Editorial *Ecozon@* Issue 8.2

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Welcome to Issue 8.2 of *Ecozon@*. The themed section of this issue is devoted to 'Green Computer and Video Games.' Literature has been the focus of our journal, apart from special numbers on religious discourse (2.2), environmental history (4.1), translation (5.1), eco-art (6.2), and occasional essays in the themed and general sections on film, popular music and philosophy. However, the world of virtual reality has not been entirely ignored: our most recent issue ('South Atlantic Ecocriticism') contained an article by Palmar Alvarez-Blanco on video-activism as a medium of cultural emancipation and political change. And Stuart Mugridge wrote in Number 6.2 ('Artistic Ways of Understanding and Interacting with Nature') about the potential of the digitalised landscapes in computer games and the 'gaming' of encounters with the natural environment to unite intelligent comprehension of nature with sensory experience. Gaming has become a hugely popular global leisure activity. Green gaming is emerging as a new field of enquiry, sharing questions and methodologies with research into popular culture, environmental communication and green media. A number of articles on virtual reality and the environment have appeared in *ISLE*, and our sister journal, *Green Letters*, published a special number on 'Digital Environments' in November 2014. It was therefore a logical step to seek to delve deeper into the subject of green video and computer games in a special issue of *Ecozon@*, and we are grateful to Alenda Chang and John Parham for taking on the task of editors.

On the one hand, computer games can be read as environmental texts: as a form of contemporary culture with enormous popular appeal and a major global industry, they can give unique insights into regionally differing and shifting environmental attitudes. On the other, although there has been a tendency to regard with alarm the huge amount of time spent playing computer games by contemporaries young and old, as an activity diminishing opportunities for experiencing the real world, these games have become ever more immersive and their environments ever more 'real' over the last four decades. This calls out for an unbiased ecocritical assessment of their potential to foster environmental awareness, and reconcile nature with culture. In their introduction, Chang and Parham give a helpful overview of relevant research in environmental communication, sustainability studies, eco-media and green popular culture, reviewing key arguments and findings. They discuss the environmental issues, positions and communicative and aesthetic strategies which characterise the different types of green game (mainstream and countercultural, independent and corporate, ludic and meditative, online, console and mobile), indicating how these expand the range of existing green media and cultural studies. They go on to contextualise the essays collected here by Josef Nguyen, Hans-Joachim Backe, Alexander Lehner, Kyle Bohunicky,

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Lauren Woolbright, Bradon Smith, Adena Rivera-Dundas and Melissa Bianchi, drawing out their original contribution to green games studies.

The General Section of this issue consists of two articles, by Anna Chiafele and Marta Wójcik-Czerwińska. Chiafele offers a reading of Elisabetta Bucciarelli's noir novel *Corpi di scarto* which is grounded in Material Ecocriticism. She shows how Bucciarelli's account of the life of a landfill site goes beyond the catastrophic imagination frequently associated with toxic discourse, by endowing refuse with a degree of agency, and depicting the interaction of the inhabitants of the site with it as a form of transformation and rehabilitation. Wójcik-Czerwińska's article, 'Plotting Against Oil in American and Canadian Non-fiction,' compares a recent American essay on an oil pipeline with a Canadian one. Drawing on Stephanie LeMenager's notion of 'plotting against oil,' she analyses means by which the presence of oil in today's world is revealed and its impact on the landscape and the lives of people whose livelihoods and cultures have been shaped by the natural world is exposed.

The power of artwork, prose writing and poetry relating to virtual reality and video games to influence attitudes towards the environment both cognitively and emotionally, and be important allies of the environmental imagination, is demonstrated by five contributions in the Creative Writing and Art section of the issue. We are delighted to have obtained permission to reproduce a series of striking Augmented Reality images (including one on the cover of the issue) by the distinguished American media artist, Tamiko Thiel. Her *Gardens of the Anthropocene*, originally commissioned by the Seattle Art Museum Olympic Sculpture Park, imagine a science fiction future in which flora and fauna have adapted to a climate-changed world. They are followed by an intriguing installation by the Chilean-born artist and architect Pia Galvez Lindegaard which is based on the QR code – the barcode originally designed for the automotive industry in Japan, which has become a universal way of communicating information about the item to which it is attached. Anthony Lioi, Director of the Writing and Communication Center at the Juilliard School, New York and author of an academic article in an earlier number of *Ecozon@*, contributes an account of his fascination since childhood with the robot R2-D2 from *Star Wars*, which is as funny as it is thoughtful. Poems by the Chilean Luis Correa-Diaz integrate the digital sphere in the world of the poet's physical being and emotions through insertion of Youtube links. And finally, the Costa Rican poet Ronald Campos López demonstrates different ways of combining bodily with virtual encounters in 'Two Homoerotic Ecopoems and Other Voices.' As Serenella Iovino comments in her introduction, López gives voice to natural entities traditionally considered inert, while combating homophobia.

The issue ends with reviews of recent publications. It opens with a review essay by Karsten Levihn-Kutzler responding to two recent books on risk, a volume of essays on *The Anticipation of Catastrophe: Environmental Risk in North American Literature and Culture* edited by Sylvia Mayer and Alexa Weik von Mossner, and Molly Wallace's *Risk Criticism: Precautionary Reading in an Age of Environmental Uncertainty*. Lenka Filipova reads Robert Tally and Christine Battista's book on *Ecocriticism and Geocriticism*. Abele Longo reviews Serenella Iovino's groundbreaking study, *Ecocriticism and Italy*; Connor

Pitetti reads a monograph by Chris Pak on environmental concerns in Science Fiction; Heather Sullivan assesses Reinhard Hennig's German study of environmental literature in Iceland and Norway; and Veronica Fibisan explores Kate Rigby's *Dancing with Disaster: Environmental Histories, Narratives, and Ethics for Perilous Times.*

We are sorry to announce that Paloma Villamil Agraso is leaving the editorial team. We thank her for her hard work on the journal as Editorial Assistant over the last seven years, and wish her all the best for the future. In her place, we welcome Beatriz Lindo Mañas and Alejandro Rivero Vadillo, who join us as new editorial assistants with effect from issue 9.1.

Ecozon@

Vol 8, No 2

Green Computer and Video Games: An Introduction

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Whether framed as environmental communication, 'sustainable media', 'eco-media', or 'green popular culture' environmental media and cultural studies constitutes an embryonic but rapidly developing body of research. The vibrant, multi-layered engagements of the eight essays collected here demonstrate not only that green gaming engages with all of the issues addressed in that research but also that games and game studies can expand the range of this incipient green media and cultural studies. This volume of *Ecozon@* is the first collection of essays to focus exclusively on the topic of 'Green Computer and Video Games'. Working from these essays, we will demonstrate in Part I of this introduction how attributes specific to gaming might address and expand our understanding of environments and ecological relations; and, in Part II, how these essays might help develop green game studies itself.

Part I: Locating Games in Green Media and Cultural Studies

Ecocritical work has gradually begun to address all dimensions of media and cultural studies, in effect adopting the "macrosociological approach" advocated by Richard Maxwell and Toby Miller. That approach encompasses "physical" production, ideology and political economy, text, and what they call "anthropological" questions such as access to cultural production, patterns of consumption and reception, and the generation of meaning (17-18). Addressing a rich ecology of media, culture, humanity, nature, and nonhuman life, the essays collected here consider numerous types of game and gaming and varied ecological perspectives. Collectively they examine the potential of digital games to raise environmental awareness, even to foster action, while engaging candidly with how games and gamers may be complicit in, or at least uncomfortably close to, legitimating unsustainable practices whether at a political or sociological level. We will begin this introduction by relating game studies to the broader field of eco-

media studies and go on to highlight a rich ecological potential of digital games that is more than evident in this issue.

The first of Maxwell and Miller's "macrosociological" elements is addressed in a recent spate of work around what Nicole Starosielski and Janet Walker in *Sustainable Media* (2016) call "resource media", the material realities that accompany the manufacturing processes and resource usage through which popular cultural texts and their host media (televisions, computers, etc.) are produced, distributed, exhibited, consumed, or disposed of. The commentary focuses principally on energy use and matter (see Cubitt 10). As many have pointed out, ICTs and digital media—the platforms and environments in which computer games operate—are important subjects for such considerations (Maxwell and Miller 1-4; Cubitt 13); indeed, as Serenella Iovino notes in her editorial to this issue, in the "striking contradiction between the planned obsolescence of their forms and the "deep time" of their matter," computers embody much of the current discourse around the concept of an Anthropocene epoch defined by humanity's indelible mark on the Earth.

In relation first to matter, concerns have long been expressed about the difficulties of recycling the numerous, varied minerals and metals from which computers are manufactured and about the toxic chemicals—mercury and lead in circuit boards; cadmium in batteries, ink, cables and screens—that can contaminate groundwater, pollute air, or, in the case of cadmium, precipitate kidney, bone, or lung disease (see Mazurek 53-63; ewasteguide.info). Such concerns have been exacerbated by instances of social-environmental justice relating to the "offshoring" of e-waste and the recycling of toxic matter in developing countries, with perilous human and environmental consequences (Rust 92-5; Maxwell and Miller ch.4; Urry). Correspondingly, in terms of energy use, carbon emissions, and, ultimately, climate change, Cubitt notes that, while cloud computing has been lauded as a greener alternative to "ecologically destructive" hardware, the relentless move to media rich, interactive, and unendingly networked content that it helps serve is giving rise to demands which can only be met by vast and numerous server farms which are exponentially increasing energy use. For example, Cubitt reports that Blizzard, the company behind the globally popular massively multiplayer online role-playing game (MMORPG) *World of Warcraft* is estimated to have around five hundred servers in the US and beyond supporting its 7.7 million subscribers (17).

Consequently, habitual use of computer hardware and software and participation in digital and online networks integrates us all into wider and seemingly unsustainable levels of resource and energy consumption, a point addressed in Josef Nguyen's essay here on how games can attend to their own material conditions. Such matters make any articulation of green gaming questionable and, even worse, potentially complicit in mystifying "its own material context" (Milburn 203). Nevertheless, while making this point Colin Milburn has argued that we ought at least to consider whether, in recompense, gaming can engender the "ecological awareness" and "cognitive resources" to address environmental risk and even to encourage us to do something about it (203-4). To consider such possibilities requires, in the first place, focusing on a further

"macrosociological" dimension to green media and cultural studies, the economic and political organization of media forms and technologies and the ideology (or ideologies) that underpin this.

Perhaps because of the relationship of gaming to corporate media conglomerates, political, economic, and ideological dimensions have been prominent in green game studies. Allison Carruth has noted, for instance, how long-standing utopian connotations around ICT and the internet and, specifically, the "ethereal" metaphor of the "cloud" mask not only the "energy-intensive and massively industrial infrastructure" of "servers, wires, undersea cables, microwave towers, satellites, data centers, and water and energy resources" but also the manoeuvrings of the corporate bodies that produce, operate, sell, profit, and mine individual data from networked systems (342-3, 359-60; Parks and Starosielski). However, the more political emphasis taken by green game studies is also partly due to the influence of one heavily cited book, Nick Dyer-Witheford and Greig de Peuter's *Games of Empire: Global Capitalism and Video Games* (2009).

Dyer-Witheford and de Peuter incorporate games within what Michael Hardt and Antonio Negri call the 'Empire' of consumer capitalism, an empire that extends from economic power to an ideological, cultural, and affective capacity to permeate everything. Consequently, computer games encompass, they argue, mass market economics (in the sales of games, consoles, associated merchandise, film franchises, etc.), political struggles between labour and capital, the cultural transformation of free play into a commodity, and a training that games allegedly offer in preparation for the capitalist market—"virtual play trains flexible personalities for flexible jobs" (see xv-xix, xxix-xxx, 36). Additionally, they argue, while the interactivity unique, in many ways, to computer games "seems to break with the passivity" traditionally attributed to media consumption, that interactivity might actually intensify the internalisation of a game's ideological message. This isn't, though, their entire argument. For while deeply implicated in networked capitalist power, computer games also harbour powerful possibilities within what they call the sporadic "upsurges" which occur in the empire of capitalism (xxi). Hence, Dyer-Witheford and de Peuter develop a second category, 'games of multitude', which, as described below, are games that act against the prevailing ideology and/or offer a creative, sometimes 'dissonant' force within it. Alexander Galloway has similarly argued that although games epitomise managerial bureaucracy and Deleuzian forms of informatic control, they also lend themselves to artistic appropriation and the resistance of the 'multitude' through what he calls 'countergaming'. These more emancipatory possibilities can be placed in context by considering two further dimensions of green media and cultural studies: modes of communication; and the conceptualisation of a ground-level green popular culture.

Stephen Rust, Salma Monani, and Sean Cubitt's collection of essays, *Ecomedia: Key Issues* (2016) attempts to untangle the complex interrelationship of media, society, and environment. In particular, the book carefully balances how popular media texts treat nature as a material and ideological resource against their potential to promote a new, ecological "commons sense" around the "profound belief that we share the world in common with one another and with other non-human organisms and processes" (1-2).

To achieve this, the editors divide the book into three sections, each focused on a key paradigm in communication studies—frames, flow, and convergence (6).

Media *framing* has recently been a substantive focus for examination of how the media diverts ostensibly environmentalist subject matter into ideologically motivated frames such as national security or cost (see Hulme 229). In *Ecomedia*, conversely, Carter Soles and Kiu-Wai Chu's 'Overview' essay on frames explores how evolving theories such as Karen Barad's materialist notion of human-nonhuman 'intra-action' and Ursula Heise's eco-cosmopolitanism facilitate the construction of more ecologically inflected frames in visual media. These are realised, in a more literal sense, by aesthetic frames: the art photography of Edward Burtynsky's *Manufactured Landscapes* series renders the ceaseless, damaging, industrial-scale, human transformation of the environment into static and, by implication, permanent images; correspondingly, a tension between sequential narrative frames in comics and the "gutters" (empty space) that separate them constitutes a perfect form for exploring the ambiguities and mystery of (say) our posthuman sense of simultaneous alienation from/affinity with other species. As one might expect, the essays in this issue invariably deploy similarly adventurous theoretical paradigms to think, in new ways, about how computer games frame meaning in ecological ways—from Backe's deployment of Miguel Sicart's ethics-based framework for games to Lehner's use of Hubert Zapf's 'cultural ecology', and from Bianchi's expansion of Donna Haraway's 'Chthulucene' to Rivera-Dundas's creative application of Anna Tsing's concept of "noticing".

Flow is more difficult to treat ecocritically. Stephen Rust's overview chapter extends the classic meaning bequeathed to media studies through the work of Raymond Williams. Williams formulated flow in terms of "the layering of discourses and meaning produced by viewers' collective and continuous experience of television programming" in the process of watching television or listening to radio over weeks, months, or years (Rust 88). Rust couches his ecocritical conceptualisation of flow mainly as a shift from "figurative concept" to materialist, resource ecology, that is as an understanding "that the flow of information and images on the internet cannot be detached from material conditions" (91). Attempting to translate this back—to Milburn's emphasis on whether games can engender ecological awareness—perhaps the nearest we get in game studies are theories of immersion and flow and the question of whether "game worlds" reinforce or counteract dominant ideology. What games do is, in at least two senses, more complex. In the first place, Gordon Callejo argues, while games transport us to other worlds, this is not so much 'immersion' as 'incorporation.' Identifying factors central to the experience of game playing, Callejo's seven point model for incorporation amalgamates factors beyond immersion (or inhabitation) of a virtual environment (e.g. narrative, aesthetics, and the rules, goals or procedures of the game) while also emphasizing, in further components such as other players and our own *kinesthetic involvement* (the individual player's movement), that the nature of game play is intrinsically more interactive than a concept such as televisual flow allows for. In fact in game scholarship, flow generally refers less to Williams's flow or even the transnational flows proposed by sociologist Manuel Castells than the positive psychological notion of

flow developed by Mihály Csíkszentmihályi, which describes an engrossed, almost transcendent state where in ludic terms a player's ability is appropriately met by a game's level of difficulty (Chen). Secondly, Eugénie Shinkle has argued, more adventurous games that draw on the disruptive visual patterns of new media replace the conventionalised gamespace by "dispers[ing] attention across multiple contexts." Consequently, the "continuous flow of meaning" becomes "a constant stream of possibilities" leading, as discussed below, to an (intrinsically ecological) recognition of change and flux as essential properties of life and, ultimately, to possible new political conceptualisations (169-70).

The conventional emphasis within media and communication studies on flows of ideologically reinforcing content produced by media organisations may seem, therefore, less applicable to computer game aesthetics. However, that more orthodox understanding might still apply in two senses. First, in understanding the cumulative ideological impact of battalions of mass market computer games harboring likely anti-ecological values; but also, more positively, in the possibilities of countercultural manifestations of flow. This is explored in Sean Cubitt's essay in *Ecomedia*. This discusses how environmental themes emerged out of the alternative content flows of the more specialised FM, pirate, and free radio broadcasting that arose in the 1960s and 70s. On this understanding, we can expand the concept of the individual "game-world" to the possibility of game worlds created by acts of modding (i.e. player-created modifications to (e.g.) the design or functionality of games, as considered in this issue by Bohunicky), or by countercultural 'indie games' companies and/or participatory game communities, an understanding that brings us to a final concept, convergence.

A conventional understanding of media *convergence* focuses on how, by working across platforms, industries, corporations, and audiences, large media organisations can sustain or optimise their profits and how, simultaneously, convergence strengthens the ideological grip enacted through media frames and content flow (see Dwyer 2-3, 27). Nonetheless, in his *Ecomedia* essay Anthony Lioi rightly argues that "media convergence is environed but not limited by the economic logic of the global marketplace. Convergence culture in ecomedia performs both a pragmatic, market-based function and a liberatory, political function in the digital public sphere" (173-4). Subsequently, Lioi works an analysis around Henry Jenkins' identification of three forms of 'Convergence Culture' in his book of that name (2008): *media convergence*, as described above, but qualified by Jenkins to take into account the unpredictable reception patterns of audiences; *participatory culture*, which Lioi defines as "the intervention of fans in the production of popular culture" (168); and *collective intelligence*, where an accumulation of the skills and knowledge of those intervening or participating in popular media converge (writes Lioi) in "networks of action" (see 166-9). Without dismissing the enduring economic and ideological power of media industries, Lioi sees in 'collective intelligence' the potential for a new ecological politics. For collective intelligence presents a helpful bridge between theories of grassroots media culture put forward by the likes of Jenkins and the growing body of work on alternate-reality gaming (ARG), which traces collective intelligence back to the cyberutopian proposals of French

philosopher Pierre Lévy (McGonigal). Both suggest that new socially progressive permutations may emerge from individuals working in concert toward a common goal. Accordingly, it is in the 'Convergence' section of *Ecomedia* that an essay on computer games, by Lauren Woolbright (one of the contributors to this volume) and Thaiane Oliveira, describes how, in Latin America, a range of interactive, multimedia ARGs have kindled a convergence between environmentally-themed metafictional narratives and real-life environmental protest.

Overall, the possibilities identified in Rust et al.'s analysis of frames, flows, and convergence—new insights realised through re-framing; new broadcasting ecologies stimulating new content flows; and participatory cultures intervening in popular culture to engender new forms and collective action—offer the foundation for, and increase the likelihood of, a genuinely 'green' popular culture. A range of possibilities for this, including how those possibilities might be realised in computer and video games, is outlined in a further recent contribution to the field, John Parham's *Green Media and Popular Culture* (2016). Parham, in effect, substitutes the somewhat linear, purposeful metaphor of flow with the open-ended and recognisably cultural studies paradigm of a "circuit of culture". Paul du Gay argues that that paradigm replaces an understanding of the "mode of production of a cultural artefact" as "the prime determinant" of its meaning (the underlying assumption of media flow) by stressing "a number of distinct processes whose interaction can and does lead to variable and contingent outcomes" (3). Encompassing "production", "consumption", and "regulation", but also "representation" and "identity", those processes reach toward the "anthropological" dimension mentioned by Maxwell and Miller. They are woven together by Parham to posit popular media as a complex network of competing ideologies which emerges in the interplay of producers and audiences, global and local, or industrial mass culture with popular folk cultures, subcultures, and countercultures.

Each of these interplays can be illustrated via games. For example, the interplay between media effect and audience resistance takes shape in the "simulation gap" between the virtual world of the game and the subjectivity, experience and worldview of the player, a theme addressed here in the dissenting possibilities of game-playing suggested, for example, by Backe, Lehner, or Rivera-Dundas. Rivera-Dundas, for instance, suggests that while Dyer-Witheford and de Peuter have argued that playing a game on a console means "plug[ging] oneself into a network of techno-human relations, which even as it offers cognitive skills and affective thrills also inserts subjects into a commodity web," there is also the possibility, in more ecological games, that the creation of what they call "machinic subjectivities" might be replaced by a sense of being constituted by nonhuman things. Such discussions indicate the possible world of alternative games that underpins Dyer-Witheford and de Peuter's countering taxonomy of "Games of Multitude." These encompass, amongst others, *tactical games*, "designed by activists to disseminate radical social critique" and what they call *dissonant development* (the existence of critical content in mainstream games) (191).

This issue of *Ecozon@* considers an array of different types of game: mainstream and countercultural, independent and corporate games; rule-based 'ludic' games and

more meditative, immersive games; online, PC, console, and mobile games. Linking that diversity to the range of 'eco-media' perspectives detailed above, we can develop a foundational understanding of what categories might constitute the study of green computer games. This would include:

- "Contradictory" ecocritical readings and playthroughs of games produced within mainstream, industrial (mass) culture. Here we can apply an argument of Andrew Hageman's: that even where popular media is "bathed" in ideologies of capitalism, because ideology never stands still, and is itself negotiable, there are always opportunities to "glimpse and [...] imagine an ecology without capital" (65-6). Where such contradiction is most productive, we get scenarios that can confront a player starkly with the resilience of his/her ethically environmental stance, such as the achievement award granted (notes Backe) in *Red Dead Redemption* (Rockstar, 2010) for hunting the endangered buffalo to extinction.

- Analyses of environmentally educational 'serious' games (categorised by Dyer-Witheford and de Peuter as *polity simulators*) which, because they are produced in social institutions, tend to exist in the borderlines between 'empire' and 'multitude.' We find this, for example, in Smith's comparison of *Fate of the World* with policy tools such as the UK Department for Energy and Climate Change's *2050 Calculator*.

- Fan interventions, subcultures, and participatory communities developed around games, whether commercial or non-commercial. As we see from the essays here, this could take various "metagaming" (Boluk and Lemieux) forms: "modding" (examined here by Bohunicky, as a means of intervention in games' flattened environmental representations, or ideological agendas); or forms of "emancipatory" or "expansive play" which resist or reinterpret games' procedural rhetoric (Bogost) while perhaps developing unanticipated environmentalist perspectives. The latter is found, for instance, by Lehner in *Shadow of the Colossus* and by Smith in the perhaps unlikely example of *Minecraft*.

- "Tactical" and/or countercultural gaming: from immersive games designed to return us to nature (e.g. David O'Reilly's *Mountain*, Ed Key and David Kanaga's *Proteus*) to eco-politically critical games. Here, for example, Nguyen addresses the mobile/online game *Phone Story* (2011), created by Molleindustria artist Paolo Pedercini and whose stated aims encompass "the reappropriation of video games" and "the radicalisation of popular culture".

- "Dissonant" games developed in a symbiosis between mainstream media and alternative games companies, like thatgamecompany's *Flower* (2009). This includes surprisingly critical content published in conventional, even triple-A (high budget) games, whether anti-industrial, back-to-the-farm games (Chang, "Back") or (say) in the anti-capitalist, dystopian themes of *Bioshock* (Irrational Games, 2007).

Popular media has "potentially finer antennae" for detecting environmental attitudes because of its broad consumption and appeal (Rust, Monani and Cubitt 4) and because it exists both in a complex media ecology and a circuitous, complex cultural ecology. Hence, the enormous popularity of computer games can tell us much about the resilience that environmentalist ideas may or may not have within a mainstream

popular culture. But ultimately, connecting the popularity of games to any potential to nurture ecological awareness is less about thematic elements and more about whether their unique formal, aesthetic, and in particular interactive properties can engage audiences in this direction. We can consider that question through one last dimension of emergent green media and cultural studies, 'affect'.

In *Ecologies of the Moving Image: Cinema, Affect, Nature*, Adrian Ivakhiv extends the theories described above by considering "three ecologies"—the material, social, and perceptual. These, he argues, constitute our understanding of the world (5). In relation to them, film, for example, can encourage a cohesive ecological sense of the world by working across three dimensions: the geomorphic (cinema takes us to places which, nevertheless, hold some relationship to the audience's here and now i.e. existing spaces); the animamorphic (whereby films develop a sense of other living forms and our relation to them); and the anthropomorphic which, distinct from its conventional definition, that of ascribing human characteristics to nonhuman being, Ivakhiv defines as positing certain qualities as distinctively human, in the process creating the human as something distinct from the animal and the inanimate world (8-11). A perceptual ecology, in a cultural context, refers therefore to how (in film) images and sounds are deployed as affective forms in ways that allow us to see, hear, and feel this world in which we are, partially separate, but ultimately enmeshed in relations with the nonhuman. This is a useful model for understanding also a potential typography of 'green games.' To take examples: games examined in this issue geomorphically explore simulated "more-than-human" environments as is the case, for example, with *Flower* (Lehner), *Proteus*, *Islands: Non-Places* (both Rivera-Dundas), and *Mountain* (Smith); Backe similarly registers an enormous range of playable animal characters in games or games where animals are subject to the agency of human avatars. In that context, when he subsequently writes that the nature of play is that "it appropriates and changes its objects", one can see how the interactivity of computer games might correspondingly enact animamorphic reflection on how we live alongside other beings, something explored in detail when, working from Haraway, Melissa Bianchi explores how games cultivate multispecies relations. Finally, anthropomorphic games that entice us to address the human ecologies in which we live appear throughout these pages—from the social realist *Little Inferno* and *Phone Story* (Nguyen), to the fantastical or dystopian, as in *The Elder Scrolls V: Skyrim* (Bohunicky) and *Dishonoured* (Backe). Smith makes the crosscurrents Ivakhiv describes explicit in the movement of his essay from grid-based resource management games which, he argues, "encode a set of narratives in which nature is the location of resources to be extracted and used" to an alternative art game like *Mountain*. Hence, 'affect' introduces a new realm into green media and cultural studies, one that focuses on how we are influenced, connected, and encouraged towards action not only by evidence, argumentative logic, and the structural oppositions intrinsic (Ivakhiv argues) to critical theory, but also by emotional triggers and "affective dynamics" (4).

This theme is further developed in Alexa Weik von Mossner's careful reading of affect theory in relation to cognitive science and psychology in *Affective Ecologies:*

Empathy, Emotion, and Environmental Narrative (2017). Overlapping with Ivakhiv's three morphological realms, Mossner offers two main arguments concerning the role of affective dynamics in engendering ecological consciousness: firstly, affect theory's concentration on "circulations between narratives, bodies, and environments" and its "conceptual unwillingness to accept boundaries of any kind" (11) corresponds to ecological thinking; secondly, she suggests that a relating of affect to "cognitive narratology" can furnish tools for understanding how texts engender environmental values. Specifically, they highlight both "the importance of […] environments for plot and character" and the ways in which film and literary texts might create "immersive environments for readers" (12). Turning to film, Weik von Mossner argues that it affects us in two principal ways: the *motion* intrinsic within a "motion picture" simulates embodiment and gently pulls viewers into the environment of the text (Ivakhiv's "geomorphic"); and, correspondingly, narrative, which can touch us emotionally and potentially instigate (depending on the text) either the animamorphic or the anthropomorphic relationships on which ecological consciousness rests, or both.

This model is even more applicable, we argue, to computer and video games (as Weik von Mossner indicates in her book's conclusion). Games, too, immerse us in environments while narrating ecological interrelationship. Yet the linkage between body, environment, and narrative forged in motion pictures is intensified by the interactive nature of playing a computer or video game, a point that Shinkle has stressed. Referring to the long tradition of linear or Albertian perspective in forms of visual culture which themselves enact objectivity, Shinkle laments a focus in studies of computer game play on structural elements – semiotics, semantics, narrative, rhetoric, ideology—rather than affect, which in gaming, she argues, "is key to the perception of images, and to the notion of meaningful interaction with them" (22). What we lose as a result is not just an understanding of the experience of gaming, but a full appreciation of how the affective dynamics of games can have personal and ideological importance. Analogously, while developing his model of the perceptual Ivakhiv cites computer and video games as part of a pervasive "visual world". Here, ever-expanding visual technologies—photography, cinema, games, data graphs—simultaneously objectify the world, giving human observers an illusion of knowledge and power over nature, but can also destabilize by defying obvious meaning or by triggering an emotional response (2013: 3-4).

Shinkle's argument is particularly applicable to an ecocritical reading of games for three reasons: firstly, she suggests that gaming's multisensory alliance between vision and affective properties such as touch, feel, and movement creates a phenomenological ontology that perceives incessant flux and our co-creative involvement in change as intrinsic to human being in the world (the linkage of anthro- and animamorphic of which Ivakhiv speaks) (26). In much the same vein, Milburn, drawing on Haraway's *When Species Meet*, argues that a sense of environmental responsibility rests on an aptitude to respond—"to affect, and be affected" by other people, other species, and "the otherness of our own planet." Notwithstanding the simulation gap, this can be "intensified", he argues, by the interactive nature of computer

Ecozon@ | *Vol 8, No 2*

games, by which games compel us to respond (212). Shinkle, secondly, expands affect beyond emotion to encompass the "'feel' or intensity of a game" as experienced by the player (22). Intensity refers, she says, to "the strength or duration of its effect, and the way this is embodied in autonomic relations like galvanic skin response, heartbeat, and breathing" (25). Several essays here make reference to how affect is created through the environment and/or controls in games. Backe mentions the audible scraping of bone and severing of the cartilage of animals in the survivalist game *Red Dead Redemption*; Lehner references the extensive use in *Flower* of the Sixaxis controller's gravitational sensor, an implementation which, he argues, can defamiliarize accustomed modes of control. Bianchi likewise suggests that the awkwardness of control schemes in games like *Octodad: Dadliest Catch* (Young Horses, 2014) can give us an insight into what it means to be other-than-human, whether to comic or poignant effect.

Lastly, Shinkle argues that the affective nature of computer games engenders a productive destabilization. This argument is not unlike that of the music theorist Jacques Attali, who suggests that music, because of its non-discursive and non-narrative qualities, not only escapes being bound up in philosophical, economic, and ideological conventions, but also expresses feelings, beliefs and aspirations lost or submerged in society (6). Moreover, music can prophesy change: "It makes audible the new world that will gradually become visible" (11). Influenced by Attali's translator, the theorist Brian Massumi, Shinkle correspondingly argues that the effects of computer games "make their way into the sociocultural realm in the form of the unexpected, the lateral, and the unquantifiable which rather than reaffirming ideology allow for potential, incipient new meanings to seep in" (23). If we lose a sense of the affective charge of games, then we lose these meanings and run the risk of erroneously dismissing them as frivolous, escapist, lowbrow, or violent entertainment.

This is where, ecocritically speaking, game studies comes into its own: games possess an affective quality, engendered by their uniquely interactive basis, which is captured in many of the key concepts of this still youthful field: immersion, interactivity, incorporation, identification, and agency; the ludic, ergodic, algorithmic, and machinic; play, platform, and procedurality; and so on.

Part II: Greening Game Studies

Although academic game studies is not even two decades old, the field has already developed noteworthy historical investments in narrative and game mechanics, cultural studies analyses of representations of race, gender, and sexuality, and ethnographic and social scientific research on player behavior and belief. Of course, games and play more generally have been topics of interest to researchers for far longer, as demonstrated by some of the most referenced antecedents to contemporary video game theory—the Dutch historian Johan Huizinga's *Homo ludens*, first published in 1938, and the French sociologist Roger Caillois's *Man, Play and Games*, originally published in 1961. However, as Espen Aarseth writes in the inaugural issue of the journal *Game Studies*, "2001 can be seen as the Year One of *Computer Game Studies* as an

emerging, viable, international, academic field." Early defining debates between the so-called narratologists, who saw video games as leveraging the storytelling techniques of older media like cinema and the stage, and the so-called ludologists (like Aarseth), who felt strongly that games needed to be treated as distinctive, process-based art forms, have since been supplemented by an ever-expanding gamut of interests, among them studies of platforms, software, and code, player ethics, queer game-making, the production cultures and political economies of the mainstream and indie game industries, and the unique challenges of preserving the "virtual worlds" of games and related paratexts.

Given this ferment of scholarly activity, it is somewhat surprising that environmental criticism has been little represented in game studies thus far—a dearth that this issue of *Ecozon@* directly seeks to ameliorate. However, as Chang has elaborated across several essays, particularly the seminal article "Games as Environmental Texts," there are a number of reasons for the strange lack of congress between game studies and the environmental humanities, reasons that boil down to complementary blind spots and prejudices on the part of each set of disciplines. Like the proverbial oil and water, nature and technology do not mix well, or at least not without a vigorous shaking up! Environmental scientists and humanists would do well to move past both knee-jerk suspicion of media and technology and a friendlier instrumentalism, or seeing media like games as convenient if compromised vehicles of science communication. Games scholars meanwhile tend to fetishize the player and the act of play in a way that inevitably denigrates game content and context, even as gaming increasingly happens on the move or beyond the confines of basement, bedroom, or living room.

While environmental game scholarship is still relatively scarce, we would be remiss not to mention some promising recent seams. For instance, there is a growing body of writing on the political economy of game production that includes not only de Peuter and Dyer-Witheford's perspective on gaming and global capitalism, but also James Newman's detailed analysis of the game industry's rhetorics of obsolescence and supersession and Raiford Guins's concern with the afterlives of games, as seen in the storied excavation of Atari's failed game *E.T. the Extra-Terrestrial* from a landfill in Alamogordo, New Mexico. The 2014 "Digital Environments" special issue of *Green Letters* (vol. 18 no. 3) also contained game articles by two authors featured here, Melissa Bianchi and Kyle Bohunicky. Isolated but groundbreaking essays can likewise be found, with enough diligent searching, for example science and technology studies scholar Colin Milburn's typology of "green games," noted above, Matt Barton's 2008 *Game Studies* reflection on weather simulation, and Benjamin Abraham and Darshana Jayemanne's white paper on ecological representation in games from the proceedings of the 2015 Digital Games Research Association Australia conference (DiGRAA). And now the authors, editors, and references collected in this issue also constitute a resource detailing varied ecocritical perspectives on games while also pointing to exciting and as of yet untapped areas of inquiry.

Beginning this issue with an essay focused (broadly) on politics, ideology, and ethics, Josef Nguyen attends closely to questions of provenance and disposal, arguing that environmentally themed games ultimately fall short of real-world efficacy unless they call attention to the game industry's and technology manufacturers' complicity in unsustainable forms of resource extraction, toxic dumping, and energy use. Correspondingly, conjoining political economy with ethics, Hans-Joachim Backe demonstrates 'dissonant development' in his essay. He demonstrates how Miguel Sicart's user-centred and ethics-based perspective on games can be applied in mainstream computer games so as to identify glimpses of ecological engagement. Ethical conflicts emerge because the player is, in Sicart's words, "a living, breathing, culturally embodied, ethically and politically engaged being that plays not only for an ulterior purpose, but for *play*'s sake." Similarly, Alex Lehner suggests that aesthetically complex games which subvert established conventions in games (from non-anthropomorphic avatars to non-standard controls) 'emancipate' the player, freeing their imagination and their play, so as to facilitate a space for reflection on ecological co-existence.

We recognize that the term "green" means many things to many people, from corporate greenwashing and a kind of sunny environmentalism to sustainable practices and, as we tender, ecologically inflected media scholarship. Despite their obvious participation in unsustainable flows of global capital and labor, we join those who still find cause for hope in the mediation offered by games. In part, this is due to the medium's tendency to stress systems thinking, continuous feedback, and richly immersive experiences of diverse worlds, a fundamental similarity between games as informatic objects and ecology as a cybernetic science. Although interactivity is a notoriously slippery term, the scholars assembled here recognize that games offer distinctive and powerful opportunities for environmental meditation, action, and affect, even if not all of it is benign. In his essay, for example, Kyle Bohunicky turns to the practice of modding as evidence of creative player engagement with environmental issues as scaffolded within games like Bethesda Softworks' *The Elder Scrolls* series. Like Nguyen, Lauren Woolbright offers a more direct conduit between gameplay and design and environmental activism, suggesting that games might usefully subvert the didacticism and moralizing tone of much campaigning for environmental causes. Similarly, in Bradon Smith's essay we find both games such as *World Without Oil* that forge a form of "collective intelligence" in simulating experience of and action on ecological problems, and others like O'Reilly's *Mountain*, a powerfully affective and off-beat game-animation which strictly limits the agency of the player and thus forces a re-thinking of our ontological relationship with nonhuman nature, a theme picked up (as discussed shortly) in our final two essays.

The cover of this issue relates to all of our essays in its staging of the impossibility of consequence-free play. It features concept art from the "global survival game" *Eco* (Strange Loop Games), which began as a successful Kickstarter project in August 2015 and has since been funded by the U.S. Department of Education. Like *Minecraft* but with a decidedly American Pacific Northwest feel, *Eco* is a resource-based multiplayer world sandbox, but it is fundamentally different in a crucial way--every action that players take

not only impacts the game world, but other players inhabiting that world. Mining produces toxic tailings, overhunting can lead to species extinction, and breaking the law can lead to fines and even arrest. Curiously, however, living lightly on the land and refusing to harvest resources is not designed to be a winning strategy. In *Eco*, the threat of an imminent meteor collision demands that players work together to collect, build, research a technological solution, and even legislate communal behavior. In other words, doing nothing and doing too much are equally unproductive routes. While the game's prescribed middle road may strike some as technological utopianism, the crucial point is that while players are markedly free to do as they please, it is within the bounds of a materially and temporally finite world in which hunger, pollution, food chains, hydrology, economy, ecology, and existential threat are all real and equally important. Still only in its alpha phase, *Eco* has already won the 2015 Curse PAX (Penny Arcade Expo) Prime award for "Best Use of Imagination in Gameplay" and the Climate Challenge at the 2016 Games for Change Festival in New York.

Figure 1. A likely home site in *Eco* circa 2015. Screenshot by A. Chang.

As playful experiments like *Eco* and *Mountain* indicate, games can offer deep, affective opportunities for environmental meditation. This, broadly, is the focus of our final two essays. Adena Rivera-Dundas's essay in effect illustrates Shinkle's main arguments. She demonstrates that games like *Proteus* and *Islands: Non-Places* deploy disorientating and destabilising interactive mechanics which, by introducing a lack of control over the games' virtual environments, inculcate an experience of flux and a compulsion to respond which can lead, she argues, to heightened environmental awareness. Melissa Bianchi helpfully elaborates on Donna Haraway's fleeting acknowledgment, in *Staying with the Trouble*, of the Inupiaq co-created game *Never Alone*. Informed by Haraway's concern for multispecies flourishing, Bianchi searches for

and finds evidence of creaturely games that exhibit "tentacular" and entangled ways of being with other lifeforms, among them the delightfully cephalopodian *Octodad: Dadliest Catch* and *Splatoon*.

While we believe firmly that such rich essays will advance 'green' game studies, given the rapidly developing state of the field it is inevitable that other potentially fertile areas meriting further investigation on the part of ecomedia scholars fall outside of the purview of this issue. These areas include biotic games (games played with living microorganisms), animal welfare games (like "zoo tech" games created for captive animals' enrichment), immersive virtual experiences (such as those created at the Virtual Human Interaction Lab at Stanford), augmented or alternate reality games, pervasive/locative games (such as those designed by Jane McGonigal and Kari Kraus, like *Superstruct* or *DUST*), and, indeed, studies of analog games such as board games, card games, and so on, many of which employ fascinating material mechanics. Chang has also recently co-edited a volume of the *Journal of Gaming and Virtual Worlds* with Braxton Soderman and Jesús Costantino, on permanent death or "permadeath" mechanics in games, including not only the irrevocable deaths of player characters, but also the demise of entire game worlds. Furthermore, as games increasingly move beyond the domestic interior, significant questions arise about the spaces and contextual practices of gaming, as well as perennial issues surrounding mobility, access, and the "magic circle" (Huizinga) of play and its inevitable porousness. Thinking about games as site-specific phenomena or about players fluidly adapting their gameplay among diverse actors and situations may thus benefit from early work by Anna McCarthy on television in public space or by sound-studies theorists who contemplated the Walkman, the iPod, and so on.

As Hollywood invests heavily in "worldbuilding" strategies rather than traditional scripts, and transmedia storytelling becomes the norm rather than the exception, we need to think about where games and gaming figure in the urgent quest to reconfigure human life on this planet into something ecologically sustainable, for us, other species, and the Earth itself. This is a particularly acute imperative given the worldwide game industry's massive reach, which far exceeds cinema and other media industries in terms of profits, but which also augurs the potential to reach younger generations who may be desensitized to or apathetic in the face of the staggering environmental challenges of the twenty-first century. In that context, perhaps the most radical conclusion offered by this collection of essays is Nguyen's notion that we must rethink our idea of fun—how we *have* fun, and what makes games such guilty pleasures, so as to confront our own complicity in the industry's undeniable ecological harm. For some, this might mean going analog, imposing bandwidth and processor-cycle limits on our computational devices, or even ceasing to play. Yet while we *must* remain mindful of these possibilities, the essays in this volume also demonstrate that some games may help us play our way to ecological consciousness (of co-existence with other species or of human society's ecological impact) or, even better, move us to acts of environmental responsibility.

Acknowledgements

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Ecozon@

Vol 8, No 2

Digital Games about the Materiality of Digital Games

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Abstract

This article investigates the potential for digital games to advance environmentally responsible attitudes by attending to their own material conditions, since the production, consumption, and disposal of games and the platforms on which they run enact ecological harm. I examine how Tomorrow Corporation's puzzle game *Little Inferno* (2012) and Molleindustria's political mobile game *Phone Story* (2011) address their own participation in ecological harm through rendering visible the very games themselves being played as material commodities. In doing so, they acknowledge their own complicity as well as that of their players in existing processes of environmental degradation. Moreover, both games challenge conventional expectations of fun as harmless or inconsequential, since this environmental destruction results from digital entertainment. I argue that digital games advancing environmentally responsible attitudes must address the ecological devastation tied to their materiality as well as support players in accepting responsibility for and remedying the harm players enact. Consequently, digital games of environmental responsibility must also question the dominant mode of fun that drives ecological devastation by reminding us that we dwell in a world where we need to be responsible for the fun we choose to have.

Keywords: Digital games, materiality, responsibility, dwelling, fun.

