becoming-animal occurs in the tension between players' control over the nonhuman avatar and the limits imposed on the avatar by the game system. This conjunction of bodies (human and avatar) can spur imaginative reflection on how animals experience the world. Other games, in contrast, work to subvert dominant narratives of human mastery and control over animals through satire, such as animal mayhem games like *Goat Simulator* (Coffee Stain Studios 2014) and *DEEEER Simulator* (Gibier Games 2020; Caracciolo 2021). Thus, some games offer ways of thoughtfully considering animals alongside visually reproducing them for entertainment.

To broaden examinations of animal depictions in games, I turn to games about wildlife watching and photography to identify how they complicate traditions of reproducing animals in images. Applying discourses from some of these games, I use "wildlife" to refer to their virtual creatures despite their man-made and digital materiality as well as the reality that there are few real-world "wild" animals unmanaged by human institutions, boundaries, or regulations. Overlooking potential challenges to concepts of "wild" and "wilderness," these games ask players to practice reproducing animals visually by photographing wildlife in their habitats. These remediations of wildlife photography practices are typically contextualized by narratives that situate players as observers studying exotic and pristine environments. For example, in Rhino Studio's *Afrika* (Rhino Studios 2009), *Wild Earth* (Super X Studios 2008), and the original *Pokémon Snap*, players assume the role of a photographer documenting virtual animals in natural settings. The games'

visuals and mechanics simulate features of analog and digital photography, such as zoom, framing, focus, and more. Their algorithms also analyze and evaluate players' photographs based on specific parameters (Möring and De Mutiis 2019, 75), identifying the qualities that compose an ideal image, such as the size of the animal in the photograph and if it is performing unique behaviors. Simultaneously, however, these games operate using mechanics like those found in first-person shooters. Despite reframing these mechanics in a different context, "an underlying power dynamic remains, a way of approaching particular subjects as things to target, capture, and 'own'" (Porembra 2007, 53–54). Both the animal images and the mechanics of these games reify the nonhuman as an object for observation, surveillance, and visual pleasure. The acquired images replace the photographed virtual animals (of which there are no short supply) and accrue explicit and measurable value through point systems. These mechanics place primacy on the animal image, reinforcing hierarchies in which humans exert control over objectified animals using technology.

Since the release of games like *Afrika* and *Wild Earth*, simulated wildlife watching in games continues to capitalize on innovations in technology to captivate players. For example, improved 3D graphics and shaders, high-definition displays, larger hardware storage, and online capabilities for sharing content have reshaped how video games remediate photography and emulate its material products. Notably, *New Pokémon Snap* and *Monster Hunter Rise* apply these technologies and more when asking players to observe and document nonhuman creatures using their in-game photo modes. In each artifact, practices of looking, observing, and spectating are contextualized by explicit narratives about nature influenced by Japanese culture and mythology. Despite their similarities, the goals, nonhuman creatures, and mechanics in these games differ significantly from one another so that in analyzing them together, one might see a range of ways games characterize practices of watching and photographing wildlife.

But first, it is important to clarify how the categories of animal and monster fundamentally influence how video games represent the nonhuman. In designing the monsters of the *Pokémon* and *Monster Hunter* franchises, the games' creators and developers drew inspiration from real-world animals. The creator of *Pokémon*, Satoshi Tajiri, was inspired by his childhood interest in bug collecting when designing the pocket monsters that players would eventually capture, train, and fight. The franchise's slogan, "Gotta catch "em all," alludes to the vast number of Pokémon species and reflects the "tension implicit in the franchise from the beginning, between a yearning for nature and a desire to contain it" (Bainbridge 2014, 402). The designs of

most Pokémon species reference living organisms, which are often described in Pokédex entries under "category," a metatextual clue about the inspiration for the Pokémon. For example, Pikachu is categorized as a "mouse Pokémon" even though mice do not exist in the games' narrative world. Similarly, the monsters in the *Monster Hunter* series are modeled on the appearances, behaviors, and movements of actual animals. The game's director and producer express in interviews with various media outlets how they looked to Japanese folklore and live animals, such as tigers, cranes, turtles, and more, for inspiration (Krabbe 2021). Taking these monsters as animals then, we might unpack how their simulations reify and subvert patterns in the ways we practice watching animals, reproducing their images, and maintaining a human–animal hierarchy.

Simultaneously, the creatures of *Pokémon* and *Monster Hunter* are explicitly monstrous, and, as such, they reflect contemporary culture and its pressing ecological concerns. About video game monsters, May (2021) asserts "these horrific figures, through their primordial aesthetic and affective impacts, are adept at foregrounding the ecosystemic nature of the relationship between games and our own world." May's ecocritical approach to games reveals how they allow players to overcome ecological problems by combating virtual monsters, building on Jaroslav Švelch's (2013) arguments. Švelch (2013) claims that video games empower players by giving them control over monstrosity through knowledge and informatic control. Švelch observes:

> Although video game monsters are still made to look disgusting or awe-inspiring, their behaviors are dictated by algorithms that can be analyzed and described. They are slain by the hundreds and turned into rewards and mementoes of players' efforts and skills. (Švelch 2013, 202)

Gathering information about how monsters in games operate gives players power and control over them to emerge triumphant in combat. The qualities of video game monstrosity described by both May (2021) and Švelch (2013) are useful for considering how the monsters in *New Pokémon Snap* and *Monster Hunter Rise* encourage ways of thinking about control and mastery over the nonhuman, be it animal or otherwise. Depictions of monstrosity in these games, coupled with concepts of the animal, influence how these artifacts engage players in particular kinds of relations with the nonhuman.

Alongside wild animals and monsters, both games feature domesticated nonhuman creatures that trouble the neat categories and distinctions identified here. In *New Pokémon Snap*, Pokémon like Pikachu and Eevee

live in the Laboratory of Ecological and Natural Sciences (LENS) facility and teach players how to use the game's photography features and controls. In *Monster Hunter Rise*, anthropomorphic cat- and doglike creatures called Palico and Palamute, respectively, aid players in combat against monsters. These characters function as companion species to players and represent a "bestiary of agencies, kinds of relatings" (Haraway 2003, 6) that complicate human–animal relations as they are framed by wildlife watching and photography in the games. While these creatures are not the focus of this chapter's inquiries, their existence in their virtual worlds mark a liminal position between human and nonhuman, one that may potentially defy objectification but is still subject to human control.

The nonhuman spectacle and informatic control

In *New Pokémon Snap*, wildlife watching is framed through discourses and practices associated with observation, data collection, and scientific discovery. During the game, players travel throughout the Lental region of the Pokémon universe using an on-rails hovercraft and camera to photograph Pokémon and learn more about them. Players' photographic expeditions are completed for LENS run by Professor Mirror and his young research assistants. Professor Mirror asks players to develop a Photodex, or photographic compendium, of the 200+ Pokémon in the region as well as investigate the "Illumina phenomenon," where Pokémon and plants have a unique glow. Players take photographs during daytime and nighttime expeditions to capture Pokémon in their habitats, which include jungles, deserts, and even the ocean depths. Players' photographs are then evaluated by the game using an algorithm that accounts for the content and composition of each image. Unlike in other Pokémon games where Pokémon are caught and trained for battle, catching Pokémon in *New Pokémon Snap* is prohibited in favor of documenting their behaviors in their environments. Thus, players learn that nonhuman species are captured digitally through images for study, rather than physically for battling. For players entrenched in the Pokémon franchise, this directive encourages reflection on what are and are not appropriate ways of interacting with nonhuman species based on institutionalized goals, technologies, and practices. LENS and its mission of ecological stewardship draw specific attention to how the ideals of organizations regulate human interactions with animals.

Furthermore, the game's emphasis on photography as a data collection tool demonstrates how visual production and informatic control are used to

exert mastery over the nonhuman. Dialogue and tips in the game support these links between mastery, images, and information. Professor Mirror notes, "Photographing those Pokémon helps us learn more about them and their ecosystem," providing an anthropocentric and educational imperative for collecting Pokémon data. He also explains that the player's camera "lets you keep in touch and analyze data on the fly." This brief explanation in the game's tutorial clarifies that Pokémon and their unique behaviors are data—information to collect and catalog. Coupled with this discourse is the game's Photodex, which collects images players capture, provides information about each Pokémon, and awards achievements for completion. Through data collection and the Photodex, the nonhuman is cataloged, analyzed, and mastered. These processes demonstrate the game's logic of informatic control where "the medium's computational and procedural nature makes monstrosity fit into *databases* and *algorithms*" (Švelch 2013, 194). As players submit photos for evaluation, they learn how the Photodex database operates as well as how the algorithms for photo evaluation work (i.e., what content and framing Pokémon photos require to successfully meet the criteria of the Photodex). Players, then, may exert informatic control over the Pokémon they encounter in the Lental region by preparing to take specific photos knowing that Pokémon appearances and behaviors are preset along expedition paths and dictated by the game's algorithms. In this way, nonhuman bodies are rendered marginal by the database and algorithms that reduce them to information used to master the game.

Because technology in *New Pokémon Snap* is used to gather data, its frequent and obtrusive applications also draw attention to the ways technologies mediate wildlife encounters and produce idealized images of animals. During the game's expeditions, wild Pokémon roam "free" in their "natural" habitat while the player's character is confined to the NEO-ONE hovercraft vehicle. This confinement is defined by the game's controls, which deny players open-world exploration of the expedition zones, as well as the user interface, which persistently centers on the camera reticle (see Figure 27.1). Through these features, *New Pokémon Snap* simulates engagements with animals like those found in modern ecotourist experiences where technologies for human transportation and animal documentation mediate interactions. When players repeat expeditions to collect Pokémon data, they earn camera and hovercraft functions, routes, and items, which include the ability to run diagnostic scans, throw food (fluffruit), and play music. As developers sometimes "transform the camera into something else by endowing it with special powers that have nothing to do with photography" (Möring and De Mutiis 2019, 77), such liberties with remediation illuminate

Figure 27.1: In *New Pokémon Snap*, world exploration is mediated by the game's user interface, which includes the game's camera reticle as well as buttons for various supporting technologies. Screenshot from *New Pokémon Snap* by Bandai Namco Studios captured using the Nintendo Switch.

alternative ways of seeing or being in the world. In *New Pokémon Snap*, using the game features can elicit previously undiscovered Pokémon behaviors that award more points when photographed successfully. Here, the camera is not only a tool for observing, but also, a tool for *engaging* the nonhuman. These engagements, however, illustrate that the virtual animals' lack of agency as their scripted algorithmic behaviors are not "their own," but rather, are directly "produced" by players' actions. This feature of the game further constructs an idealized reproduction of the animal—one that generally responds positively to human interventions. Moreover, the in-game technologies draw attention to the complex assemblages that mediate human–animal encounters, prodding players to question when, where, why, and how these technologies might be applied to animals. Players may abstain from using in-game technologies altogether by simply riding along without snapping photos or using items. This choice comes at the expense of accruing photos and experience points to unlock new expeditions and different Pokémon, inhibiting progress in the game's narrative. Still, offering choices about deploying technologies in wildlife encounters may encourage players to reflect on their agency when engaging with ecologies and their nonhuman inhabitants.

Whereas wildlife watching in *New Pokémon Snap* is motivated by research efforts and scientific ideals, wildlife watching in *Monster Hunter Rise* is framed by practices of hunting and human survival. In *Monster Hunter Rise*, players adopt the role of a hunter who must slay or capture large monsters

Figure 27.2: A monster called the Bishaten prepares to hurl poisonous fruits at a player posing in the foreground of the image. Screenshot from *Monster Hunter Rise* by Capcom captured using the Nintendo Switch.

that threaten society and the local ecology. Like most video game monsters, those in *Monster Hunter Rise* "exemplify the way in which societies of control deal with and take advantage of enmity, threat, and challenge" (Švelch 2013, 194). Players must use information they gather about their quarries to defeat them. A core part of this information requires cultivating a literacy of the monsters' behaviors through up-close encounters. During hunts, players observe monsters' behaviors to anticipate and ward off devastating attacks (charging, roaring, etc.), play offensively if the quarry shows signs of fatigue or weakness (panting, limping, etc.), and capitalize on inter-monster combat (using a weak monster as a steed to attack another). Through monsters' animated behaviors, *Rise* simulates animals as dynamically and violently responding to players' presence in the environment and the actions of other monsters (see Figure 27.2). These visual spectacles are rendered on a large scale, creating engaging encounters that share similarities with Japanese *kaiju* movies in which "the monsters and the films embody ecological messages" (Rhoads and McCorkle 2018, 2). The visuals also evoke animal cinema produced in the early and late 1900s for big game hunting reels and wildlife documentaries. Like each of these types of films, which often narrativize and construct events that pit man against animal in a battle for survival (Chris 2006, 9), the imagery and mechanics of *Monster Hunter Rise* use human–animal violence as a spectacle for entertainment and a display of mastery.

Beyond the game's combat scenarios, *Monster Hunter Rise* also simulates practices of visually reproducing animals through side quests designed

around photographing monsters and other endemic virtual life. These ancillary activities ask players to document animal activities, such as taking a picture of a Bombadgy (a beast reminiscent of a tanuki) expelling gas or a sleeping Arzuros (a bearlike monster). Like in *New Pokémon Snap*, these images become signifiers of human mastery over the nonhuman as they are added to the game's hunting log, a compendium of data about the game's wildlife. Unlike the Pokémon game, however, the methods for acquiring these images in *Monster Hunter Rise* and the content they provide are less rigidly regulated and analyzed. Instead, the game allows players to take images of nonhuman creatures using practices like those of early-twentieth-century "camera hunters" who would document their kills and sport through photography in the wild. For camera hunters,

> Part of the thrill of their new sport seems to have resided in the physical closeness of photographer and subject. Some claimed to be unarmed during these encounters, but the best known of these adventurers … obtained their most dramatic images of big game such as rhinoceros and elephants by provoking the animals to charge, sometimes by wounding them in a manner that would not be apparent in the photograph. (Chris 2006, 9)

Camera hunters would approach and engage animals to acquire impressive photos of their encounters. *Monster Hunter Rise* simulates the experience of camera hunting for players by offering directed quests as well as a photo mode without the ability to pause gameplay. The former allows players to use technology, by way of their weapons and tools, to elicit specific shots, while the latter simulates the thrill of danger in positioning the hunter near monsters that might (and often do) attack (Figure 27.2). In such instances, the photo serves as a trophy of players' mastery over the nonhuman, while the experience of capturing the photo draws attention to the constructedness of such images and players' agency in producing them.