Resumen

Este artículo investiga el potencial de los juegos digitales para fomentar actitudes responsables hacia el medioambiente atendiendo a sus propias condiciones materiales, ya que la producción, el consumo, y el desecho de los juegos y de las plataformas en las que funcionan representan daño ecológico. Examino cómo el puzle *Little Inferno* (2012) de Tomorrow Corporation y el juego político para móvil *Phone Story* (2011) de Molleindustria abordan su propia participación en el daño ecológico haciendo visible el que los juegos en sí mismos sean productos materiales. Al hacerlo, reconocen su propia complicidad, así como la de los jugadores en los procesos de degradación medioambiental. Además, ambos juegos desafían las expectativas convencionales de la diversión como algo inofensivo e intrascendente, ya que esta destrucción medioambiental resulta del entretenimiento digital. Argumento que los juegos digitales que promueven actitudes responsables hacia el medioambiente deben abordar la devastación ecológica vinculada a su materialidad, así como animar a los jugadores a que acepten su responsabilidad y corrijan el daño que hacen. En consecuencia, los juegos digitales con responsabilidad medioambiental deben también cuestionar la forma dominante de diversión que conlleva devastación ecológica recordándonos que vivimos en un mundo en el que necesitamos ser responsables de la diversión que elegimos tener.

Keywords: Juegos digitales, materialidad, responsabilidad, morada, diversión.

Much of the scholarship at the convergence of game studies and ecocritical inquiry investigates how digital games can reinforce as well as reimagine existing environmental politics. In examining digital games as cultural texts, scholars have shown that digital games can reinscribe persistent attitudes detrimental to the environment, such as treating nature as a conquerable resource in Sony Online Entertainment's fantasy-themed multiplayer online role-playing game *EverQuest* (1999) (Stumpo) and in Zynga's farming simulation game *Farmville* (2009) (Chang "Back"; Flanagan and Nissenbaum 26-29). Although they can reinforce environmentally harmful attitudes, many scholars have also argued that digital games can productively intervene in ecological issues, including renewable energy (Abraham), urban sustainability (Springer and Goggin), entanglements of nature and technology (Chang "Games"; Bianchi; Bohunicky), and human-animal relations (Attebery).

While digital games, as John Parham contends, "can contribute both to a pragmatic understanding of and instruction in ecological issues such as sustainable development or energy supply and to constituting or shaping environmental or ecological awareness," addressing digital games as physical technologies underscores how the resource and energy demands involved in their creation, circulation, operation, and disposal pose significant problems for environmental sustainability (205; see also Hageman). Alongside work that explores the representational content and textual form of digital games through ecological concerns, other scholarship investigates the material and socioeconomic dimensions of digital games as commercial technologies, including systems of resource extraction, labor exploitation, and electronic waste.[1] James Newman, for instance, demonstrates how conventional digital games industries actively produce obsolescence in favor of incessant newness (Newman). Nick Dyer-Witheford and Greig de Peuter, similarly, foreground the damaging environmental harm and labor exploitation central to the life cycle of computing technologies by identifying digital games as paradigmatic commodities in the global networks of empire (222-224).

From politically and physically exploitive conditions surrounding coltan mining in the Democratic Republic of the Congo to hazardous e-waste recycling operations in Ghana and China, encounters with Microsoft Xboxes, Sony PlayStations, and mobile phones by consumers in the West constitute only a segment of these commodities' lives. The full life cycle for computing devices involves processes of extraction, production, consumption, obsolescence, and disposal that enact harm to sites and subjects all over the globe. Moreover, the operation of digital games—playing and having fun with them—is also environmentally taxing as running computing platforms requires infrastructures embedded in petroleum energy cultures (Wark; Milburn; Elerding; see also LeMenager; Zehner). Consequently, that digital games otherwise interested in ecological responsibility are themselves contributors to environmental destruction and yet may fail to recognize and address that harm represents a critical limit in their capacity to advance ecologically mindful politics.

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[1] Such studies of digital games joins a larger body of research examining the environmental conditions that undergird digital media technologies more broadly (Blevis; Mantz; Maxwell and Miller; Taffel; Gabrys; Parikka; Cubitt; Starosielski and Walker).

In this article, I investigate the potential for digital games to address their own material conditions in advancing environmentally responsible attitudes. If digital games are to contribute to ecological sustainability, they must be self-reflexive of their participation in ecological harm and signal to players their complicity in that harm as part of the cost of playing and having fun. I examine two digital games—Tomorrow Corporation's puzzle game *Little Inferno* (2012) and Molleindustria's political mobile game *Phone Story* (2011)—that not only explore how making the devices for running as well as powering digital games inflicts ecological harm but also dramatize how players can act responsibly as a result of recognizing and accepting blame. I argue that digital games that advance ecological sustainability as a central value should both attend to their material conditions, their creation, operation, and disposal, as well as provide suggestions for what can be done to act more responsibly and do otherwise. Through my discussion of both game titles, I contend that such environmentally conscious games must also challenge prevailing constructions of fun, exploring how games can address player complicity in environmental harm resulting from having fun with digital games.

Digital Games and Environmental Responsibility

Approaching digital games as symbolic texts without attention to their material existences as commodities, even if relevant to ecological responsibility, ignores that playing digital games is itself implicated in environmentally damaging processes. For instance, both digital games and the computing platforms on which they run reinforce designed technological obsolescence through shared logics of upgrading, accumulation, and novelty that encourage consumption and result in waste, such as digital character upgrades and physical device upgrades (Short). If, as Alenda Y. Chang contends, "games that call our attention to environmental states and shifts, and to our implication in those processes, promise a new kind of gameplay challenge, one that would deliver the deathblow to the pernicious myth of a free and ever-abundant Nature while establishing a new level of consciousness in player experience," such games must address reflexively their material existences to be more environmentally responsible ("Games" 61). According to Colin Milburn, games most interested in environmental responsibility must address how playing digital games is itself ecologically harmful. Games of environmental responsibility, as one of the modes that Milburn identifies in how digital games can frame environmental harm, "attend to their own involvement in the networks of the energy economy, while also drawing attention to players' culpability in enjoying media technologies that pose so many risks to the environment" (212). Milburn asserts that games of environmental responsibility hold the most promise for advancing ecological principles.

While a title like Greenheart Games' business simulation game *Game Dev Tycoon* (2012) recognizes games as commodities, however, it does so only by perpetuating the conception of digital games as ostensibly immaterial, focusing on the production of software as players manage a game development business. *Game Dev Tycoon* does little to highlight the material conditions of computing technologies that are required to

create, distribute, and play digital games, except for representing that computing platforms change over time and that such changes merely impact what software can be developed. Even though games are treated as commodities in *Game Dev Tycoon*, there is no discussion of their ecological costs and, thus, no sense of environmental responsibility in the creation and consumption of digital games.

In elaborating on games of environmental responsibility, Milburn discusses two key examples: Dingo Games' top-down arcade-style collecting game series *Tasty Planet* (2006-2010) and Team Ico's open world action-adventure game *Shadow of the Colossus* (2005). In both titles, players wreak environmental harm in order to complete the game successfully, to have fun and satisfy the games' central objectives. *Tasty Planet* and its sequel *Tasty Planet: Back for Seconds*, for example, require players to direct a grey goo, a blob of nanotechnology, in a feedback loop of growth and consumption by devouring larger and larger objects in the world. This progression continues until the player consumes the entire planet and other celestial bodies. Because the grey goo is a product of techno-scientific work, Milburn argues that "the game presents an allegory of technological consumerism and the environmental impacts of our cultural appetites, the desire to guzzle more and more resources in order to grow, develop, expand" (212).

Players also harm the environment in *Shadow of the Colossus* as they control a solitary adventurer named Wander in a vast land uninhabited by humans. Playing as Wander requires killing and, consequently, rendering extinct sixteen colossi, who are not only massive creatures but also suggested to be "manifestations of the environments in which they live" (Milburn 215). While the game does not explicitly frame the killing of the colossi as inherently malicious at its onset, killing the colossi is tied to the overarching goal of resurrecting Wander's beloved Mono. Playing the game requires players to kill and to recognize themselves as responsible for that killing, the cost to achieve their primary objective.

I identify an ethical thematic of blame as the source of responsibility central to this mode. If games of environmental responsibility require players to recognize that they are already implicated in ecological harm in choosing to play, then they must recognize that they are to blame for that harm. Games within the mode of environmental responsibility foster what Miguel Sicart defines as ethical gameplay, play experiences wherein the rules or objectives of the game enable moral reflection from players (24). Since playing and winning the game are inextricable from inflicting ecological damage, games of environmental responsibility require players to harm the in-game environment and to reflect on their complicity in that harm. Player complicity describes when players abide and operate within the ethical logics of the game and, thus, becomes an opportunity to interrogate the nature of those logics through play (Sicart 22). Players accept the logic of winning the game only for the game to demonstrate that such logic is ultimately incommensurable with environmental responsibility.

Games of environmental responsibility represent direct inversions of games of environmental discipline, games that Milburn suggests frame environmental destruction

as enacted by eco-criminals perpetrating ecological violence (206).[2] In games of environmental discipline, players typically bring eco-criminals to justice, such as when players as Samus in Retro Studio's science fiction adventure game trilogy *Metroid Prime* (2002-2007) investigate the origins of the mutagenic substance that contaminates the planet of Tallon IV and subdue the Space Pirates seeking to exploit it. In games of environmental discipline, ecological harm originates outside of player control, rendering "games of environmental discipline [as] actually incapable of addressing their own connections to circuits of pollution" (Milburn 207).[3] This inability for games of environmental discipline to recognize their own contribution to ecological harm demonstrates a significant limit to their potential in advancing ecological politics mindful of the material conditions of games themselves. Instead of neutralizing eco-criminals as in games of environmental discipline, players in games of environmental responsibility are themselves the eco-criminals whose in-game fun and successes necessitate ecological destruction—including playing as the grey goo voraciously devouring everything or as Wander slaying the colossi.

In discussing how players of *Shadow of the Colossus* are responsible for the harm they inflict on the colossi, Milburn also notes how a sense of responsibility arises from a sense of care. To explore the immense game world, players must cooperate with their horse companion Agro. While conventional game controls allow direct manipulation of the game's protagonist Wander in the game world, the change in input and interface schemes when riding Agro suggest that players do not directly control the horse but must negotiate with it through Wander as Wander would a sentient mount. As Milburn argues, players "develop a haptic and emotional relationship with Agro, in that maneuvering the horse with the PlayStation controller is a process of coaxing and constant care. It becomes the condition for love: a commitment to the nonhuman other" (216). This kinship with Agro as a companion species—an animal other with whom humans participate in mutually transformative embodied encounters—is heightened when, in the course of the game, the loyal horse sacrifices itself for the sake of Wander (Haraway, *The Companion* 2-3; Haraway, *When* 134). While care and intimacy of others can "animate our capacity to respond," as Milburn asserts, *Shadow of the Colossus*' construction of this capacity requires the larger narrative context of player blame for environmental harm, juxtaposing the murdering of the colossi against the altruistic death of Agro as costs for the player's success (212). The kinship with Agro develops in pursuit of the ecological harm that players must inflict to achieve the main objective of the game: to kill the colossi in order to resurrect Mono. Agro's sacrifice for the player as

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[2] Milburn draws on Michel Foucault's theorization of discipline as a mode of power to conceptualize how such games frame environmental harm (Foucault).

[3] Milburn identifies games of environmental control as another limited approach for addressing environmental degradation, where players regulate environmental conditions through models of interrelated systems and processes. Milburn draws on Gilles Deleuze's theorization of control as a mode of power to describe how games including environmental management simulators—for example, Chris Crawford's *Balance of the Planet* (1990), Maxis' *SimEarth* (1990), and Red Redemption's *Fate of the World* (2011)—represent environmental harm (Deleuze).

Wander highlights the manifold acts of killing and death performed in the service of care and love as well as such acts that could have been avoided.

Key to games of environmental responsibility is player recognition of their complicity and acceptance of their blame in ecological harm caused by playing, extending the harm they enact in the virtual game world to correlates beyond the screen. This recognition of blame and subsequent responsibility suggests the potential to do otherwise, to avoid or minimize harm.[4] As Milburn argues, "Responsibility emerges in responding to the game, recognizing the lethal dimensions of having a good time. And so, for some players, the real game becomes how to play otherwise" (214). Through examining their comments in online discussion threads about *Tasty Planet* and *Shadow of the Colossus*, Milburn demonstrates how some players not only share in their recognition of blame for ecological harm but also how they seek more responsible ways of playing to minimize that harm (214). Such conversations outside of the game among players demonstrate how ethical gameplay can encourage players to "[engage] with the very consequences of the act of play, within and outside of the game world" as they negotiate with the game's ethical systems themselves, including the attribution of blame (Sicart 80). Accepting blame, after all, also functions as the accepting of responsibility, both for what has been done and for what is to be done to repair, resolve, and care for the situation.

Having Fun with the Materiality of Digital Games

I now turn to examine Tomorrow Corporation's puzzle game *Little Inferno* (2012) and Molleindustria's political mobile game *Phone Story* (2011), two games of environmental responsibility that show not only how players are responsible for environmental devastation related to digital games as material technologies themselves but also how players can act on that responsibility. I consider how games of environmental responsibility must negotiate the politics of fun as they highlight the ecological costs of having fun with digital games. As Bonnie Ruberg argues, commonplace attitudes toward games often expect that games are, above all else, supposed to be fun and only fun (109). These expectations of fun function to both reinforce particular acceptable means of creating and consuming games within a normative conception of pleasure, enjoyment, and empowerment as well as suppress political critiques of games by suggesting that games are only just for fun (111). As an intervention, Ruberg articulates "no-fun" as an aesthetic framework that explores the expressive capacities of games as a form through refusing the expectations of conventional and commercial forms of normative fun (Ruberg 115-117).

Both *Little Inferno* and *Phone Story*, I suggest, explore the contours of no-fun by interrogating the environmental harm of having fun with digital games and investigating the cost of producing and playing with digital devices. While *Little Inferno* parodies the carbon economy that powers digital technologies by having players repeatedly burn

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[4] Donna Haraway articulates responsibility as arising from subjects who can respond, who can make choices, as opposed to subjects who can only react, who have no capacity to choose (*When* 78).

objects as the game's driving mechanic for fun, *Phone Story* frustrates conceptions of inconsequential and harmless fun by directly implicating players in the violence enacted in the life cycle of mobile computing technologies through a series of short and simple mini-games. Their differing approaches to framing how the fun of digital games performs ecological harm demonstrate how games of environmental responsibility must explore ways to interrogate the constitution of fun itself, since there are environmental and social costs to having any kind of fun with digital games.

Little Inferno

Tomorrow Corporation's *Little Inferno* questions the cost of having fun with digital games by distilling the burning of fuels to power digital games into the game's repetitive core mechanic. *Little Inferno* requires the player to burn objects in the eponymous product they have recently purchased to solve a series of combination puzzles (see Figure 1). Purchasing objects from catalogs, such as a pirate doll, a model of the moon, a toaster, etc…, and burning them in different combinations allows the player to advance through the game, since the player is tasked to solve puzzles by burning specific sets of objects together to satisfy particular thematic hints. For example, to solve the "Cornflakes COMBO!" requires setting both an ear of corn and a box of cereal on fire (See Figure 2). As objects burn, they not only animate and interact with other objects— an ear of corn pops into popcorn, a battery explodes, and a bus of children generates screams of terror—they also produce Tomorrow Bucks, the game world's currency, which the player collects in order to purchase additional objects to burn in a feedback cycle of consumption and combustion.

Figure 1: Initial view of the player's Little Inferno at the start of *Little Inferno*.

Figure 2: "Watching You COMBO!" puzzle solved by burning a television and a camera together in *Little Inferno.*

The Little Inferno as a product in the game allegorizes digital computing devices both as sources of fun that require the burning of fuels to use and as major contributors to anthropogenic climate change. Over the course of the game, *Little Inferno* reveals to the player that they have been an eco-criminal who has inflicted harm on the environment in order to play all along. Throughout, the player intermittently receives letters from three non-playable characters who inhabit the game world: Miss Nancy, the figurehead of Tomorrow Corporation that produces Little Infernos, Sugar Plumps, the player's next door neighbor, and the Weatherman, the source of climatological information (see Figure 3). Together, the correspondence from all three reveals that the world outside the player's home has been cold for years, a bleak consequence of the widespread use of Little Inferno devices and their resultant ash occupying the atmosphere (see Figure 4). Sugar Plumps muses, for example, that "it seems like everyone has one [a Little Inferno] these days," while the Weatherman reports from his hot air balloon above the city that there is "chimney smoke… and smoke stacks… as far as the eye can see!" In requiring the player to burn objects to play the game and recognize the climatological devastation to this virtual world, *Little Inferno* parodies the petroleum and carbon energy industries that supply the electricity demanded by computing devices running digital games as well as adversely impact atmospheric conditions. *Little Inferno* suggests that the player is to blame for their contribution to the endless winter resulting from their fun.

Figure 3: Letter from Sugar Plumps, the principal neighbor in *Little Inferno*.

Figure 4: View of the cold and bleak world outside the player's home in *Little Inferno*.

A refrain of "that can't last forever" recurs throughout the correspondence with the three primary non-playable characters, linking the Little Inferno, digital games, and climate change together. Miss Nancy, for instance, concedes that Little Inferno "can't last forever," which references both playing a game with the Little Inferno as well as the social and environmental processes that enable that playing. Sugar Plumps uses the same phrase to refer to the nonsensical cycle of burning objects for Tomorrow Bucks to buy more objects to burn, questioning the rampant logics of collection and accumulation that Steven E. Jones identifies as central to digital games broadly, whether collecting items, currency, or score points (55). Although the Little Inferno product resembles a brick fireplace, the player does not incinerate objects for warmth—or rather, any warmth it generates is functionally irrelevant to the player—despite a world growing increasingly colder. The only intended use of the Little Inferno is to burn objects for to generate more currency in order to purchase and burn even more objects in order to solve puzzles. Both Miss Nancy's and Sugar Plumps' uses of "can't last forever" call into question the sustainability of burning objects to fuel the fun of digital games as well as of the generation of wealth predicated on that process.

Sugar Plumps eventually becomes a victim of a house fire resulting from her Little Inferno device malfunctioning. The Weatherman, in reporting this event, writes that "a house has burned down… another resident lost…," suggesting that others, like Sugar Plumps, have succumbed to the dangerous fires of Little Infernos and that others will befall the same fate. In his own use of "that can't last forever," the Weatherman describes the current climate conditions: "The snow's been coming down faster and faster… every day, colder than the last! That can't last forever! Heh heh!" The facticity of his use of that phrase, however, becomes unclear, since the unknown possibility of undoing ecological damage suggests that the increasingly cold climate could last indefinitely.

Little Inferno, however, shifts in play style near the end of the game. After completing the final combination puzzle, the player's own Little Inferno begins to malfunction before destroying their home. The camera then transforms from a first-person view of the Little Inferno device to a third-person view that enables the player to see their character in the virtual world for the first time (see Figure 5). Until this point in the game, the visual focus has been on the Little Inferno—the fetishized commodity—without representation of the player or much else of the world beyond the product. Freed from the rapt attention placed on the Little Inferno, the player becomes capable of moving about the city they inhabit (see Figure 6). The player now explores the world outside their home and investigates the production of Little Infernos by tracing them back to the Tomorrow Corporation headquarters, witnessing the cost of all of their fun.
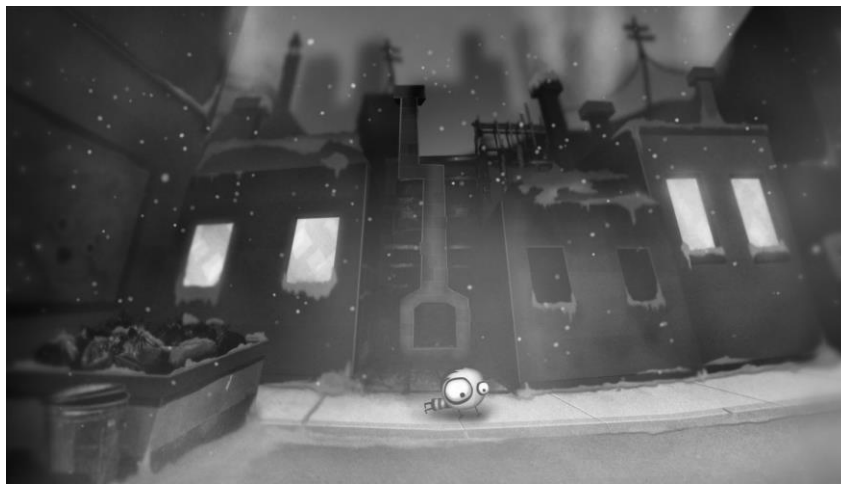

Figure 5: First view of the player's in-game character after their house burns down from a malfunctioning Little Inferno in *Little Inferno*.

Figure 6: Exploring the city in which the player lives in *Little Inferno*.

I suggest that this marked shift in gameplay and in visual design reflects a shift in the framing of the player, from single-minded consumer and unwitting eco-criminal into exploratory investigator of the larger social and ecological conditions of which they are complicit in causing. In this exploration of the world beyod the Little Inferno, the game argues that the player of digital games must not only understand but also actively learn how their playing, their fun, is embedded in obfuscated and ignored arrangements, processes, and systems that enact environmental harm. I argue that this responsibility is an invocation to dwell, to recognize the dwelling that takes place in the world beyond the limits of the game—both the world outside of the Little Inferno entertainment device within the game and the world outside of the *Little Inferno* game title itself. In his study of late twentieth- and early twenty-first-century U.S. imagination of environmental disaster, Frederick Buell advocates adopting the metaphor of "dwelling in crisis" to understand contemporary conditions of environmental risk. For Buell, dwelling demands investment, care, and responsibility, because:

> Giving way to disinformation, turning over responsibility to distant authority, and deciding that one's environment is terminal and therefore to be abandoned are all hard to do if one internalizes the metaphor [of dwelling in crisis]. One knows one's dwelling all too well to be disinformed; one is too locally and intimately touched to hand all responsibility to an outside authority; and one knows that no other credible refuge exists. (205)

The player of *Little Inferno*, as they become visually represented on screen, escapes the narrow view of their Little Inferno to see the larger world in which they are embedded, an opportunity to do otherwise than simply play with their Little Inferno.

Little Inferno suggests hopeful possibility in the advice of Sugar Plumps, who is revealed to be alive and well, and of the Weatherman at the end of the narrative to leave home—encouragement to inhabit and dwell in the greater environment. While *Little Inferno* operates predominantly in the mode of environmental responsibility by framing the player as an eco-criminal, however, the game's ending ultimately curtails its potential for encouraging environmental responsibility, since it closes with a scene of escape from the responsibility of ecological devastation. During the player's face-to-face

encounter with Miss Nancy at the Tomorrow Corporation headquarters, Miss Nancy comments on the current weather conditions and the future trajectory of the city: "Every day, colder than the day before. That can't last forever!" Because of the increasingly bleak weather, Miss Nancy's optimistic use of the refrain "that can't last forever" is a lie, since she explains that the city will eventually slow down until it freezes. As she prepares to leave to enjoy life elsewhere, Miss Nancy rejects blame by claiming that "it's nobody's fault. We can't control the weather." Her refusal to accept blame and take responsibility for remedying the environmental harm done signals her refusal to dwell. The player, too, leaves at the close of the game with the assistance of the Weatherman, as the game provides no possibility to stay and remedy the harm done. Their flight from the virtual city within *Little Inferno* instead renders the player no different than Miss Nancy as they escape the city as fugitive eco-criminals searching for another home, shirking responsibility to dwell in and care for the one they have already ravaged (see Figures 7 and 8).
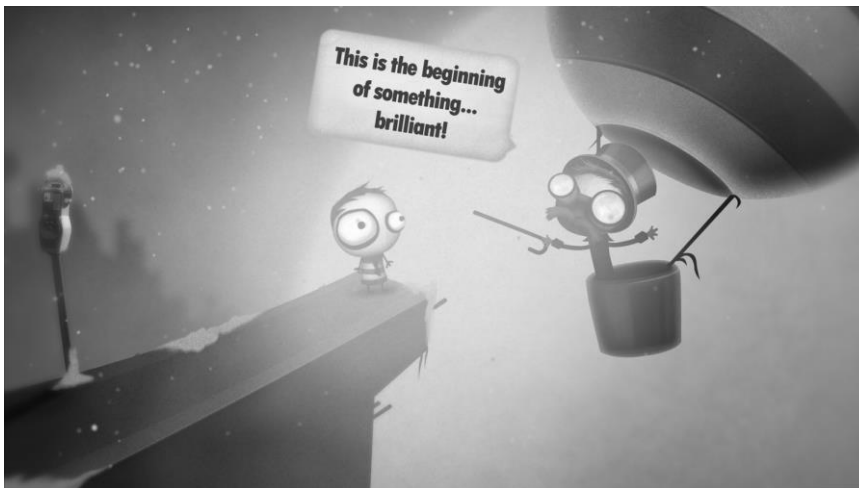

Figure 7: The Weatherman offers the player escape from the freezing city in *Little Inferno*.

Figure 8: The player leaves the city in the Weatherman's hot air balloon in *Little Inferno*.

Little Inferno explores the limit of how fun burning things for entertainment is, parodying this logic to its excess while recognizing the appeal of such fun. The game lulls the player into a seemingly harmless activity done just for fun before showing their complicity in the grave costs of that amusement. *Little Inferno*'s approach to the environmental harm of digital games acknowledges that digital games are fun and enrapturing, but this fun is both what is appealing about games and also what partially masks or elides the costs of such fun. While many reviews indicate that players recognized ecological principles as central to the game, many players also demonstrated that the fun of the burning mechanic entirely eclipsed *Little Inferno*'s interest in engaging environmental ethics. Steam user "King of evil Disco," for instance, recommends the game because "it brings you joy while playing it. And that's all you need to know" (King of evil Disco). Their comment fixates on the fun of the game at the exclusion of all else, especially of recognizing or addressing the costs and consequences of such fun.

For other players, their reviews indicate that not only did they miss the game's ecological critique but they are instead motivated to continue playing the game and, subsequently, enacting further environmental harm by having more fun. Enamored of the game, Sepp Schekelhuaba admits, "I play this every year during the christmas [sic] time. It's such a lovely and cozy game, I love it <3" (Sepp Schekelhuaba). Dorkasorus, similarly, writes that "Little Inferno is such a cute little story, it will make you want ot [sic] play it more and set more things well.. [sic] on fire. Let's be honest here, it will get you hooked" (Dorkasorus). Both of these comments underscore that rather than prompting reevaluation of the environmental harm enacted by playing *Little Inferno* some players instead become engrossed by the fun of it all.

In arguing that contemporary US life already dwells in crisis, Buell warns that the potential to care, investigate, and defend in response may instead lead to what he describes as "domestication within crisis" by accepting and adapting to conditions of risk (204-205). In its name, *Little Inferno* subverts the suggestion of containable disaster. The game itself emphasizes that no inferno, fire, or combustion is insignificant if it contributes to climate change. *Little Inferno* models how one should become conscious of environmental degradation by dramatizing the need to recognize and investigate how all digital devices are fundamentally little infernos.

But as a game that interrogates the cost of fun through enabling fun itself, *Little Inferno* also demonstrates how presenting ecological harm as fun through games of environmental responsibility may enable domestication within crisis. As one player, for instance, admits: "Sure it's a commentary on the sobering reality of Global Warming, radical weather shifts caused by it, and rampant consumerism, but dangit, [sic] burning things is too much fun!" (OneScoop). This final concession that "burning things is too much fun" captures the tension of simultaneously recognizing the serious environmental and social harm of digital games while still wanting to enjoy them.

Phone Story

Unlike *Little Inferno*, Molleindustria's mobile phone game *Phone Story* refuses to appear harmlessly fun from the beginning as the game explicitly describes the violence enacted by the production of mobile phones. Instead of inconsequential fun, *Phone Story* foregrounds the cost of playing *Phone Story* and explores the harm, blame, and responsibility around mobile phones through direct address of the player and their complicity as a consumer. *Phone Story* presents itself as a literal biographic narrative detailing the life of the physical phone device on which the player of the game is playing (see Figure 9). Upon its release, *Phone Story* drew media attention for its unapologetically political objective of critiquing mobile phones and their associated systems of violence ("Phone Story - Android/Iphone Game by Molleindustria") as well as being banned by the Apple apps store within a few hours of its release in September 2011 (see Figure 10) ("Phone Story - Banned"; Lien).
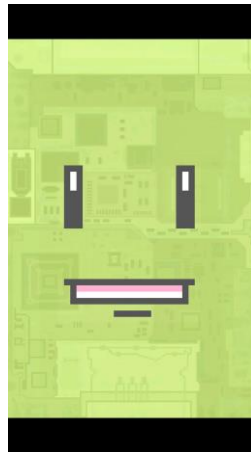

Figure 9: *Phone Story* addresses the player as a consumer of mobile phones by having the anthropomorphized phone address players directly.

Figure 10: *Phone Story* references Apple and their iPhones heavily, parodying the iconic brand with a store topped with a pear-shaped logo.

Phone Story consists of a series of four mini-games that highlight particular locations and harmful processes in the global life of mobile phones: coltan mines in the

Democratic Republic of the Congo, manufacturing plants in China, retail stores in the U.S., and e-waste recycling centers in Pakistan. In traveling through these various global locations, *Phone Story* explains to the player how they are already complicit in processes of environmental degradation, labor injustice, and military violence central to the conventional digital phone production, consumption, and disposal pipeline not only by playing the game but in owning a digital phone altogether. During each mini-game, the narration describes the forms of violence in which the player is complicit by tasking them to perpetrate that violence to advance through *Phone Story*, revealing the extent of their eco-criminality as the game progresses. The first mini-game, for instance, requires player to direct armed military agents who force exhausted and enslaved children to mine coltan in the Democratic Republic of the Congo (see Figure 11). In another stage, the player sorts out e-waste for recycling through crude methods that generate a range of environmental toxins for the local salvage workers in Pakistan (see Figure 12).

Figure 11: The player must control armed soldiers to coerce enslaved children to mine coltan in *Phone Story*.

Figure 12: The player generates toxins that affect recycling workers' health and environmental conditions in the process of sorting and recycling e-waste in *Phone Story*.

Phone Story explicitly frames refusing to play, refusing to accept responsibility, as an ethical impossibility. If the player fails any of the mini-games, *Phone Story* reprimands them by declaring that they failed the objective and that they cannot "pretend [they] are

not complicit" in these acts of harm, suggesting that the game conflates failing a mini-game with refusing to take part in it and the violence it represents. Failing does not lead to a conventional game over screen indicating that the game has ended. Instead, the only available formal option is to "Try Again," a reminder that there is no possibility of denying complicity by refusing to play since the player is already complicit in the very act of owning the device on which *Phone Story* is running. Even if the game itself does not provide an internal mechanism for quitting, the player can choose to exit *Phone Story* by accessing the device's operating system. As one reviewer on the Google Play Store writes, however, "You realise you can quit anytime but for the people depicted in this game, there is no quit for them" (A Google User-B). This review underscores that playing *Phone Story*, and consuming the devices that it runs on, comes at the price of harm to subjects who may be incapable of opting out of their involvement with mobile phone production.

  Phone Story, by framing the action of the game in the player's world, asks the player to dwell and care for the world they live in, accepting responsibility for the harm the production of phones enacts. The game highlights the connections that the player needs to trace from their digital games to become responsible for the forms of ecological and social harm in which they are complicit, by providing information about the relationships among military violence and coltan mining, labor conditions and mass manufacture, and environmental pollution and e-waste recycling. To encourage this process of dwelling further, the game's official website, www.phonestory.org, presents a free web version of *Phone Story* as well as more detailed information regarding the political and ecological issues surrounding digital devices and media coverage of *Phone Story.* Molleindustria also proposes possible interventions, ways to do otherwise, in coltan mining, factory labor, e-waste recycling, and, planned obsolescence: the major driving mechanism for the devastating life cycle of mobile phones. Regarding harsh factory labor conditions, for example, the *Phone Story* website declares that "workers can organize internationally to fight against the violation of trade union rights and to promote freedom of association and collective bargaining as a universal human right," providing a link to the International Trade Union Confederation's (ITUC) profile on China and other resources to educate players ("Phone Story - Suicides"). For their part to be more responsible, Molleindustria has stated that they donate all app revenue to "organizations that are fighting corporate abuses" ("Phone Story - Android/Iphone Game by Molleindustria").

  As an independently-developed game eschewing commercial profits in favor of drawing attention to many of the costs of having fun playing and using digital devices, *Phone Story* provides a simple play style, a very short playthrough, and an unrelenting didactic tone in order to prioritize its political objectives over simply having fun. For some players, however, this approach to decenter fun was poorly received as they were unable to evaluate *Phone Story* outside of a consumer framework of commercial value and return. Johnny Prencipe commented, "Awful Repetitive gameplay, too short, glitchy. Definitely not worth money" (Johnny Prencipe). gannon minton, similarly, finds the game as a purchased commodity deeply unsatisfying. Their review begins emphatically

with "DO NOT GET THIS GAME!" before explaining how they feel that the game is not worth any amount of money or time: "The game is 1.00$ [sic] exact, and it's the worst 1.00$ [sic] I've spent in a while. The game is short. […] In my opinion I wouldn't get it if I had the choice to redo my last 10 minutes" (gannon minton). gannon minton's expression of intense regret, in particular, underscores the dominant commercial logics of fun, fun in terms of the intensity and duration of interactive engagement, as the ultimate desired result of purchasing and playing games for many players.

In its short gameplay, *Phone Story* as a game of environmental responsibility directly questions the various costs of mobile phones. While acknowledging that there is "a good cause" to Molleindustria's game, gannon minton's review attempts to undermine *Phone Story*'s political project itself: "The game itself has a good cause. To raise awareness about what's going on in the electronic business. But how did they get the message out? Electronically" (gannon minton). In creating a digital game in order to critique the current system digital phone production, however, *Phone Story* aims not simply to educate players but to implicate players quickly in the act of eco-criminality, holding players accountable immediately by catching them red-handed.

For some players, their experience with *Phone Story* tasked them to think critically regarding digital phone production, demonstrating that they engaged with the game as a form of ethical gameplay. As Sicart argues, ethical gameplay is reflexive play that investigates "its purpose, meaning, and impact" (29). One player, engaging in such reflection, admits, "It wont [sic] stop me from using my current phone because well... It is too late BUT I doubt I will every [sic] buy a new phone again," suggesting future reluctance to participate eagerly in the conventional cycle of forced obsolescence and consumption (A Google User-A). Another player writes, "While it won't make me not want the next greatest thing to come out of phoneland […] We can't keep making devices at this pace without having serious ramifications on human life as well as the environment" (A Google User-C). For both of these players, *Phone Story* does not convince them, nor enable them, to opt out entirely of the violence and harm that they recognize. But the game does prompt them to assess the costs of owning digital devices within current logics of commercial production and consider alternative ways to engage with them. Such responses align with comments from Paolo Perdicini, the game's designer, that with *Phone Story* "we don't want people to stop buying smartphones […] but maybe we can make a little contribution in terms of shifting the perception of technological lust from cool to not-that-cool. This happened before with fur coats, diamonds, cigarettes and SUVs" (Hick). *Phone Story*, rather than expecting players to give up mobile phones entirely, tasks players to consider how their fun, their conventional enjoyment of digital devices, is predicated on labors and harm enacted elsewhere and, through the game's website, explores how to reduce those labors and that harm.

Conclusion

Representing digital devices themselves as tools of eco-criminality enables both *Little Inferno* and *Phone Story* to interrogate the environmental harm of having fun with digital games, rendering players complicit in harm and encouraging them to be responsible and do otherwise. Whether suggesting the need to investigate normally mystified ecological damage or proposing specific alternatives for intervening in ongoing destructive processes, games like *Little Inferno* and *Phone Story* provide possible options for acting on the environmental responsibility players may adopt from playing them. As the previous discussions of player responses to both games demonstrate, however, engaging with environmental responsibility, like all ethical gameplay, "is not experienced by all players but can be traced back to specific elements of the design of the game" (Sicart 24). *Little Inferno*, in embracing the fun of burning fuels to parody it, risks players fixating on that fun at the expense of engaging with environmental responsibility. *Phone Story*, on the other hand, by refusing to be inconsequentially fun through short and simple gameplay, risks players fixating on its perceived failures within a dominant framework of commercial fun despite the game's clear explanation of player complicity in the ecological and social harm of owning mobile phones. While no amount of game design can ensure that all players will embrace environmental responsibility, games of environmental responsibility, addressing that game technologies and the act of playing games itself are ecologically harmful, underscore that having fun is neither without cost nor without responsibility.

To address critically the fun of playing digital games and the harm that fun entails, games of environmental responsibility must challenge dominant logics of fun not only by revealing that fun is ecologically costly but also by investigating what constitutes fun, for whom, and whether fun is ultimately desirable. This is particularly important if conventional understandings of fun are both what can draw players to games of environmental responsibility as well as what can operate as a means of domestication within crisis that runs counter to the potential to dwell and take responsibility for ecological harm. Games of environmental responsibility must consider alternatives to the conventional fun of digital games, to allow players to contest the primacy of fun above all else and explore how to have fun more responsibility, which may require accepting that there needs to be less fun overall. Such games must champion dwelling over fun by showing how the games themselves enact material harm in the world. Digital games seeking to encourage environmental responsibility should connect players to other players, to information, to resources, and to proposals for recognizing blame, for accepting responsibility, for providing care, and for doing otherwise in light of and even in lieu of the mere fun of playing them.

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ECOZON@

Vol 8, No 2

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Within the Mainstream:
An Ecocritical Framework for Digital Game History

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Abstract

Ecocriticism of digital games has so far engaged with a rather small corpus of examples, often prescriptively and with a quite limited methodological toolkit. This essay systematizes and historicizes some of these commonly found limitations of past research and proposes methods for a more historically and generically diverse exploration of ecological thinking vis-à-vis digital games. The majority of discussions of games from an ecocritical perspective has applied concepts and frameworks borrowed from literature and film studies, thus privileging surface semiotics over game mechanics. More methodically aware studies have oriented themselves toward the popular framework of procedural rhetoric (Bogost 2007), resulting both in a selection bias towards serious games and an author-centric, intentionalist slant inherent in the approach. In general, the discussion revolves around a small number of games with apparent ecocritical potential, such as *Myst* (Cyan 1993) or *Farmville* (Zynga 2009), resulting in a selective, a-historic and therefore distorted discussion of ecology in the diverse medium of digital games. This essay discusses strategies for dealing with a larger corpus of digital games through a descriptive matrix for identifying and analyzing the ecological dimension of digital games. It proposes an extension of the ecocritical toolkit by including a more user-centered, ethics-based theoretical framework based on Sicart's *Ethics of Computer Games* (2009). The gain of engaging with representation and simulation of the natural environment in mainstream computer game history will be demonstrated in an analysis of two paradigmatic games. In both *Red Dead Redemption* (Rockstar San Diego 2010) and *Dishonored* (Arkane Studios 2013), we encounter game design geared toward producing ludo-narrative dissonances which are highly inductive of critical engagement with the ecosphere.

Keywords: Historiography, popular culture, entertainment, anthropomorphism, methodology, ethics, *Red Dead Redemption, Dishonored.*

Abstract

La ecocrítica de los juegos digitales se ha centrado en un corpus de ejemplos muy pequeño. Asimismo, la ecocrítica se ha basado en un número muy limitado de métodos. La mayor parte de los debates sobre juegos han utilizado conceptos y teorías tomados de la teoría literaria y el análisis cinematográfico, haciendo prevalecer por tanto análisis semióticos superficiales sobre el estudio de las mecánicas de juego. Los estudios que aplican métodos de *game studies* suelen estar basados en la teoría de retórica de procesos (Bogost, 2007), lo que acarrea una selección de ejemplos sesgada hacia los *serious games* y los juegos de autor. En general, estos debates se centran en un número pequeño de juegos con potencial ecocrítico, como *Myst* (Cyan 1993) o *Farmville* (Zynga 2009), lo que deriva en una discusión selectiva y ahistórica de la ecología en un medio tan diverso como los juegos digitales. Este artículo presenta estrategias para analizar un corpus de juegos mayor y propone una matriz descriptiva para identificar y analizar la dimensión ecológica de los juegos digitales. Metodológicamente, este artículo opera con una extensión de la teoría ecocrítica que incluye un marco teórico centrado en el usuario y

basado en *The Ethics of Computer Games* (Sicart, 2009). Los beneficios de centrarse en la representación y simulación del medio natural en el canon de los juegos digitales serán demostrados a través del análisis de dos juegos paradigmáticos. Tanto *Red Dead Redemption* (Rockstar San Diego 2010) como *Dishonored* (Arkane Studios 2013) producen disonancias ludo-narrativas que promueven una relación crítica con la ecoesfera.

Palabras clave: Historiografía, cultura popular, entretenimiento, antropomorfismo, metodología, ética, *Red Dead Redemption, Dishonored.*

Introduction: Game Ecologies, Broad and Narrow

Ecocritical studies of games are, as the other contributions to this issue document, both necessary and challenging. Ecocriticism has always been conceived of as an open movement, characterized by a "commitment to environmentality from whatever critical vantage point" (Buell, *The Environmental Imagination* 11). At the same time, "[e]co-criticism takes as its subject the interconnections between nature and culture, specifically the cultural artifacts of language and literature" (Glotfelty xix). Only in recent years has this traditional focus on the literary been identified as little more than a "home-discipline affinity […] of literature-trained environmental critics", whose endeavor has been a necessarily interdisciplinary one from its very beginnings (Buell, "Ecocriticism" 103).

Ecology is a term one encounters with surprising frequency in game studies—however mostly in a metaphorical sense, following the lasting influence of Gregory Bateson. It is used to denote human embeddedness in digital environments (Salen), or, in more technological contexts, the algorithmic interdependencies of gameworlds (Grimshaw and Schott). Consequently, while established game scholars sidestep ecocritical questions even in analyses of games with a pronounced ecological dimension (Begy and Consalvo), experienced ecocritics have often struggled with addressing the peculiarities of games. Early ecocritical studies of games (Ulman, Clary) tended to disregard medium specific aspects and dedicated game studies methodologies, while at the same time privileging a handful of atypical games such as *Myst* (1993).[1] Newer studies, most notably Alenda Chang's excellent work, have mostly overcome these issues, yet as in any developing field, the variety of examples discussed and the range of methods applied is still somewhat limited.

A survey of existing writing on the topic reveals a completely understandable, possibly even unavoidable privileging of advocacy and activism over detached analysis. There is a tendency towards selecting a specific type of example in a fashion comparable to ecocritical film studies' focus on the "genre of ecocinema" (Willoquet-Maricondi 45).