Social media and alternative ways of looking

While *New Pokémon Snap* and *Monster Hunter Rise* continue traditions of visually reproducing animals from film and photography, both games also incorporate social media practices in their gameplay. These elements reflect contemporary technoculture, reifying ways of editing, circulating, and interacting with images of animals. In *New Pokémon Snap*, players

Figure 27.3: Adding frames and stickers to a photograph taken in *New Pokémon Snap* using the game's Re-Snap interface. Screenshot from *New Pokémon Snap* by Bandai Namco Studios captured using the Nintendo Switch.

can curate and edit photos in their album using the Re-Snap feature, adjusting the brightness, zoom, and other elements of their photos as well as applying filters, frames, and stickers (see Figure 27.3). Players can also share their photos publicly via Nintendo Online services and have them promoted in-game by accruing "likes" from other players in the LenTalk image feed. These features, though likely implemented for internet marketing, simulate trends in viewing and photographing actual animals. Parallels might be drawn between historical practices of disseminating and circulating animal images to the public as well as to contemporary social media practices where users post and circulate content depicting animals, often as a tactic to increase their account's popularity. The photo manipulation and sharing practices in *New Pokémon Snap* and those of viral social media bare striking similarities. During the year before the game's release, content about animals returning to urban areas after COVID-19 quarantine mandates went viral (Daly 2020). Though the content ultimately proved to be fabricated and the images doctored, their virality and accrual of "likes" suggests that the content resonated with audiences hoping for the planet's recuperation of ecological losses. In *New Pokémon Snap*, the simulated photos as well as players' abilities to edit, post, and like them are a similar opportunity to *share* in a rich and pristine, albeit fictional, world ecology.

Monster Hunter Rise similarly nods to social media practices through its Cohoot photo mode, which facilitates capturing selfie-like images.

Figure 27.4: A player uses her Cohoot to photograph her avatar from the third-person perspective. Screenshot from *Monster Hunter Rise* by Capcom captured using the Nintendo Switch.

The Cohoot is an owl companion that accompanies players and carries a vintage folding camera that allows for photos of their avatar with their companions, monsters, and the environment (Figure 27.4). The resulting images resemble "wildlife selfies" (Figure 27.2) or "photographs taken by a tourist in close enough proximity to a wild animal so that they both appear in frame" (Lenzi, Speiran, and Grasso 2020, 70). Wildlife selfies often participate in fantasies of anthropomorphizing animals and restoring them to our daily lives (Lenzi, Speiran, and Grasso 2020). The Cohoot, as metaphor, hints at these desires. The character combines a visual reproduction of the animal with technology (both the remediated camera and the game's operations), so that the animal—a figure marginalized by visual culture and industrialization—can look back at the human player-avatar and reproduce its image in turn. The Cohoot and its mechanics at once acknowledge animals' marginalization through visual and mechanical reproduction while continuing such practices by giving players control over the angle and perspective of their photographs.

Beyond the mainstream titles examined here, independent video games also simulate and critique practices of looking at animals in alternative ways. For example, *ABZÛ* (Giant Squid Studios 2016), a third-person ocean exploration game, reimagines wildlife watching as a practice of observation and visual pleasure through its "meditate" mode. Codified as a ritual of relaxation or spiritual practice, "meditating" in *ABZÛ* depicts wildlife watching as an experience of being with, or perhaps one with, the environment. Players engage in this game mode through a

Figure 27.5: An undersea vista accessible in "meditate" mode. Screenshot from *ABZÛ* by Giant Squid Studios captured using Microsoft Windows.

traveling, disembodied first-person perspective through which they can see marine life swimming and feeding (Figure 27.5). Species names are offered unobtrusively in the lower-right corner of the screen, but players are not asked to document, capture, or catalog animals using in-game technologies. This free form and less obviously mediated approach to observing virtual animals offers an alternative to *New Pokemon Snap*'s comparatively directed processes of watching. Whereas *New Pokemon Snap* emphasizes "correct" ways of looking at animals designated through various technologies and evaluations of photographic techniques, *ABZÛ*'s meditate mode and its sparse options for actions suggest that the nonhuman is "not something to *play with* or control" (Bianchi 2020, 24), but rather to acknowledge and appreciate.

While *ABZÛ* relies on meditation, in part, to frame how players observe animals, *NUTS* (Van Hove, Clarissou, Schwacke et al. 2021), another independently developed title, deploys video surveillance and documentation practices in its representation of wildlife watching. *NUTS* asks players to observe squirrels for an impact study of Melmoth Forest using video cameras, monitors, and more (Figure 27.6). Like the mainstream games described earlier, *NUTS* draws attention to the complex technological assemblages that mediate humans' understandings of animals. Players must strategically place video cameras in the woods, watch surveillance footage, take stills, and fax photos of Melmoth Forest's scarce squirrel population. Whereas mainstream games often suggest that there is an endless supply of animals to photograph, *NUTS* challenges this premise by developing a threat to the squirrels' ecosystem: the construction of a dam by a corporation. When the

Figure 27.6: Various technologies used for squirrel surveillance in Melmoth Forest. Screenshot from *NUTS* by Van Hove, Clarissou, Schwacke et al. captured using Microsoft Windows.

corporation attempts to bury the findings of the impact study, one of the game's characters laments, "then your photos will be the *only* remnants of life in Melmoth Forest." Here, the reality that images often replace animals *entirely* is underscored by the game, emphasizing real-world concerns about ecological losses and the critical roles observation and documentation play in conservation efforts. *ABZÛ* and *NUTS*, then, both challenge popular logics of mastery and control over the nonhuman by depicting alternative perspectives of watching wildlife. These works individually illustrate how games might encourage critical consideration for animals in virtual and actual environments.

Thus, video games simulate a variety of distinct contexts, practices, and technologies through which players watch wildlife and visually reproduce animals. In *New Pokémon Snap*, observation and photography are framed by discourses about ecological study and gathering information. Pokémon are visually reproduced through images that are described as data to be collected, evaluated, and scored. Players exert informatic control over the nonhuman using mediating technologies, but in learning how to apply these technologies, might question their ecological agency and environmental impacts. Similarly, the creatures in *Monster Hunter Rise* can also be reproduced visually using an in-game photo mode. While there are parallels to *New Pokémon Snap* in the way *Monster Hunter Rise* links animal photos to informatic control, the mechanics of the game's photography characterize animals as spectacle by simulating camera hunting and drawing attention to the constructedness of animal photos. In both games, players learn how

to participate in photographic production and social media practices that may extend to contexts beyond the games, shaped by losses in ecological diversity and animal encounters. Furthermore, how these games characterize human–animal relations differ from independent titles, which offer alternative and nuanced perspectives on wildlife watching.

Still, the global appeal of mainstream games speaks to trends about how we consider the nonhuman. Their designs and popularity may reify contemporary practices of watching wildlife, illustrating how video games continue to support certain narratives, practices, and conceptions of the nonhuman that justify anthropocentric actions and maintain hierarchies. At the same time, mainstream games do draw attention to the roles of players' ecological agency and technological mediation in nonhuman encounters. It is worth investigating further how these aspects of gameplay extend beyond the games' systems as players use additional hardware and software, such as video capture systems and streaming services, to further circulate the visual media they produce in games. Broadly though, mainstream video games encourage reflection and experimentation with the ways wildlife encounters are constructed by institutional beliefs, cultural traditions, and technological assemblages both in, and perhaps beyond, game worlds.

Ludography

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About the author

Melissa Bianchi is an Associate Professor of Writing and Communication at Nova Southeastern University. Her scholarship bridges rhetoric and composition, media studies, and ecocriticism. Her work speaks to conversations in ecomedia studies about how video games simulate and complicate perspectives on environmental agency, ecological responsibility, and the posthuman. She has published on these and related topics in refereed journals, such as *Ecozon@: European Journal of Literature, Culture and Environment* (2017), *Green Letters: Studies in Ecocriticism* (2014), and others. Her scholarship also appears in edited collections, including *EcoComix* (2020), *Mediating Nature* (2019), and more.

28. Remediating Green Practices: Landscape Photography and Nature Documentary Filmmaking in Video Games

Stefan Werning

Abstract
The chapter examines how contemporary forms of digital metagaming, specifically in-game photography and recording in-game wildlife documentaries, reenact and reinterpret constitutive practices of earlier environmental movements. The first part of the analysis explores how in-game landscape photography in *Red Dead Redemption 2* remediates earlier aesthetic traditions going back to landscape painting. The second part investigates fictional nature documentaries using footage from games like *GTA V* and *Destiny 2*, retracing how the focus gradually shifts from nature photography and documentary as (digital) "objects" towards replicable and inclusive practices. To conclude, the chapter briefly reflects on other epistemic ecopractices like the remediation of "community gardening" in games like *Stardew Valley* and *Animal Crossing: New Horizons* during the COVID-19 pandemic.

Keywords: ecopractices, in-game photography, in-game videography, remediation, ecomedia literacy

This chapter examines how contemporary forms of digital metagaming, taking in-game photography and in-game wildlife documentaries as examples, remediate and reenact critical "green practices" (Lewis 2012, 315) and asks what their cultural implications are, specifically in terms of fostering eco(media) literacy. According to Tania Lewis, "green practices" include, for instance, tending to community gardens, permablitzing, as well

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as "the rise of "sustainability streets" and "voluntary simplicity" networks" (315). These types of practices arguably constitute individual performative acts of developing and applying ecoliteracy (McBride et al. 2013) as well as negotiating and performing "eco-identity" (Hoffman and Doody 2015, 104), but participating in them in real life is not always easy or even possible (particularly, as elaborated below, under unique circumstances like the COVID pandemic). Despite the individual focus of engaging in green practices, they are also relevant from a societal perspective, not least by playing a role in the emergence, propagation, and societal impact of environmental movements. For example, J. Keri Cronin (2011) documents the connection between nature photography and the rise of national parks. By creating and homogenizing a popular imaginary of nature (often in connection to national identity), landscape photography has galvanized public support and contributed to the fact that the wilderness industry of these parks also became economically sustainable. Similarly, Dawn Drake demonstrates in her doctoral dissertation how nature photography in contemporary media culture still contributes to "awareness" of and perceived "connectedness" to nature as well as our sense of "ecological self" (Drake 2014).

Despite not using the concept itself, Lewis (2012) already points to how these green practices are being "remediated" by investigating "green lifestyle practices on television" (317). Contrary to popular perceptions, she reassesses "so-called 'reality-based' lifestyle programs, from home renovation to cooking and eco-lifestyle shows, [as] intensified sites of social 'play' and experimentation" (317), emphasizing the everyday creativity and corresponding "ethic of experimentation and play" they bring into the "modern suburban contexts" that they originate from (319). Thus, rather than focusing on the TV program as "text," Lewis foregrounds the element of practice, pointing to how a show like *Guerrilla Gardeners* is "trying to link itself to various forms of urban activism [such as] a 'seed bombing mission' around Melbourne at night" (320). Both shows Lewis discusses tackle the "relationship between lifestyle and citizenship" (324), which similarly suggests a more active, social, and involved viewing experience than one might traditionally associate with the medium.

Following this line of argumentation, the chapter at hand explores how digital games allow for remediating these critical "green practices" in virtual environments, and which implications this might have for the players, the goals of climate media education (using the concept of ecomedia literacy outlined by Lopez 2021), and the digital games industry. The analysis is informed by critical discourse analysis following Norman Fairclough's terminology (as summarized by Philips and Jørgensen 2002), which differentiates

between three dimensions (or rather: layers) of discourse, arguing that 1) "texts" afford forms of 2) "discursive practice," which in turn legitimize, inspire but also possibly preclude 3) "social practice" (68). This chapter focuses on the relationship between the first two layers, conceptualizing in-game landscape photography, specifically in *Red Dead Redemption 2* (*RDR2*, Rockstar Studios 2018), as well as in-game nature documentary filmmaking in games like *Grand Theft Auto V* (*GTA V*, Rockstar North 2013), as "discursive practice[s]" (68) responding to the games as "texts." For that purpose, I draw on "the discourses and genres which are articulated in the production and consumption of the text" (69), in other words, material such as publicly available interviews, interview material from online photography and game journalism, academic sources and sample content, and screenshots and videos.

The discursive environment of (in-game) landscape photography

This section will briefly discursively position in-game (nature) photography on the basis of recent game media coverage, departing from the more technical term "screenshotting." Screenshotting (in games) has received increasing scholarly attention in recent years, and it is often inherently framed as "virtual photography" (Moore 2014). Christopher Moore emphasizes its connection to the "performance of identity" (146), but also usefully points out how it can "remediate the photographic past" (147). For example, analyzing tags in a large *Second Life* Flickr group, Moore shows that often-used tags like "'landscape,' 'light,' 'art,' 'pose,' and 'portrait'" (147) reference and reinterpret established photographic genres. Sebastian Möring and Marco de Mutiis (2019) define in-game photography as situated "between remediation and simulation" (70). The authors distinguish between four archetypes: simulated photography, photo modes, "artistic screenshotting" and "creative photographic interventions" via image modification (74). These are useful basic categories, but the examples below suggest that in-game nature photography can often encompass and even selectively combine all four categories. Therefore, this chapter instead advocates "importing" the aesthetics of real-world landscape photography as an established visual genre framework to analyze a small subset of in-game photography more holistically, specifically as part of "green media [in] popular culture" (Parham 2016, 2).

In mainstream discourse, in-game photography is often intuitively (and emphatically) hailed as an "artform" (Hobbs 2021). For example,

screenshotters arguably "explore and engage with video game worlds much like how artists of the past viewed the real world" (Gilmour 2015), which suggests that they develop and train specific forms of perceiving and interpreting in-game objects. This "artistic gaze" can be critical but might also lead to reenacting romanticized views, both on virtual nature as a primarily aesthetic phenomenon, or on virtual characters as quasi-human. Eminent screenshotter Duncan Harris characteristically argues that "(almost) every game character has a soul, even if the developer doesn't realise it," a claim that suggests a romanticized interpretation of the game as a technical object, similar to how artists have historically attributed spiritual qualities to natural phenomena they depicted. Contrary to these optimistic interpretations of in-game photography, professional (landscape) photographers still often seek to separate their craft from screenshotting, possibly owing to external pressure stemming from the fact that "the photography industry is under assault from many fronts" (Ahmad 2017). Wasim Ahmad consequently describes landscape screenshots as art but not photography, implying that because they are taken in nature, "with all of the danger and infinite variability that comes with it," photographs are imbued with a distinct "aura."