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[1] Amy Clary, for example, interprets the success of *Myst* as a part of "the ongoing desire for *representation* of the natural world in popular culture" (105, my italics) and analyses exclusively the visuals of the game, ignoring the immersive and interactive qualities that set games apart from other media. It needs to be pointed out, though, that such underdeveloped approaches are widespread in—even typical of—early contributions to all branches of game studies.

Amy Clary, for example, limits her study to "games that teach natural resources stewardship" (107), while Chang focuses primarily on overtly ecocritical games to "embrace and encourage game design in forms that recall our favorite modes of natural play" ("Games as Environmental Texts" 58) and which "measure games as instruments of public knowledge" ("Games as Environmental Texts" 59).[2] Equal attention is devoted to negative extremes in the depiction of the natural environment, e.g. in farm games, which "inevitably caricature complicated biological and economic processes" (Chang, "Back to the Virtual Farm" 250). The analyzed examples thus cluster towards the ends of a categorical spectrum, with intentionally ecocritical games on one end and environmentally irresponsible games on the other, explicitly excluding 'modern' and 'popular' "console blockbusters" (Chang, "Games as Environmental Texts" 58) in favor of atypical, albeit very successful, games.

The central hypothesis presented here is that ecocritical studies of computer games would benefit from taking the long and rich history of mainstream computer games into consideration more frequently and systematically. The classifications of 'atypical' versus 'mainstream' is, of course, tentative, a shorthand meant to highlight that many common genres and conventions are underrepresented in the existing literature. Examples like *Myst* or *Farmville* are important milestones in the history of computer games that have reached millions of players, yet they are not indicative of the medium's capacity for simulating the natural environment in intricate detail, nor of the expansive and intricate ludo-narrative hybrids distributed by major publishers as single-player computer games.

Ambitious nature simulators can be traced back at least to *Eco* (1988), *SimEarth* (1990) and *SimLife* (1992), and came to significant popularity in *Creatures* (1996) and its numerous sequels. These games are complex and ambitious even by today's standards and deserve study. *SimEarth* allows the player to manipulate twenty macro-level parameters such as erosion and cloud formation as well as giving her the opportunity to manually trigger events such as volcanic eruptions and to influence the flora and fauna of specific areas. While this sounds like a power fantasy, the effect of the simulation is rather the opposite, namely a game that suggests omnipotence yet not only withholds it, but makes it seem completely unachievable. The combination of the excess of parameters and the graphical limitations of the user interface, above all the maximum resolution of 640x480 pixels, impress upon the player the quite literally super-human scope of the simulated system. The interrelations between the geology, atmosphere, hydrosphere, plant and animal life cannot be processed either visually or mentally. While in their later landmark, *The Sims* (2000), Maxis stress that the mundane is manageable, their earlier games revel in the almost unmanageable complexity of interrelated systems. While it is possible to play *SimEarth* successfully, one can never fully master the game, because the remaining contingencies are not only greater than in

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[2] These approaches put games and ecology into the frame of science education, where the accuracy of scientific facts is the primary focus of attention. This leads Chang to correctly identify *Spore* (2008) as a problematic environmental game because it over-simplifies and distorts natural processes (Chang, *Playing the Environment* 1–2).

other games, but of a more fundamental kind. *SimEarth* leaves the player with two lasting impressions: one knows very little about the history of the planet and its evolution, and even if one does, it is frequently impossible to attribute the game's outcome to player actions or the autopoietic quality of the ecological simulation.

Excluding the mainstream from an ecocritical approach to games is problematic, it seems. It is for these reasons that, inspired by the broadening of scope in ecocritical film studies (Murray and Heumann, Rust et al.), this article proposes to extend serious ecocritical thinking to popular digital games at large, and sketches an ethics based approach to the history of ecology discourses in computer games. It proposes a descriptive matrix for gauging the ecological dimension of digital games based on existing models of game ontology and play ethics. These tools are used in analyses of paradigmatic cases in which procedural design and player behavior create friction. The overall aim of proposing such a method for an environmentally aware interpretation of games is to stipulate a more widespread discussion of ecocritical thinking to game studies by offering up an easy-to-use, systematic tool for the identification of ecocritically interesting examples.

Exploring the Field

Considering mainstream games for a systematic discussion of ecology in computer games is contingent on two questions: Are there enough viable examples, and, if so, how can they be properly systematized in order to prevent positivist and unspecific analyses?

In fact, a brief historical overview of computer games shows a wide variety of ecological phenomena. One recurring, even ubiquitous topic is the relationship of human and non-human agents, which leads many mainstream games to deal with themes identified as central to ecocriticism by Buell, such as "human obligations toward the nonhuman world, the porousness or solidity of the human-nonhuman border, interspecies communication" ("Ecocriticism" 106).

Even the least sophisticated implementations of playable animal characters give rise to reflections on anthropocentrism and anthropomorphism. The popularity and influence of these games has traditionally been enormous, from early arcade games like *Frogger* (1981) and *Donkey Kong Jr.* (1982) to console games of the 1990s—from *Sonic the Hedgehog* (Sega, 1991) to *Ecco the Dolphin* (1992), *Earthworm Jim* (1994), *Gex* (1994), *Jazz Jackrabbit* (1994), *Crash Bandicoot* (1996) and *Spyro the Dragon* (1998)— not to mention all the worms, lemmings, and birds that have made group appearances in digital games.[3] With equal frequency, animals are subjected to the agency of human avatars. Fishing, hunting, and farming games—like *King Salmon: The Big Catch* (1993),

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[3] In his application of Thomas Nagel's reflections on the ontological differences between human and non-human sensory perception, Stefano Gualeni points out that even imperfect renditions of an animal perspective in computer games possess enormous potential: "The crucial point in this understanding of the metaphysical relevance of interactive digital media content is that it prompts humans to apply their cognitive and perceptual equipment as well as their subjectivity to a context that could not be encountered in their ordinary life" ("What is it Like to Be a (Digital) Bat?" 5).

Deer Hunter: Interactive Hunting Experience (1997) and *Animal Crossing* (2001)—therefore raise very different questions of anthropocentricity. Somewhere between the extremes of anthropomorphism and commodification, we find virtual pets of different complexity, from the original *Tamagotchi* (1996) to 'nurturing games' like *Petz: Horsez* (2006). Of a similar anthropomorphic status, yet on a different level of anthropocentricity, are the animal companions of adventure, role-playing or action games, from the second-order avatars in *Black & White* (2001) to the NPCs in *Fallout* (1997) or *Dragon Age: Origins* (2009), and the same issues can be raised with other non-human game characters, be they elves or extraterrestrials. All these categories are often dissolved or called into question by anthropomorphic machines and objects—artificial intelligences like SHODAN in *System Shock* (1994) or GLaDOS in *Portal* (2007), sentient weapons like *SoulCalibur*'s (1998) Soul Edge, robots like the Protectrons and Sentry Bots in *Fallout 3*—which may appear alongside anthropomorphized animals (the core concept of *Ratchet & Clank* (2002)), or even form hybrids, like Max, the four-armed, cigar-smoking cyborg dog in *MDK* (1997) or Rex, the 'cyberdog', in *Fallout: New Vegas* (2010). And there are, of course, many tropes apart from encounters with the non-human that make mainstream games interesting from an ecocritical perspective. Most notable are examples that deal with the threat of biotechnology—like the *Resident Evil* series (1996–2017) and *Far Cry* (2004)—, natural disasters—*Spec Ops: The Line* (2012)—or visions of a postapocalyptic biosphere—the *Fallout* (1997–2015) and *STALKER* series (2007–2009).

It should have become apparent that even within such a small selection of examples and phenomena, there are many instances that would warrant analysis and categorization. This answers the first question, pertinence, and prepares the second, method. The key reason for the wealth of examples is, more generally formulated, the systemic coincidence of two of the main foci of environmentalist criticism: the setting as more than a neutral backdrop (Buell, *The Environmental Imagination* 4), and the privileging of human perspective and resulting anthropomorphism. According to environmental philosopher David Keller, humans cannot but think of themselves as the center of every discourse. This stance, he stresses, is one of "the defining features of Modernity" (Keller 709). One of the key components of this anthropocentric word view is a mechanistic perception of nature that "entails the conclusion that nature has no intrinsic value" (Keller 710). Formalized games of strongly ludic character (Caillois 27–28) (i.e. goal-driven board games and digital games) tend towards a mechanistic treatment of all their subject matter. Sometimes reduced to the management of resources (Salen and Zimmerman 78), games are characterized by the construction of complex, yet calculable systems with many discreet, unequivocally defined elements. These systems share important traits with the ecosphere as conceptualized by Barry Commoner in the early 1970s; they tend to be an interdependent, closed sphere "in which nothing can be gained or lost and which is not subject to over-all improvement, anything extracted from it by human effort must be replaced" (Commoner 23).

Regardless of the fact that there are absolutely no natural environments in computer games—because virtual worlds are completely 'built', and as such, suffused

with technical and strategic significance (Aarseth, "Virtual Worlds")—the environments *coded* as natural within game worlds can be critiqued.[4] Chang defines these as "not only topography but also the flora and fauna that should be coextensive with such topography, and their manifestations via images, sound design, and potential for interaction" ("Games as Environmental Texts" 79, EN 4). It is especially the last aspect that Chang identifies as crucial: the ability to interact with the game environment. Two of the three gravest mistakes she diagnoses in the handling of natural environments in games are connected to this: "relegating environment to background scenery, relying on stereotyped landscapes, and predicating player success on extraction and use of natural resources" (Chang, "Games as Environmental Texts" 58). As games allow players to be an active part of an environment (as opposed to an observer in other media), the actions they can (or cannot) perform towards this environment are imminently meaningful (Vella 6–7). Yet how does one account for these actions within analyses of game objects?

Proceduralism and Ethics

Just as the virtual worlds themselves are completely fabricated, so are their behaviors and the players' abilities to influence them or be influenced by them. As such, the processes the players participate in carry meaning. The most widely used theory of this kind of meaning-making is Ian Bogost's concept of procedural rhetoric. He stresses that "abstract processes […] can be recounted through representation. However, procedural representation takes a different form than written or spoken representation. Procedural representation explains processes *with other processes*. Procedural representation is a form of symbolic expression that uses process rather than language" (9; emphasis in original).

Bogost's strong claim that procedural representation foregoes and replaces language, while paradoxically amounting to a language of its own, poses many challenges. Newer publications thus explain more modestly that the "proceduralist position strives to understand a game's meaning in the context of the processes that it affords […], sharing similarities with the New Criticism movement which strove to understand how language can be *charged with meaning*, without relying on authorial intention, individual experiences, or historical context" (Treanor and Mateas 2; emphasis in original).

While proceduralism seeks to enable analysis independent from implied authorial intention, its language-analogy leaves open the question of whether processes

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[4] The virtual worlds of games matter, because they are cognitively as well as conceptually actualized in the process of incorporation: "the absorption of a virtual environment into consciousness, yielding a sense of habitation, which is supported by the systemically upheld embodiment of the player in a single location, as represented by the avatar" (Calleja 169; emphasis in original). A similar argument has been made by H. Lewis Ulman from a ecocritical vantage point, who argued that the distinction between "real" and "virtual" landscapes is meaningless. Not only are (mirroring Calleja's argument) similar phenomenological stances taken towards both. The degree to which nature has been shaped and transformed by humans, especially when aiming to produce an "even more natural nature" as in the case of natural parks, blurs the distinction:"Yet even our attempts to preserve and protect material, nonhuman nature from the worst effects of human encroachment necessarily entail the virtual" (Ulman 353).

denote or connote meaning. Bogost suggests a denotative quality when he discusses the persuasive power of procedural rhetoric; in the words of his critic Miguel Sicart: "players will be ethically or politically affected, or *persuaded*" (Sicart, "Against Procedurality" n.p., emphasis in original). This idea, the assumption that games are encoded with values and directly reproduce them in their players, has been taken literally in some games ecocriticism, and, ironically, even been attributed to authorial intentions: "I wish further to emphasize that Norrath, as an interactive and redundant medium, does not just reflect the value system of its designers, but works to reproduce these values in the user" (Stumpo 30).

The revised proceduralist approach of Treanor and Mateas identifies this stance as that of a "naive proceduralist" (3). They oppose the idea of a directly encoded message in games and stress the importance of context and interpretation. Yet even they remain convinced that the communicative power of games relies on processes with unequivocal meaning that will be understood by players (4).

As indicated, one of the most vocal critics of procedural rhetoric is Miguel Sicart. While he (as probably do most game scholars) agrees with the basic observation that games produce a significant part of their meaning through rule-based processes, he has spoken out against the deterministic dimension of proceduralism. Sicart posits that to actually effect a change in players, games have to be "ethically relevant", which he defines as "a game in which the rules force the player to face ethical dilemmas, or in which the rules themselves raise ethical issues" (*Ethics* 49). These games create "a space of ludic possibility that is determined by a set of ethical values" (*Ethics* 50) through their ontology as "both objects and experiences; they are objects designed to be experienced, and they only exist fully in that process" (*Ethics* 30).

As objects, games are made up from a rule system and a representational or semiotic layer, or, in Sicart's terms, "systems and worlds. These two elements have to be coherent, creating entertaining gameplay while crafting a game world. The ethics of games as designed objects can be found in the relations between these two elements" (*Ethics* 21–22).[5] In their procedural and experiential dimension, however, games can only be understood by accounting for the active role of the player. "Players are creative, engaged, value-driven agents who engage in play with their own values as part of what helps them configure their experience" (Sicart, "Against Procedurality" n.p.). These values derive from the fact that we "think, and play, as ethical agents beyond being players, but also as cultural beings" (Sicart, *Ethics* 105). Properly constructed games will not try to determine and condition every action of their players—the extreme form of procedural rhetoric mentioned before—but will offer enough freedom and depth to allow players to not only overcome the game's challenges, but to enjoy a wide range of actions which produce a reflective distance.

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[5] In his description of the game object, Sicart uses Järvinen's (2003) tripartite model of system, representation and interface. Not the least because an ecocritical approach is dependent on the semiotic layer, it might be advisable for future studies to replace this model with Zagal et al.'s (2005), because it offers a finer granularity, distinguishing interface, world-rules, gameplay-rules, agent goals, game goals, as well as entities and entity manipulation.

The availability of a wide range of actions is contingent on simulating a system in which players can interact with a considerable amount of freedom—a freedom not afforded in more linearly scripted games. This freedom does neither have to be total, nor does the simulation have to be complete.[6] To engage the player in a process of reflection, Sicart adds, "a computer game need not simulate the complexity of the world: it is enough to create a simulated world where play is interesting" (*Ethics* 32).

In such games, ethical conflicts emerge because the player is "a living, breathing, culturally embodied, ethically and politically engaged being that plays not only for an ulterior purpose, but for *play*'s sake" (Sicart, "Against Procedurality", n.p.; emphasis in original). Therefore, games become ethically—as well as, in our case, ecologically— relevant if they provoke conflict in players by implementing game goals that may clash with a player's extra-ludic values and beliefs. In the closed systems of single player campaigns, this can happen in two different modalities: "subtracting ethics patterns leave players the task of understanding the values they are playing by, and reflecting on them; mirror ethical patterns are more direct experiences of predetermined ethical situations, a much harsher kind of experience that can also yield intense reflection when we are not players" (*Ethics* 217).

It is therefore not necessarily the overt, explicit treatment of moral themes that have the greatest impact. Sicart holds that without provoking ethical conflict in the player, there is no need for reflection (*Ethics* 159–160). He argues that a game like *The Sims* (2000) inhibits critical reflections on ethical issues by enforcing an ethical stance through its rules, therefore connoting its work-life-balance ethics as not only 'good' but as the only meaningful possibility. The controversial *Manhunt* (2003), however, inevitably provokes ethical considerations by putting the player in a morally impossible situation (*Ethics* 52–53).

An Eco-Ethical Analysis Framework

Applying this line of reasoning to ecocritical game studies is helpful in dealing with game mechanics and semiotics. Sicart's reflections suggest that the factual and representational accuracy of simulations of the natural environment are less important than their ability to model key aspects and to get players to engage with them practically and emotionally—an assessment in tune with even the foundational texts of ecocriticism such as Buell's *Environmental Imagination*, which only calls for an implicit awareness of ecology in paradigmatic texts (Buell, *The Environmental Imagination* 7–8).

If we furthermore accept the idea that dissonances between gameplay and semiotics as well as tension between game goals and player morals provoke critical engagement with the game and its topics, it is possible to formulate a number of research questions to operationalize the inquiry into an ecological history of computer

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[6] Sicart points to Mary Flanagan's reflections on simulation: "Games are frameworks that designers can use to model the complexity of the problems that face the world and make them easier for the players to comprehend. By creating a simulated environment, the player is able to step away and think critically about those problems. […] In some cases, a game may provide the safest outlet available for exploring devastating problems and conflicts" (Flanagan 249).

games. With the exception of the first one, the questions set out below are no checklist of binary possibilities, but an interpretive scaffold that points towards essential, yet easily overlooked dimensions of ecology in games. The absence of any one of these elements in an example can also be productive.

One: Is the natural environment engaged with semiotically—that is, audio-visually and discursively—as well as ludically? As a first step, it is obviously important to identify the elements of a computer game that deal with the natural environment. As discussed in the previous section, the communicative dimension of game mechanics cannot be stressed enough. Still, a game that does not refer to the natural environment through audio-visual or verbal cues will not prompt players to perceive gameplay elements in this dimension. The opposite is true, as well. To paraphrase Buell's initially quoted realization: as soon as a computer game represents or discusses the natural environment, players will make the connection. Some types of games—most notably farming, hunting or fishing games—will, by virtue of their genre conventions alone, engage with the natural environment through audio-visual signs, discourse, and mechanics. It seems also important to distinguish between audio-visual and verbal semiotics, as already demonstrated in existing ecocritical writing on games, e.g. in Chang's pointing out discrepancies between pastoral visuals and mercantile verbal rhetorics ("Back to the Virtual Farm"). If there is no engagement with the natural environment to be found in any dimension, an ecocritical study of a game object would be pointless.

Two: Do the three modes of engagement with ecological questions cohere or create friction? This second research question tries to identify ludo-narrative dissonances, as per Sicart's theory, as sources of deeper critical engagement with the game under consideration. This is, however, more of a meta-question: for the verbal, visual and ludic dimensions can be interrogated through the following four questions, and the results then compared as to coherence or friction.

Three: Is the treatment of ecological topics explicit and central or rather implicit and peripheral? If a longish game such as *Batman: Arkham Asylum* (2009) refers to one of its numerous opponents once as an ecoterrorist, but otherwise does not engage and fails to connect its mechanics to ecology, the peripheral treatment of ecology might indicate that the game holds less promise for an ecocritical analysis (which might, of course, turn out to be wrong if those peripheral, isolated elements emerge through analysis as having a strong impact on the game as a whole). *Spec Ops: The Line* for the greater part treats cataclysmic change in the natural environment—sand-dunes big enough to swallow all but the tallest high-rises of Dubai—as a mere backdrop, yet makes use of the sand as an environmental hazard and potential weapon, thus drawing attention to it (and ecological questions) on a gameplay level. A further, extreme example is *Whiplash* (2003), a platforming game which refers to environmentalist issues explicitly and drastically on the semiotic layer, yet offers a contradictory gameplay. *Whiplash* puts the player in control of Spanx, a weasel, who tries to escape an animal testing facility together with Redmond the rabbit. While the basic game goals—escape the facility, free other animals and destroy lab equipment—seem reasonable enough, the

game mechanics reduce Redmond the rabbit to an unfeeling, facile tool, often for comic effect. When Spanx swings his fellow animal on a chain and smashes him into objects, it creates a jarring disconnect between semiotics and gameplay.

Four: Is the treatment of "nature" specific and informed? As already discussed, a certain degree of accuracy in depicting and simulating the natural environment is essential for games to seriously reflect ecological issues. Chang ("Back to the Virtual Farm") discusses at length the problems of farm games that omit elementary components of the simulated processes such as watering and fertilizing, and other ecologies, such as that of *EverQuest*, are similarly "utterly broken, with frankly dangerous theoretical underpinnings" (Stumpo 30). It is not only the omission of important factors (such as the dynamic nature of creatures and ecosystems) from a simulation that leads to problematic distortions. Wildly inaccurate models of genetics in games such as *Evolva* (2000) and *Spore* raise the question of whether one is dealing with nature simulations at all, or whether the games are merely using natural processes as metaphors for arbitrary gameplay mechanics. And an example like *Jaws Unleashed* (2006), which lets players control the bloodthirsty, man-eating shark from the *Jaws* movies, shows how intentionally and programmatically inaccurate a portrayal of the ecosystem can be—a fascinating topic in its own right.

Five: Are game mechanics or semantics anthropocentric, or do they offer alternative perspectives? Some simulated activities such as hunting, farming, and zoo-keeping necessarily affirm an anthropocentric perspective and can, at best, incorporate notions of responsibility, sustainability and stewardship. Putting the player in control of a more or less realistically simulated animal forces her to reflect upon her relationship to her environment, especially if this environment is not natural but tailored toward the needs and abilities of humans. Even games that resist the anthropocentric in such ways usually remain anthropocentric on the interface level, because otherwise interaction would be impaired or impossible. However, *Flower*'s (2009) extensive use of the Sixaxis controller's gravitational sensor, for example, shows that the implementation of unusual controls can productively defamiliarize the player from accustomed modes of control. Furthermore, *Flower* largely disembodies the point of agency, rather than anthropomorphizing animal behavior to such a degree—as does *Tokyo Jungle* (2012)— that feeding, mating and protecting territory appear as "basically Grand Theft Auto with lions" (Gibson n.p.).

Six: Is the treatment of ecological topics affirmative, critical, or ironical? The general tone of a game has to be taken into account, as well, yet this qualitative dimension can only be dealt with as part of the interpretive process. The humorous, even farcical tone of games like *Worms* (1995) or *Angry Birds* (2009) has to be taken into account so as to not misinterpret irony or exaggeration as serious depictions. While in humorous games, a certain distance to the subject matter is obvious and inevitable, the question of a *critical* distance in more serious games is often difficult to resolve. A comparison of the dedicated hunting simulation *Deer Hunter Tournament* (2008) with the hunting mini-game in *Resident Evil 4* (2005) will reveal that the former is more explicitly didactic in its portrayal of hunting: for while the latter game awards the avatar

money for killing birds and snakes without the least amount of contextualization, the former implements the possibility of shooting endangered species, but punishes the player massively for doing so. Whether the utter lack of problematization in *Resident Evil* or the enforcing of a specific ethical position in *Deer Hunter* would qualify as "unethical game design" (Sicart, *Ethics* 37)—i.e. if the examples fail to create a critical distance to their subject matter—can only be productively discussed in correlation with the overall tone and stance of any respective example.

Following these six questions, a quick assessment of latent ecological properties in specific computer games is possible, rendering the transhistorical dimension of the medium's ecocritical aspect more tangible. There are obvious limitations and biases inherent in this approach. The analytic framework intentionally privileges the object-analysis of representational games over analyses of abstract ones, while also excluding player-studies.[7] Interpretations of abstract games are notoriously fraught with subjectivity. Janet Murray's interpretation of *Tetris* as a metaphor for the stress of American office workers is probably the best-known example of an interpretation of a computer game that lacks any referential trigger and thus might be considered as an associative over-interpretation (see Möring, *Games and Metaphor* 228–234). Yet even mostly abstract games can be productively processed within the framework presented: The title of the mobile game *Splice* evokes the natural environment, creating a first reference to ecology. Its gameplay is wholly abstract: pill-shaped objects have to be combined in the most efficient way to create patterns in the utter isolation of a featureless, fluid or gaseous void. The simulation of natural processes is explicit and central to the game, but the game places no emphasis on an accurate depiction of genetic splicing—rather, natural processes serve as a template for puzzle design. The game's abstraction and de-contextualization make it impossible to inquire into its tone, anthropocentrism, or ludo-discursive dissonance, because even on the discursive level, the game is too abstract, dealing not with life as we experience it, but with life's building blocks. Whether this still presents an engagement with ecology is more of a philosophical question, but comes more clearly into focus through application of the analytic framework outlined above to two mainstream games.

Red Dead Redemption

Red Dead Redemption (2010) deals with the natural environment verbally, visually and ludically. Set in the last days of the Wild West, hunting, herding cattle and breaking in horses are discussed and implemented as gameplay elements, and the gameworld is highly detailed and densely populated with plants and animal life. The game's narrative foregrounds questions of coexistence with nature through its criminal-turned-farmer protagonist John Marston, who initially aims for nothing more than sustaining his family with just as much land and livestock as absolutely necessary.

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[7] Players will unpredictably engage with games or interpret them in ways that are influenced by ecological awareness. It lies in the nature of play that it appropriates and changes its objects. Player-studies have developed their own instruments and methods, though addressing these is beyond the scope of this article.

Marston not only discusses his outlook on life and nature with the game's non-player characters, his first missions require him to apply the necessary skills. While nature always features prominently in the game, its specificity is especially apparent in longish side-quests aimed at survivalist skills, which require Marston to identify the habitat of some flora or fauna and collect specimens. The game's depiction of nature is guided by verisimilitude rather than an attempt at true simulation: weather changes are random, animals spawn instead of reproduce, and wildlife will never become extinct—with one notable exception.

While *Red Dead Redemption* is unabashedly anthropocentric on all levels, it verbalizes the necessity for a conscientious treatment of nature, especially near the end of the single player campaign, when Marston teaches his son the strategies and ethics of hunting. The interesting friction in *Red Dead Redemption*'s treatment of the natural environment results from a clash of its discussion of morals with its gameplay. Although Marston ends up killing hundreds of people in the course of the game, it is surprisingly moralistic when compared to other Rockstar games (Pallant 134). This means, as Sicart has stressed, that some player actions are made impossible. No matter what temptation he faces, Marston remains faithful to his wife, and the player cannot change this. However, the game does allow the player to explore the boundaries of Marston's morality in several respects, acknowledging the player's actions through optional achievements.[8] The crowning achievement of amoral play toward NPCs is called "Dastardly" and is awarded for tying up a woman, placing her on railroad tracks and watching her be killed by a train. As a sort of companion piece, there is an achievement called, cynically, "Manifest Destiny", which contextualizes the game's treatment of hunting. In a move identified by Stumpo as "forced commercialization" (Stumpo 34), one of the most lucrative activities in *Red Dead Redemption*'s open game world is hunting, both in intradiegetic and ludic terms. The avatar can sell furs, organs and trophies for money, while the player needs to hunt to fulfill a number of quests. Hunting is not trivialized, though. Unlike *EverQuest*, which "sanitizes" the reality of skinning (Stumpo 36), *Red Dead Redemption* shows skinning and gutting as the messy activities they are. Although the dead animal is hidden from view, the screen fills with blood spatter while Marston's knife audibly scrapes bone and severs cartilage. Frequently, Marston will complain about the stench of the animal carcass, which, after this treatment, is left lying on the ground, skinned and bloody. Still, the game makes hunting attractive through rewards, and the player will be motivated to explore the possibilities of this activity. While wild animals are, as already mentioned, generally plentiful, the endangered status of the buffalo is problematized by in-game dialogue several times. Fittingly, it is the only species in the game that can be hunted to extinction by the player, for which she will be awarded the "Manifest Destiny" achievement. The tension between the verbal treatment of the buffalo, its portrayal as a peaceful, beautiful creature, and the temptation of the achievement for completionist players provokes reflection about not only hunting buffaloes, but animals per se, as well as (through the intricate connection the game

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[8] Achievement systems are "[s]ystems where players collect virtual rewards that in some sense are separated from the rest of the game" (Jakobsson 2011).

constructs between all of Marston's civilian activities) the greater context of farming, and general coexistence with the environment.[9]

Dishonored

The natural environment is a far less explicit feature in *Dishonored's* urban setting, the steampunk city of Dunwall. As an assassin, the game's protagonist Corvo has little connection to the natural environment, and initially, nature appears mostly as a threat. The citizens of Dunwall suffer from a plague transmitted by rats, which, when they appear in large enough groups, will attack and devour dead and even living bodies. The rivers that run through Dunwall are populated with predatory fish, and the only other species of animal the avatar comes into contact with are bloodhounds. Yet neither the graphics nor the elements of the simulated world aim for realism. Everything in *Dishonored* is carefully stylized, from hand-painted textures and angular, sketchy character models to retro-science-fiction machinery. Accordingly, the game offers visuals that are imminently appropriate to the not-quite-realistic stealth mechanics that make up the bulk of its gameplay.

While the majority of the game's elements thus create a unified impression, ecology is used as a subtext to create a certain degree of disenchantment or even alienation from the gameworld. Its steampunk technology uses whale oil for a power source, and as such, whaling is an integral part of the gameworld's culture. Whaling is never practiced by the avatar, but he does not actively oppose the practice, either. On the contrary, it is impossible to play the game without benefiting from or actively using whale oil powered devices. As such, the treatment of whaling might be considered uncritical if it was not for the prominent placement of whaling ships and accounts of the trade. The game opens with the avatar disembarking from a whaling ship and being driven through Dunwall's harbor and with the whaling fleet having numerous half-dead whale bodies still onboard. Throughout the single player campaign, the avatar finds many written accounts of whaling practices as well as scathing attacks against animal rights activists. The rich and powerful decorate their apartments with paintings of whaling ships and display harpoons next to taxidermy trophies, while the poor spend their money on dogfights. Cruelty against animals and general disrespect of the natural environment are used to mark Dunwall's society as primitive, regardless of its admirably advanced technology. However, *Dishonored*'s critique of society does not stop there. The game's missions are designed so that it is possible to play them violently or without shedding a single drop of blood, thus leaving it to the player to interpret the main character Corvo through her actions as vengeful, pragmatic, or idealist. The chosen play style affects the gameworld, which becomes more chaotic and frantic the more violently the avatar behaves. In the end, the avatar's actions will have either been responsible and

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[9] The impact this achievement has on players can be observed in public discussions about it. One forum of such discussion are the comments to YouTube achievement guides. In the most popular one (with ca. 600.000 views and 1.400 comments at the time of writing), a great number of players express remorse for their actions and discuss the ethical dimension of the achievement (Rooster Teeth 2010).

mindful, leading to restoration, or irresponsible and destructive, ending one crisis by instigating another. Given the prominence of ecological topics in the game, these alternatives might be taken as signifiers of ecological behavior leading to either conservation or entropy. But *Dishonored* precludes such an easy reading. Corvo and his world are always violent, and even the least harmful courses of action lead to dire consequences for someone. The game is, therefore, deeply ambivalent, almost cynical towards humanity, with every potential romanticizing gesture thoroughly deconstructed. Yet, regardless of its advanced technology, there is still magic in Dunwall, preserved in runes from a Golden Age when humans and whales coexisted peacefully. The runes and charms made out of whalebone fully identify the sea mammals as essential for the physical as well as spiritual well-being of *Dishonored's* society, and one spell they grant Corvo lets him abandon his anthropocentric perspective by taking possession of an animal. For a short time, Corvo can see the world through the eyes of a fish or rat—only to kill the animal once the spell wears off.

Conclusion

These two brief analyses should have demonstrated the potential for ecocritical analysis present in mainstream games as well as the applicability of the research questions outlined above. Without in any way diminishing the excellent work already done in ecocritical game studies, this essay should have also pointed out the need for a more diverse and intensive discussion of ecological thinking and games. It is meant, above all, as a proof of concept, a demonstration of just how fruitful the medium can be when discussed from the vantage point of environmental awareness. I have streamlined complex concepts from both ecocriticism and game studies but have done so intentionally in the hope of somewhat bridging the gap between them. The reflections presented here should offer a robust basis for future developments in ecocritical game studies such as gendered or animal studies approaches, globalizing perspectives of spatiality, or the discussion of individual ecosystems (e.g. oceans). Above all, this essay should have proven one point: that the discourse of the natural environment stops at no border and has no privileged locus.

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Videogames as Cultural Ecology: *Flower* and *Shadow of the Colossus*[1]

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Abstract

In this paper, I discuss videogames as a form of cultural ecology using the examples of *Flower* (2013) and *Shadow of the Colossus* (2011). As foundation for this thesis I deploy Farca's "Emancipated Player" as a player-type receptive for representational art and as a form of dialectic meaning-production between an actual player of this type and the implied player (the game's design). This will be connected to Zapf's notion of literature as a cultural ecology. Addressing similarities in function and differences in the mediality of literature and videogames and considering recent studies in game-theory and ecocriticism, I will demonstrate that emancipated play of aesthetically complex videogames can be considered a condition for videogames to function as a form of cultural ecology and thus also as a regenerative force in the larger cultural context akin to literature. The exemplary analyses consider especially the use of unnatural anti-conventions as a self-reflexive technique for reflections about videogames themselves, which are connected to reflections about the empirical reality. The games offer perspectives creating blanks for the player to be filled with her imagination and consequently unfold arguments about the aesthetic condition and conventions of videogames as a mirror of a neoliberal society without regard for the environment or the non-human. It becomes clear that representation or procedural rhetoric alone cannot be sufficient to describe the aesthetic effect of the videogame as a *Gesamtkunstwerk* (an all-embracing art form). They can only function as cultural ecology, if we consider them as multimedia artworks offering a degree of openness for the imaginative power of the player. To play videogames is not either to observe or to inhabit, it is the amalgamation of both which enables their creative force to influence the discourse as cultural ecology.

Keywords: Emancipated player, cultural ecology, videogames, *Flower*, *Shadow of the Colossus*.

Resumen

Este artículo trata los videojuegos como una forma de ecología cultural, usando los ejemplos *Flower* (2013) y *Shadow of the Colossus* (2011). Para apoyar esta tesis, hago uso del "Emancipated Player" (jugador emancipado) de Farca, un tipo de jugador receptivo de las artes figurativas y como forma de produccion dialéctica del significado entre un jugador real de este tipo y el jugador implícito (el diseño del juego). Conectaré esta teoria con el concepto de Zapf sobre la literatura como ecología cultural. Abordando las semejanzas en la función y las diferencias en la medialidad de la literatura y los videojuegos, y considerando los estudios recientes sobre teoría de juego y ecocrítica, demostraré que el juego emancipado de videojuegos estéticamente complicados puede ser considerado como condición para que los videojuegos funcionen como una forma de ecología cultural y, por lo tanto, como una fuerza regenerativa en un gran contexto cultural como la literatura. Los análisis ejemplares consideran especialmente la aplicación de anti-convenciones poco naturales como técnica auto-reflexiva para reflexionar sobre los videojuegos, que están relacionados con la realidad empirica. Los juegos ofrecen

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[1] I would like to thank Hubert Zapf and Gerald Farca as well as the American Studies Oberseminar of the University of Augsburg for their valuable input and help.

perspectivas creando espacios en blanco para que el jugador los llene con su propia imaginación, creando así argumento sobre la condición estética y las convenciones de los videojuegos como espejo de la sociedad neoliberal sin consideración del medio ambiente ni del no-humano. Se comprobará que la representación ni la retórica procedural pueden por sí solas ser suficiente para describir el efecto estético del videojuego como una *Gesamtkunstwerk* (una forma artística universal). Solamente funcionarán como ecología cultural si los consideramos formas de arte multimedia que ofrezcan un grado de apertura para la fuerza imaginativa del jugador. Jugar videojuegos no es ni observar ni habitar, sino una amalgama de ambos que permita que su fuerza creativa influya en el discurso como ecología cultural.

Palabras clave: Jugador emancipado, ecología cultural, videojuegos, *Flower*, *Shadow of the Colossus*

Videogames and ecocritical projects oftentimes face the same accusations based on the assumption that the only way to experience nature is to be in nature: "Why are you playing games in here where you could be playing outside? […] Why write about the environment when you could just go outside?" (Chang, "Environmental Texts" 78). A common reference for this alleged deficiency of videogames compared to nature is Richard Louv's *Last Child in the Woods*. He describes the generations born since the 1970s and judges all kinds of electronic devices—most particularly computers and gaming consoles—as main reasons for what he calls "nature-deficit disorder" (2008). Chang argues against Louv's thesis, as she points out similarities between the benefits he ascribes to natural experiences and videogames ("Environmental Texts" 58). Also, Parham argues for a positive impact of videogames on the "pragmatic understanding of and instruction in ecological issues [and] to constituting or shaping environmental or ecological awareness" (211).

We cannot expect this kind of positive feedback from every game and player-type, especially when it comes to such topics as ecology and the environment, but such games and receptive players for them exist; there is only a lack of theory to describe them both. Zapf's cultural ecology here offers a valid framework for literature and a starting point for an ecocritical discussion of videogames. This concept is based upon the assumption that literature "in its aesthetic transformation, […] acts like an ecological force within the larger system of culture and cultural discourse (Zapf, "Ecology of Literature" 140). Cultural ecology offers a theoretical framework for the deconstructive and reconstructive impact of imaginative literature that "breaks up ossified forms of language, communication, and ideology, symbolically empowers the marginalized and reconnects what is culturally separated" (Zapf, "Ecology of Literature" 147). I will connect this regenerative force of literature to videogames proposing that they function in the same way (but medially different). To establish a background for games apt to function as a form of cultural ecology, I will use Farca's "Emancipated Player" (2016). This concept fills the void of a well-defined player-type, who reads and plays games as a form of meaningful representative art in game studies, which is a crucial step in understanding videogames as an art form with all its implications. I propose that an emancipated player is a necessity for videogames to function as cultural ecology, as there needs to be critical reflection upon the perspectives the player encounters and

creates reaching from the gamespace into the empirical reality. I will exemplify this with the remakes of thatgamecompany's *Flower* (2013) and ICO Games's *Shadow of the Colossus* (2011) as their (primarily) unnatural elements enforce reflections in the player and connect the metaludic deliberations with those on environmental issues. First, I will outline Farca's emancipated player as a player-type.

The Emancipated Player as Player Type for Aesthetically Complex Games

The emancipated player generally engages in videogames as a form of meaningful art and participates using her full potential in both the ludic as well as narrative aspects of the game (Farca 2). She is inclined in the processes she sees and creates and is involved not only on the level of plot, but strives for the thrill of significance. Here, the types of involvement coined by Calleja—"kinesthetic, spatial, shared, narrative, affective and ludic involvement" (37-38)—are extended with emancipated involvement as an additional possible player's pleasure. An emancipated player is receptive for games as a form of meaning production and willingly engages with the game's design on an aesthetic-interpretative level. She takes pleasure in the significance of her actions and imaginative processes (Farca 5-6). Additionally, the emancipated player obliterates limiting perceptions of videogames confining her and sees them as multifaceted artifacts (Farca 3). The emancipated player sees videogames in their entirety and combines different approaches in opposition to the focus on one particular aspect of what a game possibly offers, such as its procedural rhetoric, semiotic layer, gameplay, or story. Thus, this player-type neglects for example Bogost's (2007) structural notion about the primary importance of the procedural rhetoric of videogames. Only through viewing the different aspects of a game in combination can the act of play properly be understood (Farca 14).

Further, emancipated play highlights the intellectual part of playing videogames, as an increase in knowledge and experiences (aesthetic and worldly ones) also enhances the intellectual potential of readings and playthroughs (Farca 2). This might seem elitist at first, but emancipated play is something inherent in every player to a certain extent (Farca 8). This means, every player who is at least to some extent receptive for representational forms of art can experience this thrill of significance and make connections to the real world or other works of art (Farca 7-8). An emancipated player-type is explicitly necessary for videogames offering a certain "aesthetic complexity" (Farca 2) to account for player-involvement on a higher level. Without this complexity, the game cannot exercise its aesthetic effect in the process of play. It is inscribed into the implied player (Farca 6), which will be outlined in the following section which deals with the dialectic act of communication between the emancipated player (an actual player of this type) and the implied player (the game's design in all its facets).

The Dialectic Between the Player and the Implied Player

The foundation of the "Emancipated Player" is the creative dialectic between the player and the implied player, a form of communication between an actual player and the game's design on different levels; it is the analysis of the game's implied player. Aarseth's "[i]mplied player [...] can be seen as a role made for the player by the game, a set of expectations that the player must fulfill for the game to exercise its effect" (132). He focuses on the ergodic aspects, whereas Farca includes the imaginative aspect in his more extensive approach. He sees it as a semi-open framework molding the player's imaginative experience in outlining the actual player's interaction in the game's world in all modes of involvement (Farca 8). By including the game's "*affordance and appeal structure*" (Farca 8) the implied player not only becomes a set of expectations the player needs to fulfill in order to make the game functional, but it becomes the very basis of its aesthetic effect. As a "dynamic framework" it outlines the player's interaction and offers an incomplete "game- and storyworld" that the actual player completes through her imagination and acts of play (Farca 8).

Further, the player does not only accept this role offered by the implied player, but rather reflects on it and its implications; she is not in a mode of passive reception, but thinks self-consciously about her role (Farca 14). This also holds true for the game's persuasive effort, which the player might negate or affirm; the player creates her own opinions and thus emancipates herself from the implied player as a role and as a structured form of aesthetic effect (Farca 14).

But how does this dialectic work? An aesthetically complex game offers different perspectives. These basically describe everything a game contains. They offer meaning to the play and include processes, player actions, the gameworld (including signs), spaces, labyrinthine structures, characters (speech/actions), music, sounds, and the plot framework (Farca 10). The friction of perspectives offers the player blanks, which she can fill in by using her world knowledge and the act of play (Farca 10).

The mode of expression for the emancipated player is play on the ergodic and the imaginative level (Farca 10). The actual player engages dialectically with the implied player as a form of creative meaning-production (Farca 2). Expression happens through play and the engagement with the implied player, as the emancipated player "participates, observes, selects, interprets, and acts upon her deliberations" (Farca 10). In her dialectic engagement, she acts like a detective; deploying her knowledge about the world to make connections with her encounters and creations and also relates the experience to the empirical world. She imprints herself in the game world as the game world imprints itself back on her (Farca 8-10).

Farca introduces a new player-type necessary for the analysis of and perspective on aesthetically complex games. This player-type uses her knowledge about and experiences of the world to act as a co-creator for the perspectives through which blanks can emerge. Those can be filled using her imaginative power and the potential choices offered by the game. She shapes the game's world (as far as the game itself allows it) through imagination and play (Farca 14). Further, she abstracts meaning from

her experience and the perspectives she encounters: meaning is created through the act of play (Farca 14).

The following part will connect this approach to videogames as a form of meaning-creation to Zapf's assumption about literature as cultural ecology. I will establish that videogames can act like an ecological force in a larger cultural system and thus can be read and played as a form of cultural ecology.