While not posing any actual "danger," complex game environments similarly afford serendipitous discovery. For example, a screenshotter using *RDR2* points out how "in this game we can't really predict how a scene will turn out" since the virtual environment requires waiting for "the right moment when various elements come together" (Gilbert 2019). Technical manipulation of images also applies in both cases and, thus, does not serve as a distinguishing feature. Screenshotter @in__the__frame admits to adding "sun burst and lens flare" (Gilbert 2019) to their *RDR2* photographs; similarly, landscape photographers like Ansel Adams have long experimented with technical properties like exposure (Kozak 2019) and perceived nature through the "lens" of photographic technique, the main difference being that these manipulations were typically not "previewable" in real time nor applicable in a nondestructive way as in the case of in-game photography. Personal virtues of the photographer-as-artist constitute another common framing, namely the notion of perseverance both with regard to material and conceptual difficulties, which connects screenshotting and real-world photography. Screenshotter Leo Sang admits that "people think there's no struggle behind [in-game] photos and that they can't be seen as art," but also declares this interpretation rooted "in the past now" (Hobbs 2021), pointing to how it may take hundreds of screenshots to create an image that evokes an emotional response. In turn, discursive and material practices

of screenshotters have, explicitly or implicitly, contributed to bridging the "gap" between in-game and outdoor photography as evidenced, for example, by Eron Rauch's images taken in *World of Warcraft*, which were "processed through a laser film burner and printed using a traditional gelatin silver chemical process so they looked like traditional 1800s view camera images" (Gilmour 2015).

As a medium to think about nature, in-game photography can be considered "real" because of the "double experience" of play (Frissen et al. 2015, 18–19). While the imaginary world of a play situation (like an in-game environment) is fictional, the player is still bound by material needs and constraints; in turn, the emotional and cognitive experience of a play situation can be as "real" as an experience derived from situations not marked as "play." With reference to Cindy Poremba's early association between in-game photography and Susan Sontag's "tourist photographic 'frame,'" Moore similarly argues that in-game photography is "capable of producing dynamic sensations and powerful reactions to the digital object rendered in the moment of interaction between human and machine" (Moore 2014, 149). Thus, like real-world landscape photography (and landscape painting before it), screenshotting should be considered a performative method (Heras and Tàbara 2014), which, more than just producing representations, brings about change within the world or at least in the performer themselves. This implies that both professional and amateur screenshotters are "thinking through" in-game photography about the real world; for example, the project *Down and Out in Los Santos*, which "aims to engage in a sort of social-realism for the software-age, documenting poverty and the lives of the homeless within [*Grand Theft Auto V*]'s socio-economic hegemony," is explicitly described as a "performative engagement"[1] with real-world issues through a virtual world. While the in-game characters are not actually suffering, photographing them can be an effective way to think cocreatively but also self-reflexively about poverty and destitution, by "unearth[ing] the viewer's empathy and humanity through manipulative photographic tropes." In that context, the screenshots themselves are rather "props" than "texts"; they can be understood with cultural scholar and filmmaker Mieke Bal as "theoretical objects" (Bal 2013). Bal argues that images can "articulate and embody thought," even "perform an equivalent of speech acts"; in other words, they "respond … to the look cast onto them" and "entice viewers to theorize" (51–52). For example, visually juxtaposing one's previously taken in-screenshots allows for more concrete reflections on the player's

1 See https://downandout.in-los-santos.com/about.

photographic imagination of a given subject matter and enables them to practice different approaches towards nature perception. Similar to how landscape photography constitutes an "embodied" (Klerk 2020, 202) mode of reflecting on nature and ecology, Bal's notion of theoretical objects emphasizes the embodied aspect of (scholarly) reflection. Below, examples of both in-game photographs and video documentaries serve to unpack and elaborate on how this can apply to developing environmental awareness.

In addition to affecting the person performing it, in-game photography may also encourage viewers to reinterpret in-game environments as symbolic representations, specifically to reconsider the very common "environment as backdrop" (Abraham and Jayemanne 2017, 79) trope, which stems from how gameplay usually clearly differentiates between interactable objects and "just scenery." Yet, without guidance or at least a space for critical discussion, in-game landscape photographers might also, more often than not, act as "gamer-tourists" (Salmond and Salmond 2016, 157), replicating a characteristic "tourist gaze" that frames (in-game) nature as a (virtual) space designed for consumption. Consequently, definitions of "ecostrategies" in the actual tourism industry, which frame natural landscapes as either "(i) a museum for external consumption, (ii) a factory for producing activities and products, (iii) a dedicated place to be utilized [or] (iv) a dedicated place to be contemplated" (Sandell 2016, 64), bear a striking resemblance to how Benjamin Abraham and Darshana Jayemanne distinguish players' interpretation of in-game environments. Below, both the photographer's (or videographer's) and the viewer's side will be explored further before discussing which conditions need to be met for these practices to have longer lasting implications outside of the games themselves.

Remediating landscape photography in RDR2

Landscapes constitute only one of several visual genres within contemporary in-game photography,[2] yet they are an unusually prevalent motif

2 Judging from some of the biggest online archives (such as *Dead End Thrills* or *Virtual Geographic*), other genres include portrait photography, architectural photography (https://www.blind-magazine.com/en/stories/the-imaginary-worlds-of-in-game-photography), advertising photography (https://videogametourism.at/content/art-game-photography), and medium-reflexive microgenres like emulating the material properties and aesthetic conventions of old black-and-white photographic films (https://virtualgeographic.tumblr.com/tagged/Black%20and%20White).

in *RDR2* screenshotting. The game offers different photo mode options. In the regular mode, an option titled "lens" (which zooms the image in and out in various steps) suggests a naturalistic approach to handling the camera in-game. Yet other design elements, like allowing players to freely customize "focus distance" and "blur strength"[3] (which corresponds to focus range), prioritize convenience over realism. The game also features an in-game camera object, which remediates the embodied experience of setting up a historical camera, including the obligatory tripod, in the game environment. Furthermore, in the *Naturalist* expansion for *Red Dead Online* (Rockstar Studios 2018–), an "advanced camera" can even be bought from a historical catalog. Yet, the design affordances of the photo mode itself, for example, how the "simulation of photography is reminiscent of gunplay" (Möring and De Mutiis 2019, 75) are not the main concern in this chapter.

Tutorials on how to take aesthetically pleasing, "atmospheric and dynamic" photography in *RDR2* and its online counterpart (PhotographyGamer 2020) differ between black-and-white and color shots; while the latter also feature landscape scenes like a river at sunset or the player character on a cliff, looking out over a valley, the former usually foreground people. Many video tutorial creators like PhotographyGamer encourage players to recreate mid-nineteenth-century photography tropes, not least because *RDR2* features numerous predefined filters that add grain or vignette effects to evoke old film material. In comparison, landscape photography does not appear to be systematically facilitated by tutorials and similar paratexts at the time of writing.