Emancipated Play as Condition for Cultural Ecology

Zapf states that especially "imaginative literature" has an impact on the ecological discourse, as it "deals with the basic relation between culture and nature in particularly multifaceted, self-reflexive, and transformative ways. [...] [I]t produces an 'ecological' dimension of discourse precisely on account of its semantic openness, imaginative intensity and aesthetic complexity" ("Ecology of Literature" 139). His assumptions about this kind of literature resonate with Farca's statements about aesthetically complex videogames featuring a "degree of openness or multifacetedness that allows for a diverse richness of playthroughs, imaginings, and interpretations" (Farca 6).

This enables literature to function as a form of regenerative force, which opens an "imaginative space" for (self-)reflection and exploration and does so primarily through the "representation of the unrepresented [and] the reader's participation in the textual process" (Zapf, "Ecology of Literature" 141-142). The notion of the participative reader is especially interesting here, since it echoes the "emancipated player designat[ing] a reader and creator of perspectives" (Farca 14) filling blanks with her imagination. In comparison to literature, however, the act of emancipated play goes beyond the mere participation in the medium's processes; the player becomes a creative force as she acts within the limits the gameworld provides.

What Zapf describes as "(re-)integration into the larger ecology of cultural discourses" ("Ecology of Literature" 149) can be seen in prototypic form as Farca's emancipated involvement which "establish[es] links between virtual and empirical world, which [...] may influence or even benefit the player's life" (6). Chang also sees this evocative power in videogames as "even games that present a temporally remote scenario [...] can impress themselves forcefully on our psyche" ("Environmental Texts" 78) and she argues that game environments can function as "affective [constructs]" ("Environmental Texts" 75). Similarly, Parham claims that "computer games can contribute both to a pragmatic understanding of and instruction in ecological issues such as sustainable development or energy supply and to constituting or shaping environmental or ecological awareness" (211). This enables ecocritical play to function in the same reflective way for the player as environmental literature does for the reader and the surrounding discourse: "[T]he affective and rational understanding of readers— and even that of non-readers—can be shaped or at least influenced by environmental narrative" (Weik von Mossner 534).

Nevertheless, videogames go beyond the mere representational (though indeed highly impactful) mode of literary writing as "to play is always to inhabit" (Chang,

"Environmental Texts" 78). Videogames offer "a chance to think procedurally about consequences of actions on the environment itself as a system with its own particular inputs, triggers, instabilities, affordances, and dangers" (Chang, "Virtual Ecologies" 4); it is (at best) a dynamic environment using a "procedural rhetoric" (Bogost 1-64) in which the player can "learn ecological principles through playing a game" (Parham 214): The player gains awareness through inhabiting a virtual place. Authenticity of representation ultimately becomes accessory, since "[t]he test is not verisimilitude or allegiance but ethical engagement and critical understanding" (Ulman 349). Thus, playing videogames can be a cultural "process by which new human ecologies emerge" (Parham 215). The emancipated player recognizes the importance of the procedural rhetoric, but integrates it into the multilayered medium of the videogame; games may be built upon code and processes, but the videogame as a *Gesamtkunstwerk* includes all kinds of different perspectives. The player fills in the blanks in-between those perspectives using the choices the game offers and her imaginative power. She is situated between inhabiting (Calleja 167) and observing the gameworld "as an amalgamation of both creatures" (Farca 5).

Cultural ecology as well as the emancipated player are based upon multifaceted and aesthetically complex works of art, through which their positive influence as a regenerative force can emerge in co-operation with an active reader/player. Both see their respective genre as a potential influence in the world, which can have a positive effect on the individual's behavior through active participation in the media's processes and (in the case of videogames) through actively taking part in the gameworld. The acknowledgment of reflections about the empirical reality triggered by playing videogames in connection to their affective structures is at least a pre-condition of emerging ecological thoughts as a regenerative force in society rooted in playing games. This renders emancipated play a necessity for videogames to be understood as a form of cultural ecology and as a forceful rendition of representational art.

Combining this player-type with Zapf's notion of cultural ecology, I proclaim that (aesthetically and imaginatively complex) videogames can function as a form of cultural ecology in a larger cultural context. I propose that *Flower* and *Shadow of the Colossus* are prime examples of this type of videogame that addresses environmental issues. These games in particular focus on unnatural elements as self-reflexive means, as I will discuss in the following section.

Unnaturalness as a Form of Self-Reflexivity

Richardson defines unnaturalness in narrative terms as "defamiliarizations of the basic elements of narrative" using the "anti-mimetic" as violation of narrative and realistic conventions (34). His notions are correct, but the term "anti-mimetic" might be misleading; thus, I will call it the *anti-conventional*, since he continually refers to the violation of conventions leading to reflections about fictionality and constructedness. Ensslin considers unnaturalness as an element inherent in videogames (Ensslin 53). Nevertheless, she also acknowledges a different kind of unnaturalness as self-reflexive

anti-conventions, since "they deliberately violate the ludo-narrative conventions of their genre and the medium itself" (55). These can be connected to the reflective nature of emancipated and ecocritical play, as Ensslin ascribes them the function of "evok[ing] metaludic reflections in the player—as well as other types of philosophical and critical processes" (55). Thus, self-reflexivity in videogames through the utilization of unnatural elements seems to fit the conditions of the emancipated player. This aesthetic effect can trigger metaludic reflections which might include the potential emergence of ecocritical thought. The following analyses will show how these concepts can be applied to the implied player offered in *Flower* and *Shadow of the Colossus* and how they unfold their dialectic with the empirical player through representation and play.

Flower as Cultural Ecology: Breaking the Nature/Culture Divide

In *Flower*, every level contains the same elements: A scene showing the urban space and then the game environment acting upon the urban premise. The player has to open flower-buds to progress and collects more and more petals. Through this structure, the game unfolds a rhetoric of oppositions concerning the nature/culture-dichotomy and seems to affirm these binaries in favor of nature at first, but in the end strives for a synthesis of the human and the non-human (Chang, "Environmental Texts" 74-75). This rhetoric unfolds in different ways all aiding this particular interpretation of the game, which does not mean that this is the only possible reading. It is but one of the potential interpretations of this multifaceted game. First, I will address the avatar the player controls as a means of immersion into the non-human. The second section will deal with the controls as a form of defamiliarization and simulation of empathy for another system of thought. The third section is dedicated to *Flower*'s unconventional gameplay and its implication of sustainability. The final section deals with the game's visual rhetoric and how it advocates a synthesis of the human and the non-human. All these elements form an argument for sustainability through defamiliarization, though without an overtly educational impetus. It is one of the possible readings of this complex game, which can emerge through emancipated play.

The Unnatural Avatar as a Form of Foregrounding the Environment

In *Flower*, the player essentially acts as the wind (Chang, "Environmental Texts" 74). This opposes the common practice of games, which use human, humanoid or symbolic characters: *Flower* works against this convention of games as it presents a non-human and organic avatar; it neither provides an anthropomorphized nor a graspable form of corporeality (Chang, "Environmental Texts" 74). The invisible wind gathers more and more flower-petals, but essentially stays an amorphous mass for the player to navigate. Visibility is only created through the player's effects on the environment and thus foregrounds firstly the environment itself as a protagonist and secondly the effects created through the player's actions (Chang, "Environmental Texts" 74). In comparison to mainstream games, the drama unfolds around the usually neglected scenery

elements, as Kelley Santiago, one of the co-founders of thatgamecompany states: "What would happen if we take [bushes and grasses] that [are] normally an afterthought on the edge of the world […] and put it right in front and make the entire game about it?" (Donovan 368). The natural environment constitutes the gameplay instead of just being a supplementary element (Chang, "Environmental Texts" 74). This design-choice shifts the focus from a human-centered approach to the surroundings as well as it highlights the impact our actions have on it and thus enforce an immersion into a "simulated natural environment" (Parham 225).

The Controls as a Way of Shedding the Human Scope

Flower uses an almost idiosyncratic form of controls. The six-axis-controller is used through motion: the player must tilt it forward to accelerate and to the side to change directions. Chang sees these kind of controls as an encouragement to leave our experiential repertoire bound to the earth by substituting it with "birdlike swooping and skimming" ("Environmental Texts" 74). Where this adds nicely to the overall theme of the game, these motion-controls are a struggle for experienced players who are particularly familiar with the conventional controls of sticks and buttons. This struggle simulates the challenge of understanding the non-human by stripping the player from her conventionalized means of interacting with the game-world. Usually, familiarity is enforced by the controls; games of the same genre use a similar control-scheme and familiar players can easily navigate within them. However, the controls of *Flower* urge the player to understand a system to which she is not accustomed. This can be described as an unnatural use of a control-scheme, disrupting the usual conventions of flawless and repetitive game-controls. On the one hand, this reveals the player's bias concerning controls and the invisibility of controls as a self-reflexive statement about their conventionalization. On the other hand, it mirrors the process of relating to the non-human through an anthropocentric mind. Of course, other deliberations could be triggered by this experience and observation, but in the grand scheme of the different perspectives offered by the game, this interpretation of the controls seems to be viable.

Flower thus works against the human hegemony and highlights the marginalized through the new form of understanding the player has to develop. Further, this is integrated into an aesthetic discourse about the condition of mainstream-gaming that is about dissolving the nature/culture dichotomy or anthropocentrism; self-reflexivity becomes a means of reflecting upon the player's conventional perspective in gaming and in life.

Overcoming Obstacles in a Sustainable Way

Flower's gameplay differs vastly from mainstream games. Whereas brutality, combat and self-optimization are the focus of lots of acclaimed and successful blockbuster games, *Flower* strives for a friendly approach to overcome obstacles. Rather than exploiting the given resources to optimize her character (Stallabras 94; Baerg

"Governmentality" 119-121), the player is acting as an environmental-friendly force, enhancing the conditions she is thrown into. Instead of draining the environment of all valuable resources, the player gives something back and acts in a cooperative manner; she goes from conqueror to an ecological force with a positive effect on the environment. The mechanics of letting flowers bloom and establishing sustainability (through activating windmills and giving back energy) can be seen as "impart[ing] ecological principles in the process of navigating through that environment" (Parham 225).

The gameplay disrupts the hegemonic structure of capitalist society mirrored in the usual approach to games, that is, self-optimization, overcoming enemies and exploitation of resources. It foregrounds a culturally neglected approach of non-exploitative gameplay and thus the mindset of an ecologically sensitive humanity. Again, the aesthetic discourse about games as revenants of capitalist-thought can be integrated into the ecological message of the game.

Flower's *Visual Rhetoric as Argument for the Synthesis of Human and Non-human*

The first level starts with a cut-scene showing a hectic street accompanied by distorted city noise. While zooming out, we see more of the dark city and construction sites lurking above it. This is an unconventional use of cut-scenes, as usually games begin with an introduction of their characters via outstanding animation; here the environment is foregrounded instead and the usually depicted human presence is only alluded to by indirect means (Chang, "Environmental Texts" 74).

The first gameplay section shows a green and lush environment. This juxtaposition of hectic and dark city life with the soothing and colorful natural environment constructs a clear opposition between the city connoted with darkness and turmoil and the natural landscape with color and tranquility.

The following level begins with the depiction of grey spaces within the city and then blends to an also grey environment the player has to fill with color, affirming the formerly constructed dichotomy and the healing power of nature.

With the third level, *Flower* addresses environmental issues more directly. It starts with an image of the burning sun and then cuts to a heat-wave in the urban space. This juxtaposition symbolizes climate change as the highly-intensified sunlight together with the flickering air can be seen as an allusion to the receding ozone layer. The play section does not oppose this imagery, but shows a solution for the problem by offering an alternative way to reduce pollution through renewable energy, as the player activates wind-turbines. The formerly constructed binary opposition of nature and culture is challenged the first time, since human-made technology is integrated into the natural environment harmoniously. *Flower* is "[f]ar from condemning human intervention [and] attempts to bridge the pastoral and the urban through the player's experiential journey from one environment to the other" (Chang, "Environmental Texts" 75).

The fourth level shows an energy crisis as the lamps at night suddenly turn off. The player is able to reactivate them through play and imaginative natural energy, but

inevitably fails. Using "futile interactivity"[2] (Fortugno 176), the game takes a sinister turn and renders the setting, polluted through fossil fuels, a dark pastoral.[3] In Sullivan's words, *Flower*'s environment turns into a representation of dark ecology including "the beauty and horror of this interconnectivity [between human and non-human]" (85).

The fifth level is a dark world, where drilling rigs and oil pipelines dominate the formerly astonishing landscape. All color is gone and what is left is a dreadful space of danger and death. The dichotomy created in the first two levels seems to apply again, the stakes for the environment never higher than in this dramatic turn.

Only in the sixth level, there is hope for the cooperative work of the human and the non-human. Rather than destroying the cultural effects within the environment, they are transformed into something cooperating with nature. Eventually, the player dashes through the central construction and above it and transforms into a giant tree surrounded by the (now white and bright) human-made constructions. Humankind is no longer depicted as an alien element in the former pure nature, but strives for synthesis with the non-human. The epitome of this rhetoric can be seen in the ending-cutscene, where the urban premises are re-iterated: the traffic is shown as more tranquil, the grayish wall becomes colorful, the sun does not seem as hot anymore, and a flower is blooming through the concrete of the pavement.

The game progresses from simple oppositions of nature and culture to a nihilistic ending in the fifth level. This metaphoric death is followed by a rebirth in the sixth level that changes the rhetoric completely. Ultimately, there is hope for a better world, which offers space for the human and the non-human alike. The visual rhetoric advocates neither a stance on the radical nature side nor nihilism concerning the environment; rather, we strive for the ideal of a symbiotic life. The environment is foregrounded, as avatar, enemies, and challenges to overcome, everything unfolds around what used to be merely perceived; the marginalized environment in games (as well as in empirical reality) is at the center of attention. Thus, *Flower* and its visual rhetoric can be ascribed an unnatural quality unfolding an ecological drama on the periphery of humanity as well as in the margins of blockbuster games and creates a discourse against the boundaries of the human-centered perspective.[4]

Shadow of the Colossus as Cultural Ecology: Inverting Videogame Conventions

At the beginning of *Shadow of the Colossus* the common trope of the damsel in distress is iterated and the player willingly engages in the premise to save a girl from death by acting as the hero. Nevertheless, the final plot-twist—Dormin, who acts as an

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[2] Fortugno describes "futile interactivity" as the player's struggle to achieve a goal which is not intended to be reached: "[T]he scene resolves to designer's and not the player's objective [enabling] the designer [to use] agency in order to create dramatic necessity" (Fortugno 176).

[3] Sullivan describes the dark pastoral as "a rejection of the artificial delineation of local and global, of cities here and rural countrysides there, as if they were independent from each other in the anthropocene" (85).

[4] This mirrors Zapf's statement about literature (applying Derrida) that it has the ability to open up the text for the other of non-human nature by essentially keeping its alterity ("Kulturökologie" 25). This is a recurring moment in *Flower* and its unnatural traits in terms of shedding the human perspective or offering an alternative (non-human) point of view.

instructive voice from above (often seen in videogames) selfishly sends him on this quest for his own gain—negates the protagonist's heroic ambitions and renders him villain (albeit maybe a tragic one). Although this particular convention is not inverted, *Shadow of the Colossus* generally defamiliarizes conventions through inverting them. Again, this technique connects an aesthetic discourse with ecocritical deliberations. The first section deals with this narrative premise and the subsequent betrayal of conventions through the gameplay, as the player recognizes her own complicity in the destruction of the environment. The second part deals with the appearing creatures as a foregrounding of marginalized gameplay elements and non-human entities in connection to capitalism. The last section deals with the protagonist as an inversion of the neoliberal tendencies of character-development in videogames.

Narrative Expectations and Failing Realization through Gameplay

The aforementioned narrative frames are not questioned within the game (be it the benevolent quest-giver or the quest-giver turned evil). It is not the betrayal of the convention that enables the player to question those structures in the empirical reality, but exactly the unquestioned authority of those frames within the game, which creates expectation in the form of gameplay. Being sent on a quest signifies in this narrative framing, that heroic deeds are to be done and the player is triumphant during gameplay (even if her attempts are ultimately rendered in vain). The friction here emerges during gameplay as the player's triumph is taken away, rendering her complicit in the environment's destruction (Milburn 217).

The core of the game is taking down the colossi; they are complex puzzles to be solved supposedly "lead[ing] to a sense of triumph" (Fortugno 173). This ludic goal is usually enforced through narrative desire (here saving the damsel in distress), which also becomes the player's motivation. However, *Shadow of the Colossus* creates incongruence between these types of desire (Cole 7) as the player becomes gradually less willing to fulfill the narrative premise of saving the girl. This discrepancy is created through various perspectives during encounters with the colossi, making the player question the morality of her actions (Cole 4; Fortugno 174-175).

There is the inversion of the trope of the heroic protagonist and the enemies as aggressors; the colossi are hidden away acting harmlessly and are often ignorant to the protagonist's appearance in their realm (Cole 4; Fortugno 173f). Their case is one of self-defense upon trespassing or attacking of the player, since they are harmless and content with their environment until the player interferes. This renders the protagonist a villain invading the colossi's realm.

The representation of the allegedly triumphant act of defeating one of those creatures also denies the player her emotional reward. Stabbing them results in "a gory stream of black blood in an awful hiss" (Fortugno 174), their deaths are shown in slow-motion cutscenes accompanied by a "sorrowful female choral [reminiscent of] a requiem" (Cole 5) and the camera lingers over the corpse of the slain giant (Fortugno 174). Cole sees taking down these harmless creatures as "making an appeal to our sense

of morality" (Cole 4). The environmental framing of the colossi, their behavior, and the cruel display of their death creates a "conflict between the player's desire [of mercy] and the narrative desire [of saving the girl]" (Cole 7) and causes a friction in-between those perspectives letting the player question her deeds. She realizes her own complicity in obeying the rules of narrative desire and the gamic system (Milburn 217).

This affective and self-reflexive structure of the game is enhanced through a decidedly environmental stance. As Fortugno states, the usual "world saving quest" (174) becomes something else entirely: the player does not feel heroic anymore, but like a monster herself "hunting down and killing innocent beasts in the barren wilderness" (174). However, the colossi do not only represent animals as the non-human, since 11 of the 16 colossi resemble animals, but through their bodies. The hybrid materiality of fur, stones, and ruins also renders them representatives of the environment.

The process of hunting the giants makes the player question her morality through its emotional impact and is intertwined with environmentalism through the presence of the colossi as symbols of the non-human (animals and the environment). The player becomes an invader disturbing the creature's natural habitats and those habitat's perfectly content inhabitants to fulfill the narrative premise (i.e. saving the girl). Through inhabiting the gameworld in this malicious way and being emotionally affected by the consequences, deliberations about the morality of conventional game-mechanics and rewards are triggered. An aesthetic discourse about games traditionally built around a neoliberal mindset and a procedural rhetoric which "functions like the neoliberal free market economy in offering choices to players who can use its resource to further their own interests within the parameters of the game's rules" (Baerg, "Governmentality" 119) is countered with moral deliberations through the dreadful representation of the player's deeds. A videogame usually "shapes subjects for militarized markets, and makes becoming a neoliberal subject fun" (Dyer-Witheford and de Peuter xxix-xxx) and do so through the narrative frames of heroic quests. However, players are not usually confronted with implications for flora and fauna, especially in minor tasks like slaying a certain number of monsters in an area. Here, though, the player is confronted with the immediate response of the environment to the naturalized convention of neoliberal capitalism in games. The friction between narrative expectations and the procedural dimension questions this convention in videogames and may enable the player to make critical statements about the narrative explanation of deeds done in this mindset thus acknowledging their own in complicity—in videogames as well as in the empirical reality.

Marginalized Creatures and Elements of Games Made Visible

The protagonist's horse called Agro would usually be a tool for travelling through the gameworld, but instead becomes a personal acquaintance for the player. Of course, there are examples for animal helpers whom the player's get attached to like Dogmeat in *Fallout 3* and *4*, but Agro is a special case, since her procedural representation differs vastly in this respect. Dogmeat's procedural existence intends him as a tool to be used

(he can attack and guide the player to items), whereas Agro's behavior marks her as a singular being within the world of *SOTC*; the design enforces this attachment not only through a 'cute' visual representation like in the case of *Fallout*, but through its processes. She becomes an algorithm that "stand[s] for the nonhuman" (Milburn 2016). If not being ridden, she wanders around on her own, although staying close to the protagonist. Additionally, she behaves idiosyncratically as she "frequently slows for no discernible reason, randomly changes directions […] and refuses to attempt difficult obstacles" (Cole 9). She is a character with her own will and the player needs to learn to cooperate with her rather than to use her like a tool. Further, players gets emotionally attached to her as a companion not only for her gameplay purposes, but "because […] they have developed a relationship with her as a person" (Cole 9). Rather than being a tool, Agro becomes a personal acquaintance for the player especially by means of her procedurality.

Also, the implementation of the colossi takes a stance against the matériel battles fought in videogames. Since there is no conventional dungeon within the game, the colossi effectively replace this concept as they are "puzzle[s] that the player must solve" through experimentation and exploration (Fortugno 173). Thus, the player engages more personally with them as one would with conventional "waves of near identical (and dehumanized) [enemies]; each one is a distinct individual" (Cole 4). In the process of climbing the colossi and spotting their weaknesses, the player gets acquainted with her opponent and its personality. Through estrangement the colossi oppose the commodification of enemies (Stallabras 94) in favor of a more personalized approach. Additionally, at the end of the game, the protagonist is transformed into a colossus as Dormin takes over his body. The player is thrown into an unknown situation, with "confusing controls, limited vision, and encumbered movement" (Fortugno 183). Though this change seems to signify an increase in power, the player feels helpless and is forced to sympathize with the colossi through her own experience (Fortugno 183). The conventional anthropocentric perspective of the protagonist is disrupted and replaced with a new level of sympathy. Understanding of the non-human enemy is enforced by disrupting the whole mechanical and perceptual system of the player.

The companion Agro and the adversarial colossi function as a culture-critical discourse of the capitalist patterns of maximized exploitation and mass-produced commodification and integrate this in an aesthetic discourse about the capitalist structures in videogames. They especially focus on the exploitation of the non-human (for example the animal as a commodity in factory farming) by representing animal and environmental natural forces.

The Protagonist as an Inversion of the Capitalist Tendency in Videogames

The protagonist shows "fatalism and almost apathy that is atypical in a hero" (Fortugno 173), as he does not display any regard for the impact his actions have. This can be seen already when Dormin sends him on his quest: "[T]he price you pay may be heavy indeed. [Protagonist]: It doesn't matter" (*SOTC*). Further, the arrival of Emon

reveals the true colors of the protagonist: "Not only did you steal the sword and trespass upon this cursed land, you used the forbidden spell as well" (*SOTC*). He is a "reckless and heedless character who has broken sacred law, stole from his people [...] and brought down great harm all in the name of his goal" (Fortugno 182). Additionally, he shows no remorse or guilt, or any emotion toward the atrocities he commits in slaying the colossi (Fortugno 180).

Through his lack of emotions, the protagonist offers a double perspective: it presents him as stoically focusing on his goal while also offering a blank space for the player's emotional (Cole 3) and imaginative processes. Furthermore, the usual development patterns for a character in a videogame is inverted: instead of increasing in skills, power, and equipment (Baerg, "Risky Business" 160), the protagonist degrades gradually (Cole 9; Fortugno 181) as his clothes get dirtier and his appearance thinner with each defeated colossus acting as a metaphor for "[the player's] questionable actions" (Cole 10).

The game incorporates a hero who essentially becomes a villain in connection to the inversion of the conventional developing structures of a character in videogames which are based on the accumulation of power and wealth. The player cannot advance through an unquestioning overcoming of obstacles anymore. The preference of self-optimization and a no remorse strategy for achieving one's goals inherent in a neoliberal gameplay of increasing one's own state through mastering challenges is exposed. This makes clear how the drive for perfection and the reckless strategy capitalist society uses to achieve its goals, is oftentimes at the expense of others, in this case the non-human.

Conclusion

Flower simulates the struggle for empathy with non-human organisms, whereas the usual standardized controls, conventional gameplay and an anthropomorphic or merely symbolic avatar would have strengthened familiarity and thus an anthropocentric worldview. Through the anti-conventions of idiosyncratic controls, non-violent and non-competitive gameplay, and corporeality in the form of the non-human but organic and interconnected avatar, the player becomes aware of an unknown system using empathy as she is forced into a different perspective. The game disrupts anthropocentrism and the nature/culture-dichotomy through play and self-reflectivity. *Flower* undermines, therefore, the symptomatic conventions of games as the world's mirror of habitual patterns, like greed for power, a lack of empathy for the non-human, and a tendency to stay in the comfort-zone of the human's own experience. Those thoughts emerge through the critical stance of the emancipated player and her imaginative and actual play.

Shadow of the Colossus also criticizes videogame-conventions as a mirror of the current conditions of capitalism and its recklessness. It questions the obedience to narrative structures through anti-conventional gameplay. Taking away the player's triumph, the game is not conceived as a celebration of the capitalist spirit often encountered in games, but rather forces the player to reflect upon her actions and her

complicity in the system as destructive force. Capitalism is also addressed by using a negatively connoted and anti-conventional protagonist working against capitalist videogame-conventions. The ecocritical connotation is enforced through the inclusion and revaluation of marginalized creatures as non-commodities and singular acquaintances.

Both games deploy the unnatural to form a self-reflexive discourse about conventions of videogames that intertwines them with deliberations about humanity, capitalism, and its ecological impact, though without an overt pedagogic impetus. They are semantically open and offer a multitude of interpretations through their complexity and necessitate an emancipated player to have their full effect. The various perspectives offered by them create blanks for the player to fill through imagination and play and which enable the reflections necessary for such deliberations to emerge. Through observing, inhabiting, and relating not only ecocritical ideas arise in the player, but the potential for a magnitude of different reflections and ideas is offered. Thus, these games are prime examples of imaginative and aesthetically complex videogames that fit the definition of Zapf's cultural ecology. To play videogames in an emancipated way is not either to observe or to inhabit, it is the amalgamation of both, which enables their creative force to influence the discourse as a form of cultural ecology.

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EC@ZON@

Vol 8, No 2

Ecomods: An Ecocritical Approach to Game Modification

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Abstract

As systems that model complex relationships, digital games encourage players to enact Morton's "ecological thought" through the actions players perform within the game world. Yet these representations, as Alenda Chang (2011) has noted, "commit at least one if not all of the following missteps in their realization of in-game environments: relegating environment to background scenery, relying on stereotyped landscapes, and predicating player success on extraction and use of natural resources" (58). In other words, the flora and fauna players find are often reduced to non-interactive set pieces, thereby stripping actions of the ecological and environmental impact they could have. Despite these problems, ecocritical approaches to digital games have sought to re-assert the significance of connections between game ecologies and their environmental representations by tracing cultural associations (Bianchi, Barton), and by investigating problems with materiality and waste (Apperley and Jayemanne). This essay builds on these approaches by considering "modding," short for "modifications," as an area for ecocritical intervention in the flattening of games' environmental representations. Specifically, this essay examines the thriving environmental modding communities around Bethesda Softworks' *The Elder Scrolls V: Skyrim*. Although some of the mods released for *Skyrim* emphasize visual enhancements, others re-connect players to the game's ecology and environment in meaningful ways.

Keywords: Digital games, mods, ecomedia, ecocriticism.

Resumen

Como los sistemas que modelan las relaciones complejas, los juegos digitales animan a los jugadores a restablecer el "pensamiento ecológico" de Morton por medio de las acciones que los jugadores llevan a cabo dentro del mundo del juego. Pero estas representaciones, como Alenda Chang (2011) comenta, "cometen al menos uno de los errores en sus realizaciones de los entornos dentro del juego: relegando al medio ambiente al escenario del fondo, dependiendo de paisajes estereotipados, y afirmando el éxito del jugador en la extracción y uso de recursos naturales" (58). En otras palabras, la flora y fauna que se encuentran los jugadores a menudo quedan reducidas a piezas establecidas no-interactivas, de esta forma desmontando de las acciones el impacto ecológico y medioambiental que podrían tener. A pesar de estos problemas, el enfoque ecocrítico a los juegos digitales ha buscado reafirmar la importancia de las conexiones entre las ecologías del juego y sus representaciones medioambientales trazando asociaciones culturales (Bianchi, Varton); e investigando los problemas sobre materialidad y basura (Apperley and Jayemanne). Este ensayo surge de estos enfoques considerando el "modding", abreviatura de "modificaciones", como una zona para intervención ecocrítica en la simplificación de las representaciones medioambientales de los juegos. En concreto, este ensayo examina las florecientes comunidades de *modding* medioambientales en torno a *The Elder Scrolls V: Skyrim* de Bethesda Softworks. Aunque algunos de los *mods* lanzados enfatizan las mejoras visuales, otros reconectan a los jugadores con la ecología y medioambiente del juego de formas significativas.

Palabras clave: Juegos digitales, *mods*, ecomedia, ecocrítica.

As ecocriticism branches out to a variety of media including comics and animation, television, and online social networks, scholars have also begun to address the environmental and ecological implications of digital games. [1] Digital games have been presented as media promoting an ecological consciousness grounded in action, identification, and empathy. In "Games as Environmental Texts," Alenda Chang argues, "Games 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" (58), a sentiment shared by both Lauren Woolbright and Thaiane Oliveira in "Where the Wild Games are: Ecologies in Latin American Video Games." Yet digital games have also been critiqued for a variety of environmental and ecological offenses, including problematic reductions of the environment to utilitarian and romantic views as well as the use of toxic and conflict minerals in their hardware.[2] This is demonstrated in Chang's critique of "God games" such as *SimCity* and *Spore*, which give players "the power to design or modify the landscape, for example, through the terraforming capability" (60) shaping their relationship with the environment through rhetorics of control, mastery, and domination. And when game environments are given agency, that agency is often expressed in agonistic terms. Woolbright and Oliveira, for example, show that much of the conflict in digital games like *World of Warcraft* places the player in an antagonistic relationship with the environment (199). The in-game environment becomes a rival that must be conquered and tamed, an obstacle for players to vanquish in order to achieve their goals.

These criticisms of environmental representations within digital games raise a second, and equally pressing concern about the *ecologies* of digital games. While much gaming scholarship has addressed individual games or series of games, ecocritical work with games raises significant questions over the larger media ecologies in which games circulate and are produced. In *Best Before: Videogames, Supersession and Obsolescence*, James Newman documents how the digital game industry's marketing and labor practices have rapidly accelerated deterioration of game hardware and software—contributing directly to electronic waste and wars over precious minerals used to build these technologies. Exploring why the industry has done little to preserve digital games and intervene in these practices, Newman remarks, "This, then, is an industry whose forward movement is almost wholly contingent on the denigration of its own present and past. Even where that past refuses to be silenced…it is reinvented and remade with its old, and only now apparent, deficiencies rectified" (75). Many digital games and digital game platforms are released into a media ecology driven by planned obsolescence. Here, these technologies "die young" so that publishers, companies, and

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[1] See Veronica Vold's "The Aesthetics of Environmental Equity in American Newspaper Strips" and Sean Cubitt's *EcoMedia* for ecocritical discussions of comics and animation respectively. Sarina Pearson's "New Zealand Reality Television: Hostile or Hospitable?" and John Parham's *Green Media and Popular Culture* contain re-assessments of television as a site for ecocritical work. Aimei Yang's "New media, Environmental NGOs, and Online-Based Collective Actions in China" explores the use of social media to raise awareness about environmental issues.

[2] See Melissa Bianchi's "Rhetoric and Recapture: Theorizing Digital Game Ecologies Through EA's *The Sims* Series" in *Green Letters* for a fuller account of these perspectives in digital games.

corporations can rush the next iteration to market and manufacture nostalgia that can be capitalized on later. In the last decade alone, several games and game series including Naughty Dog's *The Last of Us*, Nintendo's *Mario Kart 8*, and Bethesda Softworks' *The Elder Scrolls V: Skyrim* have seen remakes and "remasters" despite releasing only several years apart. Such re-releases increase the likelihood that many players will discard or dispose of their earlier editions, creating a significant amount of waste given the millions of copies sold per series. Moreover, certain companies have begun re-selling older digital content via hardware reproductions such as the NES Classic or the Atari Flashback, which re-package pre-existing software and hardware (as well as emulators, ISOs, and ROM files) in the form of an older gaming console/controller. These reproductions run afoul of many of the same problems that remasters create, decreasing the need to repair and preserve older hardware including more recent consoles such as the WiiU or PlayStation 3 on which players could purchase such titles digitally. The drive to outdate and update gaming software is thus a major contributing factor to the ecological impact of digital games, and it materializes Roger Caillois' claim that games, like play, are "an occasion of pure waste" as digital games and digital game platforms are rapidly translated from commodity into waste and back again (5).

While Newman's critique emphasizes the gaming industry's need to produce excess waste, Nick Dyer-Witheford and Greig de Peuter as well as Robert Mejia have addressed the material impact of video game production—in particular, the industry's widely documented use of conflict minerals as well as toxic acids and metals in video gaming hardware. In "Ecological Matters: Rethinking the 'Magic' of the Magic Circle," for example, Mejia challenges the idea that games are divorced from material consequences by describing the social and environmental harm caused by minerals used in Advanced Micro Devices' (AMD) computer and console graphics processing units (GPUs) and central processing units (CPUs). Mejia argues that the fantastic and "magical" spaces provided by games are not separate from and exist because of "The use of toxic chemicals, conflict minerals, and production of hazardous waste," which are "just some of the many ecological effects that undergird the video game and electronics industry" (182). Citing documentation from AMD and Intel that describes the use of tin, tantalum, tungsten, and gold in the manufacture of hardware as well as transistor and chip connections, Mejia explains that "These metals are considered potential conflict minerals as extraction of these resources have been linked to wars and political instability in the Democratic Republic of Congo (DRC), as this central African nation is 'richly endowed' with these resources" (180). Mejia also notes that recycling scrap metal and manufacturing electronics in countries lacking strict labor and environmental protection laws has proven fatal to workers and harmful to the environment.

Digital games' environmental representations and their media ecologies thus often mire ecocritical work with games in contradictions, or what John Parham, in *Green Media and Popular Culture*, describes as "moments of ecological clarity in otherwise deeply compromised texts" (20). Such contradictions are unavoidable even in seemingly ecologically sound games such as Nifflas' *Knytt Stories: The Machine*, which is a free to play 2D side-scrolling adventure game for the PC and Nintendo DS that boasts both

techno-critical rhetoric and environmentally conscious design.[3] *Knytt Stories: The Machine* introduces its world and conflict through a series of images showing the in-game environment's transformation from a lush wilderness into a desolate wasteland. The root of this transformation, it explains, is a "machine that draws the life out of the planet." As Juni, players overcome the challenges that guard the machine by foraging the environment for abilities that allow them to increase their ability to jump, climb, and dodge. After navigating the maze-like environment and avoiding enemies that resemble microchips and shoot glowing balls of electricity, players eventually shut down the machine and restore the world to its former state.

Knytt Stories: The Machine's simplistic narrative and environmental representation comments directly on the problems of unchecked technology. More directly, the antagonistic machine provides a loose metaphor for the hardware players use to run and navigate the game. The inefficient and grandiose design of many digital games often requires performance-intensive computers that chew through a significant chunk of kilowatt-hours per year. In "Taming the Energy Use of Gaming Computers," Nathaniel Mills and Evan Mills estimate "the typical gaming computer (including display) to use approximately 1400kWh/year which is equivalent to the energy use of ten game consoles, six standard PCs, or three refrigerators. The more intensive user segments could easily consume double this central estimate" (321). Mills and Mills estimate that consumption rates will double by 2020 unless, they argue, energy efficient components become standard for computer gaming. But as *Knytt Stories: The Machine* demonstrates through its narrative as well as its coding, optimized hardware is just one solution to gaming's carbon footprint. The game is designed to consume a minimal amount of processing power when players run the game, showing that game design can have a hand in "shutting down the machine" by optimizing resources and coding to put less strain on computer hardware thus reducing the need for what Mills and Mills describe as "performance racecar" computers.

Although *Knytt Stories: The Machine*'s innovative design addresses gaming's carbon footprint, as we turn to its ecology we encounter points of contradiction. To play, players must either purchase or access computer hardware including a keyboard, monitor, motherboard, power supply, CPU, and other components. These components are shipped in cardboard, plastic, and styrofoam packaging and consume carbon fuels to move from warehouse to consumer. Moreover, many of the minerals and metals used in computers are not ethically sourced and contribute to the ongoing problems described previously. Lastly, *Knytt Stories: The Machine* does not necessarily change players' other process-intensive computer habits. Running background communications and recording software to discuss and document gameplay, for example, may create as much of an impact as *Knytt Stories: The Machine*'s less efficient counterparts. In other words, even eco-friendly games will be ensnared in larger, environmentally deleterious systems that resist any easy reading.

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[3] *Knytt Stories* is free to download from Nifflas' website.

Ecocritics thus have several options with media like *Knytt Stories: The Machine*. They can, as many have done in the past, lament and attack these contradictions as signs that video games, like television before it, are irredeemably lost. Such an approach would comfortably retread the well-worn arguments of early environmentalists and ecocritics whose works are marked by both an aversion to popular media and what Parham describes as an eco-pessimism about the potential for popular media, categorizing much of it as "green-washing" in which representations of nature merely serve corporate interests, consumerism, and capitalism (xv). But perhaps ecocriticism might temporarily refrain from exiling digital games and instead, as Parham argues, understand and address contradictions as signs of the complex conditions and realities of environment under larger systems of capital. By foregrounding contradiction as an important component of media, ecocriticism can resist empty idealizations that obscure the ongoing "exploitation of the natural world" (Sandilands, qtd. in Parham 19).

Recognizing and resisting such idealizations also means acknowledging that while digital games face contradictions, like much ecomedia, they do not face them equally. As Woolbright and Oliveira have demonstrated, digital games consist of varied genres, communities, and subcultures that address ecological issues in diverse and complicated ways. Mods and the modding community, in particular, work to resolve (as well as perpetuate) the contradictions we encounter in games' approaches to ecologies. Whereas players can only challenge problematic environmental rhetorics through creative and subversive play, modders actively introduce alternative content that re-writes (but also re-enforces) destructive and harmful representations. Moreover, the representations authored through mods illustrate the environmental effects of labor practices driven largely by economic activity.

To this end, I explore the effects of modding and modding culture on ecological representations in video games. I specifically focus on the relationship between the labor of modding and its environmental products in the digital world of Bethesda Softworks' *The Elder Scrolls V: Skyrim*, a game widely acclaimed for its environmental representations. I argue that modding is a practice through which players can engage the problems of living in the Anthropocene—a contemporary moment of global human impact on other species and environments. In addition to promoting mastery and domination, modding also allows players to explore their needs and wants in a game environment and see how those desires directly affect the environments and species therein.

An Introduction to Mods

While the past decade has seen a steady rise in digital game "upgrades" through remasters and re-releases, scholars of fan-made media such as Henry Jenkins contend that officially sanctioned content is not alone in determining whether a game title is abandoned to the dustbin of history. Fan art, fan fiction, machinima, and other products of fan labor can qualify as "unofficial" post-release updates that extend the content of a digital game in significant ways either by adding new narrative dimensions or

suggesting alternative ways to play. "Mods," another genre of fan-made media short for "modifications," also present a popular avenue for players to extend the lifespan[4] of a game by authoring their own content and distributing it to other players. In *Game Mods: Design, Theory and Criticism*, Erik Champion offers Greg Finch's definition of mods: "user-made edits to PC videogames, the game equivalent of fan fiction. Traditionally free, they range from minor code changes to fix bugs or smoothen gameplay to 'total conversions'—complete overhauls of art assets to form an entirely new experience" (12). Although the types of mods available will vary by game and genre, players often design mods that offer other players alternative cosmetic options (clothing, equipment, hair styles, etc.), expanded race and gender options, additional stages and environments, fine-tuned graphical updates, nuanced interface design, and a variety of new gameplay modes. As Rob Gallagher *et al.* note in "Who Wrote the Elder Scrolls?: Modders, Developers, and the Mythology of Bethesda Softworks," players' motivations for producing mods are equally as diverse, ranging from players who design mods that thematically and contextually match the game world and gameplay, to those who design mods for subversive play. Whereas many players have designed mods for *The Elder Scrolls V: Skyrim* that re-enforce the Tolkien-esque fantasy setting of the series through equipment or companions, "other players will try to add as many wackily incongruous elements into the gameworld as possible, running mods that turn the game's dragons into WWE wrestlers or cause steam locomotives to rain from the sky" (38). Thus, modding is a way for players to add to the pre-existing content of a game world and a means to realize its latent possibilities. Mods also help to sustain various game worlds through player labor well after designers and publishers have moved on.

Modding taps into the hacktivist ethos that both Hector Postigo and Peter Christiansen respectively argue lies at the roots of such a practice. Specifically, Christiansen describes how *Spacewar!*, designed by Steve Russell and a group of self-proclaimed hackers at MIT in the 1960s, was one of the first instances of game modding. *Spacewar!* was created prior to the existence of a "gaming industry" and its commercial outlets such as Steam, Good Old Games, or GameStop to market and sell digital games. Instead, Russell and his colleagues invented their own distribution system, circulating the source code to *Spacewar!* across a pre-internet network environment to other players free of charge. Christiansen notes that Russell and other members of the MIT Tech Model Railroad Club believed in an open-source ethic that granted designers unlimited access to technology and information, and they put this belief into practice by inviting players to design different functions and inputs for the game (Christiansen 32). Eventually, *Spacewar!* would become the sum of its parts as various features were introduced through player modifications: "Pete Sampson [sic] added a program he

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[4] In *Game Mods: Design, Theory and Criticism*, Erik Champion explains that Peter Christiansen argues that *SpaceWar!* (1962) was the first game mod. Of course, there is debate over the first mod, Bogacs (2008) named the 1983 game *Load Runner* as the first game with a game editor, but he seemed to think *Ms. Pac-Man* was the first game mod, created in 1981 and released in 1982, was the first game mod. More recently, *ZZTT* (1991) was a text program with an editor which spawned many mods (Au, 2002). Au noted that by 1993 there was also a *Castle Smurfenstein*, a humorous mod of *Castle Wolfenstein*, where all the Nazis were replaced by smurfs" (13).

dubbed 'Expensive Planetarium' to generate stars for the background. Dan Edwards added functions for calculating gravity. Other hackers added a hyperspace button and even built primitive controllers out of scrounged parts" (32). Ultimately, the MIT Tech Model Railroad Club's emphasis on hacking and open-source software not only inspired various modifications to the game controls and design, it also generated a broader ecosystem around *Spacewar!* that entangled various human and non-human agents (players, designers, networks, etc.), iterations of the game, and forms of labor.