One way to explore how *RDR2* affords the photographic imagination of nature is by following the developer's commentary on inspirations for designing the game's landscapes, specifically the Hudson River School (Goldberg 2018), a mid-nineteenth-century American art movement that expanded romanticist landscape painting to areas including the Hudson River Valley and adjacent mountain areas but also New England, the American West and, to a lesser degree, South America. Apart from its geographical focus, the movement iterated on themes like discovery, exploration, and settlement which informed contemporary "frontier" mythologies. It catalyzed American exceptionalism and has shaped popular framings of American cultural identity to this day, being superseded by other movements in the late nineteenth century but "rediscovered" in the second half of the twentieth

3 See https://rockstarintel.com/red-dead-redemption-2-on-pc-will-have-a-brand-new-photo-mode.

century.[4] Yet, the Hudson River School also, as Peter Fedoryk (2018) outlines, facilitated early environmental movements in the United States with its polarizing but affectively engaging depictions of nature. While *RDR2*'s art director Aaron Garbut claims that the studio was "not looking to film or art for inspiration" because they "were building a place, not a linear or static representation," he later concedes that, for example, "Owen Shepherd, [Rockstar North's] lighting director, looked to the pastoral and landscape painters like Turner, Rembrandt and American landscape painters from the nineteenth century such as Albert Bierstadt, Frank Johnson, and Charles Russell."[5] Thus, the game can be understood as a remediation of romanticist landscape painting using 3D game graphics technologies like fog shaders and volumetric lighting, whereas virtual photography in turn remediates landscape photography using these virtual environments as material. Moreover, collections of in-game landscape photos on fan websites like GTABase[6] illustrate how players, for the most part assumedly unknowingly, intuitively "reenact" the Hudson River School's aesthetic categories in their in-game photographs (see Figure 28.1).

In addition to landscape paintings, in-game photographers in *RDR2* also remediate pictorial traditions of nature established in American Western cinema. In fact, Peter Cowie points to aesthetic continuities between the two media genres, arguing that the Hudson River School had been one of the primary sources of inspiration for directors like John Ford (Cowie 2004). Like the Hudson River School, Western cinema has been intertwined with environmental movements in the United States (Murray and Heumann 2012). Thus, more than remediating the films-as-texts, *RDR2* enables and even encourages players to reenact modes of "perceiving nature" informed by decades of movie Westerns. Many screenshots in the aforementioned GTABase collection consequently exhibit visual tropes reminiscent of Western cinema, including many sunrise/sunset scenes, visual framing of the scene through objects like cacti or power lines, slightly asymmetrical compositions and shots looking down over the in-game character's shoulder on hills or mountains.

Performing in-game landscape photography clearly draws attention to both virtual plants and wildlife in a way that regular gameplay usually does not. Edward Crowley, Matthew Silk, and Sarah Crowley (2021) have

4 See https://www.metmuseum.org/toah/hd/hurs/hd_hurs.htm.

5 See https://www.polygon.com/red-dead-redemption/2018/10/26/18024982/red-dead-redemption-2-art-inspiration-landscape-paintings.

6 See https://www.gtabase.com/red-dead-redemption-2/photos/?limit=30&thumb_limitstart=0.

Figure 28.1: In-game landscape photo from GTABase (see https://www.gtabase.com/red-dead-redemption-2/photos).

argued that playing *RDR2* may facilitate learning about real-world ecologies, including "animal behaviours and interspecies interactions" (1239). The authors point out how players' success at identifying a species often appears linked to its "in-game utility value" (1229), but also emphasize that deeper learning engagement may be fostered by the "immersive qualities of the gameplay," which may "provoke real emotional reactions" (1239). As a slower alternative to common playing styles, in-game photography can help intensify this effect and address the often-diagnosed lack of "plant and animal awareness" (Bakar et al. 2020), at least in the context of the game's virtual spaces. This alleged "retraining of perception" due to a deceleration and defamiliarization of regular viewing habits has been previously attributed to independent ecocinema (Parham 2016, 177). However, animal or plant "blindness" does not merely imply not noticing flora and fauna around us, but also failing to understand their interrelatedness with and impact on their natural surroundings. Acknowledging these systemic aspects as well as transferring the newly developed ways of perceiving (virtual) nature into the real world arguably requires pedagogical and institutional support, as will be briefly elaborated below.

Another aspect that might require a critical context for in-game landscape photography to play to its strengths is the possibly problematic focus on "objectifying" nature inherent on "taking" and collecting in-game photos. This specifically applies when games incorporate this practice into their core gameplay, for example, by allowing players to upvote photos in *New Pokémon Snap* (Bandai Namco 2021), or into metagame events like the

"Naturalist Photo Challenge"[7] in *Red Dead Online*, in which players compete for prizes. Both cases continue aesthetic traditions, in which the animal as "supposedly primitive Other was already being sought, displayed, and observed as entertainment," as Melissa Bianchi argues in her chapter on in-game photo modes in this book. These potential ambivalences, as well as how they may be addressed within climate education contexts, will be briefly addressed after the following section, which explores in-game videography as a related, yet subtly different remediated ecopractice.

Remediating nature documentary filmmaking in *GTA V* and *Destiny 2*

Nature documentaries have been a mainstay of what is now often regarded as "green documentary" (Parham 2016, 193), which refers to the use of nonfictional film and television for the purpose of environmental and ecological education and, occasionally, persuasion. Especially the animal documentaries narrated by David Attenborough, starting with *Life on Earth* in 1979, have become iconic in contemporary popular culture and, with their focus on cinematic realism, have reframed our perceived relationship with animals, for better or worse (Gouyon 2019). The genre, culminating in recent Netflix productions like *David Attenborough: A Life on Our Planet* (2020), has captured popular attention both through familiarity, by drawing on habitualized narrative patterns (including Attenborough's recognizable narration), but also, paradoxically, the "never-before-seen trope," referring to the search for surprising perspectives on familiar animals (Gouyon 2019, 102) and high production values. The examples below demonstrate how this "wildlife blockbuster" (205) subgenre is being reappropriated and reenacted in digital games as a performative practice.

The marine life documentary *Into the Deep* (8-Bit Bastard 2014), "filmed" in *GTA V,* is a characteristic example, and it evokes several tropes of the genre, starting with the title and establishing shot, the virtual camera right above the ocean surface, and moving on to the dramatizing use of music and the anthropomorphizing backstories of its animal protagonists. The same applies to its "companion piece" *Onto the Land* (8-Bit Bastard 2015), which documents the animals inhabiting the mountains and valleys of Los Santos and Blaine County in the game (see Figure 28.2). These examples could be analyzed

7 See https://www.rockstargames.com/newswire/article/k49a58878822k2/The-Naturalist-Photo-Challenge.

Figure 28.2: Screenshot from *Onto the Land* (see https://www.youtube.com/watch?v=KsXsyepW6pM at 3'51").

as "texts," following the ecocritical perspective of authors such as Parham (2016), who refers to Bill Nichols' documentary modes to identify motifs in "environmental and ecological documentary" (195). However, it appears more fruitful to consider them, like the in-game landscape photographs above, primarily as theoretical objects, that is, as objects with an agency of their own or as props in a performative practice of developing environmental literacy (as defined by McBride et al. 2013). For example, creating these "documentaries" requires a combination of "environmental sensitivity," "knowledge of environmental issues," particularly "cognitive skills" (7) and, given the media-reflexive function of the videos, also elements of "intuition [and] creativity" (16) associated more directly with ecoliteracy. The fact that these videos are being created both within naturalistic (see *GTA V*) and fantastical (like, for instance, *Destiny 2*, see Kimber Prime 2020) virtual worlds, suggests that, more than the game environment itself, the genre affordances of the nature documentary genre constitute the primary reference point for their creators. Videos like *Into the Deep* demonstrate how the Attenborough-style animal documentary has gradually transformed in the perception of participatory media users from a "mere" genre, in the traditional sense defined as a set of formal characteristics, into an inclusive, replicable practice.

This remediation of a media genre "as practice" rather than as a set of "objects" exhibits conceptual similarities with Manovich's concept of deep remixability (Manovich 2007), which suggests, using examples like the lens flare in video games, that digital media allow for reenacting the

practices and material conditions of earlier media techniques rather than simply their aesthetic markers. More importantly, it evokes the notion of "genre affordances" (Alacovska 2017, 666), which Ana Alacovska mobilizes to claim that familiar formal and rhetorical elements of genres like travel guidebooks have been instrumental in the emergence of participatory media practices well before digital media. Accordingly, knowledge of how a genre "works" has allowed for media practitioners to collaborate in a decentralized manner on joint projects, and this body of shared knowledge facilitates the formation of communities of practice. In the case of *Onto the Land*, the documentary creators draw on the genre's conventionalized portrayal of real animals and similarly rationalize the behavior of in-game animals. Commenting on a virtual rabbit on a mountain, they argue, for instance, that "being this high up has an advantage [because] a rabbit's eyesight is very acute, and at this altitude they are able to spot approaching predators from much greater distances" (8-Bit Bastard 2015, 7'17"). The *D2* documentary, *Creatures of Destiny*, applies the same rationale to imaginary creatures like reptilian-bird hybrids (Kimber Prime 2020, 2'6"). Even though the behavior of the virtual animals documented on video is algorithmically defined, this practice arguably can performatively address similar complications within human–animal relationships and pose similar questions as real-world wildlife photography, for example, regarding the symbolic potential of "respecting" a (real or virtual) animal's natural habitat, or how photographing wildlife functions as a self-reflexive practice (Brower 2009). For example, "playing slowly" to record animal footage or even waiting for specific behavioral loops to trigger clashes with the way the game would normally be played (that is the "orthogame" as elaborated by Hans-Joachim Backe in this book). Yet, how this embodied experience compares to real-world wildlife observation, and what reflections on our relationship with nature can be derived from that, usually will not become clear just from the practice alone. Therefore, the next section briefly discusses the context required for remediated ecopractices to potentially become transformational.

In-game photography and videography in the context of ecomedia literacy

The examples above indicate the epistemic potential of in-game photography and videography, but remediated ecopractices are not critical and self-reflexive by default. For instance, Duncan Harris dismissively notes

that his existing screenshot work in *Dragon Age: Origins* "was mostly just scenery" rather than the "combat shots" he is more interested in (Gilmour 2015). That is, a photographic reframing of virtual nature requires contextual knowledge and a space for discussion to facilitate a lasting "retraining our perception" as suggested above. Moreover, even though the virtual landscapes of *RDR2* have captured the popular imagination and media attention, online communities in which players would share and discuss their in-game (landscape) photographs are still few and far between,[8] as photos are rather shared via Instagram[9] than via platforms like Flickr, which host many traditional (landscape) photographer communities.[10] Stable online communities could help draw attention to the ambiguities inherent in the practice, like the potentially constraining influence of tools. One of the first recognized examples of in-game photography, the collection of portrait screenshots *13 Most Beautiful Avatars* captured in *Second Life*,[11] utilized external software and was printed on canvas for exhibition in galleries. In comparison, many commercial games now offer dedicated photo modes, which are, first and foremost, marketing tools that incentivize users to document and share the visual appeal of the game's environments or characters. And indeed, prominent screenshotters have argued that they find it more appealing "to capture a game's natural environmental beauty … because it's a real contrast to what climate change is doing to our real world" (Hobbs 2021) than to critically engage with the "beautifying" impetus of many games' photo modes.

To unlock the potential of in-game photography as a critical practice, Lopez' notion of ecomedia literacy (Lopez 2021), which addresses the role of media in sustainability education, can be useful. It describes a "historical neglect of the environment in how media are taught and conceptualized" (4), including a neocolonial bias in specific media forms like "broadcast media [a]s a particularly Western mode of communication," which stabilize the "status of Western culture as 'gift giver'" (94). Instead, for in-game landscape photography and videography to have a societally transformative impact like early landscape photography requires a more inclusive approach supported by 1) active and self-sustaining communities of practice, 2) accessible and

8 As of writing, individual posts are still the most common occurrence; see, for example, https://www.reddit.com/r/reddeadredemption/comments/af2yaa/ingame_landscape_photography_by_me_ill_try_to.

9 See authors like Gilbert (2019), who refers to prominent RDR2 photographer accounts like @mesopotamian_meow or @in__the__frame.

10 See https://www.flickr.com/groups/13197975@N00.

11 See https://01001011101011o1.org/show-13-most-beautiful-avatars.

Figure 28.3: Screenshot from a *WIRED* video on selecting wildlife images with photographer Steve Winter (see https://www.youtube.com/watch?v=7VVU0DlIWuE at 3'14").

flexible tools (not least to challenge the corporate bias of photo modes), and 3) distribution channels/platforms that bring these images into the popular visual imaginary and provide a back channel, for example, to identify and outgrow overly romanticizing representational traditions. According to Margreth Lünenborg and Christoph Raetzsch "a multitude of participatory practices do not necessarily lead to a joint idea of what a movement is about or what its aims are" (2017, 17). Thus, we need to consider scaffolding strategies to provide this context.

This could, for example, be a workshop format in which participants are asked to reenact the perspective of a real-world nature photographer in a game. These categories (see WIRED 2021) include emphasizing the "emotional connection" by always showing the eyes, which need to be in sharp focus even with motion blur in the picture (see Figure 28.3), or selecting photographs that suggest characteristic "behavior" for the animal. Alternatively, participants could creatively engage with critical claims like Carolyn Kane's argument that traditional landscape photography glosses over human interventions such as the by-products of "post-industrial consumer excess" (Kane 2018, 131) and perpetuates obstinate "demands for the American utopia" (126). This could involve aestheticizing waste as part of the landscape or leaving small, almost imperceptible irritations in images otherwise evoking the visual rhetoric of a natural "sublime." Formats like these might enable discussions about which aspects are transferable and which are not, as well as how this practice might inform our everyday appreciation and stewardship of nature.

Outlook

The concluding section briefly addresses practical considerations and possible avenues for further research. First, it is important to acknowledge in-game landscape photography and videography as part of a larger, yet often marginalized spectrum of alternative playing practices, such as when players of *RDR2* follow nonplayer characters (NPCs) to observe their behavior.[12] The evident similarities to documenting in-game animals suggest that these practices do not simply constitute forms of thinking "through" the game about nature but also thinking "through" natural phenomena about the technical properties of the game and the computer, which Janet H. Murray (1997) described as an "enchanted place" (99), a "transitional object" (100) that we simultaneously seek to demystify and remain immersed in.