Although *Spacewar!* clearly bears the trappings of space operas and sci fi novels (31), the media ecology that emerged around it may have also have shared a thematic relationship with the game. In *Twisty Little Passages*, Nick Montfort notes that *Zork*, a text adventure also designed at MIT, was influenced by and included the various tunnels, basements, and subbasements that wound through campus (101–102, 104). *Zork* was designed in and around these areas, and spatially the game shares many resemblances with its material environment. Similarly, *Spacewar!* navigated a wide ecology of players, equipment, and locations as its source code was distributed and modified around the country. This desire for exploration and inventive labor can be seen in both the game's setting, space, as well as its gameplay which actively encourages players to creatively use forces in the environment to generate new strategies for winning the game. Similarly, the "hyperspace" feature, which instantly moves a player to another region of the map, draws on the elements of discovery and the unknown experienced by those continually finding new things to do and add to *Spacewar!* Playing *Spacewar!* serves as a metaphor for what Stephanie Boluk and Patrick LeMieux might describe as the surrounding "metagame" in which players collaborated (and, perhaps, competed) to modify and permanently etch their mod into the legacy of *Spacewar!*

Before delving into what contemporary modders are designing for video games, it is important to consider the ideologies and labor that drive the production of mods. Christiansen's depiction of the *Spacewar!* mod scene, for example, emphasizes the productive aspects of the MIT Tech Model Railroad Club's labor ethos, but it also exhibits many of the contemporary issues with labor practices including voluntary and uncompensated labor. In "Precarious Playbour: Modders and the Digital Games Industry," Julian Kücklich describes this labor as "playbour" in which entertainment and labor are deeply entangled. Playbour encourages modders to view their labor as "leisure" lacking the significance of the "real" kinds of work they perform at their place of employment. Modding, in this model, is just another frivolous form of "play" to enjoy. At the same time, however, digital game companies capitalize on these fan-made products by either using them to market a game, design new features, or even develop entirely new games such as *Counter-Strike*. Kücklich explains that because playbour blends leisure with work it also allows the gaming industry to deny modders' intellectual property rights and avoid having to pay employees what it can get for free from fans.[5]

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[5] Olli Sotamaa adds that "the game industry benefits from the perception that work in games industry is seen as a form of play […] Addressing modding as an extension of play and therefore a voluntary and non–

Whereas the developers of *Spacewar!* benefitted from the security of developing their game within MIT, many contemporary modders are self-funded and self-trained designers who produce free content in order to get recognition and, potentially, recruitment from commercial developers. In "Game Modding, Prosumerism and Neoliberal Labor Practices," Renyi Hong demonstrates how the allure of potentially working for a developer shapes both how players design and market their mods. Hong found that "interviewees engaged in the labor practices of marketing and customer relations management [...] Interviewees explained that marketing requires one to 'think of your mod as a product' and publicize it such that 'people would come and search for your mod through all the other hundreds of mods out there.'" Facing the realities of an oversaturated mod market, content is catered to player tastes and modders create videos and websites to help advertise their mods to gain attention from various player communities and developers. And yet despite this labor ending up as a resource for gaming companies to readily exploit, Hong found that fans still endorse modders' playbour. Gallagher *et al.* note that corporate figures like Bethesda's Todd Howard, who began as a "fan, to bug tester on the CD-ROM version of Arena, to project leader on the three most recent Elder Scrolls games" (42), strive to market the narrative according to which, with enough passion and fandom, modders can, one day, land their dream job designing games professionally. Thus, modding is generally influenced by both utilitarian and romantic perspectives that conflate modders and their labor with a resource to both harness and exploit.

Yet to read all modders as free-agent "flexi" workers dismisses the potential nuances of their modding contributions. In particular, many modders design challenging and subversive content that critiques the systems of labor and capital that seek to absorb modding into the game industry. As Alexander Galloway explains, mods can repurpose game spaces into art objects or interventionist political objects that critique elements of the game itself or socio-cultural and political events disconnected from a game. Mods might also mark a crucial shift from official to player-owned and maintained distribution channels. Unlike the authenticated and narrow distribution of patches or DLC from company-controlled channels, mods emerge from and create a wide ecology of unofficial channels hosting chunks of game data. In this sense, then, the game data extends well beyond the confines of developer computers and draws together a larger community of agents acting on and radically changing the game. Additionally, some mods repurpose code and other media to both humorous and subversive ends, embodying a force of renewal and preservation for deserted and abandoned digital landscapes. Although such practices can and should be read in terms of exploitation, the production of mods also models ecological labor practice that renews, reuses, and recycles.

Finally, while we may be tempted to dismiss mods as acts of power and control over a game environment or game characters, they are contingent on and survive because of a larger ecosystem of human and nonhuman actors. For example, mods

profit–oriented activity helps to justify the contemporary economic structure in which companies can decrease their risks by transforming parts of the development tasks to the hobbyists."

cannot function without a base game to which they are applied, nor can they exist without thoroughly maintained hubs for their curation and circulation. This means that like their designers, mods are somewhat precarious and vulnerable, threatened by both developers who may ban a mod or mod user if it violates a game's terms of service (TOS) as well as the hyper-obsolescence of games and gaming platforms. Mods depend and thrive entirely on a "healthy" ecosystem, yet most mods circulate in an ecosystem guided by the pressures of economic activity, giving them little recourse if that ecosystem is threatened by pressures from a variety of sources, including consumerism and capitalism. As I describe in the following section, the ecological and environmental representations that are often the product of such contradictory conditions make mods and modding an important site for ecocritical intervention and exploration.

Ecomods in *Skyrim*

In the previous section, I have attempted to point toward connections between digital games, modding, and media ecologies as well as various contradictions in modders' labor practices that dislodge modding from any singular interpretation. Rather than just providing "god-like" mastery, the previous examples attempt to connect modding and mods with tenuous ecologies invested in creating alternative networks between and among various elements of digital games. Yet despite these ecological possibilities, the forces of labor and capitalism encourage utilitarian and romantic depictions of both workers and nature that reproduce harmful ways of thinking and acting with the environment. However, as I show throughout this section, these mods are not indicative of modding as a whole. Modding, instead, continually re-imagines itself and its content, providing a site for re-envisioning games as both environmentally problematic and subversive. Although I open with environmentally reductive mods, I build toward mods that demonstrate these media can be sites where, as Dyer-Witheford and de Peuter explain, "multitudinous subjectivity" can emerge. My goal here is not to purify the more problematic aspects of modding (in fact, I contend these constructions offer players a way of de-familiarizing utilitarian and romantic view points), instead I hope to show that mods provide a site for discourse and debate over environmental and ecological issues.

Most of the mods I describe in this section were accessed through Nexusmods, a leading online hub hosting thousands of fan-produced mods to pre-existing digital games, for Bethesda Softworks' *The Elder Scrolls V: Skyrim* (*Skyrim*). I've selected both because of their popularity in the modding community as well as *Skyrim*'s emphasis on natural environments and nonhuman species. Many other games including *The Sims* series feature rich modding communities actively supported by the series' designers. However, I've avoided *The Sims* because most of the mods apply to human spaces and objects like clothing and furniture. *Minecraft*, on the other hand, is a game that also features a large modding community and foregrounds environmental representations and would make for a useful object of study. Yet *Skyrim* and *Minecraft* work in two very different directions with *Skyrim* largely pushing toward a romantic and pastoral

perspective, whereas *Minecraft* reflects the utilitarian. For this section, I've focused solely on *Skyrim* rather than both because many of the mods and the modding community for each game are shaped by the specific ways that each game invites players to relate to the in-game environment.

The Nexusmods Skyrim page features a variety of categories ranging from "armor" and "creatures," to "user interface" and "environment." The categories imply obvious partitions, but exploring the mods reveals significant overlap between categories such as environments and creatures appearing in the "Collectables, Treasure Hunts, and Puzzles" section. Similarly, the "environmental" section contains changes to in-game plants and animals as well as environments. Although blending categories presents intriguing potentials for ecocritical work, it also presents some significant issues. Specifically, in this section, players can find Kazoomie's "Birds and Flocks," which adds birds and bats to *Skyrim*'s oddly barren ecosystems. "Birds and Flocks" raises numerous questions for ecocritical studies beyond potentially reducing living creatures to flat props for players' visual enjoyment. *Skyrim* is a Tolkien-esque fantasy game populated by giant trolls, fearsome dragons, and strange deities. Although its visual design may appear "realistic," *Skyrim* has little interest in *realism*. Kazoomie's desire to add in "dozens and dozens more instances of birds that fly away when startled by either the player or another creature" should thus stand out as peculiar. The mod perhaps acknowledges an uncomfortable silence in the game, a longing for and attachment to the various feathered friends in this player's childhood or current life. It may also stem from nostalgia and romantic notions of ecologies in which birds are a defining symbol of the "natural." For whatever reason, Kazoomie's mod acknowledges the absence of birds and bird behaviors in a fantasy world and intends to resolve this gap in *Skyrim's* ecology. Similarly, both "Ducks and Swans for Skyrim," by zero2900 and "Sea of Spirits" by SpikeDragonLord follow suit by introducing missing species into *Skyrim*'s waterways and oceans. Many of *Skyrim*'s rivers, streams, lakes, and oceans are uninhabited, functioning more as boundaries and borders than as ecological representations. By introducing new species into the game, these mods also intervene in the erasure of certain species from *Skyrim*'s ecology.

Although it might be tempting to read such mods as encouraging players to view the environment as a plaything, these mods are at the very least a response to the game confronting players with missing animal populations, and perhaps a degree of unease over *Skyrim*'s speciesist tendencies based on utilitarian needs and genre tropes. Recognizing these failures in the game's representation, the prior mods attempt to address this issue by replacing what has gone missing. Alternatively, MightyNINE's "Trashcans of Skyrim" attempts to engage problems of waste, waste removal, and waste storage by highlighting what was always there. In the description for "Trashcans of Skyrim," MightyNINE writes,

> Tired of carrying around useless junk. Sick of filling up corners of your house, city or farm with clutter you will never use or sell? Waste Management of Skyrim, Inc is here to save the day! Simply place your unwanted trash in our conveniently placed trashcans found in every Hold Capital and forget about it. Our workers, quite possibly Falmer or even Dwemer, beneath the surface will silently remove your junk every 24 hours to our

custom and highly secret waste disposal site located in the south side of a northbound Mammoth.

Skyrim is notable for allowing players to collect and hoard a wide variety of nonessential items. Despite modeling excessive consumerism, the game contains little indication of waste or garbage. MightyNINE's mod therefore not only highlights how *Skyrim* completely ignores issues of waste, but it also hypothesizes how such an environmental concern would be handled. Using Falmer, a subaltern race of elves that live in the caves and outskirts of *Skyrim*, to clean these trashcans draws an uncomfortable analogy to the problems of electronic waste and recycling. Edward Burtynsky, through his photographs and collaboration with Jennifer Baichwal on a documentary of eWaste communities in China, notes that many of the recycled materials collected in America (and 50% of the world's computers) are taken to China where large communities work in extremely dangerous conditions to extract precious metals from various electronic components. Falmer reside in the ruins of the technologically advanced but now extinct Dwemer race, often seen dwelling in and brandishing many of their discarded technologies. Players learn that the Falmer are descended from Snow Elves who, facing extinction, were forced to accept servitude and consumed a poison that blinded and corrupted them. As a result, Falmer are extremely hostile and players who encounter them can only battle or flee, suggesting a troubling ethics toward humans living in eWaste communities. Moreover, the ironic use of "quite possibly" in MightyNINE's description speaks to broader ignorance about these issues (or, perhaps, the difficulty in understanding their complexity and vastness). Rather than simply reproducing the problems of consumerism and waste, modding provides a site to engage with and critique both the limits of *Skyrim*'s environmental representations as well as environmental issues beyond the game.

Nexusmods also offers a wide range of changes and additions to landscapes, weather, and possible interactions with the environment. A majority of these environmental mods, such as the "Vivid Landscapes" series for *Skyrim*, provide enhanced textures to mountains, tundras, cliffs, creeks, and other landscapes primarily affecting the appearance of *Skyrim*'s "natural environment." Texture mods aim to spruce up visuals that may look outdated or introduce new details to environmental models; however, such changes rhetorically suggest that the environment is a passive backdrop "less interface than canvas" (Chang 59) that merely serves as a technological benchmark. The designer of "Skyrim Realistic Weather Mod" makes this belief explicit while commenting that

> I was always disappointed at how dark & colorless the weather was in Skyrim, AND in all of the weather mods. I understand that it's supposed to be cold & atmospheric, but that doesn't mean you need to make it extremely dark & gloomy; in my opinion. So I modified the weather myself; making the main-end-goal realism.

Although Quayvetocar2's mod is an impressive technical update, these comments (and the mod itself) display what Chang cites as an environmental relationship established primarily on human control and manipulation (60). Such appeals to "realism" in

environmental mod commentary are not uncommon and mistake visual fidelity as the marker of environmental reality—reducing environment to a drifting signifier attainable through multi-core processors and graphics cards. At the same time, however, Quayvetocar2's comments indirectly acknowledge the role of technology and discourse in "coloring" (or lack thereof) the environment. By modding, Quayvetocar2 not only contests what they view as a problematic discourse, but also encounters the environment as always already manufactured.

Romantic environmental mods, like the Vivid series and Quayvetocar2's mod, are extremely common on nexusmods. And many other mods exist to not only improve the appearance of the game environment, but also forcibly expand it by introducing clichéd landscapes and weather systems like "heavy rain" or "dense fog." These kinds of mods have close connections to how *The Elder Scrolls* series invites players to relate to the game environment. In his "The Pastoral and the Sublime in *Elder Scrolls IV: Oblivion*," Paul Martin remarks on how the game foregrounds the environmental beauty of Tamriel (the name of the continent on which the Elder Scrolls series takes place) and its contrast with the "demonically industrial oblivion" (Parham), a force attempting to invade Tamriel. Martin argues that Tamriel's environment is reduced to the picturesque:

> Tamriel, as a game environment, is not, as we have come to realize, the terrifyingly vast landscape promised in the game's opening. It is, like Camoran's paradise, merely a garden. It does not extend beyond the horizon but is bounded on all sides. It is not as you find it, but carefully arranged and ordered. It is not, like the wilderness, a sublime chaos, but, like the garden, a picturesque design.

Martin's use of garden cues us to how *Skyrim*'s general representation of the environment may very much influence the kinds of mod content produced for it. Moreover, such a rendering of game space as "garden" is not unusual in game design. Jennifer DeWinter, in *Shigeru Miyamoto*, notes that Miyamoto thinks of his games as gardens (76); similarly, Derek Yu designer of the indie hit *Spelunky* and author of the self-reflective book *Spelunky* describes game design in terms of a garden. Citing Haruki Murakami, who explains that "If writing novels is like planting a forest, then writing short stories is more like planting a garden," Yu responds that his Game Maker games, "were Murakami's gardens: vibrant, intimate, and full of charm…I was eager to find my own little patch of fertile soil" (14). *Skyrim*, like *Oblivion*'s "natural" and unmodded state, toys with the same aesthetic pastoralism—one that is enhanced though both the action of installing mods and what the mods actually *do* to the game experience. Like a potted plant sequestered to a planter, these mods tend to function as pure décor, presenting opportunities for counter-readings but largely depicting the environment as a dwelling explicitly designed for and by humans.

Yet mods do present opportunities for presenting the environment as agent. Returning to the blended categories that open this section, we encounter opportunities for re-casting the environment as a "follower." Followers in *Skyrim* are nonplayable characters that may join with and assist in the player's travels. Alternatively, players can download the "Louis Cultivation Kit," which allows players to grow their own follower by purchasing a seed at an in-game shop, planting it in soil, waiting several days, and

then "harvesting" the follower. This plant-human hybrid is a form of what Mel Y. Chen describes as "improper affiliation," meaning associations between subjects and objects that do not ascribe to hegemonic ideologies or values (104). Not only does Louis subvert the typical logics of companionship in *Skyrim*, he emerges from the ground completely naked—a significant shift in the mod community which predominately features objectified and scantily clad women. Alternatively, LittleVienna's "Spriggan Matron Follower" invites similar opportunities for kinship with and hybridization of the environment with in-game characters, allowing the player to join with a tree spirit that assists in their journey. In "Rhetoric and Recapture: Theorizing Digital Game Ecologies Through EA's *The Sims* Series," Melissa Bianchi argues that "PlantSims" in *The Sims* series, "tightly couple the human to the natural environment through their plant-like physiology, needs and interactions" (215).[6] These followers, although much less complex than those modeled in *The Sims*, suggest a companionate role for the environment that offers an alternative to romantic or utilitarian relationships with nature.

Conclusion: Mod Ecologies

Although the previous section focused on mods as content that orchestrate alternative and unusual relationships with the ecosystem and environment represented in *Skyrim*, further studies might consider more "non-traditional" forms of mods. Although less frequent than one might hope, some digital games and game experiments have similarly explored the potential for nonhumans to modify game spaces. Hideo Kojima, designer of the popular *Metal Gear Solid* series, produced *Boktai* and *Boktai* 2, both of which include a photometric light sensor on the game cartridge that modifies gameplay depending on the amount of sunlight exposed to it. *Boktai*, like many digital games, moves beyond strictly visual or textual representation to present the environment through specific actions that players can perform. Unlike many games, however, the rules and representations within the game are affected by the presence of sunlight or darkness. *Boktai* features a hoard of vampires-like creatures called "Immortals" threatening mass extinction of all life and whose "unnatural-ness" is stressed throughout the game, especially in their description as beings "breaking the *natural* cycle of life and death [emphasis added]." The player must combat these creatures using various weapons including the "Gun Del Sol" and the "Pile Driver." The Pile Driver is a large, immobile device used to purify Immortals and can only be used if sunlight is detected by the sensor mounted on the game cartridge. Similarly, the "Gun Del Sol" is used for close-range combat and can stun Immortals. Players can only use the gun if sunlight is detected, represented by a gauge that shows the level of sunlight detected by the sensor, and it depletes upon use. If no sunlight is available, the tone and experience of the game shift significantly. Players can no longer shoot and engage in

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[6] Bianchi describes "PlantSims" as "human-plant hybrids that have green skin and foliage for hair" (215).

combat, but must rely on the game's stealth mechanics for hiding from and dodging enemies.

In many ways, the *Boktai* series' inclusion of sunlight echoes many problematic perspectives of the environment. Much like *Minecraft* and *Skyrim*, both of which include representations of nonhuman animals, plant life, and minerals that players use as *resources*, both the Gun Del Sol and Pile Driver encourage players to think of sunlight as a product to be used and weaponized. Here we again encounter Hochman's scathing critique of media and culture industries damaging effects on animals and the environment. Solar energy becomes something to capitalize on, and much like the raw materials driving conflict and violence in the DRC, its presence drives violent conflict within the game. Yet *Boktai* can also be read as a counter to Louv's "last child in the woods" hypothesis, encouraging players to explore and engage with environments not normally addressed through digital games.

Ultimately, modding is a nuanced and complicated ecological activity that demands ongoing critical attention from both media ecology and ecomedia studies. Modding exceeds the in-game actions players perform, allowing them to design and subvert the ideological positions that games ask players to occupy. By stealing, re-purposing, and preserving, modding resists the "total monetization of social relations" (187). Finally, mods allow players to imagine alternatives to worlds established on the consumption and destruction of natural environments.

Submission received 4 February 2017   Revised version accepted 20 September 2017

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Game Design as Climate Change Activism

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Abstract

The disconnect between climate activists and their skeptical audience is a multipart communication challenge of representing the unrepresentable. Even if we accept climate change as reality, enormous barriers stand between humans and effective action, the first being a crisis of imagination: climate change is too big for representation, scholars such as Morton (2013) and Marshall (2014) have argued. This paper examines games that have taken climate-related themes into account and analyzes them in search of resonant design elements that might work to communicate about climate change. Focusing particularly on two independent games that stand out as climate change fiction (cli-fi), *Little Inferno* and *The Flame in the Flood*, this paper highlights the narrative and representational capabilities of digital games to facilitate engaging, educational, emotional environmental experiences. Rather than focusing on doomsday, as cli-fi tends to do, there may be more effective ways to explore climate change solutions. Some of the video game design principles that could be manipulated to this end include: nonhuman avatars; dynamic game environments that impact player-characters; mechanics that reflect climate change characteristics; and reliance on player ethics. If game design can persuasively communicate about climate change and encourage players to innovate solutions, games may have the potential to turn play into activism.

Keywords: Video games, cli-fi, environment, activism, climate change.

Resumen

La desconexión entre los activistas climáticos y su audiencia escéptica es un reto multiparte de comunicación para representar lo irrepresentable. Incluso si aceptamos el cambio climático como una realidad, existen enormes barreras entre los humanos y la acción efectiva: la primera es una crisis de la imaginación ya que el cambio climático es demasiado grande para su representación, tal y como argumentan académicos como Morton (2013) y Marshall (2014). Este ensayo analiza juegos que han tenido en cuenta temas relacionados con el clima y los analiza en búsqueda de elementos de diseño resonantes que pudieran funcionar a la hora de comunicar sobre el cambio climático. Centrándose en particular en dos juegos independientes que destacan como ficción de cambio climático (cli-fi), *Little Inferno* y *The Flame in the Flood*, este trabajo recalca las capacidades narrativas y representacionales de los juegos digitales a la hora de facilitar experiencias cautivadoras, educativas, emotivas y medioambientales. En vez de centrarse en el día del juicio, como tiende a hacer la cli-fi, pueden existir formas más efectivas de explorar soluciones al cambio climático. Algunos de los principios del diseño de videojuegos que pueden manipularse para este fin incluyen: avatares no-humanos; entornos de juegp dinámicos que impactan en los personajes-jugadores; mecánicas que reflejan las características del cambio climático; y la dependencia en la ética del jugador. Si el diseño de juegos puede comunicar persuasivamente sobre el cambio climático y animar a los jugadores a innovar en cuanto a soluciones, los juegos pueden tener el potencial de convertir el juego en activismo.

Palabras clave: Videojuegos, cli-fi, medio ambiente, activismo, cambio climático.

The position of the Environmental Justice Warrior (EJW) seems hopelessly desperate in current digital culture, given that Social Justice Warriors (SJWs) are openly derided for their efforts to improve representation of diversity in media.[1] Being heard on the Web of identity politics at all can feel futile for environmental activists; media, language, and culture insist on distinguishing the human from the natural at every turn. Worse still, Americans find themselves in a culture where the Sioux, native inhabitants of the Dakotas, are attacked by authorities and arrested for protesting petroculture's encroachment on their natural resources[2] and where, in the wake of global post-inauguration protests of early 2017, numerous American states put forward legislation increasing the severity of consequences for common tactics of peaceful protest (Patton). Americans were also dismayed at the removal of climate change information from the White House website and the gag order the new administration placed on federal agencies (Wynne Davis). All this to say that this political climate has made it more difficult and dangerous to advocate for stronger government-issued environmental protections in the US, and the global public appears to care far more about quibbling over social justice than uniting as a species to face our collective environmental challenges.[3]

Representing climate change in media has proven difficult. Beyond its immediate physical threats, climate change presents humans with a crisis of imagination: the causes and consequences are both global and local, involve both warming and cooling, are accelerated by both human and geological activity, are extended through time and space (Nixon, 2011; Morton, 2013). Given that "the wild" and "the natural" are human conceptual constructs created to separate humans from our own naturalness (Cronon, 1996) and perpetuated endlessly by media, we start from behind with internal misconceptions that run deep. In itself, climate change is so enormous in scope, theorist Timothy Morton refers to it as a hyperobject—"massively distributed in time and space relative to humans" (Morton 1). In *Hyperobjects: Philosophy and Ecology After the End of the World*, he explains, "Hyperobjects occupy a high-dimensional phase space that results in their being invisible to humans for stretches of time" (Morton 1), resulting, whenever they resurface in our lives, in the environmental uncanny (Morton 28). On the topic of the environmental uncanny, Amitav Ghosh writes in *The Great Derangement*, "it would seem that those unseen presences actually played a part in shaping our discussions without our being aware of it… can we help but suspect that all the time that we imagined ourselves to be thinking about apparently inanimate objects, we were ourselves being 'thought' by other entities?" (Ghosh 31). Essentially, climate change is the ultimate object in an object-oriented ontology,[4] the main thrust of which is that we are not, as we so comfortably assume, the planet's top dog—or top priority. In fact, ecosystems, whether perfectly functioning or not, churn on without any concern

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[1] Admittedly, some of these efforts are ill-informed or suffer from failures of rhetoric, as is the case with any issue that gains a broad following.

[2] While petroculture is not the same thing as climate change, carbon economies are a driving factor in climate change; the two are interlinked.

[3] In *The Great Derangement*, Amitav Ghosh discusses India and Southeast Asia in particular.

[4] See Harman (2002, 2010, 2011); Bryant (2011); Morton (2011, 2013); Bogost (2012).

whatsoever for us; while humans continue to make a vast and multivalent impact, many factors are at play in the lives of everything on the planet, and we Westerners are only beginning to realize what Eastern philosophies have espoused for a very long time: we are neither alone nor special in this world.

Ironically, the toxicity we breed is something Earth will ultimately survive and recover from; humans, however, will not be so lucky (Tyson). It is unclear how EJWs can most effectively combat climate change, yet action is critical. While some risk arrest and harm by physically standing between corporations and threatened natural spaces and others join peaceful marches striving to reach government officials,[5] another course for advocacy lies in popular media. Although video games are typically considered merely an entertainment medium, using mechanics (structures of rules and methods of interaction in a gamespace) and narratives, video game designers have proven that, in their uniquely interactive and community-building nature, games can be a powerful platform with which to address some of the most daunting questions looming over our techno-centric cultures in the global North.

Regarding climate change discussion in media, we see a devastating disconnect between climate whistle-blowers and an unwilling audience: the politicians legislating environmental policies and often-undereducated citizens. I am convinced, as many scholars and designers are, of the power of video games to counteract disconnects like this, to generate empathy where there had been none, to foster cooperation, to be rhetorically persuasive, and to encourage innovation through play. As Miguel Sicart writes in *Beyond Choices: The Design of Ethical Gameplay,*

> When players encounter the being of a game, they participate in a complex interrelation of the rules and world in which they live. Sometimes, whether on purpose or by chance, that participation requires players to be more than just observers. The being of a game might allow players to pass through those worlds of rules and fictions, and this passage can deeply affect them. (Sicart 60)

Katherine Isbister further develops a theory of how games affect players in *How Games Move Us: Emotion By Design* wherein she claims that games are proficient, richly emotional media experiences, if designers develop them to be. Isbister writes:

> This capacity to evoke actual feelings of guilt from a fictional experience is unique to games. A reader or filmgoer may feel many emotions when presented with horrific fictional acts on the page or screen, but responsibility and guilt are generally not among them. At most they may feel a sense of uneasy collusion... Because they depend on active player choice, games have an additional palette of social emotions at their disposal. (9)

She backs up her claims with empirical research by psychologists studying how the brain works during play, demonstrating beyond doubt that playing a game is far closer to real-life experience than reading a book or watching a film (4).

Climate change calls for creativity and reliance on the strengths of games as a medium. As Alenda Chang writes in "Environmental Remediation," "our usual media are environments, which inevitably frame our understanding of the natural world and thus

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[5] Such as the Scientists' March on Washington in February 2017.

have the capacity to remediate beyond their representational margins" (Chang, "Environmental" n.p.). Games have the potential to reconnect us to the physical world emotionally and conceptually, and ideally, habit and practice will follow.

But this potential is not enough; it has to be enacted through design. What design principles could help players accept climate reality and identify themselves as vulnerable to climate-related conditions? Further, what might empower players to take action or spread the word, rather than leaving them feeling helpless? And, for ecocritics, must designers continue to privilege human survival in games in order to reach players? How can we diminish the primacy of human agency in games and thus emphasize the significance of the environments we so often overlook, exploit, and take for granted?

Articulating climate change through game mechanics proves tricky, but there are a number of techniques that could do it well such as playing a non-human avatar, allowing players to interpret a game's subtlety rather than pushing the message overtly (this may draw in players resistant to climate change ideology), and creating mechanics that accurately represent climate change. To illustrate some of these principles, I will focus on two games I claim qualify as climate change fiction (cli-fi)—significant because there is so little cli-fi, especially in digital media—and will then discuss design elements that might bring players into deeper engagement with climate change, both as a concept and in their personal lives.

Surviving the Flood

> *"Seen enough lost to boldness in my time. Hope you live to tell the tale!"*
> (Quincey Collie, *The Flame in the Flood*)

One of the most difficult game genres to play and an obvious choice for exploration of climate change is the survival game, which features limited resources, bodily demands, harsh environments, and often bellicose natural enemies. This style of game has become popular in the indie and modding[6] communities as well as in AAA titles, many of which have incorporated survival modes into their designs.

Survival games are full of environmental potential, favoring realistic environmental mechanics rather than standard game settings, which, for example, usually provide rapid and abundant health regeneration. Beyond tracking player-characters' physical status, survival games are more likely to accurately depict functioning, human-independent ecosystems and environmental events such as storms, earthquakes, and eruptions, giving players a sense of disempowerment and lack of agency, the opposite of most games. Often touted, player agency is precisely the kind of anthropocentric concept that runs counter to environmental thinking; most natural systems from how bodies work to weather patterns are not matters of choice, but subject to innumerable physical, chemical, and biological conditions that games have the

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[6] Modification; some developers give free access to the engines and code used for their games, so players can modify the code to create new content. Mods for Bethesda's *Skyrim*, for example, include options for an alternate beginning, add different styles of armor or new character classes, make the landscape richer, or provide mechanics for a survivor mode version of the game taking physical status into account.

ability to replicate. Because most games are human-centered, they tend not to do so. While survival games, with a couple exceptions,[7] still focus on a human protagonist, environmental mechanics drive the game rather than taking a backseat.

One such game is *The Flame in the Flood*, a point-and-click, post-apocalyptic survival adventure in which a devastating flood has made refugees of humankind on a massive scale. The game begins when a dog (players can choose to name it Aesop or Daisy) drags a red backpack away from a human skeleton and up to the game's protagonist, known only as Scout. The pack contains a radio picking up a faint signal, which players assume is a message from other survivors. Scout's journey begins with a quest to find a way to hear the message more clearly and learn where everyone has gone. She travels down the flooded river through what appears to be the American South, stopping at various types of islands to replenish her resources, ultimately winding her way to the ocean on her search for salvation from this environmental catastrophe.

In this game, as in most survival games, the player-character's body and its hunger, thirst, fatigue, and temperature are of central concern, and players spend most of their time fussing over how to find enough food, clean water, and protection from the elements, as well as items they can use to make tools, traps, medical supplies, and hunting gear. The game's basic structure of traveling down a river sets it apart from other games in this genre, which tend to encourage players to set up a home base and deck it out with a bounty of supplies and defenses. Not so in *Flood*. Here, the river drives the action; players must navigate its calms and rapids carefully so they do not destroy their raft, which has its own health meter. Scout only has a limited amount of stamina to turn the craft, and crashing too many times results in drowning; players must then restart the game.

Players choose when and where Scout docks to scavenge, and each location is procedurally generated, meaning that the terrain, resources, and creatures she finds there are randomized within the parameters of the location type. Types of locations include wilderness—likely to harbor more animals—towns with stores to loot, churches, and marinas—the only places where Scout can repair or improve her raft. She can set snares to catch rabbits, but boars, wolves, snakes, and bears will attack her, so she has to stay alert and keep items on hand to help fend off these hungry and territorial animals. The harder a creature is to kill, the more protection its hide offers from the cold, which intensifies as the game progresses, and Scout's body temperature is not helped by the frequent thunder storms that soak her to the bone—not to mention making the river harder to navigate—although she can fill her jars with rainwater without worrying about getting parasites from it. While drowning and infection from my animal-inflicted wounds had been frequent causes of Scout's demise in my earliest play-throughs, being "ill-equipped" and freezing to death was what killed me later on. I had to learn from experience that running away from the wolves was not the best way to play;

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[7] *Shelter*, 2013; *Shelter 2*, 2015; *Depth*, 2014.

facing them with spear traps and tainted bait, risking injury, and crafting warm clothing from their hides was worth it.

Scout must constantly move onward as she exhausts the resources available in the areas where she stops. Nothing of what's left of civilization is sustainable, and she cannot survive long if she lingers, even though she does encounter a handful of non-player characters (NPCs) who clearly are managing to scrape a living from the land. The riparian landscape and its denizens have their own desires and will; they are more than mere backdrop for the action, establishing the mood of the human-centered narrative (Chang, "Games" 59). This humbles players and may shift their attitudes toward themselves in an ecological context. I found myself admiring how nature continued to flourish despite the calamity humans had faced, and it made me want to brush up on my real-life wilderness survival skills (just in case).

But the climate-related undertones were what surprised me in *Flood*. Once Scout clears the first checkpoint, she learns that the "evacuation" is happening at Angel Yard. Crash-landing there at the second checkpoint, Scout encounters one of the game's few NPCs, Quincey Collie, who informs her that the situation is not as hopeful as she might have liked: "Made it? Can't say you made it much of anywhere. Look 'round… Just old buildings, junk… a mess of wild animals." The "junk" he refers to turns out to be a dilapidated rocketship. In order to progress beyond this point, players must get past all the animals in the evacuation site and read the note attached to the rocket: "I bear… unfortunate tidings, friends. Rockets 're dead. Ain't no way off this world. Not no more. No use cryin' 'bout it neither. There's a place fer you. The Kingdom. Offers salvation fer all left behind. Head south to the sea. That's what you'll find." The note bears the faint insignia of a castle perched on a geodesic dome. It appears that in response to whatever disaster led to this flood—and I am inclined to point to climate change, although the Christian reading (what with "Angel Yard", "The Kingdom", what amounts to the Rapture, and the flood itself) is certainly there—the people have tried to abandon the planet altogether, indicating that this calamity reaches well beyond the landscape where we find Scout and her dog.

If players can manage to survive all the way to The Kingdom, they will find that it is actually a repurposed theme park with decidedly Disney-esque overtones in its Epcot-like sphere. Scout finds food growing and pens with domesticated boars and rabbits, as well as numerous dogs just like her companion and a rack of backpacks just like hers; it seems whoever lives here has been sending out dogs with packs to find survivors and guide them to The Kingdom, but with little success. A ledger on the board there reads that none of the recent excursions have been able to bring anyone back. It turns out "Scout" is not a name, but the designation of these survivors. Quincey Collie has a tattoo reading "Scout" on his arm implying that he failed to complete his journey (he lost his dog, he tells us), and players may have come across a tombstone engraved with "Scout". All this serves to undercut Scout's primacy in this narrative and suggest that something else—the flooded river, I propose—is at its core.

Fig. 1: The Kingdom, *The Flame in the Flood*, 2016

The rhetorical implications of this remediation of the theme park into a functional living space, essentially a farm, is intriguing. That Western culture's most flagrant consumer fantasy lives on in this life-giving form is an odd reversal. It appears sustainable, out here in the middle of the Gulf, but perhaps in part because the nature of theme parks, it also feels too comfortable, too disturbingly perfect in its anthropocentricity. As Jean Baudrillard famously writes,

> Disneyland is there to conceal the fact that it is the 'real' country, all of 'real' America… Disneyland is presented as imaginary in order to make us believe that the rest is real… It is no longer a question of a false representation of reality (ideology), but of concealing the fact that the real is no longer real, and thus of saving the reality principle. (Baudrillard 169)

Baudrillard is an uncomfortable bedfellow for any digital game, as the layers of simulation multiply. So, too, the "childishness" of Baudrillard's Disneyland (Baudrillard 170) ranks parallel to the common perception of video games as meaningless and infantile. Viewed in the context of the game from Scout's perspective, however, the effect is to undermine any sense that this theme park might actually offer freedom from want. Baudrillard might consider video games like this third order simulations in themselves, convincing us by their unreality that our out-of-game lives are real when they are anything but.[8] Climate change necessitates mediation, simulation, abstraction in order to be understood. Conversely, *Flood*'s representation of climate calamity may have the opposite from intended effect, convincing players with its stylized interface of status bars across the screen that the plight of the climate refugee is fantasy and could never be their fate, though it certainly will be for millions across the globe.[9]

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[8] McKenzie Wark corroborates this view in *Gamer Theory* (2007), reading all life as a series of games.

[9] Data in *The New York Times* (Popovich et al, 2017) suggests that most Americans believe climate change is real, that it will affect Americans, but that it will not affect them personally.

The game ends with the gates of the Epcot-style dome opening to reveal a blinding light, at which point the screen fades to white and text appears: "Tell us traveler… what's out there?" The ending rings hollow; where Scout's being seemed equal to every other being trying to survive during her journey, now the focus comes back to the human, ordering and governing, growing and making peaceful the natural world in true Genesis fashion.[10] It feels so unlikely after the gritty realism of Scout's trials, I suspect she may be hallucinating, dreaming, or dead.

The Burnt Sun

"It's nobody's fault. We can't control the weather." (Miss Nancy, *Little Inferno*)

Contrary to *Flood*, struggle to survive is not the structure of *Little Inferno*, which has its own take on climate apocalypse. For most of the game, the player cannot control the camera and can only see the "Entertainment Fireplace" the unnamed player-character has purchased; players cannot even see their character's body. The only game mechanic is lighting fire by clicking anywhere in the fireplace. Players can start by burning the fireplace's safety document to make space in their inventory for items from the enclosed catalog. Every item produces a unique and often disturbing effect when burned. For their destruction, players are rewarded with more money than they spent, and the game begins to feel a lot like Plato's Allegory of the Cave: stare at the stone walls, control nothing but the flames, your only agency predetermined by the game's design.[11]

Gradually, the game's narrative unfolds through letters from three characters: the Little Inferno product developer, Miss Nancy; a neighbor, Sugar Plumps; and the Weather Man. Part grandmother, part corporate CEO, Miss Nancy tells the player very little beyond congratulating them on their progress burning their way through the catalogs she sends, but Sugar Plumps and the Weather Man both report on the state of the world beyond the fireplace: it's snowing, it's getting colder, and smoke is pouring from the city's chimneys. After playing through two catalogs of toys to burn, players get access to a commercial for the Little Inferno Entertainment Fireplace, which includes the following passage: "But up out of your chimney, way up in the sky / It's been snowing for years, and we just don't know why. / Our world's getting colder, but there's no need for alarm; / Just sit by your fire, burn all of your toys, and stay warm" (Tomorrow Corporation).

The commercial is the clearest indicator of climate problems until the ending. There is nothing players can do but keep burning things until, finally, the fireplace explodes, releasing the player-character—miraculously unscathed—into the "real" world, out of the Cave. Here, the game changes to a point-and-click side-scroller; players have an avatar whom they can move left and right. He walks through the snowy streets

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[10] Lynn White Jr. famously critiques Christian anthropocentrism in "The Historical Roots of Our Ecological Crisis." Genesis has been interpreted as one of the most detrimental influences on Western ecological thought by numerous ecocritical theorists.

[11] Wark discusses at length the parallels between Plato's Cave and playing games in *Gamer Theory* (2007).

past a silent family, whose photo he burned in catalog one. "I just found out that I exist," players can choose to say to the Mailman met on the street, ironic given that the avatar is a nameless character in a fictional digital world, but he is meant to be interpreted as a corollary to the player, who may question whether they exist if all they do is play games. Wark and Baudrillard would argue that this is moot, as we are never not in a game.

Arriving at the Tomorrow Corporation, the character confronts Miss Nancy about her dangerous product. After insisting that "It's nobody's fault. We can't control the weather", she escapes in a rocketship, avoiding all responsibility for the climate disaster she exacerbated. Reviewers have not commented on how true to life this feels: the privileged will escape the consequences of the apocalypse they wrought, leaving the rest behind to suffer. Exiting the gates of Tomorrow Corporation, if the player lingers or tries to go back to the left, the Gate Operator prompts them to go right: "It turns out there's a whole world out there!" he insists. Walking right, the player passes through a snowbound forest, emerging at last on a broken sidewalk that juts out over a cliff face. There is nowhere else to go. Just then, the Weather Man emerges from the clouds to whisk the player away. It is unclear whether or not there really is a world "out there," or what kind of shape it might be in. Regardless, the only way to end the game is to join the Weather Man and fly away into the clouds as the credits roll.

Fig. 2: Miss Nancy's rocket escape, *Little Inferno*, 2012

The meaning that most players and reviewers agree upon is that people waste their lives with stupid games that manipulate them into spending money; they might want to put down the controllers and get outside, because the alternative is self-destruction. In the comments section for Matt Shea's video of the ending of *Little Inferno*, one viewer brought up the game's climate change message (S1RWats), but was dismissed because "volcanos have produced more pollution than humanity has"

(mercenary2905). The second commentator clarifies, "My comment has nothing to do with the reality (or lack of same) of climate change but, rather, the popular media-driven narrative of man-made climate change" (mercenary2905). The dynamics playing out in this comments section are telling: players bring their political attitudes to bear, and while some are open to the climate interpretation, they may not feel comfortable saying so, as others dismiss them or insist on a more metaphorical reading about leaving childhood behind or how most people lack the creativity to live "outside the box."[12] Players here blame media for perpetuating the climate change "narrative", not seeing the game itself as cli-fi. They seem to see news media as the simulation, buying into Baudrillard's idea that world is not really real, but mediated. This might be true, but it brings them to a point where they can dismiss climate science and never imagine themselves impacted by it, despite climate's evident effects on all of our daily lives.

For me, *Little Inferno*'s greatest appeal was in the subtle creepiness of its environmental themes, and its greatest disappointment was that these were all too escapable. Whether by rocketship or weather balloon, the game implies an accessible "out-there", and nothing about the ending threw this hope into doubt. I can understand why the designers would want to avoid a dismal ending—the game is simple enough to appeal to players as young as my kindergarten-age daughter—but for my part, the gravity of the questions the game posed with its persistently unsettling tone were far too easy to settle with an ambiguously airy escape. Speaking as an ecocritic, I wanted there to be more consequences, though it might have upset other players had the ending been darker. Designers live and die by player reception, so design choices have to be carefully weighed.

Design Strategies

The extent to which an ecocritical game design impacts player attitudes largely depends on the players themselves, but some design principles may be more persuasive than others. Video gamers, particularly those with entertainment as their primary purpose, tend to dismiss overtly educational games as boring or "preachy." With regards to climate change, it may be helpful to consider playing a nonhuman avatar, taking on the shape of animals or, radically, the environment itself. Playing a nonhuman in a video game could help dissolve the separation we cultivate between our "human" selves and our "animal" selves and bring us into a clearer understanding of our natural context. It seems likely that this would be more effective in demonstrating humans' natural-ness than playing as a digital human.

Ecocritics have long struggled against the Western denial of human natural-ness, interconnection with the nonhuman, and status as animal. In Lawrence Buell's foundational *The Environmental Imagination*, he writes "…what sort of literature remains possible when we relinquish the myth of human apartness? It must be a literature that abandons, or at least questions, what would seem to be literature's most

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[12] See full comments section: https://www.youtube.com/watch?v=1yqePTYIOzo

basic foci: character, persona, narrative consciousness" (Buell ix). Imagining stories without characters or narrators is nearly impossible. Our anthropocentricity runs so deep that we find it necessary to anthropomorphize other beings—the animal, spirit, fae, monster, or nature guardian of myth and folktale. While anthropomorphism is useful for engaging an audience, it underscores our inability to imagine an experience other than our own. For example, in *Don't Even Think About It*, Marshall describes how Michael Crichton's novel *State of Fear*, which features a corporation triggering natural disasters to sow chaos and gain political power, became legitimized as fact in America by then-President George W. Bush and was used as "evidence" presented to a U.S. Senate committee. Marshall writes,

> The critical ingredient that has made *State of Fear* such powerful denialist propaganda is that Crichton perfectly understood the principle of narrative fidelity and set out to write a compelling story. It has pace, enemies, motives, and a comprehensible human-generated threat that could be defeated. Like all good myths, it ends with the punishment of the perpetrators and the restitution of social order. It is hard to think of any story that could be more different from the complex, multivalent, collective, and boundless reality of climate change. (Marshall 108)

The story appeals because of its human faces and resolvable conflict. The task, then, for games invested in climate change might be to utilize the inherent difficulties of environmental representation to advantage. One way to do so would be to allow players to *be* an environment, setting up conditions that would develop into climate-related obstacles; meanwhile, other players would have to navigate, survive, and complete tasks within this player-controlled terrain. This type of game would serve to illustrate core characteristics and consequences of climate change in an engaging way. Pitting players-as-environment against players-as-creatures would provide opportunities for productive role swapping and the kind of play-together Isbister advocates in *How Games Move Us: Emotion By Design.* This design would, however, emphasize an antagonistic relationship between human and non-human nature, so its design would need to present nature not as a thinking antagonist, but as a dynamic—never evil—force wherein natural processes play out. I would be interested to see how players feel about playing on either side of the equation.

Designers run the risk of alienating their player base when they create something with a controversial message. In classes where my students have looked at serious games (games with obvious political or social messages),[13] they express annoyance at the lack of choices they have. They are used to being free to determine their own course of action in games, and serious games tend to limit power in favor of communicating their messages quickly and cleanly. Games like *Little Inferno* and *Flood* leave interpretation up to players, and they are more widely played and enjoyed than serious games.

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[13] Three social justice games useful to play in class because they are short, free to play online, and ripe for discussion are *September 12th* (Gonzalo Frasca 2001), *A Closed World* (Gambit Singapore-MIT Gamelab 2011), and *We Become What We Behold* (Nicky Case 2016). My students' critiques notwithstanding, these games make their point.

Enjoyment does not necessarily mean fun, as Jesper Juul discusses at length in *The Art of Failure: An Essay on the Pain of Playing Video Games*. He writes, "This is the double nature of games, their quality as 'pleasure spiked with pain' " (9) and because of this, "To play a game is to make an emotional gamble" (14). A game must be challenging to be enjoyable, because the player's efforts to succeed make winning much sweeter. *Flood* is not an easy game; some people quit after dying a couple times. As Juul points out, "Players are not willing to run the same amount of risk—some even prefer not to run a risk at all, not to play" (14). Designers take a risk in making games too realistic; players may quit for any number of unforeseen reasons, but there are also rewards in making games challenging. Since I had to fail many times in *Flood* to learn which resources were the most important and develop a strategy of play, I spent a great deal more time in the world, taking in its moods and subtleties and deepening my emotional investment in it. Fighting for my avatar's life made me love it, and my choices are what dictated my survival, so I was invested in the game's outcome.

I have suggested that human agency may not be the most ethical design element for an environmental game, but designers must maximize player choice to make gameplay emotionally rich; these are not mutually exclusive. Players can choose how to act as an environment or animal without a human avatar, and moments when the game wrests control from players, illustrating how environmental structures play out, become surprising and memorable. For Isbister, the two most important elements of games that cultivate emotional investment are choice and flow. Flow is not a concept I plan to explore here,[14] but with regards to choice, neither cli-fi game offers much, yet both are powerful experiences because their sparsity highlights the few choices available. Finishing either game requires being swept along by the mechanics at hand: burning as directed or rafting downriver. The player's choices in *Little Inferno* are limited to what items to buy, whether to attempt combos for more rewards, and when to allow the game to finish; in *Flood*, players' decisions revolve around managing resources for survival and when and where along the river to stop. *Little Inferno* does not allow players to compose a response to anyone writing them letters, except to obediently send items to Sugar Plumps when asked, and Scout has only one or two options for responding to the few humans she encounters, neither of which change the dialogue. Before the game calls for it, there is no leaving the house—or even turning around—in *Little Inferno*; there are no animal rights in *Flood*; players can choose to be vegetarian and earn an achievement for it, but to survive to the end of the game, they still must craft warm clothing from animal hides. It is only one achievement, one most players ignore because it is too challenging.

Another way to get players to invest time in a game is to make it social. Reviewers and players of these two games discussed feeling beset by sadness and loneliness as they played (Boyne; Muncy; Roberts; Shea; Stumpt Rik; Totillo). Loneliness is central to both games, not because neither offers options for cooperative play (they do not), but because each *player-character* is isolated with only fleeting moments of

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[14] Flow essentially means a psychological state of being "in the zone", often heard regarding athletes. See Isbister pp. 4-10.

connection with others. I found this to be an interesting choice if we read these as cli-fi games. Climate change is a single phenomenon creating an array of problems affecting literally every being on the planet, but these two games choose to isolate the player in their climate struggle. While this makes the experience of play more personal, I believe an emotionally rich approach would be utilizing the social capabilities of games. Isbister focuses a whole chapter in her book on social games. Discussing the promise of collective play, she writes:

> Anytime players gather and take part in something that has a persistent alternate world, the stuff of their interaction can be shaped to create a positive experience. Players of games have always thrown their lot together to get further along, and also to enjoy the mutual pleasure of ruminating over and solving things among peers. With computers and the Internet, it's possible to make this happen at a mass scale. (122-123)

One example of a game contributing to real-life positive change is *Foldit*, a community-based game series designed by scientists who needed to model protein folding to help develop more effective drugs to fight diseases like AIDS and Alzheimer's. Because thousands of players can tackle each puzzle, the incoming data is beyond anything the scientists could have completed alone. What if a similar method of cooperative play was designed for climate change? The example of player-as-environment versus player-as-creature fits the social play parameters Isbister discusses; conflict designed this way allows players to work together to win. Mechanics where players could innovate technologies to deal with specific environmental problems would be an interesting way to bring more people into active engagement with solutions, rather than focusing on illustrating problems. That's really what games in essence are: problems posed to players who innovate solutions based on the tools at their disposal, often limited ones. A well-designed game could tap into that creative potential. Players could innovate amazing solutions to climate change problems, and if organizations with resources could see the results, those solutions might come to life. Games would certainly be more engaging than yet another documentary or advertisement desperately trying to educate an unwilling populace about the worst-yet-to-come.

With that in mind, in summer of 2006, *An Inconvenient Truth* was released in my local movie theater. I was working on campus, and all of my friends had gone home, so I went to see it alone. As the film's dark facts intensified, so did my solitude. I felt like the only person watching in the world. I felt helpless. The suggestions for what individuals could do playing over the end credits were not enough to make me hopeful about the future or excited to take action.

Strangely enough, what I felt in real life at that moment was similar to the underdog-facing-insurmountable-evil scenario portrayed in many games. I wonder what I would have felt if I had played a game about climate change instead of viewing the film. Studies Isbister cites suggest that I would have felt greater hope and involvement had I played rather than watched (Isbister 4-5). But games are not real life; in games, my avatar has special abilities, weapons, wealth, and impunity from the law; if I die, I can respawn at the last checkpoint; in games, I am invincible, and I can quit anytime. Climate change will not be solved by a masked or sword-toting hero. In spite of these game

industry norms, there are ways to knit in-game empowerment to real-life cultural and political change with regards to climate change. Game designers have vast and fertile ground to explore for thinking about climate change, encouraging community-building, and facilitating innovation through play. Not only could games of this sort raise awareness of the intricate difficulties inherent in climate change, rendering its hyperobject, extra-simulated, silenced status more visible, but games could also bring more people to action politically and personally to combat growing climate struggles. In an admittedly sunny view, inviting players to think through climate solutions may prove life-giving, life-altering, and life-sustaining, and to design a game to this end would be a radical act of activism. It certainly could not hurt.

Submission received 21 February 2017   Revised version accepted 26 September 2017

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Resources, Scenarios, Agency: Environmental Computer Games

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Abstract

In this paper I argue that computer games have the potential to offer spaces for ecological reflection, critique, and engagement. However, in many computer games, elements of the games' procedural rhetoric limit this potential. In his account of American foundation narratives, environmental historian David Nye notes that the 'second-creation' narratives that he identifies "retain widespread attention […] children play computer games such as Sim City, which invite them to create new communities from scratch in an empty virtual landscape…a malleable, empty space implicitly organized by a grid" (Nye, 2003). I begin by showing how grid-based resource management games encode a set of narratives in which nature is the location of resources to be extracted and used. I then examine the climate change game *Fate of the World* (2011), drawing it into comparison with game-like online policy tools such as the UK Department for Energy and Climate Change's *2050 Calculator*, and models such as the environmental scenario generation tool *Foreseer*. I argue that while both may be narrowly successful in generating engagement with climate change and resource issues, in other ways their effect may be disempowering: firstly, they emphasise the scale and complexity of environmental problems; secondly, they prioritise technocratic top-down policy responses at the expense of changes on the level of individual behaviour. This paper then turns to examples of digital games and playing strategies that offer more plural and open-ended engagement with environmental concerns. The on/off-line game *World Without Oil* (2007) encouraged players to respond to a fictional oil crisis, generating sustained and solution-focussed engagement. David O'Reilly's off-beat game-animation *Mountain* (2014), which in its unflinching mountain removes the agency of the player and mocks the 'nature as resource' model of games, invites an ontological reconsideration of the player's relationship with the non-human. Finally, examples of modding and 'expansive play' are examined to reveal surprisingly ecocritical playing strategies in the sandbox-game *Minecraft*, a game that initially seems to take the logic of resource extraction to its extreme.

Keywords: Computer games, ecocriticism, climate change, scenarios, policy simulators.

Resumen

En este ensayo argumento que los juegos de ordenador tienen el potencial de ofreces espacios para la reflexión, la crítica y el compromiso ecológicos. Sin embargo, en muchos juegos de ordenador, los elementos de la retórica procedimental de los juegos limitan este potencial. En su recuento de las narrativas fundacionales americanas, el historiador medioambiental David Nye destaca que las narrativas de 'segunda creación' que él identifica "conservan una atención generalizada […] los niños juegan con el ordenador a juegos como Sim City, que les invita a crear nuevas comunidades desde cero en un paisaje virtual vacío, un espacio vacío maleable e implícitamente organizado por una cuadrícula" (Nye, 2003). Comienzo mostrando como los juegos de gestión de recursos basados en cuadrículas codifican un conjunto de narrativas en la naturaleza es la ubicación de la que se extraen y en la que se usan los recursos. Después examino el juego sobre el cambio climático *Fate of the World* (2011), comparándolo con herramientas de política online como la del Departamento de Energía y Cambio Climático de Reino Unido, *2050 Calculator*; y modelos como la herramienta de generación de escenarios medioambientales *Foreseer*. Argumento que mientras que ambos pueden ser poco exitosos a la hora de generar compromiso con el

cambio climático y con temas de recursos, por otra parte, su efecto puede ser desalentador: primero, enfatizan la escala y la complejidad de los problemas medioambientales; segundo, priorizan respuestas políticas tecnócratas verticales a expensas de cambios en el nivel del comportamiento individual. Este ensayo luego recurre a ejemplos de juegos digitales y a estrategias de juego que ofrecen un compromiso más plural y más abierto de mente con respecto a las preocupaciones medioambientales. El juego con/sin conexión *World Without Oil* (2007) animaba a los jugadores a responder a una crisis petrolífera ficticia, generando un compromiso sostenido y centrado en soluciones. El juego de animación poco convencional de David O'Reilly *Mountain* (2014), que en su inquebrantable montaña elimina la agencialidad del jugador y parodia el modelo de juegos 'naturaleza como recurso', incita a una reconsideración ontológica de la relación del jugador con lo no-humano. Finalmente, se examinan ejemplos de modificación y 'juego expansivo' para revelar estrategias de juego ecocrítico sorprendentes en el juego de mundo abierto *Minecraft*, un juego que en principio parece llevar la lógica de la extracción de recursos al extremo.

Palabras clave: Juegos de ordenador, ecocrítica, cambio climático, escenarios, simuladores de políticas.

Introduction

In his account of American foundation narratives *America as Second Creation* (2004), environmental historian David Nye examines popular accounts of technological progress in America from the eighteenth-century onwards, and shows how the understanding of each new technology—the axe, the mill, the canal, the steamboat, the railway, and irrigation—leads to what he calls a foundation narrative of "second-creation" (40). Nye identifies four structuring shifts in perception that are important to this narrative: firstly, the "imposition of a grid on an empty landscape" dividing the land not by type or according to natural features, but with an arbitrary grid; secondly, the "expansive belief in resource abundance" and the rejection of Old World (particularly British) notions of scarcity; thirdly, the "rejection of government regulation in favour of the free market"; and finally "a world in which access to force [energy] and efficiency in using it improved constantly" (287) .

The result of these shifts, Nye shows, is that the continent of North America is seen by colonists as a paradisiacal natural environment of remarkable abundance, but one which is to be *improved* by technological progress, creating a kind of augmented Eden, a 'second creation'. After all, "How could anything but progress result from using natural forces to develop the immense resources of an empty continent in a free-market economy?" (Nye 287). In his conclusion, Nye observes that although the underlying concepts were undermined during the twentieth century, the technological creation story itself, "has by no means disappeared": "Children play computer games, such as *SimCity*, that invite them to create new communities from scratch in an empty virtual landscape where a grid defines the contours of roads and the arrangement of houses, factories, and commercial districts" (288).

The continuing presence of the grid is particularly apparent in these games which invite players to create a civilization (the *Civilization* series), or a city (*SimCity* series) or a colony (*Colonization*), in virgin territory. The name often given to this genre is 'God

games', with the player supposedly given omnipotent control over the game environment, revealing the enduring presence of the second-creation narrative. The video trailer for *SimCity 4*, for example, shows a young man walking up to the edge of a canyon, and with sweeping deistic gestures clearing away the mists, raising a landmass, planting vegetation and then summoning a city, accompanied by suitably grand music ("SimCity™ 4 Deluxe Edition").

There's something familiarly dismissive in the way that Nye characterises computer games as for children, and mentions the genre only once and in passing: "Nor are such visions limited to children's games" (288). In this essay I argue that his observation has implications for assessing the ecological limitations of some computer games. I argue that hallmarks of the foundation narrative that Nye identifies persist in a number of computer games—the presence of the grid, the implication that 'nature' is primarily a resource to be used, the idea that through technological progress we can improve on nature, and a teleology of technological progress. Nye shows how the success of the foundation narrative based on these ideas effectively supressed other narratives, including those of indigenous American people, and narratives of ecological limits. Counter-narratives had to try and "subvert at least one of the four underlying concepts", and were therefore mostly rejected as "un-natural": "were land, power, and resources really abundant, or were there natural limits?" (Nye 41). The consequence is that "ecological or human losses were largely excluded" from the narrative (Nye 40).

Gaming has the potential, as various critics have argued, to make ecological ideas meaningful to players; in John Parham's terms "the virtual can […] put us in touch with the ecological" (Parham 206). Having such characteristics as interaction, immersion and engagement, computer games may represent ideal media for 'green' or environmental thinking, since the player is consistently expected to manipulate their environment. Towards the end of this essay I look at some examples of how the ecological can emerge in computer games in perhaps surprising places. However, manipulation of the environment can also be deleterious. The continuing presence of some of the underlying assumptions that Nye identifies, together with the persistence of the foundation narrative in many computer games, places limits on the capacity of such games to engage in nuanced ways with environmental issues such as climate change or biodiversity loss.

I begin by showing how in both their narratives and in their aesthetics, games like *SimCity 4*, *Civilization* and *Minecraft* perpetuate some ecologically unhelpful assumptions. I move on to discuss the game *Fate of the World*, set in a future of accelerating climate-change, and—drawing comparisons with online policy tools—show how, although it draws attention to pressing environmental problems, it may disempower the player both by emphasising the scale of the task, and by prioritising technocratic responses to climate change. I turn then to the online alternate-reality game *World Without Oil*, and to the game *Mountain* to show how some of these assumptions and teleologies can be challenged through innovative games. Finally, I examine examples of modding and "expansive play" to reveal surprisingly ecocritical playing strategies in the sandbox game *Minecraft*.

God Games' and Resources

The underlying assumptions of Nye's second-creation narrative will feel familiar to players of two highly successful series of computer games: Will Wright's *SimCity* series (1989-2013), developed by Maxis studio and released by EA games; and Sid Meier's *Civilization* series (1991-2016). Both series of games have been highly influential, spawning numerous spin-offs and clones, and remaining popular over many sequels. In essence, the games in both series begin with the representation of a natural environment, with gameplay involving building, respectively, a modern city and a civilization built around a number of cities.

As Nye describes, in the *SimCity* games a grid defines the arrangement of residential districts, roads and commercial districts from the outset; in the *Civilization* games, a grid likewise controls activity within each square and the movement of the player's units while organising the resources available to the player. Similarly, in accordance with Nye's foundation narrative, games in both series start with an empty, malleable landscape with abundant resources: the *SimCity 4* tutorial begins by telling the new player "you've got a bunch of cash and some pristine land. Try to make a thriving metropolis." Any idea that a player might want to leave the environment—this pristine land—as it is, undeveloped, runs counter to the game's entire narrative.[1]

Of course, it can be argued that the organising structure of the grid derives at least in part from hardware and software limitations within the early games in these two series. As Bianchi notes, following Terry Harpold, "digital games' cultural signifiers [...] are inherently bound to and governed by material limitations (i.e., processing speed, memory, graphical capabilities, keyboard and mouse controls, etc.) and not just the cultural context of the designers and players"; interestingly, this is, she observes, especially true "for animals and nature as a whole" (Bianchi 210). This is presumably because, as games eco-critics have stressed, animals and nature have been routinely cast as mere backdrop to the main anthropocentric narrative, an "equivalent to theater flats" (Chang, "Games as environmental texts" 59). Despite this caveat regarding material limitations, I argue that even as the grid aesthetic became less dominant in later games in these series (the fifth and sixth iterations of *Civilization*, for example, moved to a map of hexagonal tiles), it derives from the "cultural context of the designers" and has been influential in subsequent games.

Game scholars such as Ian Bogost have argued that the rhetoric of a digital game is derived not only from its semiotic elements (e.g. graphics or text) but also from its "procedurality". The grid straddles these two categories: it visibly orders the game environment, but is also part of the set of "rules that create particular possibility spaces for play" (Bogost, "Rhetoric of video games" 122). In the case of both *SimCity* and *Civilization*, the "procedural rhetoric" promotes an idea of the game environment as an empty landscape waiting to be built upon (Bogost, "Persuasive games" 1). The player is not, in the strictest sense, *required* to use natural resources, build cities, and aim for

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[1] Though not counter to its constraints. For more on this kind of 'expansive play' or 'counter play', see *A Walkthrough, or just a walk?* section below.

technological 'progress'; but the game mechanics give the player little choice but to pursue this path. This is amusingly apparent in the *SimCity 4* player tutorial, which makes clear this Hobson's Choice: "Whether you prefer a farming village or a GIGANTIC METROPOLIS […]" (emphasis in original). Although *SimCity 4* supposedly offers the player the option to build a low-resource, low-impact city, in reality the game's mechanics often "constrained environmental understanding within parameters dictated by the Western capitalist value system" (Parham, citing Nilsson and Jakobsson, 216).

Bianchi has shown how, in the early games of the spin-off *Sims* series of computer games, the extent to which the player can engage with nature at all is in the terms described by Max Oelschlaeger as 'resourcism': "visually and procedurally" players are separated "from the game's representation of natural environments" (Bianchi 213). Like in the *Sims*, in *SimCity 4* the player can build parks and green spaces, but these are understood as beneficial only in the degree to which they encourage Sims to move into the city. In other words, despite this greater interaction with the game-world environment, the game's procedural rhetoric still "coincide[s] with conceptions of nature as a resource" (Bianchi 213). Bianchi argues that successive iterations of the *Sims* games manage to move away from a wholly anthropocentric representation of nature, but the "cognitive hegemony" of 'resourcism' which pervades the *SimCity* and *Civilization* games remains in place (Oelschlaeger 284).

This limitation can be found even in games with an avowedly didactic and environmental purpose. John Parham identifies similar ecological concerns in an EU-funded pedagogic game *EnerCities* aimed at secondary school pupils. However, these are "connected to the game's conformity to both humanist and, implicit in the emphasis on growth, ideological values. Grid squares into which the fictional city is divided imply, for example, an entirely utilitarian approach to the land" (Parham 218). In the next section, I examine *Fate of the World*, an environmentalist computer game that attempts to avoid some of these pitfalls.

Climate Models and Climate Games

As Alenda Chang notes, "almost by definition, all computer and console games are environments, but surely not all games are environmental" ("Games as Environmental Texts" 58). In fact, she concludes, few engage in ways that go beyond the simplistic forms addressed in the previous section. Some games, though, have attempted to address major environmental issues head-on. The PC game *Fate of the World* (2011) gives the player the chance to control global policy in an effort to avert catastrophic climate change. The narrative begins in 2020, with a world summit, at which a Global Environment Organisation is formed to take control of environmental policy actions. The player recruits representatives in each of 12 regions, and can then choose from over one hundred policy response 'cards' from a deck, in an effort to meet the aims of particular missions. These missions mostly revolve around reaching a certain date having kept climate change to 2 or 3 degrees above pre-industrial levels, while maintaining the Human Development Index above a set level in every region. News

headlines and detailed data on 24 indices (GDP, literacy, emissions, water stress and so on) for each region give the player feedback.

As the designers were keen to stress, the game's models are based on real-world data, and designed in collaboration with Dr Myles Allen at the University of Oxford. Its ambition to suggest realistic consequences of the player's choices of global and regional climate policies and social policies brings it into conversation with two sets of antecedents: models of the future climate itself; and game-like tools used for policy development and public engagement with climate and resource policy.

Climate models are not, clearly, computer games though their development certainly has been in parallel with the history of increasing computing power (Edwards 115, 278 et passim). There are huge epistemological differences between the use of computer-based climate models to create scenarios of the future climate, and computer games that create speculative narratives of future society based on game code that responds to player feedback. But they also share fundamental features of iteration, response to feedback, and future scenario building. In his exhaustive history of climate models, Paul Edwards shows that our understanding of climate—past, present and future—relies fundamentally on models; the idea of meaningful 'pure' data separate from models is a myth (Edwards xiv). As he says, "the epistemological undercurrents of this […] argument [concern] the proper role of models in forecasting climatic change: not as absolute truth claims or predictions, but as heuristically valuable simulations or projections"; we will "always experience them [climate futures] as probabilistic, as shimmering rather than fixed" (Edwards 352). The comparison with computer games is not intended at all to call into question the validity of these models, but rather to note that looking at climate futures through computer games has a natural precedent.

An even clearer precedent is in models of resource and infrastructure planning, and in particular the system dynamics of MIT Sloan School of Management professor Jay Forrester. Forrester's work in the 1960s and 1970s was a strong influence on Will Wright as he developed the original *SimCity* (Kushner). As Forrester turned these systems to examine global issues in *World Dynamics* (1971), he became a critic of growth; it was four of Forrester's students who built upon his work to write the seminal 1972 book *The Limits to Growth* (Meadows).

More recently, computer game-like tools have become common for modelling the effects of policy in resource management. One example is Foreseer, an environmental scenario generation tool developed by a team at the University of Cambridge. The Foreseer Project was a BP funded project resulting in a tool for visualising the influence of future demand scenarios on requirements for energy, water and land resources (Allwood). This resource forecasting tool works on user inputs to model future resource shortages, demand for final services, and the value of technological innovation. Although the interfaces and modelling technologies may differ, the basic structure of this tool is not dissimilar to that of *SimCity* or *Fate of the World*: the user/player makes decisions about competing resources, which affects the demand for services and the value of differing technologies and responses. This, in turn, may affect the decisions about input that the user makes in the next iteration; comparing outputs of successive iterations, the

user can make better decisions.[2] In Foreseer the output is represented in a Sankey diagram, a flow diagram in which the extent of the flow is reflected in the thickness of the diagram's lines; in *Fate of the World* it is represented in shifts in regional statistical data. It is not surprising, then, that one of the researchers on the Foreseer project has described the original Foreseer tool as a "game-like model of Californian resources", and suggests that its value is as a "game player exercise about possible futures […] to see how different decisions have impacts."[3]

A fascinating example of an attempt to use such a tool for open and transparent policy-making is the UK Government's Department for Energy and Climate Change (DECC) *2050 Calculator* (2010). The *2050 Calculator* is an online interface, based on a "monster spreadsheet," which allows users to change an array of options relating to the supply and consumption of UK energy (Mackay). The *2050 Calculator* is not a computer game, but it conforms to many of the generally agreed criteria: it has clearly defined rules (the assumptions can be altered by users); it gives user-feedback (in emissions reductions, and cost); and it has a desired end goal. This end goal is an energy system balancing supply and demand, with emissions reductions that meet UK legal commitments under the Climate Change Act (2008). It is even mildly competitive, with a number of 'Pathways' designed by stakeholders in the energy system (five government examples and others by environmental groups, the National Grid, the Campaign to Protect Rural England, and so on), with which you can compare your own.

In the original 'classic' version of the Calculator the interface is graphically fairly unappealing and the feedback is entirely in the form of data represented in graphs, segmented bar charts and complex Sankey diagrams. But data is also at the core of feedback in *Fate of the World* and other games, like *SimEarth* where the desktop can become overrun with "innumerable bar graphs" and "images that would be equally comfortable in an environmental science textbook" (Chang, "Playing Nature" 25). In an updated version of the *Calculator*, the interface becomes more intuitive, and a simple cartoon-like "picture near the top of the screen changes to reflect the choices you've made" (by adding icons for wind turbines, car icons replaced with bicycles, and so on), in addition to the graphs and charts. This graphic feedback is improved further in the slightly simplified online tool *My 2050* (see "DECC presents: My 2050").

In game reviews of *Fate of the World*, and in review-like articles on the *2050 Calculator*, a striking theme emerges around the complexity and difficultly involved. Reviewers describe the "sheer difficulty of *Fate of the World*" and the "sobering" effect of "watching the planet crumble—wars and natural disasters are often triggered inadvertently by your decisions, and you're informed each time a major species becomes extinct" (Arnott). A RockPaperShotgun (RPS) review calls the game a "very difficult turn-based strategy game indeed. There is a good reason for that. Saving the planet—saving civilization as we know it—is not going to be a cakewalk, after all. So while it teaches me,

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[2] It is interesting to note that this policy tool has itself been used in an educative-game context with students (Bajzelj).

[3] Keith Richards, speaking at Culture and Climate Change: Scenarios. Scott Polar Research Institute. Cambridge, UK. 15th Sept 2016.

it also scares me, rather a lot" ("The Games of Christmas '11"). The same review implies a sense of frustration: "And I fail. Again and again and again. I don't think I'm entirely rubbish, it's just that saving the world from ourselves turns out to be quite complicated" ("The Games of Christmas '11"). A separate review on RPS calls it "as an educational videogame, a masterpiece" but narrates the extraordinary difficulty and complexity involved in understanding the consequences of your decisions: "You find out you're an idiot. Not because your plan doesn't work, but because there are side effects that never occurred to you" (Smith).

Articles covering the launch of the *2050 Calculator* acknowledge the game-like nature of this online tool, which was designed under the leadership of the late David Mackay, then Chief Scientific Advisor to DECC, who on his own blog described the tool's "'play Secretary of State for Energy and Climate Change' approach" (Mackay). Mackay's measured observation is that the tool might "help people understand the range of possibilities that are open to us; the trade-offs; the common themes shared by energy pathways that add up; and the scale of action required" (Mackay). But media coverage shows that a common reaction to the tool was the realisation that the problem itself is daunting: "a few minutes of play shows just how difficult it will be to cut emissions 80% on 1990 levels in four decades"; "Doing it yourself gives an unusual and vivid insight into the difficulties faced by real policymakers in grappling with our energy future" (Vaughan; McCarthy).

From the perspective of engagement with ecological issues such as climate change, then, we can perceive two inter-related problems with both the *Fate of the World* policy-game, and DECC's game-like tool. The first is the representation of the complexity and scale of the solutions required. It is difficult not to wonder if this was a desired outcome in both cases: *Fate of the World* challenges you to see if you can solve an almost intractable, "super wicked", problem, and some players apparently relish the frustration of "solving unexpected problems with *your own plan*" (Levin; Smith). DECC's *Calculator* seems to say: 'look what a fiendish job we have got on our hands'; or as Louise Tickle wrote in *The Guardian*, "Such is the life of an energy planner. I have more sympathy now" (Dudman et al.). But it has become increasingly accepted in recent years that narratives of catastrophe and disaster around climate change in all forms of media are far from productive, and are instead disempowering (O'Neill and Nicholson-Cole); there is a danger that these simulations—at the same time as being educative—convince players first and foremost of the possibly insurmountable scale of the problem.

This may be compounded by a second limitation. As these two examples (and there are others in both genres) draw on their common antecedents, they both naturally prioritise top-down state or even global-level policy mechanisms as the means of implementing change. Whilst excusable in both cases, this prioritisation has consequences. In *Fate of the World*, the game's engagement with real-world environmental crises—and its clear desire to engage its players with these issues—can seem at odds with the game's aesthetic: with its interface's 'Blue Marble' view of the Earth, there really isn't an 'environment' or 'nature' for the player to engage with. All of the player's interactions with natural processes, resources or habitats, or with mega

fauna (as they become extinct), are mediated through news reports or data ("The primates [Sumatran orangutan] are extinct, the victim of shrinking rainforest habitats and poachers"), or through policy interventions ("Subsidise biochar"). Even environmental attitudes are encoded in a policy card that allows your government to "Raise Eco-awareness," helping to shift a region's population's attitudes.

In the case of the *2050 Calculator* a technocratic bias may seem unsurprising, originating as it does in a government department. Certainly, there is a policy emphasis here. But the tool is actually fairly good at stressing the importance of demand side reduction, and at least suggesting that some changes are on the level of the individual— both facts registered by commentators on the tool (Dudman et al.). However, although Mackay asserted that the intention of the tool was "not to imply that the energy system could or should be centrally planned," gathering these supply and demand drivers in one place to be controlled by uniform sliders does, by its very nature, seem to suggest exactly that (Mackay).

Perhaps rather than 'God games,' we should call these 'technocrat-games': Mayor, President, Leader of the Global Environment Organisation—these games give all the power to policy-makers.[4] *Fate of the World* has some real strengths in environmentalist terms: it's encyclopedia is detailed and informative and its gameplay requirement to balance climate adaptation with mitigation foregrounds an important, and (in public discourse) too often overlooked debate. However, in a procedural rhetoric that implies a possibly insurmountable problem only to be addressed through centralised policy mechanisms, there is a real danger that it is disempowering for the player-as-citizen. In the next section, I turn to innovative games explicitly designed to empower players and which emphasise the potential of bottom-up responses to large-scale societal crises such as peak oil and climate change.

Player-as-citizen

The 2007 online 'alternate reality' game *World Without Oil* (*WWO*) represents a fundamentally different approach to engaging with societal challenges through games to those policy-oriented games discussed above. In this online participatory project players were invited to contribute responses, in any media or form, to an evolving (fictional) energy crisis. Players documented real and fictional actions, as well as their attitudes and emotional responses, in videos, photographs and text, mostly hosted on their own blogs or other platforms, but all linked through the *WWO* main website. Played over 32 days, *WWO* simulated the first 32 weeks of a global oil crisis, and participants described a full range of responses. Players reported the consequences of the crisis, and, reacting to news fed to them by the game's designers, the increasing pressures they were facing: the stress on infrastructure, the difficulties in everyday life, in work and in relationships. As writer and games designer Ken Eklund put it "*WWO* in its design was very open in what the story was going to be," but the variety and creativity of participants meant that

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[4] And indeed, 'acts of God' such as earthquakes, not in the player's control, are also common in these games.

responses ranged from the micro (e.g. a shortage of migraine medication) to the geo-political (Eklund).[5]

A noticeable shift in the nature and mood of stories contributed to the project was apparent across the month over which it ran. Perhaps unsurprisingly, as the fictional scale of the crisis increased, stories about the deleterious effects of an oil crisis likewise ramped up from inconvenience and expense to, in some cases, reports of rioting and violence. But following a "seminal moment" in which one player said "I've had it with hearing about all these problems, we need to start thinking about solutions – how we're going to move forward," there was a move toward an emphasis on community and on solutions (Eklund). A wrap-up Livejournal post at the end of the project describes the overall impression of "People working together, sharing ideas, and experimenting with different ways of going about their everyday lives" ('A to Z'). Eklund remembers a turn toward "things like grow-your-own food, or other sorts of community resilience" (Eklund).

Chang is right to note that the fact that alternate-reality games like *World Without Oil* involve "direct, physical interaction with the real world overlaid with a game-like scenario" does not grant them any inherent superiority ('Playing Nature' 72). But in the case of *WWO* this overlaying of the real with the virtual *was* helpful in creating a community of engaged players thinking seriously about an environmental and social issue. Players shared stories that derived in lesser or greater part from their own (real) lives, and shared real-life experience and knowledge in response to other players' (fictional) concerns. The mixing of real and virtual made this game more 'serious' for players, since they were imagining a scenario as it played out in relation to their own lives, and their own futures. What is significant here is the game's experiential nature–players inhabited the scenario, imagining it into their own lives. As Jane McGonigal, who was involved with the game, has written, "players were telling stories about the futures they cared about most—the future of their industry, their religion, or their own town and their children" (McGonigal 310). This personal engagement is key, since an often-cited barrier to engagement with issues such as climate change is that they are too big and too far away; in other words, they seem somehow impersonal. As Eklund notes, the game allowed players to take on an empowered role, "taking hold of a different sort of crisis narrative, not the one where crisis is something that happens to you, but is something that happens to you and you recover from it" (Eklund). Another consequence of this was a concentration on local lived experience as opposed to the level of national or even regional responses. As Eklund says, the reason for this is that "you don't necessarily feel comfortable talking about what's happening in your state, or even in your city […] but you feel confident talking about your neighbourhood" (Eklund).

These features—the personal, the everyday, and the local—are key to understanding the success of *WWO*'s engagement with a large-scale environmental issue; they are also in stark contrast to the game mechanics of (say) *Fate of the World*. *WWO* was, according to Eklund, almost an experiment in "participatory governance […]

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[5] This and other quotations hereafter cited as (Eklund) are from an interview conducted with Ken Eklund by the author in February 2017.

starting with collaborative imagining of futures" (Eklund). *World Without Oil*'s open-ended invitation to play within the context of an energy crisis resulted in a rich engagement with the topic of environmental sustainability. *World Without Oil* locates agency in the imaginative acts of individuals, empowering them to devise stories about their own personal responses to environmental change, rather than offer the player a toolkit of top-down policy interventions in which individuals are, broadly, invisible.

Of Humans and Mountains

If *World Without Oil* empowers players by giving them agency, then a game like David OReilly's *Mountain* might initially appear to remove a player's agency altogether. In *Mountain*, many of the player's expectations of a game are confounded; it is a game that, in part, asks what constitutes a computer game. It begins with the generation of a 3D model of a mountain, floating—as if pulled up by its roots—in a bubble of cloud in space; in terms of interactivity, very little happens. Random koans of cod-philosophical musing appear in text in the sky; most players work out that they can generate these by hitting a certain key. Occasionally, objects—detritus of the modern world, or just amusing objects?—hurtle from space into the mountain and embed themselves in it. Day turns to night; the weather changes. But there is little that the player can *do*, and interaction with the mountain is absent. One could argue that this is hardly a computer game at all, and yet it was sold as one on Steam and reviewed as one on, for example, RockPaperShotgun (O'Connor).

Here, certainly, the natural environment is not simply a resource. But although it is a game that asks to be thought of philosophically, both the mountain and *Mountain* resist interpretation. The mountain may be thought of as invoking, or perhaps parodying, the tradition of the sublime; but most clearly, the unflinching mountain withdraws from us, unmoved by our interest or disinterest. We may read emotions or patterns into its zen-like statements, but we are aware that these are just our interpretations.

Bianchi observes that "rules and processes mediate player interactions in digital games, and the way players negotiate this mediation creates specific arguments about players and their relations to certain signifiers within the game"; at first glance, such a position would seem problematized by a game whose processes mediate "player interactions" almost out of existence. But actually, it is the way the player negotiates this mediated non-interaction that reveals their relationship with the Mountain. This is not an environment that can be manipulated, instead one co-exists with it. Discussing the game *Spore* Chang laments that it "could be said to recapitulate some of the sorrier assumptions of our current ecological frame of mind, in which humans reign supreme, followed by charismatic megafauna, with the rest of the animal, plant, and inorganic matter of the world forming a picturesque backdrop without recognizable agency"; but in *Mountain* it is arguably the *player* who lacks agency, bringing some ontological parity between player and mountain. The game announces at the beginning that YOU ARE MOUNTAIN. Ian Bogost, games theorist and object-oriented ontologist, argues that this

cannot refer to the idea that in the game we take on the existence of the mountain, in the role-playing scenario so common in computer games, because this simply isn't the experience of 'playing' *Mountain* (Bogost, "You are Mountain"). Rather, it must mean "You are *Mountain"*—the game is us, the game is in our watching the mountain, questioning the mountain and ourselves. While *Mountain* invites, therefore, an ontological reconsideration of the player's relationship with the non-human, I want to end by considering a perhaps more surprising example of how a mainstream game might engage with environmental concerns as increased processing power in game platforms allows both for more complex environmental representation and more expansive forms of play.

A walkthrough, or just a walk?

The resource-centric approach to the game-world's environment described above reaches, seemingly, its apotheosis in the sandbox-game *Minecraft* (alpha version released in 2009) by independent studio Mojang (acquired by Microsoft in 2014). *Minecraft* has no goals other than surviving attacks from skeletons, spiders and other creatures that appear mostly at night: many players do so by building a shelter or house. It is this building process that most players enjoy about the game. In *Minecraft*, the entire environment is composed of uniformly sized cuboid blocks—sand, wood, stone, coal and so on—all of which can be 'mined' by striking them with a fist, a pickaxe, or a spade and which can then be turned into items useful to the player (glass, planks, stone tools, torches). This takes the utilitarian approach to land to the extreme, where nothing in the environment is not a resource to be extracted. *Minecraft* makes no attempt in its aesthetic to realistically mimic a natural environment, choosing instead to construct its landscape entirely out of pixelated cubes of different colour and patterns, each representing a different material. In its entirely cuboid landscape, it pushes the organisation of land via an arbitrary grid into three dimensions.

But just as the game *Mountain* resists and subverts expectations about interactivity in computer games, so players even of schematic games such as *Minecraft* can find ways to resist and even critique the procedural rhetoric of the game and its ecological implications. For example, the procedural dominance of resource extraction in *Minecraft* is the subject of an elegant commentary by new-media artist Kent Sheely, whose *Minecraft*-mod project, *Resourcefull*, "replaces the textures of resources and constructed materials with the logos of corporations who consume and utilize those materials. Sheely describes the project as "an environmental statement […] about conserving natural resources. […I] wanted people to be aware of where the things they use every day actually come from, and that they need to be aware of their personal impact on the planet when making choices about the things they buy and use."[6] What Sheely's intervention serves to do is remind us not only of the ecologically problematic extraction of resources from the environment that *Minecraft* in some way replicates, but

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[6] This quotation, and those following, are from personal correspondence with Kent Sheely.

also of the fact that our own consumption of these resources is mediated via global corporations with dubious ethical and ecological records. Each block type is linked to one company and Sheely "tried to choose logos of corporations who use that particular resource for their products"; the most common blocks in *Minecraft* (dirt and stone) are linked to major petroleum companies, "so you end up seeing a lot more of the oil company logos as you walk around."
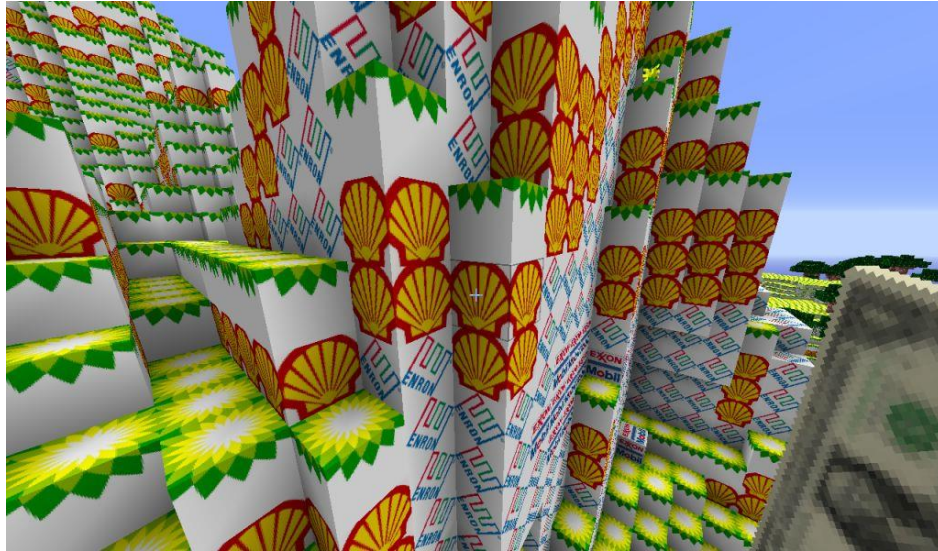

Image byKent Sheely. Reproduced by permission of the artist.