Second, as implied in the remarks about photo modes above, it is important to consider the economic context in which these remediated practices operate. This includes, most basically, the fact that "video-game photographers do not own their shots" (Hobbs 2021); rather, screenshots belong to the developer and cannot be monetized without their permission. Yet, corporate influence also manifests itself in more subtle ways. While many grassroots creations remain obscure, the documentaries of 8-Bit Bastard were officially recognized by Rockstar Games on its news website.[13] Duncan Harris from Dead End Thrills received privileged access to developer tools from the developers of *EVE Online* (CCP Games 2003–) to "build several scenes from scratch using [the game's] engine and assets, layering, scaling and manipulating effects purely for artistic ends," but also resorted to "hack[ing] the post processing values of Unreal" (Gilmour 2015) to create more cinematic-looking shots of *Batman: Arkham City* (Rocksteady Studios 2011). These examples indicate how in-game landscape photography, especially as it may eventually outgrowth its current niche status, is inherently part of the political economy of the broader games industry ecosystem. This also applies in the case of Kojima Productions co-opting landscape photographer Pete Rowbottom for a tutorial on landscape photography in the game *Death Stranding* (Kojima Productions 2019), which communicates important aspects of landscape photography to a broader audience but also inherently ties them to one particular game, with the global head

12 See https://www.youtube.com/watch?v=MrUJJgppMn4.

13 See https://www.rockstargames.com/newswire/article/ak1911209053k9/the-five-states-red-dead-redemption-2-nature-documentary-by-8-bit-bast.

of marketing and communications, Jay Boor, claiming that "the world of virtual photography [is] becoming increasingly intertwined with real-world photography," and that it will be "interesting to see how those two worlds influence one another creatively" (Campbell 2020). Kojima Productions similarly utilize the genre affordances (see above) of and associations with the documentary, albeit from a corporate perspective; for example, Kojima staff asked Rowbottom, an award-winning landscape photographer, to create real-world photographs, which are then marked as "inspired by *Death Stranding*" in the video, thus tapping into the aforementioned discursive conflation but with the purpose of promoting the game and the realism of its virtual landscapes.

On the other hand, critical metagaming practices can also help carve out niches in the commercial games industry for new (micro)genres. Games like *Beyond Blue* (E-Line Media 2020), *Birding Simulator* (T-Bull 2022), or *Photography Simulator* (Madnetic Games 2022) capitalize on the growing popularity of in-game photography and the inherent "streamability" of the genre to be economically viable and gradually "condense" in-game (wildlife) photography into an actual game genre. This might incur the risk for the metagaming practice to "devolve" into a regular orthogame (see above) playing practice and to lose its critical momentum in the process, given how the "materiality and embodiment of social actions through tools, artefacts or media" (Lünenborg and Raetzsch 2017) contributes to the bodily "routinisation of actions" (21), which may be accompanied by a "cognitive routinisation" that counteracts the more transgressive, appropriative origins of these practices. For example, *Photography Simulator* procedurally foregrounds technical aspects of commercial photography[14] like different lenses or gadgets like drones (see Figure 28.4), which may easily overshadow the intrinsic motivations and playful performativity of, for example, observing plants or animals in *RDR2*.

Finally, the findings in this chapter are intended to serve as a "blueprint" that can be adapted to investigate the remediation of other epistemic ecopractices in digital games. For example, games like *Stardew Valley* (ConcernedApe 2016) and *Animal Crossing: New Horizons* (Nintendo 2020) remediate community gardening, one of the green practices discussed by Lewis (2012), within virtual environments. Despite not being "real," cultivating these spaces may instill shared values, principles and "do's and don't's," similar to real-world communities of practice, including walking

14 See https://petapixel.com/2021/09/14/photography-simulator-is-a-wildlife-photography-video-game-for-pc.

Figure 28.4: Screenshot from *Photography Simulator* (see https://www.zockerpuls.de/photography-simulator).

slowly since "running … can lead to you inadvertently stomping on flowers [and] ruin the host's flowers for days" as well as avoiding the "tak[ing of] fruit or resources without permission" (Favis 2020). These examples illustrate how remediating community gardening, according to Lewis (2012), can be understood as one of many "everyday forms of green citizenship," an interpretation of civic engagement linked "to creativity, community-building and romantic concerns about the art and aesthetics of everyday living" (316). August John Hoffman and Stephen Doody (2015) describe this impact as reinforcing "eco-identity" (105) by fostering "psychosocial well-being and resilience" (106), especially under the conditions of the 2020 COVID-19 pandemic. The concept also has an inherently social focus, as it is defined by "understanding community needs" (110), "being able to help in one's community" (111), and experiencing "community connectedness" (112). Research into these practices can be complemented with more individualistic interpretations of tending to one's virtual garden in *New Horizons*, or the emergence of new personas like "the social player, the turnip trader, the gardener [or] the artisan" (Comerford 2021, 101). Such an angle highlights how "real-world" green practices have distinctly mediating characteristics themselves, in this case, the permaculture garden acting as a shared "medium" that allows for both internally and externally communicating values and motivations associated with ecological identity. Examples like in-game landscape photography thus illustrate that both embodied and remediated ecopractices should not be regarded as mutually exclusive but allow for informing, scrutinizing, and popularizing each other if approached from a comparative perspective.

Ludography

Animal Crossing: New Horizons. 2020. Nintendo. Nintendo Switch.
Batman: Arkham City. 2011. Rocksteady Studios. Warner Bros. Interactive. Multiplatform.
Beyond Blue. 2020. E-Line Media. Multiplatform.
Birding Simulator. 2022. T Bull. Microsoft. PC.
Death Stranding. 2019. Kojima Productions. Sony Interactive. Multiplatform.
Destiny 2. 2017–. Bungie. Activision/Bungie. Multiplatform.
Eve Online. 2003–. CCP Games. PC.
Grand Theft Auto V (*GTA V*). 2013. Rockstar North. Rockstar Games. Multiplatform.
New Pokémon Snap. 2021. Bandai Namco. Nintendo. Nintendo Switch.
Photography Simulator. 2022. Madnetic Games. Madnetic Games, PlayWay. Microsoft.
Red Dead Online. 2018–. Rockstar Studios. Rockstar Games. Multiplatform.
Red Dead Redemption 2. 2018. Rockstar Studios. Rockstar Games. Multiplatform.
Stardew Valley. 2016. Concerned Ape. Multiplatform.

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Index of Games

Index of Names

Index of Subjects

With the climate crisis and its repercussions becoming more and more tangible, games are increasingly participating in the production, circulation, and interrogation of environmental assumptions, using both implicit and explicit ways of framing the crisis. Whether they are providing new spaces to imagine and practice alternative forms of living, or reproducing ecomodernist fantasies, games as well as player cultures are increasingly tuned in to the most pressing environmental concerns.

This book brings together chapters by a diverse group of established and emerging authors to develop a growing body of scholarship that explores the shape, impact, and cultural context of ecogames. The book comprises four thematic sections, Today's Challenges: Games for Change, Future Worlds: New Imaginaries, The Nonhuman Turn, and Critical Metagaming Practices. Each section explores different aspects of ecocritical engagement in and through games. As a result, the book's comprehensive scope covers a variety of angles, methodologies, and case studies, significantly expanding the field of green media studies.

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"*Ecogames* represents the delivery of a long overdue resource for newcomers to the field, enabling students and faculty alike to get across current debates and research trajectories, and will be cited for years to come as the climate continues to deteriorate and games are forced to reckon with their role in it."
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"*Ecogames* provides a pluralistic view of play set against the climate crisis. This is an invaluable volume for thinking, doing and playing in the Anthropocene."
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