Unlike the early *Sims* games discussed above, no one could accuse *Minecraft* of restricting interactivity with the player's game-world environment; indeed, there is little else to do. But from an ecocritical perspective *Minecraft* is somewhat paradoxical. On the one hand, both its aesthetic and its procedural rhetoric can be said to fall foul of one of the "missteps in the realization of in-game environments" that Chang identifies: "predicating player success on extraction and use of natural resources" ('Games as Environmental Texts' 58). Similarly, although resources are not infinite, most are extraordinarily abundant and there is no pollution or other negative consequences of 'over-extraction'. However, as a sandbox game with no clearly defined goals, the game also allows for more environmentally engaged approaches, even if it does not require them. Rust et al. suggest that, "environmental ethics are thus not part of the design [of *Minecraft*] but are instead player motivated and severely limited in the game world" (200). Limited, true; but present nonetheless. For other engagements with the *Minecraft* game-world environment are certainly possible. Players have, for example, set vegetarian and vegan challenges in *Minecraft*, encouraging players to play without killing animals for food ("Minecraft: Pixel's Vegetarian Challenge").

But it is the expansive game-landscape of *Minecraft* that provokes the clearest environmental responses in players. As a procedurally generated world, any *Minecraft* world is practically infinite. However, one player set out in 2011 to walk to the edge of the world, called the 'Far Lands' by the game's designer Marcus Persson. Youtube user kurtjmac starting walking west and recorded his progress in regular videos, with

voiceover commentary. Beginning with just 20 subscribers in 2011, *Far Lands or Bust* (FLoB) reached 375,000 subscribers in early 2017; and kurtjmac is still walking. There are now over 600 episodes between 15 and 90 minutes long. Early episodes follow a standard pedagogic form of teaching new players the basics of the game, but as the expedition to the Far Lands quickly comes to dominate the series, kurtjmac discusses features of the landscape ("that's a weird structure, a huge spire"), and begins to also talk about himself ("a little confession", "a personal aside"). Consequently, the series gradually shifts genre to resemble a travel documentary, and conforms more to the tradition of Thoreau ("you must walk like a camel, which is said to be the only beast which ruminates when walking") (Thoreau 228) than a 'Let's Play' Youtube video. Just like many other long-distance walkers, kurtjmac now does so for charity, and has raised $335,000 for the Child's Play charity ('Minecraft Far Lands or Bust'). To put it another way, what starts out as a walk-through, becomes a walk.

Clues to a Thoreauvian attitude towards the game-environment are already apparent in the first episode, in which kurtjmac explains that he prefers single-player games, because multi-player servers tend to already be built up with cities, and "I kinda like starting in a fresh wilderness, and just trying to survive on my own" (FLoB episode 1). The log-cabin which he builds in the first few episodes, and the frontier spirit of heading West, place this firmly into Nye's American foundation narrative; but the engagement with *Minecraft*'s natural environment goes far beyond resource extraction in FLoB. As kurtjmac remarked in a profile in the *New Yorker*, the game continually "re-grabs my attention with a perilous cliff, a zombie attack, or a memorable landscape, and I remember the journey I'm on" (Parkin).

The landscape, and the non-human actors within it, become crucial elements in this narrative. Early on, kurtjmac tames a wolf, who becomes a constant companion, and key character, getting lost and found along the way. In a prescient comment as early as Episode 15, kurtjmac discusses a memory of playing *TombRaider*: 'a wolf jumped out [...] and I remember [...] this is the moment when I realised that video games were, like, pretty legitimate [...] I screamed, and dropped the controller [...] it was the first time a video game had gotten that kind of reaction out of me' ('FLoB').

A similar earlier project, Brendan Keogh's *Towards Dawn* (2010-2012) records another nomadic life in *Minecraft*, this time heading East. Recorded on a blog, *Towards Dawn*, even more explicitly than FLoB, takes the form of a travel narrative. Written in the first person, and in the present tense, the narrative makes no reference to the virtual nature of its environment, and is illustrated with images (screenshots) which are referred to as 'photos' or 'pictures'. The narrative is subtitled "Leaving the miner's life behind", and it contains repeated references both to a previous mining life and to the difficulty in leaving it: "I won't go too deep, I promise myself, but I need some resources"; "I'm tempted to push deeper. [...] No. I have to leave it"; "Perhaps I was finally learning to let go of the underground. I didn't need diamond or gold, not where I was going." The narrative is dominated by description of the landscape—"the beauty of this mountain"; "the majestic mountain"; "The canyon was just as breathtaking as the previous dusk"—and the narrator's appreciation of the environment: "gazing at the

stars"; "I found observing them [some pigs] enjoyable for a time. I couldn't say why. They just seemed very relaxed and content under their tree."; "I sat and just took in the view for a while".

There is an unmistakable ecocritical attitude displayed in *Towards Dawn*, in its recognition of the capacity of *Minecraft*'s landscape to provoke reflection on the environment-as-environment. Discussing a similar example—a mock 'nature documentary' using underwater footage from *Grand Theft Auto V*—P. Saxton Brown observes that "natural environments in games are not always beholden to the goal-directed behavior of the user, and can lead to the user's more complex considerations of ecosystems and the non-human" (384). In a moment of narrative *mise en abyme*, *Towards Dawn* ends with the only extra-diagetic comment by the player-narrator: "I looked back west and thought about all the crazy experiences I had had. I'm not just saying this, mind you. I am not talking about some fictional nomad. I had these thoughts while I was sitting behind my computer, moving my mouse to follow the path of the sun. It was one of the strangest, gut-wrenching, bittersweet moments I have ever experienced in a videogame, to know this adventure was coming to an end." This shift draws the experiences of the game-world out into the environment of the non-game world, collapsing the gap between real experience and virtual environment.

Conclusion

Computer games offer the opportunity to enable and facilitate interactions with (virtual) environments that provoke non-trivial ecological consideration and critique. But too many games re-inscribe ideological and cultural norms that are ecologically regressive. This may be through representations of natural environments that are mere backdrops to the more substantial elements of anthropocentric action; or, through procedural mechanics that cast the environment as the location of resources to be utilised by the human player.

Other games take environmental issues as their explicit focus. Although games like *Fate of the World* may raise the profile of problems such as climate change with players who might not engage with them otherwise, here too uninterrogated assumptions and norms may have unintended consequences. I have argued in this essay that games which offer the player a toolkit of top-down policy interventions as solutions to problems like climate change, and in which individuals are, broadly, invisible may in fact be disempowering, underplaying the potential for change on the level of individual behaviour. Furthermore, there is a concern that, in their implicit belief in global technocratic and interventionist approaches to the problem of climate change, 'god games' draw on a philosophical tradition that asserts man's control over nature, and so are aligned with potentially dangerous geo-engineering interventions.

However, despite these criticisms, there are clear examples of game-environments, game-mechanics, and game-play that address each of these limitations. Participatory alternate-reality games like *World Without Oil* create plural and dynamic engagements with complex large-scale environmental issues on local and personal

levels. It offers an alternative to the technocratic approach, empowering individuals and their imaginative responses to environmental problems. In contrast to the open-ended invitation for player responses to *WWO*, games like *Minecraft* are relatively constrained, at least in the sense that player actions are limited. However, while the procedural mechanics of the game might be limiting, the in-game world is large enough to allow for new modes of engaging with the game-worlds' landscape and ecology. Via examples of 'expansive play,' *Minecraft* can shift from being a game whose narrative is powered by resource extraction and utilisation, to one that is a critique of this, or one that allows other environmental interactions to become possible. These alternative strategies are achieved through a reinterpretation by the player of the procedural rhetoric of the game, resisting elements of its apparent procedurality. Here, game-playing strategies show the capacity that games have for ecological critique and engagement: players renegotiate their relationship with the game-environment.

What the ecocritical readings presented here reveal are interlinked developments of wider relevance to environmental games. On the one hand, increases in the processing power of game platforms, allowing improvements in games' graphics and the possibility of rendering game worlds of massive size and interactivity, have played an important part in enabling games to encourage or allow players to engage with them ecocritically. Sandbox games like *Minecraft* or the *GTA* series may not invite narratives or player actions that include environmental engagement, but their expansive game worlds offer players the opportunity to create their own critiques or commentaries outside the expected 'standard' or mainstream player interactions with the game environment. On the other hand, we might note, in parallel, the increasing confidence and maturity of computer games as a cultural form—from both designers and players—in addressing 'serious' subjects in game play, including ecological issues. Ecocritical scholarship in Games Studies is important in developing this.

The ecological engagements examined here come either from relatively niche games—such as *World Without Oil*, *Fate of the World*, or *Mountain*—or from unusual modes of game play in mainstream games titles such as *Minecraft*. Examples of games encompassing ecological thinking are still relatively unusual, and forms of ecological 'expansive play' are exceptions, rather than the norm. However, given the trends noted above, it is reasonable to expect both to become more common in the coming years, and to hope for ecological engagement to become increasingly embedded in game design and play.

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Ecocritical Engagement in a Pixelated World

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Abstract

How does one talk about materiality or embodiment when the "body" and the "environment" in question are forever separated by a screen? Through close readings of *Proteus* (Twisted Tree, 2013) and *Islands: Non-Places* (Ice Water Games, 2016), this essay argues that certain video games articulate empathetic relationships between player and world, because of—rather than despite—the video game's position as a virtual realm. Because these two games limit player interaction and manipulate experiences of time, *Proteus* and *Islands: Non-Places* force the player to critically inhabit her position in the world and to question her expectations of dominance and control as typically experienced in video games. Applications of material ecocriticism drive the readings of these video games. Specifically, by considering theories of time—both Anna Tsing's pace of walking and Rob Nixon's slow time of environmental disaster—together with Jane Bennett's concept of vibrant matter and Serenella Iovino and Serpil Oppermann's definition of material ecocriticism, this essay argues that the worlds of *Proteus* and *Islands: Non-Places* demand an environmental attention from the player. These two games reject the human desire to touch, cultivate, and master the environment, offering, instead, a digital assemblage that includes the corporeal player and the virtual world. *Proteus* and *Islands: Non-Places,* human-made constructions designed for human consumption, drive an investment in the vibrancy of the world—both within the game and without.

Keywords: Video games, material ecocriticism, interactivity, attention.

Resumen

¿Cómo se puede hablar de la materialidad o la personificación cuando el "cuerpo" y el "ambiente" de los cuales hablamos están siempre separados por una pantalla? Mediante un análisis cuidadoso de *Proteus* (Twisted Tree, 2013) y *Islands: Non-Places* (Ice Water Games, 2016), este trabajo argumenta que algunos videojuegos fomentan la relación empática entre el jugador y el mundo a causa de—y no a pesar de—la existencia del videojuego como un mundo virtual. Como estos dos juegos limitan la interacción del jugador y manipulan la experiencia del tiempo, *Proteus* y *Islands: Non-Places* obligan al jugador a reflexionar sobre la posición que ocupa en el mundo y a cuestionar las expectativas de dominio y control que típicamente se hacen realidad en los videojuegos. El uso de la ecocrítica material impulsa el análisis de estos videojuegos. Concretamente, al considerar algunas teorías del tiempo—como la idea del "paso de la caminata" de Anna Tsing y la noción de la "violencia lenta" de Rob Nixon—junto al concepto de la materia vibrante de Jane Bennett y la definición de la ecocrítica material propuesta por Serenella Iovino y Serpil Oppermann, este trabajo sostiene que los mundos de *Proteus* y *Islands: Non-Places* exigen que el jugador considere el medio ambiente. Estos dos juegos rechazan el deseo humano de tocar, cultivar y dominar el ambiente; más bien ofrecen un montaje que incluye al jugador físico y el mundo virtual. *Proteus* y *Islands: Non-Places,* que son construcciones hechas por el ser humano para ser vividas por el ser humano, impulsan una apuesta por la vitalidad del mundo—tanto dentro como fuera del juego.

Keywords: Videojuegos, ecocrítica material, interactividad, atención.

Your eyes open and you find yourself in the middle of a pixelated ocean. An island drifts in front of you, barely visible through the haze; a jagged-edged sun blazes in the sky above. You glide across the water by pointing and clicking your mouse until you reach land. The island is beautiful, uninhabited, and serene. You explore. The sound of the place grips you first: each object has its own tone and the score of the island changes as you wander. The trees in pink bloom, the yellow wildflowers—everything sings and together the cacophony is exuberant and joyful. This is *Proteus,* a first-person video game by Ed Key, a world created by humans for humans, accessed via a computer screen. The world is beautiful and seductive, but does it act on its players in the same way that a physical island might? How does one talk about materiality and embodiment when the "body" and the "environment" are forever separated by a screen? Building off of Alenda Chang's argument that "games are opportunities to create entirely new sets of relations outside of those based on dominance or manipulation," (60) this essay asks what happens when we include digital landscapes into the assemblages of material ecocritical theory. As ecocriticism continues to push the boundaries of what can be considered to have agency, I argue that certain video games offer unique vantage points from which environmental theory can assess and critique the position of the human within nonhuman ecologies. Specifically, *Proteus* (Twisted Root, 2013) and *Islands: Non-Places* (Carl Burton, 2016) manipulate expectations of interactivity and experiences of time within their nonhuman worlds in order to disrupt Enlightenment-era hierarchies of domination and control. These games engage in ecocritical questions that engender specific attention and care toward the environment that, one hopes, continues off-screen. This attention—influenced by Anna Tsing's "noticing"—ensnares player and game into an assemblage which disrupts the human-centric views of the earth as inert.

Proteus and *Islands: Non-Places* both allude to universes that are larger than the individual playing the game. *Proteus*, for example, provides a gorgeous world in which the player cannot touch or destroy her surroundings and thereby forces the player to engage with the environment only through walking and exploration. *Islands: Non-Places*, on the other hand, drops the player into ten surreal vignettes in which the player must click on specific objects in order to complete the whimsical scenes in which nature and human-constructed "non-places"—escalators, parking lots, bus stops, and so forth— come together. Both games are atmospheric and environmental rather than goal-oriented, and the games ask their players to witness rather than to win, to dwell within the world rather than to conquer it. Because these games create virtual spaces which are invested in the material of the natural world, I ask what happens when we consider them as material, too. Material ecocriticism, because of its investment in non-anthropocentric anthropomorphism and its insistence on querying the very same binaries that would separate video games and "nature," offers a helpful venue for addressing the seeming contradiction of analyzing a virtual space through a theoretical lens invested in embodiment.

Material ecocriticism has pushed for the destruction of boundaries between nature and culture, in favor of Donna Haraway's term, 'natureculture', the idea that our concepts of nature and culture are forever intertwined and inseparable. Haraway's idea

is expanded to argue that human and nonhuman material forms produce webs of relationships and "configurations of meanings and discourses that we can interpret as stories" (Iovino and Oppermann 7). By considering the stories that spring up within the space of connection between the human and nonhuman, material ecocriticism makes the argument that the nonhuman and the human are intimately intertwined, not separate. Timothy Morton similarly cites the historical distinction between human and nature as a damaging one, arguing that "environmentalism worries that we are disconnected from the world. But what if one of the problems were *this idea itself*?" (108). For humans are part and parcel of the nonhuman world, and vice versa.

How, though, do we think about a world from which our bodies are literally, permanently separate? Taking the environments within video games on face value—that is, considering them as nonhuman worlds—how might material ecocriticism understand the relationship between a player's body and a virtual environment? By mapping such an understanding of matter onto these games, this essay argues that elements of the video game medium, specifically those which emphasize exploration and disallow combat, offer ethical attunements to the nonhuman world.

This essay reads these games neither as symptomatic of capitalism nor as backdrops for narrative experience. Rather, it argues that *Proteus* and *Islands: Non-Places* are material environments which fully deserve ecocritical engagement in their own right. This post-critical approach is not to deny the fact that digital spaces, screens, and the Internet should be and have been scrutinized and critiqued[1]—they are, after all, products that rely on the environmental and human tragedies of enormous corporations and globalization. However, by considering these video games as environments—with unique rules and ecologies that include but supersede the human—this essay expands the scope of material ecocriticism to include digital worlds not as signposts of capitalism but as human-made (but ultimately nonhuman) assemblages. Borrowing from Jane Bennett's conceptions of vibrant matter, as well as jumping off from theorists who have made claims for digital media's materiality, this essay argues that these games are more than matter; they are material sites of agency.[2]

Interaction

Instead of objectives, the player of *Proteus* encounters a world to explore. The game begins in the ocean: you bob on the water and hear oceanic gusts of wind and the lapping of waves. In the distance you see a hazy island and through experimenting with controls—no tutorial or instructions greet you—you click the mouse or hit "W" to move

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[1] The "post-critical" comes from Rita Felski's *Limits of Critique* in which she argues: "Rather than looking behind the text—for its hidden causes, determining conditions, and noxious motives—we might place ourselves in front of the text, reflecting on what it unfurls, calls forth, makes possible. This is not idealism, aestheticism, or magical thinking but a recognition—long overdue—of the text's status as a coactor: as something that makes a difference, that helps makes things happen" (12).

[2] See Thomas Apperley and Darshana Jayemane (2012), and Richard Maxwell and Toby Miller (2012) for more on the materiality of digital media.

toward land. Once you hit the beach, you teach yourself to walk. And though all you can do is walk—there are no mechanisms for grabbing, jumping, or running—the world is engrossing and captivating enough that it doesn't matter. There are mountains to climb, animals to follow, weird rock formations to ponder. The only other action you can perform is to sit, here completed by pressing the space bar, a key used in many computer games to jump. As you explore, and through no action of your own, the gorgeous spring day wanes; the sky becomes a vibrant pink, then purple. The sun turns beet red and hangs low on the horizon as the moon rises, white and luminous. During the day you are left to explore as you will, but at night the world guides you to a specific area. This guidance takes the form of white lights which dance close to the ground and lead you to a circle of oval rocks. As you approach the stones, the dots of light swirl around the periphery of the circle; stand within the rocks' circumference and the lights accelerate. The lights constrict you and paralyze you and then the world explodes. The sun springs into the sky only to fall into the horizon again; the moon follows quickly after. Clouds pool like water in the sky and it gets dark and it rains and then the sun comes up for a second and the clouds are pink. The trees change rapidly from green to pink to orange to white; snow falls and melts immediately. The music is rapid and chaotic as you stand in the middle of a year's worth of seasons in a few seconds. Your screen whites out briefly and you wait, unable to move, in the stillness and silence. Then, it's summer. The trees are more colorful, there are more animals for you to follow, and the music is more animated. You begin your day again, and again the sun sets slowly as you explore. At night the lights come out to guide you to the rock circle where again you help the world transition. The game compresses the passage of the seasons into a few seconds, and a lifetime into less than an hour.

This cycle repeats three times total; you witness spring, summer, and autumn this way, by meandering through the day and following the white lights at night. Winter is different: it ends not with a light circle that transports you to the next season, but rather with a liftoff. At night, you begin to float. Something like the aurora borealis blooms in the sky; blue and white lights consume the horizon as your feet leave the ground. Through no control of your own, you glide way up above the island, as if carried there. The music swells; it's beautiful and moving, somehow uplifting and sad all at once. You hover in the sky and slowly close your eyes—the screen mimics the blinking of an eye— and the game is over. The island guides the player to an ending which forces the player up and out of the world; by exploring the game the player sets the stage for her own rejection. By the end of the game, the island and player enter into an uneasy symbiotic relationship: the island is open for the player's exploration, but it also exists beyond the player. By not walking toward the lights, by ignoring the path the island sets out for its visitor, however, the player forces the island and the human into a limbo. The player and the island need one another for anything to happen.

Proteus is unusual in its limited interactivity and lack of puzzles, but those familiar with computer games will recognize the style and setting of this game as reminiscent of another, much more popular game: *Minecraft.* Similarly to *Proteus, Minecraft* (Mojang, 2011) exposes the player to a pixelated, obviously digital world.

However, in *Minecraft,* the player can mine the matter of the world. Rocks, trees, and animals are all raw material that can be harnessed and then crafted; the player transforms the raw material into tools, structures, or nutrients. Unlike *Proteus,* the world of *Minecraft* exists for player cultivation, one that is not only allowed by the game but demanded: at night, zombies scramble from caves to hunt you down. In order to live through the night, you have to chop down trees and construct a house using the plants and minerals of the world. Despite some interpretations of *Minecraft* which hail it as depicting an "agential nature" because the objects of the world can be transformed into symbols and therefore demonstrate a capacity for language, the game still reinforces an Enlightenment-era model of the world.[3] The world is an agent to work against and, because of its hostility, it deserves to be cultivated and mastered. *Minecraft* necessitates a controlling attitude toward its physical spaces and transforms the landscape into raw material.

Proteus, by contrast, allows for none of that violence or exploitation. Rather than existing for the cultivation of the human avatar, the world of *Proteus* exists beyond the influence of the player. The player's avatar cannot grab, chop down, hunt, shoot, or in any other way damage or interact with the landscape. Because interaction is such an expected and joyful component of video games, its absence may evoke a number of emotions: frustration, confusion, or surprise. Regardless of the affective response of the player, the lack of interaction is, at the very least, noticeable. By disallowing the controlling mechanisms expected in a video game, the world of *Proteus* forces the player to reconsider the ways in which she interacts with space. It encourages its players to scrutinize their relationship to the world and interrogate their own desires to control, harm, or otherwise interact with an environment.

It is not new to suggest that video games affect their players. Ian Bogost, for example, argues that the "magic circle" of video games—the sanctioned, other-world experience of gaming—comes with a gap, through which "players carry subjectivity in and out of the game space" (135), suggesting that a video game lingers in the consciousness of a player long after the screen goes black. Similarly, scholars such as Miguel Sicart argue that video games provide real-world ethical experiences for their players. Sicart claims that "the experience of a computer game is the experience of a moral object by an ethical subject" (5), a claim that this article uses to argue that argument that video game ethics exist beyond what's created on the computer screen. However, where Sicart considers a game an inert object, I insist on its position as an agent within an assemblage. Nick Dyer-Witheford and Greig de Peuter also argue that playing a game on a console means "plug[ging] oneself into a network of techno-human relations, which even as it offers cognitive skills and affective thrills also inserts subjects into a commodity web" (93). Consideration of the materiality of video games consistently (and intuitively) places video games, that is, within the metric of human systems—video games are analyzed for their relationships to real-world violence, or for their complicity in military cultures. As Dyer-Witheford and de Peuter suggest, "Game

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[3] For more on the "agential nature" of *Minecraft*, see Kyle Bohunicky's "Ecocomposition: Writing Ecologies in Digital Games."

consoles … are not just hardware but techno-social assemblages that configure *machinic subjectivities*" (xxxi). I argue that these machinic subjectivities must be read as nonhuman entities which are part of the "mesh" of naturecultures as Iovino and Oppermann would argue, not just the techno-social.

The worlds that these games create ensnare players in ecologies because of their digital nature, not in spite of it. *Proteus* and *Islands: Non-Places* are not examples of virtual reality nor are they mimicries of what they represent; rather, they imagine artistic, mediated worlds and invite the player to experience them, in a fashion similar to the worlds created by literature or film.[4] That said, the video game genre offers a level of interactivity that is not afforded in books or movies because the player controls the pace of the action and, depending on her choices, how much content she is exposed to. Games have been called "structured interactions" (Deen), and studies such as "Effectance and Control as Determinants of Video Game Enjoyment," for example, argue that interaction is pleasurable because it affords players the ability to control and influence a situation (Klimmt et al). To interact with the world and to be able to have a hand in how a story unfolds is at the heart of what makes video games a distinct medium.[5] Katie Salen and Eric Zimmerman, for example, define a video game as explicitly interactive: "participation with designed choices and procedures" (60). The ability to have a part in the outcome is one of the major defining characteristics of a video game.

Proteus and *Islands: Non-Places*, however, subvert the expectation of the video game genre by limiting their interactive elements and rejecting a clear-cut objective. These are games which thrive on exploration, not combat. There are neither contests to win nor puzzles to solve, no guns to shoot or princesses to save. By limiting the interactive options available to the player and subverting winning objectives, *Proteus* and *Islands: Non-Places* underline their environmental commitments. They highlight the fact that these worlds exist beyond the scope of the player and force her to critically inhabit a world in which human and nonhuman exist in an assemblage and not in Enlightenment-inspired power structures. The world doesn't bend to the whims of the player, because the player isn't given the means of control that she expects. Instead, the player and the world act on one another; each must acknowledge the agency of the other in order to move forward through the game.

Islands: Non-Places relies on the constant clicking of a stationary player. The player of *Islands: Non-Places* watches a scene unfold before her and she clicks on different objects in it—a lamp, for example, or the fronds of a palm tree—in order to

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[4] For more on mediation and digital media, see Finn Arne Jørgensen, who argues that "new media technologies enable particular relationships between people and the world, and this act of mediation is by no means neutral. … In that sense, mediation is an important way we are in the world. Mediation is how we interface with the world, with all that it implies, including the fact that we have always been mediated" (110). An additional source is Jesse Oak Taylor who argues that "ecocriticism's greatest contribution has arguably been strengthening the *metonymic* connection between the world, the text, and the critic [...] rather than the *mimetic* one with which it is often associated" (2). Both of these sources illustrate the robust thinking that exists on the topic of mediation, ecocriticism, and media.

[5] For more on interactivity as the defining characteristic of video games, see Espen J. Aarseth's *Cybertext: Perspectives on Ergodic Literature* in which Aarseth defines video games as "textual machines" which rely on the input of the player.

view more of the scene. Each vignette offers a vision of the world if animal and plant agencies, rather than human ones, were in charge. In the first scene, for example, a dimly-lit bus stop sits in the midst of dense, blue fog. The side of the stop glows blue and after a few still seconds begins to pulse. Clicking the light triggers the next event in the tableau: a bus pulls up full of swaying bird cages and with it a crescendo of bird songs swells. The doors open and about a dozen person-sized eggs float out and assemble at the bus stop. A hole opens in the ground and the bus descends onto a previously unseen underground road and drives away. The chirping stops. The eggs float in the silence of the bus stop, the side of which, after a few moments, begins to beep and pulse. The blue light turns red when clicked and the screen fades to black, transporting the player to a loading screen.

Unlike in *Proteus,* in this world the player doesn't inhabit a first-person perspective which can explore. In fact, the player can't move at all. In order to see more of the game, she can instead spin the entire scene by clicking in the tableau and moving the mouse. That the player has the control to twirl the world implies at first glance that the world itself is something consumable; that it is small and that the human has control over it. However, by forcing her into a static position and refusing to further the action without the player's active engagement through clicking on objects, *Islands: Non-Places* forces her to question what the world of a video game is supposed to offer. By inhabiting the role of a spectator in an interactive medium, the player of *Islands: Non-Places* must reconsider her expectations of what can happen in the world. The controls in both *Proteus* and *Islands: Non-Places* subvert the desire for a habitual, naturalized interactivity between the player and the environment by making strange the degree to which she may interact with that world.

Both *Proteus* and *Islands: Non-Places* prime their players to question their expectations through the interactive mechanics that challenge their exposure to the world. That they are able to inhabit or interact with the worlds in this way points to the unique position of video games in creating environmentally-oriented exposures to the world. In addition to the restrictions on the interactivity, however, both *Islands: Non-Places* and *Proteus* create worlds that include specifically environmental content. By placing the players on an island, surrounded by lush greenery, or in a mall waiting room that becomes a habitat for fish rather than for people, these games insist on the importance of the nonhuman world. More than show that world to their players, through the interactivity of the game and, as we will shortly see, through the timing of the games, they also invite their players to empathetically inhabit the nonhuman realm.

Ecological Time and Video Game Time

Without the capacity to capture or dominate the world, players of *Proteus* and *Islands: Non-Places* must explore. While the players of *Islands: Non-Places* explore through clicking and spinning each scene, those of *Proteus* walk. Walking is such an integral part of the experience of *Proteus* that it may come as no surprise that the game has been deemed—much to the chagrin of the game's designer Ed Key—a walking

simulator. The term itself is fraught.[6] It began as a pejorative tag on purchasing and playing platforms as a way to designate nonviolent games in which "nothing happens." From these beginnings, however, the term has seen moves to reclaim it as players and developers embrace nonviolent games. Walking simulators or, as Key would prefer, "wander games," eschew puzzles or combat in favor of exploration and discovery (O'Connor).

Walking, Anna Tsing argues, is "the speed of bodily pleasure and contemplating; it is also just the speed to look for mushrooms" (141). While the players of *Proteus* and *Islands: Non-Places* are not on the hunt for mushrooms, the sentiment remains: to walk is to be observant and to explore is pleasurable. For Tsing, the two most important delights of mushroom-hunting are "first, the undeserved bounty of the gift; and second, the offer of a *place* that will guide my future walks. These mushrooms … jump into my hands with all the pleasure of the unasked for and the unexpected. For a moment … I am alight with the sweetness of life itself" (142). Excitement, delight, pleasure. The gift of discovery. In a walking simulator, the gift is the world. Tsing uses searching for mushrooms as a metaphor for environmental awareness and argues that the pace of walking engenders an attention to the world. For Tsing the "art of noticing" is a political act that makes visible small, over-looked ecologies which in turn shed light on global, political systems, or else are visible for their own sake (255).

The slowness of this exploratory pace makes *Proteus*, which takes only around 20 minutes to play from start to finish, feel longer than it is. The pleasure of discovery takes precedence over the pleasure of winning; the game asks us to slow down and to contemplate. In so doing, it subverts expectations—generated through digital culture and more mainstream video games—of speed and teaches players to notice or, as Tsing would say, to "listen politically"; a type of attention that opens one up to detecting "potential allies" (254). This listening is born through a deliberate slowness and attention which delights in the unexpected and remains open to surprise. *Proteus* has no save function. Once you begin, you either play until the end or you quit and start over. This is crucial to the environmentality of the game: the world allows the player to dwell within the game, but it doesn't exist on your time frame. Finishing the game requires committing the time to do so; there's no way to rush this game, to skip ahead, or to save and come back. Slowness, attention, and a commitment to dwelling in the world contribute to environmental engagement, Timothy Morton argues, allowing us to love a thing "*as* thing, not as a person in disguise" (196). By insisting that we notice and respect the agencies outside the sphere of human systems, material ecocritics reorient human relationships to the world.

However, the player of *Proteus* isn't walking—not literally or corporeally. The game creates the feeling of a walk, and promotes attention that Tsing argues happens only at the walking pace, while still remaining separate from the embodied action of physical movement. These tensions remain important to the considerations of what environmentally conscious video games can do, and the ways in which ecocriticism can

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[6] See "Is it Time to Stop Using the Term 'Walking Simulator'" (Kill Screen) and "Self-Interviewing Devs: Proteus and 'Walking Simulators'" (Rock Paper Shotgun).

scrutinize them. It is precisely because the game is a simulator that the limited interaction is so effective: by minimizing the choices of the player within the constructed environment, *Proteus* creates an attention that isn't available outside of the confines of the video game. The limited, controlled, but beautiful world of *Proteus* heuristically demonstrates an environmental attunement to the player's surroundings.

Walking isn't the only speed of *Proteus.* At night, when the player progresses the game from one season to the next, the animation that follows is anything but meandering. Day and night flicker back and forth and the seasons change before you, suggesting that it's not months that pass, but years. You witness the life cycle of the island in a few seconds. This new speed is extremely fast, a quickness that animates a time scale not generally accessible to humans. The environmentality of *Proteus*'s timing reflects the ongoing tension between the felt experience of slowness and capturing the passage of time on a larger-than-human scale.

Rob Nixon argues that our present time is categorized by an "attosecond pace" which "with its restless technologies of infinite promise and infinite disappointment, prompts us to keep flicking and clicking distractedly in an insatiable—and often insensate—quest for quicker sensation" (8). *Proteus,* on first glance, seems guilty of this attosecond speed: the flickering, seconds-long transitions between seasons distills months into the blink of an eye, and the game itself shortens a year into the length of a television show. However, the quickness of the year coupled with the slowness of the individual days redefines speeds in order to, as Nixon argues, "render slow violence visible" (13). Nixon argues that the goal of environmental representation is to "recast 'glacial' … as a rousing, iconic image of unacceptably fast loss" (13) which in turn promotes urgency for action. By elongating the days and condensing the years, *Proteus* counterintuitively renders the glacial pace of seasons—a passing nearly imperceptible on a human scale—as instantaneous. The passage of time becomes a "fast loss," as the player can neither go back to a season once it's passed nor can she slow down the transitions between seasons. The game toes the line between two time scales—the human pace of walking and the nonhuman pace of seasonal change. The manipulation of time decenters the human player from the universe of the game and alludes to elements of the world that the human will never experience. In so doing, the game suggests to the player that if the world was designed, it wasn't designed to cater to her.

While *Islands: Non-Places* is not a walking simulator, the meandering pace of the game contributes to similar tensions between the time scale of the human and the pace of the nonhuman world. Each vignette flows between moments in which the player has no control and moments which are looped until the player decides to progress. This push and pull between the player and the world of the game, the reliance each has on the other, further emphasizes the relationship between human and nonhuman understandings of pacing.

Time in our contemporary moment is compressed. Our inability to experience time on the geological scale has been, according to Nixon, one of the major barriers to mobilizing mass responses to global warming. By deliberately manipulating the player's expectations of time, *Proteus* and *Islands: Non-Places* allow players not only to visualize

but to *feel* nonhuman time. These games implicate the player's body in the different experiences of time and in so doing ask players to witness rather than conquer. The experience is more jarring and potentially more environmentally meaningful for the subversion of instant gratification that one expects from video games. It is in these digital worlds, however, that representations of environmental time may be felt as well as seen.

Digital Assemblages

By playing with interactivity and with timing, *Proteus* and *Islands: Non-Places* bring their players into a messy web, akin to the ecologies within which material ecocritics insist we find our corporeal bodies enmeshed. In *Proteus,* for example, while the game limits the player's ability to touch or grab, the world still reacts to the presence of the player's avatar. Animals scurry away from you, bees swarm you, and the island guides you to specific areas in order to advance to the next season. The landscape manipulates the player, invites you into the world and then coerces you into bringing about your own expulsion from the island. The world and player act on one another, creating, as Jane Bennett would argue, an assemblage or "ad hoc groupings of diverse elements, of vibrant materials of all sorts" (24). *Proteus* needs a human player to bring about the island's progression through time, but ultimately the island, by sending the human away after the end of the full year, asserts its own agency.

Bennett's assemblages, composed of vibrant matter, are ways in which the human subject is deposed from the position of power over the world. She sees our bodies as part of a vibrant, messy ecology, embroiled in the assemblage of the materiality of the world. This messiness elevates all matter, she argues, rather than relegating our bodies to the realm of "mere objects," because it positions our bodies and the rest of the world into a category of "shared materiality" (13). Considering our bodies as meshed with the rest of the world's vibrant matter reorients our attentions to consider nonhumans as potent agents and to remember that humans are composed of nonhuman material. "The hope," Bennett continues, "is that the story will enhance receptivity to the impersonal life that surrounds and infuses us, will generate a more subtle awareness of the complicated web of dissonant connections between bodies, and will enable wiser interventions into that ecology" (4). *Proteus* provides a roadmap for the first two of these hopes, and gestures toward the third by creating a story through the world of the game.

Proteus brings the player into a "dimension crisscrossed by vibrant forces that hybridize human and nonhuman matters" (Iovino and Oppermann 5), a material ecocritical dimension promoted by making the human player both central to and forever rejected by the unfolding of the game. It seduces the player into changing the seasons on its behalf. It guides the player through her own life cycle, and every season that passes brings the player's avatar closer to expulsion. By forcing players to dwell in the world without being able to control or change it, *Proteus* ensnares its player in an ecology "in which many species sometimes live together without either harmony or conquest"

(Tsing 5). And in *Proteus,* there is neither harmony nor conquest. There is nothing to win, no objectives to complete, no conquest to be had. By the same token, the player is ejected from the island once she has done what the island required of her to do, reasserting the agency of the world over the desires of the player. By combining interactive mechanisms with the experiential nature of nonhuman time and the different paces of the game, *Proteus* gestures toward ways of being in the world that expand its environmental concerns to those both within the game and outside it. As Bennett argues, including a "touch of anthropomorphism" can be necessary when trying to open up ecological understandings, as it reveals the ways in which the nonhuman world is composed of agencies that demand respect and attention on their own terms (99). Iovino and Oppermann, too, find value in narrative, arguing that it reveals the connections between humans and nonhumans. "Anthropomorphism," they claim, "can even act against dualistic ontologies and be a 'dis-anthropocentric' stratagem meant to reveal the similarities and symmetries existing between humans and nonhumans" (8). Through the anthropomorphic move of analyzing a digital island as an agential force that can act on a human, this argument hopes to contribute to the material ecocritical investment in making nonhuman agencies viscerally understandable to humans.

While *Islands: Non-Places* deviates from *Proteus* in a number of ways, its overall effect is the same: making the player aware of her position within the larger, nonhuman web of connections. Most important to this relationship, however, is *Islands: Non-Places*'s use of place. The scenes in the game occur in titular "non-places," which conform to Marc Augé's definition as "spaces formed in relation to certain ends (transport, transit, commerce, leisure)" (94)—the game includes a fountain in a mall, a baggage claim, an office waiting room. However, *Islands: Non-Places* subverts one of Augé's main claims concerning spaces as reliant on the nature of their inhabitants. Augé argues that a non-place includes the "contractual relations" between an individual and the space—through signage, for example, or other expected behavior. *Islands: Non-Places*, however, populates its spaces with nonhuman entities. A fountain in a mall, for example, isn't filled with people who experience the room as a moment of non-identity, but rather is revealed to have long roots that snake several stories into the ground. An escalator is filled not with queueing people but with floating, potted palm trees which are watered between floors. Furthermore, while *Islands: Non-Places* is populated by places, it doesn't have video game *space*, as Michael Nitsche defines it. That is, *Islands: Non-Places* is not "navigable" and the ability for a player to explore and interact with the world is limited (Nitsche 3). In nearly every scene, some action of the vignette occurs outside of the player's view. A waiting room, for example, is flooded with water. The player's task is to click on the chairs and lamps to raise them above the water levels and in so doing to end up moving the scene out of their field of vision. These moments in which the action moves just out of view references an entire world that is untethered to the player's perspective. By referencing this unseen, inaccessible world, *Islands: Non-Places* cultivates the same type of attention born in *Proteus*. Because the experience of the game consists solely of non-human interactions—clicking a lightbulb to make a fountain move rather than an action that would mimic a hand turning it on, for

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Vol 8, No 2

example—and the scenes are so devoid of people, the world becomes an exploration of what's possible when the humans are gone.

Because *Islands: Non-Places* and *Proteus* leave the human behind by moving either the scene or the player out of view, they create mini universes which demand human cooperation—you must click to continue the scene, or step into the circle of white lights to progress to the next season—but which don't entitle the human to mastery of the nonhuman world. The worlds of these games subvert Enlightenment hierarchies of power and ask instead that the human player acknowledge a cooperative and symbiotic position—important but not all-important—in the nonhuman ecology of the digital and natural world. There is no objective for the player but to witness, and no other role for her to inhabit. In this way the player and game become both simultaneously the subject and the object in their relationship with one another: the game acts on the player by keeping her still and forcing her to click on specific things to progress the game, while the player can spin the scene and inhabit the role of the witness. Both player and game act and are acted on at the same time.

The manipulations of time and the thwarted expectations of interaction attune the players of *Proteus* and *Islands: Non-Places* to assemblages within the digital world. But the question still remains: how can a human body be enmeshed in a digital ecology? How does embodiment function when the player is forever disembodied within the environment of the game? The avatar within *Proteus* offers some answers to these questions. While there is no referent for the body in *Proteus,* the lack of interactivity and the game's invisible avatar have the counterintuitive effect of increasing the potential for action rather than limiting it. Because the player isn't presented with a list of potential actions, the illusion of a human body and its capabilities is preserved. Because the possible actions aren't itemized, which would limit what can happen through exclusion, the player can imagine a whole slew of options which are never presented nor actively ignored. In this light, the lack of interactivity amplifies the illusion that the player inhabits a human body which *chooses* not to interact rather than one which is allowed to do so only in a limited capacity. In addition, because no visible avatar exists, the player is invited to fill the space with her own form. Moments in which animals in the game respond to the player's movements—such as when flocks of chickens shriek and scurry away—point to the physicality of the avatar's body in space. They remind you of your human form that not only absorbs and observes, but interacts with the surroundings. Even if you don't intend to intervene, your proximity affects creatures in the game, reinforcing the physicality of your avatar even though it remains unseen. The reaction of the world to the human's nonhuman body underlines Bennett's understanding of the human body as composed of vibrant materiality. In *Proteus,* Bennett's claim takes on an additional component because the body of the avatar is literally the stuff of the video game. It is digital; it exists only within the realm of the computer screen. However, because the avatar is invisible, the avatar becomes a blend of the nonhuman video game and the imaginative powers of the human player. The human's avatar is, therefore, part video game, part human imagination, an invisible cyborg or the "condensed image of both imagination and material reality" (Haraway, *Simians, Cyborgs, and Women* 150). By

becoming part of the game, by seeing one's body in the avatar of *Proteus,* the player develops more attention to the materiality of the world of the video game and in so doing is able potentially to extend that awareness to the nondigital world as well. By remembering that our bodies are made up of the same stuff as the world around us opens us up to the "ethical task at hand," as Bennett calls it: to be able to witness, accept, and be "perceptually open" to the agencies and vitalities of the nonhuman (14).

Conclusion

Why do we feel the need to touch? The limited interactivity of *Proteus* and limited mobility within *Islands: Non-Places* challenges our impulses to interact with or conquer the world. Even as *Proteus* invites its players into a digital ecology, the question remains: What happens when we include digital landscapes into the assemblages and ecologies of environmental theory? Because of the mediated embodied experience of the digital world, which looks inviting but doesn't allow for interaction, *Proteus* positions the player within an assemblage that includes but ultimately supersedes her. *Islands: Non-Places* similarly creates human/nonhuman ecologies within the short vignettes which explore the overlap between the built environment and nonhuman entities. Human-made objects and plants exist within one another in these worlds. Rather than undermining the nonhuman agency of these plants, *Islands: Non-Places* instead advocates for a world in which human agency isn't at the center. *Proteus* and *Islands: Non-Places* dance between human and nonhuman agencies; they flirt with anthropomorphizing nature in order to assert a nonhuman agency. As Bennett argues, "we need to cultivate a bit of anthropomorphism—the idea that human agency has some echoes in nonhuman nature—to counter the narcissism of humans in charge of the world" (xvi). *Proteus* and *Islands: Non-Places* situate plants in the human world while simultaneously revealing human characteristics that dwell in plant life, demonstrating that the nonhuman can be as funny and unpredictable and gorgeous as we can be.

The anthropomorphized elements of the game, together with their limited interactivity and the felt experience of nonhuman time, position the human within nonhuman ecologies. The island of *Proteus* is inviting, open for exploration, and yet once it has gotten what it needs from its player, it sends the player away, into the sky. *Islands: Non-Places* similarly allows visitors to see only snapshots of its world and in so doing gestures toward a world that the human cannot access. But in both cases, the human is still a necessary component of the game: not more important or more powerful, but not insignificant either. From this inclusion, the human player can learn to witness the world with a new, environmentally-attuned eye. The attention created in *Proteus* and *Islands: Non-Places* is specific to video games because they ask players to actively participate in the exploration of a world that can't be controlled and doesn't exist for human consumption.

Reading *Proteus* and *Islands: Non-Places* as environments and spaces opens up new ways of seeing our contemporary, Internet-infused world as one that exists beyond a "real world"/screen dichotomy. Instead, these games demonstrate that to inhabit a

video game is to inhabit a world and to knowingly step into its ecologies. As screens become increasingly the means by which we engage with the world, perhaps the narratives of *Proteus* and *Islands: Non-Places* might remind us to consider not that we are escaping from the world when we jump into digital media, but that we are entering into yet another web of connections. These connections don't have to blind us to the perils of the contemporary environmental scene but, rather, can open us up to them. Perhaps the attention engendered in *Proteus*—the act of noticing that occurs only when we aren't allowed to touch—can ripple outward and create attention elsewhere: eyes attuned to the hidden beauties of the world and a curiosity about what's possible when we keep our hands to ourselves.

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Inklings and Tentacled Things:
Grasping at Kinship through Video Games

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Abstract

Connecting Haraway's recent observations about "making kin" to video games, this essay examines how particular elements of the medium might cultivate nuanced considerations for multispecies relations. To fully grasp how video games broadly redefine relations between human and nonhuman animals, we must consider the role of game aesthetics and play mechanics in players' experiences of becoming-with. These elements of games fundamentally shape players' engagements with the medium and are inextricably linked to their storytelling and production. Moreover, game aesthetics and play mechanics (in conjunction with storytelling) demand that players take specific actions and inhabit distinct roles during play, enabling players to not only think alternative kinships, but also *enact* making them. To demonstrate these points, I examine the aesthetics and gameplay of two tentacular video games, analyzing how they offer rhetorical models for productively thinking about humans' relations to nonhuman species. I primarily focus on games that heavily feature cephalopod creatures because this specific animal class is often viewed as a rich site for phenomenological and ontological investigations (including in Haraway's work). Thus, my research attends to specific video games and their tentacled characters to determine how they challenge players to entertain and enact alternative ontologies and human-animal relationships through play.

Keywords: Video games, play, digital rhetoric, ecocriticism, media studies, cephalopods.

Resumen

Conectando las observaciones recientes de Haraway sobre "hacer parentesco" con los videojuegos, este ensayo examina cómo elementos particulares del medio pueden cultivar consideraciones matizadas para las relaciones multiespecies. Para comprender plenamente cómo los videojuegos redefinen ampliamente las relaciones entre los animales humanos y los animales no humanos, debemos considerar el papel de la estética del juego y la mecánica del juego en la experiencia de convertirse en jugador. Estos elementos de juegos fundamentalmente conforman los compromisos de los jugadores con el medio y están inextricablemente ligados a su narración y producción. Además, la estética del juego y la mecánica del juego (junto con la narración) exigen que los jugadores tomen acciones específicas y ocupen roles distintos durante el juego, permitiendo a los jugadores no sólo pensar en parentescos alternativao, sino también promulgarlos. Para demostrar estos puntos, examino la estética y la jugabilidad de dos videojuegos tentaculares, analizando cómo ofrecen modelos retóricos para pensar productivamente sobre las relaciones de los humanos con las especies no humanas. Me centro primordialmente en los juegos que caracterizan fuertemente a las criaturas cefalópodas, ya que esta clase específica de animales se ve a menudo como un sitio rico para investigaciones fenomenológicas y ontológicas (incluso en el trabajo de Haraway). Así, mi investigación atiende a videojuegos específicos y sus personajes con tentáculos para determinar cómo desafían a los jugadores a entretener y promulgar ontologías alternativas y relaciones entre humanos y animales a través del juego.

Tentacles mean trouble. This is a lesson learned by many video game players in digital worlds populated by cephalopod-like creatures. Tentacles are often synonymous with gameplay mechanics that threaten to ensnare, crush, sting, poison, or destroy players' avatars, making foes of soft-bodied mollusks. Across a wide range of game genres, tentacled species appear as non-player characters (NPCs) that attempt to thwart players' efforts. Squids, such as the baleful bloopers of Nintendo's *Mario* franchise, often appear as minor enemies that remain largely innocuous until a brush with their bodies harms, if not kills, the game's protagonist. Cephalopodic characters are also presented as nefarious endgame bosses, such as the heinous Old Gods of Blizzard Entertainment's *World of Warcraft*, whose tremendous tentacled-bodies require an entire party of player-characters to subdue. Juxtaposed against conventional humanoid avatars, these cephalopod NPCs and their writhing, reaching limbs largely function as ripe metaphors for unbridled power, unfettered greed, and uncivilized otherness that threaten to choke from existence all that is "good" and "human."

There are, however, instances where troublesome tentacles act as bridges rather than binds between humans and cephalopods. Consider, for example, *Octodad: Dadliest Catch* (2014), an independently developed adventure game by Young Horses.[1] Players enter the video game during the protagonist's wedding where Octodad, an octopus masquerading as a man, dons his attire before uniting with his human bride at the altar. In a cramped dressing room within the chapel, the player is offered a brief tutorial for piloting this ungainly, orange octopus avatar. Players learn that to maintain his ruse, Octodad keeps two tentacles neatly curled around his face forming a shapely makeshift-mustache while his remaining six tentacles are distributed into the four limbs that a human might have—one for each arm and two for each leg. While Octodad appears human enough (at least in shape) and getting dressed seems relatively uncomplicated, playing through the first sequence of the game proves to be anything but simple. The controls that maneuver Octodad significantly differ from the traditional controls used to move human avatars in similar third-person adventure games. Each of Octodad's four "human" limbs must be moved *individually*, rather than all at once (as is typical for most humanoid avatars). Players must painstakingly lift and position each tentacle somewhat precisely to achieve a semblance of human-like locomotion throughout the game. The results are often comically disastrous with Octodad's limbs producing exaggerated gestures, stretching and swinging wildly, and occasionally defying the logics of real-world physics. As players direct Octodad's search for his wedding accoutrements, objects are hurtled across the chapel's various rooms and the tables are both literally and figuratively turned before he reaches the bride.

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[1] *Octodad: Dadliest Catch* is the sequel to Young Horses' *Octodad*, a freeware student project created at DePaul University and released by the developers in 2011.

In *Dadliest Catch*, tentacles trouble the conventions of anthroponormative play within the medium, challenging players to (re)think their understanding of both human and nonhuman animal experience. The game's story and aesthetics ally human players with the cephalopod protagonist through the avatar body rather than situating them on opposing sides of conflict. The uniquely mapped controls of the avatar itself dislocate players from a seemingly smooth experience of mediated play by explicitly defying normative methods of player control over their character. This dislocation draws attention to Octodad's imagined subjectivity, one that resists the anthropomorphic in its clumsy attempts at mimicry and asserts his animal and (game) machinic qualities. In a way, playing as Octodad offers a sort of speculative experience where players might ruminate on the philosophical problem of embodiment through Octodad's struggle to appear human even though he is in some sense always already human via the player's control. The game operates as a critique in which humans and their technology and culture are scrutinized and rendered strange, if not alienating, by the avatar's cephalopod perspective.

The play mechanics found in *Dadliest Catch* are relatively commonplace in today's video game market. Games such as *QWOP* (2008) and *Surgeon Simulator* (2013) also rely on avatar controls that are meant to estrange the player from their digital embodiment, though typically as a human character. What makes *Dadliest Catch* relatively unique is that the game offers an alternative model of human-cephalopod relations—or more broadly, human-animal relations—that strives to find common ground between creatures with very distinct physiologies and ecologies.[2] While Octodad bares little semblance to actual octopuses, the cumulative effect of the game's storytelling and play mechanics importantly challenge players' concepts of what is "human" and what is "octopus," moving against cut and dry definitions of these terms. Such an endeavor is especially important now more than ever as we face ecological crises in the Anthropocene. As Donna Haraway points out, "It matters which stories tell stories, which concepts think concepts. Mathematically, visually, and narratively, it matters which figures figure figures, which systems systematize systems" (101), particularly if we are to find practical solutions for both human and nonhuman life. Haraway, like many ecocritical scholars, advocates for alternative methods of narrativizing humans' embeddedness in the global ecology to find viable means of addressing and recuperating from ecological devastation, such as climate change and mass extinctions. Her recent work acknowledges how some specific games produce the necessary stories and structures for effectively changing ecological thought and practices, citing string figures—some of the oldest games in human history—as well as the Iñupiaq video game called *Never Alone* (2014), or *Kisima Inŋitchuŋa* ("I am not alone"). Haraway explains that "Perhaps it is precisely in the realm of play, outside the dictates of teleology, settled categories, and function, that serious worldliness and recuperation become possible" (23–24). Responding to Haraway's writings and voices in game studies scholarship, I

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[2] Another game that works similarly is *Goat Simulator* (2014) by Coffee Stain Studios. This third-person, open-world adventure game features a goat as its primary avatar, and its controls also defy anthroponormative conventions for the medium. See Bianchi's "Awkward Animal Avatars" for details.

examine how video games—a medium defined by stories and systems— broadly offer models for productively (re)thinking human relations to other species. I primarily look to games that heavily feature cephalopod creatures because this specific animal class is often viewed as a rich site for phenomenological and ontological investigation, including in Haraway's own work.[3] Thus, my research attends to specific video games and their tentacled characters to determine how they challenge players to entertain and enact alternative ontologies and human-animal relations through play.

Becoming and Becoming-with in Video Games

Recently, media scholars have adopted Gilles Deleuze and Félix Guattari's concept of "becoming" to theorize how video games facilitate alternative understandings of human ontology. In *Mondo Nano*, Colin Milburn describes game avatars as both a metaphysical and technological concept akin to "becoming-molecular." The avatar acts as "a rendering or incarnation of personal agency at the limits of materiality, at the nanoscale level of matter" (240)—a process that Milburn refers to as "nanomorphosis," which allows players to (re)think themselves at the material level. Meanwhile, Souvik Mukherjee describes gameplay as an assemblage formed between human players and game machines. Building on Alexander Galloway's descriptions of video games as action-oriented media, he argues that when in assemblage with game machines (through avatars, interfaces, etc.), players undergo becoming as they recognize how their actions do and do not act in accordance with the machine's programming. Similarly, Colin Cremin claims that video games facilitate becoming when players identify themselves, their avatars, and the avatar's algorithmic limitations as parts of an assemblage that enables play. These scholars attend primarily to the avatar—a structure specific to video game play—and how it allows players to explore alternative human-machine ontologies through game qualities that implicate the players' sense of being.[4]

Theorizations of video games and becoming, however, primarily consider how becoming structures human players' engagements with game machines. Relatively little scholarship in the field connects theories of gameplay and becoming to the cultural and historical trappings of games' representations or seeks to understand how becoming in games might offer alternative models of humans' entanglements in social and biological ecologies.[5] To address these points, my previous research unites theories of gamic becoming with the works of scholars such as Tom Tyler and others. Specifically, Tyler's scholarship claims that video games can teach players to value nonhuman animal ontologies using design elements such as anti-environments and altercasting. Uniting

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[3] Melody Jue's "Vampire Squid Media" (2014) offers some background on this as she examines the vampire squid in Vilém Flusser's *Vampyroteuthis Infernalis* and other works.

[4] Previous theorizations of the avatar and its relation to players' concepts of identity and ontology draw on psychoanalytic frameworks, such as Bob Rehak's "Playing at Being: Psychoanalysis and the Avatar" (2003), or on cognitive science, such as Andreas Gregersen and Torben Grodal's "Embodiment and Interface" (2009).

[5] Debra Ferreday's "Becoming deer: Nonhuman drag and online utopias" (2011) offers one example of this kind of scholarship.

Tyler's work with Mukherjee and Cremin's arguments, I demonstrate how video games might facilitate players' "becoming-animal" in ways that challenge anthroponormative perspectives.[6]

Notably, Haraway's ruminations on games in *Staying with the Trouble: Making Kin in the Chthulucene* further complicate our understanding of how video games model alternative ontologies by examining how games facilitate "becoming-with." Haraway's concept of becoming-with is deeply tied to her notions of "making kin" and "the tentacular" in her writings. She offers these terms to help formulate a conceptual (re)worlding that challenges anthropocentric discourses and practices while responding to contemporary ecological crises. In contrast to becoming, becoming-with is a process that acknowledges alternative ontologies while also reinventing notions about kinship, or the relations between all life on Earth and their interwoven histories. Becoming-with defines members of a kinship through the material and semiotic properties that establish a connection between them (12–13). The process presupposes that there are no individual subjects or objects without reference to some form of established kinship and that such partnerships necessarily cultivate multispecies response-ability in the face of ecological trouble. Haraway defines "response-ability" as "collective knowing and doing, an ecology of practices" (34). The term refers to both our responsibility to the multispecies global community and to our ability to respond to problems affecting the global ecology.

Regarding games specifically, Haraway claims that the medium can offer alternative ontological models through players' becoming-with in (re)formulated kinships that might productively change ecological practices. She cites *Never Alone* (2014) as one example of how video games might simulate experiences that demonstrate human entanglement within larger ecological systems. Haraway describes this specific form of entanglement as the tentacular. She explains that

> The tentacular are not disembodied figures; they are cnidarians, spiders, fingery beings like humans and raccoons, squid, jellyfish, neural extravaganzas, fibrous entities, flagellated beings, myofibril braids, matted and felted microbial and fungal tangles, probing creepers, swelling roots reaching and climbing tendrilled ones. The tentacular are also nets and networks, IT critters, in and out of clouds. Tentacularity is about life lived along lines—and such a wealth of lines—not at points, not in spheres. (32)

Tentacularity, here, describes the processes of becoming-with and making kin in *Never Alone* that results from connecting animal species and technologies in complex systems during both gameplay and the game's production. Kinship in this independently developed, two-dimensional puzzle-platformer is forged not only between the Iñupiaq girl and fox avatars—their collaborative mechanics at once defining and uniting the two in their quest—but it is also found in their connections to the game's spirit helpers, algorithms, hardware, and players, uniting these components together in an intricate assemblage of becoming-with that finds and exacts a response to the detrimental global conditions outlined in the game's narrative. Moreover, Haraway notes, that the many

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[6] For an elaboration of this work, see Melissa Bianchi's "Claws and Controllers: Werewolves and Lycanthropy in Digital Games" (2016).

groups, including game designers, visual artists, indigenous storytellers, community activists, and so forth, who collaborated on the game's production are also deeply entangled in these kinship formations. For those involved with *Never Alone*'s production, the game's technoculture fosters a response-ability toward troubling discourses about humans' relation to the environment and continuing indigenous cultural practices (86–89). Thus, the experience of *Never Alone* is tentacular, acknowledging the historical, cultural, and material contexts in which players, developers, animals, and machines are enmeshed.

While Haraway's reading of *Never Alone* demonstrates the value of video games for reimagining relations between humans and nonhumans in the face of ecological crisis, her analysis remains brief and narrowly focused on the game's narrative and production (understandable given the scope of *Staying with the Trouble*). To fully grasp how video games broadly redefine humans through kinship making, however, we must also consider the role of game aesthetics and play mechanics in the players' experience of becoming-with. As the game theorists previously discussed make clear, these elements of games fundamentally shape player engagements with the medium and are inextricably linked to their storytelling and production. Moreover, game aesthetics and play mechanics (in conjunction with storytelling) demand that players take specific actions and inhabit distinct roles during play, enabling players to not only think alternative kinships, but also *enact* making them. To demonstrate these points, I examine the aesthetics and gameplay of two tentacular video games. Though the design of each of these games vastly differs from *Never Alone*, both encourage players' becoming-with, fostering multispecies response-ability by challenging conventional understandings of human-animal relations.

Who's Your Octodaddy?

As previously mentioned, gameplay in *Dadliest Catch* makes significant moves to challenge anthropocentrism and redefine the "human" category, in part, through the mechanics of its avatar. When playing the game, players control one or two of Octodad's tentacles at any time, switching between each with the press of a button. Octodad's tentacles can be used to grab and toss items in the game world; however, they are not designed to be intuitively controlled and often prove to be inexact in their motions. The constant need to switch between tentacles makes even simple tasks, such as lifting items and walking, time-consuming and trying endeavors. This is especially the case when compared to the movements of human avatars in highly popular game series, such as *The Elder Scrolls* or *Grand Theft Auto*, where compound actions (running, attacking, opening doors) are coded to individual inputs. Through Octodad, it becomes apparent how many games are specifically designed with human subjects in mind. As players struggle with the avatar controls to get Octodad dressed, complete household chores, and run errands, the game also suggests that society takes for granted that its subject is always already human. More specifically, its subject is a specific kind of human—one with four functional limbs—and this revelation challenges players to consider what it

might mean to acknowledge alternative ontologies in every day practice. Thus, the gameplay of *Dadliest Catch* encourages players to question anthropocentrism and what it means to be human both in and beyond game spaces.

Additionally, the challenges players face when directing the Octodad avatar to behave inconspicuously in the game's terrestrial environment facilitates the process of becoming-with an imagined nonhuman other. The character's overly fluid motions—tentacles slipping, sliding, and writhing past their targets—mark Octodad (and by proxy the player) with qualities that one would imagine an aquatic creature would have. This categorization is reified further during specific game moments where the player can direct Octodad to swim quickly through large, open tanks and long, narrow pipes using a single input for the game's controls. Becoming cephalopod in the game relies on players' performance of these actions at once understanding themselves as a part of and apart from Octodad's movements. From here, the gameplay creates a becoming-with through an enacted awkwardness shared between the Octodad character and players controlling him. Octodad's awkwardness stems from his position as an aquatic creature out of its element; meanwhile, the players' own awkwardness arises in moments where they cannot successfully make Octodad perform as a human despite their own humanness. Through this mechanism of play, *Dadliest Catch* inscribes upon the player the imagined subject position of an octopus thrust into a suburban human environment (in a sense, the worldview of a fish out of water), and in doing so, facilitates becoming-with.

The play mechanics of *Dadliest Catch* also drive the game's narrative, creating scenarios where player becoming-with enables human-cephalopod kinship. After the game's opening sequence featuring Octodad's wedding, the story picks up years later where Octodad and his wife, Scarlet, now have a home and two kids. Dressed in a business suit and tie, Octodad performs mundane tasks for his wife and children, Tommy and Stacy, who, at first, appear none the wiser to his deception. Octodad's household is reminiscent of iconic depictions of white America nuclear families from the late 1950s and early 1960s. Family relations are amicable and stable, while Octodad tends to the family's needs by grilling burgers, mowing the lawn, and buying groceries. There are, however, obvious quirks in the family's dynamics. Perhaps the most apparent of these is Octodad's inability to speak a human language. His audible responses to his family's inquiries are subtitled, bookended by asterisks, and described using expressive gestures, tonal adjectives, and indecipherable "blubs" or gurgles. Surprisingly, the family appears unperturbed by these factors, suggesting that language use—a skill often used to separate and elevate humans from nonhuman animals—should matter very little in drawing kinships between species. Likewise, most of Octodad's apparent cephalopod behaviors, especially his clumsy, player-directed movements remain uncommented upon. Scarlet, Tommy, and Stacy simply accept Octodad as family despite his difference (even when the truth about his existence is finally revealed) and with little concern for its obvious implications regarding sexual relations and paternity. And yet, Octodad's blissful home life remains under constant threat of the looming possibility that his nonhuman identity will be exposed either by his (players') inability to use his tentacles

to mimic human limbs or by Chef Fujimoto, the game's antagonist, who threatens to cook Octodad and tell his family his secret.

Overall, the outlandish premise of *Dadliest Catch* offers a reworlding where human-cephalopod kinship and the multispecies family are used to subvert human-animal hierarchies. The design of the main protagonist as an octopus deeply enmeshed within a human household encourages players to examine animals as kin from a perspective that challenges traditional relations between humans and animals in both domesticity and captivity. For example, Octodad's farce as a human father queers the normative roles thrust on animals living alongside humans, such as that of pets, service animals, and livestock. [7] His perspective of aquariums as "festering prisons of iniquity" challenges views that support animal captivity as a humane practice, while his conflicts with Chef Fujimoto critique the willful ignorance of nonhuman animal ontology that often justifies the consumption of animal flesh. Finally, as the family patriarch, Octodad is empowered in caring for his human kin, inverting hierarchies in the home that reify humans' power of care over captive and domestic nonhuman animals.[8] *Octodad: Dadliest Catch* also entertains the notion that the space of the home and the relations forged within it need not be limited to particular species (e.g. dogs, cats, certain species of fish, and so forth), suggesting that kinship making might offer a path to bridge the divides between wild and domestic animals as well as between green and blue ecologies.

Another aspect of *Octodad* that facilitates making kin, becoming-with, and response-ability is its multiplayer cooperative, or co-op, mode. In this version of the game, up to four players can play together, each controlling one of Octodad's four limbs. The cephalopod body as an avatar for four distinct players acts as an emblem of the group's tentacularity. Players become-with each other by simultaneously entering into assemblage with one another, the avatar, and the game machine in general through the collaborative acts necessary for piloting the avatar successfully. For example, one player might be responsible for directing a tentacle to flip a burger on the family grill, while two other players might coordinate the delivery of that burger to Stacy's plate simultaneously by controlling Octodad's footsteps. Co-op mode encourages players to work together—in part, acknowledging material, semiotic, and historical obstacles amongst themselves—as a means for finding response-ability in the games otherwise alienating environment.

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[7] I use "queers" here in-line with Mel Y. Chen's understanding of queer in *Animacies: Biopolitics, Racial Mattering, and Queer Affect*. Chen does not "imagine *queer* or *queerness* to merely indicate embodied sexual contact among subjects identified as gay and lesbian" (104). Instead, Chen views these terms as "social and cultural formations of 'improper affiliation,' so that queerness might well describe an array of subjectivities, intimacies, beings, and spaces located outside of the heteronormative" (104).

[8] Here, I allude to Irus Braverman's *Zooland: The Institution of Captivity*, specifically her application of Michel Foucault's concept of pastoral power for understanding how caring for animals in captivity enacts humans' power over them.

Squid-Kids and the Chthulucene

In contrast to *Dadliest Catch*—an independently developed and relatively short video game—Nintendo's 2015 juggernaut hit, *Splatoon*, offers a rich model for how video games might facilitate making kin towards response-ability in the face of ecological crisis.[9] Released for Nintendo's Wii U console, *Splatoon* is a post-apocalyptic, team-based, third-person shooter. The game's narrative takes place on Earth several thousands of years into the future after mass extinctions caused by global warming have eradicated the majority of terrestrial animal life on the planet, including *homo sapiens*. The main characters of the game, called "Inklings," resemble human children except for the long, large tentacles that protrude from their heads in place of hair. Despite their mostly humanoid appearance, Inklings are not direct descendants of humankind. Instead, these human-like squids are distant relatives of our contemporary cephalopods. Still, the narrative of *Splatoon* makes kin of humans and cephalopods by uniting our historical moment with speculative squid fiction in a way similar to Haraway's invention of the "Chthulucene."

Specifically, the game overtly links the dystopic epoch that the Inklings inhabit, called "The Mollusc Era," to the Anthropocene. Likewise, Haraway's Chthulucene narrative is a conceptual reworlding of the Anthropocene in response to our current ecological crises. Her new moniker for our current epoch of Earth's history is meant to challenge anthropocentric discourses and practices while pushing for perspectives that acknowledge human embeddedness in complex ecologies and shared histories with nonhuman life. Haraway explains that the term, "Chthulucene," resists links to Lovecraft's Cthulhu monster in its spelling and is derived instead from rich mythologies of earth and animal goddesses as well as snake-haired monstresses and their beastly brethren, each of which "entangles the more-than-human, other-than-human, inhuman, and human-as-humus" (101).[10] These entanglements, she proposes, decenter "the human" from methods of thinking about material and historical relations between all life on the planet. Haraway's Chthulucene also challenges narratives of the Anthropocene that situate human beings as the only species of portent shaping the planet and its future, supporting multispecies ecojustice. Finally, Haraway's theorization of the Chthulucene urges readers to find and practice recuperative measures in the face of ecological issues affecting our global community rather than waiting for technofixes to emerge or settling on the planet's inevitable destruction (3).

The story of the Mollusc Era in *Splatoon* performs a reworlding similar to Haraway's Chthulucene in that "the human" is largely absent from the game's narrative about cephalopods and their quest to find response-ability to their current energy crisis. The story takes place in the bustling city of Inkopolis where players engage in mock

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[9] *Splatoon* was released in May of 2015 and by the end of June 2015 the game had sold over 1.62 million copies internationally (Purchese). As of December 31, 2016, Nintendo reports that 4.76 million copies of *Splatoon* have been sold across the globe (Nintendo).

[10] Haraway's list of inspirational figures for the Chthulucene, include: "Naga, Gaia, Tangora (burst from water-full Papa), Terra, Haniyasu-hime, Spider Woman, Pachamama, Oya, Gorgo, Raven A'akuluujjusi, and many many more" (101).

gunfights with paintball like weaponry. The city square of Inkopolis where players congregate and shop bears some resemblance to present-day Tokyo, Japan, and is filled with myriad digital displays, neon lights, and blaring music. Players learn that the city draws its electrical power from a single, nonrenewable energy source called the "Great Zapfish," a rare type of bioelectric catfish. In single-player mode, players are tasked with retrieving the Great Zapfish after it is stolen by the Inklings' nemeses, the octopus-like "Octarians." Much of the game's plot is teased out through single-player mode where players complete platformer stages and battle Octarian agents to find this precious resource. While the Great Zapfish itself might be a never-ending power supply, its removal from Inkopolis conjures parallels between the Inklings' energy loss and humans' depletion of organic, nonrenewable resources. Coupled with the game's frequent allusions to human extinction as a direct result of energy crises and climate change, *Splatoon* suggests the possibility that Inklings are ill-fated to repeat the history of their primate antecedents if they and the Octarians cannot find a way to coexist (or perhaps find kinship) with one another.

In addition to supplanting humans in the Earth's global ecology, Inklings and Octarians have evolved unique morphological and behavioral characteristics to fill the ecological niche left behind by their primate kin. In a brief text blurb, the game describes Inklings as follows: "The Terrifying Biology of the Inkling! Strength: Can leap up to 5 feet. Brain: Simple and predatory. Bones: None! Eyes: Can spot prey from 100 yds. away. Defense: High-pressure, high-capacity ink sack" (*Splatoon*). The Inklings and Octarians' cartoonish appearances, however, confound these descriptors, largely because the game's aesthetics are designed for younger audiences. The most apparent quality of both these cephalopod creatures, however, is their ability to shapeshift into both a cephalopod and a humanoid form. While shapeshifting avatars are not particularly new to video games, Inklings offer nuance to the trope as well as to the ways avatars make kin as discussed earlier in this essay. For example, like werewolves and other mythical figures appearing in horror and fantasy games, Inkling shapeshifting forges a kinship between different species through the hybrid animal body. In their humanoid form, Inklings have physiques like prepubescent human boys and girls. As squids, they appear wholly cartoonish with large round eyes, no mouth, and small, soft bodies. Uniting these forms in a hybrid body uniquely bridges the divide separating phyla and classes that are traditionally demarcated, both taxonomically and biologically, as evolutionarily distant from one another. Conceptually, Inkling shapeshifting reaches beyond the typical associations forged between human bodies and other mammals or vertebrates—those made based on physiological and psychological congruence—to identify cephalopods as "persons." The transforming bodies in *Splatoon* are notably nonhuman in origin, which serves to decenter the human as the primary locus for forging new personhoods, building towards the Chthulucene.

As symbols for cephalopod-human kinship, Inkling avatars enable gameplay that challenges anthropocentrism. Mastery over the avatar's squid and human forms is vital for players' success. Inklings' shapeshifting is a central mechanic to gameplay, and, in some ways, the process operates akin to the players' exertions of control over both Nuna

and Fox in *Never Alone*. In both games, players navigate the digital world by switching between two visually and procedurally distinct avatars—one human (or humanlike) and one animal—each defined by the unique actions they offer players when navigating and affecting the digital world. In *Splatoon*, players initiate the process of shapeshifting by pressing and releasing the "ZL" trigger buttons on the Wii U controller. Inkling metamorphosis occurs nearly instantaneously with minimal graphical flourishes. The humanoid avatar shrinks into the shape of a squid when players press and hold the ZL button. The Inkling avatar returns to its humanoid form when the ZL button is released. In humanoid form, Inklings can run and jump as well as use myriad technologies to spray large quantities of their biologically produced ink on environment surfaces. In squid form, they can swim and dive in the inks that they have sprayed. Each morph has a specific purpose and context in which it is ideal to use. Though at times the human morph of the Inkling can dominate the majority of gameplay—a product of design that makes it the avatar's "default" setting (that is, it does not require the press of a button to activate)—it is not the sole or preferred form for the entirety of the game itself. In this way, the transformation ability of the Inkling avatar attempts to question privileging the human figure as the ideal form of embodiment.

Inkling technologies reflect their users' chimeric bodies in form and function, and this design choice emphasizes tentacularity as a component of gameplay. Inkling weapons are purchased in groups of three rather than as independent pieces. In battle, Inklings switch effortlessly between their main weapon (usually a spray gun or paint brush) and two sub-weapons (paint bombs, tracking devices, ink bazookas, etc.) with the press of buttons, complementing the fluidity with which they change shape. Weapons and the ink they produce serve several purposes, including producing paths for swimming, warding off enemies, and laying claim to territory (albeit temporarily as inks are erased after each match). Similarly, Inkling clothing fulfills many roles by acting as customizable fashion, bonuses to specific combat skills, and markers for team affiliation during major in-game competitions. The multiplicity of technologies and their uses in conjunction with the Inklings' hybridity demonstrates the tentacular quality of *Splatoon*'s characters—their experiences are enmeshed in a rich ecology where it is difficult to discern kid from squid from tech.

This is especially true when considering the role of ink in the game as it bridges the boundaries between bodies and technologies. The ways Inklings might use ink in the game encourages players to imagine a posthuman ontology. In the game, ink is both a biological and technological product. The Inklings produce ink from their bodies and use their weaponry to adapt it as a tool for play, marking, and transportation. For players, this means understanding technology not as an extension or prostheses of the body, but as a vital organ of the body. Ink's transience in the game parallels the ephemeral qualities of Inklings bodies—their changing shape and impermanent deaths. The inks shot, sprayed, splashed, and splattered across Inkopolis are not only traces of bodies, but they are also immersive environments *for* bodies. Inks are both mark and medium for the squid-kid. Here, technology becomes a vital point for establishing the posthuman tentacularity of the game's narrative and gameplay.

The design of the hardware used to play *Splatoon* also fosters a tentacular experience of play by drawing overt attention to the player-machine assemblage. Specifically, the Wii U console (the only sanctioned hardware for playing *Splatoon*) distributes gameplay across several pieces of technology, including the television screen, the console box, and the Wii U gamepad—a technology that hybridizes a traditional game controller with a tablet and stylus. The Wii U gamepad relies on inputs that, ideally, would require players to grow an extra hand (or, perhaps, tentacle). Much like the awkward controls found in *Octodad: Dadliest Catch* that map player control counter-intuitively, the Wii U gamepad demands that players spread their visual and haptic attention across screens and forms of input. For example, players must constantly move their gaze from the television screen to the game pad on the tablet controller while simultaneously operating the Wii U's control sticks and buttons. Additionally, players might also tilt the tablet controller to change the in-game perspective or, in the heat of battle, use the stylus to move quickly across a battleground. While a few of these inputs have options for adjustment, the majority do not. These manipulations of the game's controls, however, might draw players' awareness to how their own material bodies— their eyes, hands, and head—move together with the Wii U's parts in assemblage. For example, consider the players who, in the heat of battle, replace their gamepad stylus with their index finger. In such moments, the player is simultaneously both body and technology enacting tentacularity by blurring the categorical distinction between organism and machine.

On the surface, competition appears to be the major theme of *Splatoon*'s gameplay, but this way of engaging with the game is subverted by its emphasis on kinship and community. In online multiplayer matches, teams of three or four Inklings mock battle using specific parameters to claim territory or capture the flag. But even under the pressure of these competitive conditions, players practice making kin. In battle, color marks kin but only temporarily, and often strangers from across the globe find themselves banding together against randomly selected opponents under banners of all kinds of colors including neon purple, pink, orange, teal, green, or blue. Teamwork requires players to recognize how the Inklings' body and its technology work in assemblage with other Inkling avatars also under the direction of other players and game machines. This tentacular quality of gameplay is not unique to *Splatoon*. We might broadly apply this reading to most online multiplayer games that require team play and collaborative effort, assembling players and their game machines. What sets *Splatoon* apart is its focus on play and community as compared to other games that emphasize violence and antagonisms. According to the games narrative, Inklings battle against their own kind as a celebratory performance of their victory over the Octarians. Their matches are visually similar to the sport of paintball—a game—rather than the depictions of militaristic warfare found in most multiplayer team-based shooter series such as *Battlefield*, *Counter-Strike*, or *Gears of Wars*. Any sort of Inkling-on-Inkling violence in the game is enacted under the auspices of bonding over a shared history and is depicted without gore (in part, because the game is aimed at a young audience). Death is always impermanent and Inklings who may have been opponents one game can

become teammates in subsequent match-ups. Everyone who plays *Splatoon* is an Inkling, everyone is at once both friend and foe. Any lines drawn in ink are inevitably erased and redrawn with kinship remaining the common denominator.

Troubling Beyond the Tentacles

By examining storytelling, game aesthetics, and gameplay in *Octodad: Dadliest Catch* and *Splatoon*, it becomes clear that these video games offer distinct models for (re)thinking the place of humans in both the medium and our global ecology. These tentacular video games encourage players to explore alternative ontologies and enact nontraditional human-animal kinships. Specifically, through play, players become part of the tentacular that connects the digital world and its representations to the material realities of the game system and the ecological moment of the Anthropocene. With these readings of *Dadliest Catch* and *Splatoon* in mind, we might look at other games or return to Haraway's reading of *Never Alone*, and consider what elements beyond storytelling and methods of production, such as avatar play, interface design, and hardware operations, contribute to the medium's modeling of making kin. We might also consider how the design of various hardware technologies (controllers, keyboards, mice, touch-screens, augmented and virtual reality interfaces) can be used to foster becoming-with that leads to player response-ability.

While the gameplay in *Dadliest Catch* and *Splatoon* model making kin in various ways, it is important to recognize that their representations only offer an inkling of what it might mean to make kin in the Chthulucene through video games. There are many possibilities given the diversity of games and there is also quite a bit of room for error considering the medium's complexity. For the most part, my readings of *Dadliest Catch* and *Splatoon* have been largely utopic, emphasizing how these artifacts effectively facilitate becoming-with. There are, however, qualities of both these video games that intentionally and unintentionally work against or subvert their attempt to make kin. I will briefly touch on some of these aspects here as they raise important questions for further investigation.

For example, the representation and gameplay of consumerism in both these videos games shortchanges the cultural and material implications of tentacularity, specifically with regards to labor and waste. Both the worlds of *Dadliest Catch* and *Splatoon* are designed to be overtly consumeristic spaces. In *Dadliest Catch*, the spaces of the home, the grocery store, and even the aquarium are lined with products and Octodad is often given instructions to use, retrieve, and buy these products. Meanwhile, Inkopolis is filled with multiple shops where players can spend in-game currency on objects for their Inkling avatar. Products for purchase appear and disappear with little consequence to the game environments. While the drive to consume pervades the spaces and mechanics of these games, there is little or no acknowledgement of the labor practices and waste production that might be associated with such consumerism. There is also no suggestion of how labor and waste related to consumerism affect the environments and creatures within these digital ecologies. Though the games may push against the notion

of "the human" in the Anthropocene, it is unclear that they challenge notions of consumption in the Capitalocene (another name and narrative for our current epoch that Haraway challenges through her Chthulucene) or gesture to these aspects of the medium itself—i.e. how the production and consumption of games impacts our global ecosystem.

Another element of *Dadliest Catch* and *Splatoon* that acts as an obstacle to becoming-with is the observation that the cephalopods in both games are only imaginings of what it might be like to be a soft-bodied mollusk. Many times, in both games, these representations significantly deviate from how real-world cephalopods behave because of their obvious fiction. It is all too easy for uncritical players to draw faulty connections—or none at all—between how they interact with simulated squid and how they might understand their relation to real-world cephalopods. Similarly, it is also possible to dismiss any connection the games might make to actual cephalopods because their content is ultimately a representation, fiction, or abstraction.

Despite these counterpoints, there is still value in teasing out how a video game might critically challenge anthroponormative views of species relations through play, specifically because games are tools we use to think. They are computational systems that, through models and simulation, allow us to explore and perform alternative possibilities. Determining how games allows us to think ourselves as other in identity and experience offers us another means by which we might find theories and narratives that account for the tentacular nature of life on our planet. In doing so, we might find new practices for cultivating responsibility and response-ability regarding ecological crisis. Returning to Haraway's arguments about why and how we make kin, if we are to continue living in the Anthropocene we need stories and systems that account for the historical, cultural, and material networks connecting life and that create recuperative practices. Although this essay has only surveyed a small sample of video games, we might see how the medium can be used productively to make kin, challenging anthroponormativity and anthropocentrism in the Anthropocene.

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Corpi di scarto: la vita in discarica narrata da Elisabetta Bucciarelli

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Vol 8, No 2

Riassunto

In questo articolo si offre una lettura ecocritica di *Corpi di scarto*, romanzo noir della scrittrice italiana Elisabetta Bucciarelli. Bucciarelli descrive la vita all'interno di una discarica italiana in cui vengono scaricate illegalmente alcune sostanze nocive provenienti da un ospedale limitrofo. Partendo da alcuni principi cardine dell'ecocritica materiale, si dimostrerà che lo scarto è dotato di forza agente e, per questo, interagisce con l'ambiente e con tutti gli esseri, umani e non. In questo romanzo, Bucciarelli si spinge oltre l'immaginario catastrofico alimentato dal discorso tossico. Nonostante le conseguenze nefaste del traffico illecito di rifiuti, Bucciarelli riesce a evidenziare la capacità dei rifiuti di cooperare con gli abitanti della discarica. Con *Corpi di scarto*, Bucciarelli ha scritto un noir coinvolgente che illustra l'illusione dell'essere umano di poter dominare l'ambiente e la materia attraverso diversi tipi di barriere. Invece di storie del disincanto, Bucciarelli ci propone una storia di compassione che nasce osservando i nostri rifiuti quotidiani. A volte, sono proprio i membri ridondanti della società, abitanti della discarica, ad essere in grado di trasformare e riabilitare la spazzatura.

Parole chiave: Bucciarelli, ecomafia, noir, ecocritica, rifiuti, riuso, compassione, cura.

Abstract

In this article, I offer an ecocritical reading of *Corpi di scarto*, a noir novel written by the Italian writer Elisabetta Bucciarelli. Bucciarelli describes the life within an Italian landfill in which some illegal and toxic substances from a nearby hospital are dumped. Starting from some fundamental principles of material ecocriticism, I illustrate how trash is endowed with its own agency and, therefore, is interactive with the environment and with both human and non-human beings. In this novel, Bucciarelli goes beyond the catastrophic imagination fostered by the toxic discourse. Despite the nefarious consequences of illegal trafficking of trash, Bucciarelli succeeds in underlining the ability of trash to cooperate with the inhabitants of the landfill. With *Corpi di Scarto*, Bucciarelli wrote a captivating noir that illustrates the illusion human beings have of being able to dominate their environment through different kind of barriers. Instead of stories of disenchantment, Bucciarelli offers a story of compassion, which comes from observing our daily trash. Sometimes, it is those members of society seemingly the most redundant, the inhabitants of the landfill, who are able to transform and rehabilitate trash.

Keywords: Bucciarelli, ecomafia, noir, ecocriticism, trash, reuse, compassion, care.

Resumen

En este artículo se plantea una lectura ecocrítica de *Corpi di scarto,* una novela negra escrita por la italiana Elisabetta Bucciarelli. En ella, Bucciarelli describe el entorno de un vertedero italiano en el que se desechan sustancias y productos ilegales provenientes de un hospital cercano. Partiendo de los principios fundamentales de la ecocrítica, se demostrará cómo los residuos interactúan con el medio ambiente y, por ende, con todos los seres que en él habitan. Bucciarelli navega por la imaginación catastrófica conducida a

través de un discurso tóxico. A pesar de las consecuencias negativas del tráfico ilegal de residuos, la autora es capaz de resaltar la capacidad que tienen las sustancias residuales para cooperar con los habitantes del vertedero. En *Corpi di scarto*, Bucciarelli ilustra la ilusión del ser humano de dominar su entorno a través de diversas barreras. En lugar de narrar una historia de desengaño, la italiana recrea un relato de compasión que nace de la observación de nuestros residuos cotidianos. En ocasiones, los propios miembros redundantes de la sociedad, habitantes del vertedero, son aquellos capaces de transformar y rehabilitar los residuos.

Palabras clave: Bucciarelli, ecomafia, novela negra, ecocrítica, residuos, reutilización, compasión, cuidados.

Corpi di scarto (2011) di Elisabetta Bucciarelli narra la vita all'interno di una discarica situata nel cuore di Milano.[1] Con questo romanzo, pubblicato da Edizioni Ambiente, Bucciarelli ha vinto nel 2011 il premio Lucia Prioreschi all'interno della quinta edizione di Serravalle noir. Giornalista, drammaturga e scrittrice milanese, da oltre un decennio l'autrice mostra una spiccata inclinazione per il noir, tant'è vero che già nel 2010 le era stato conferito il prestigioso premio Scerbanenco per il romanzo *Ti voglio credere*.[2] *Corpi di scarto*, noir di ecomafia, va annoverato tra numerosi altri romanzi di scrittori italiani che, recentemente, hanno narrato i rifiuti e hanno messo in risalto quella zona grigia, labile e porosa che fa da ponte tra le organizzazioni criminali e la società contemporanea e in cui, talvolta accade, viene gestito o facilitato lo smaltimento dei rifiuti. A titolo esemplificativo, si possono qui ricordare i seguenti romanzi: *Nordest* (Massimo Carlotto e Marco Videtta, 2005), *Navi a perdere* (Carlo Lucarelli, 2008), *Previsioni del tempo* (Wu Ming Foundation, 2008), *Solo fango* (Giancarlo Narciso, 2009) e *L'albero dei microchip* (Massimo Carlotto e Francesco Abate, 2009).[3] A fine romanzo, dopo la bibliografia delle letture "dis-messe" (215) dall'autrice, si possono leggere anche "I fatti"[4] (217-223), tratti dal rapporto di *Ecomafia 2010*; quest'appendice al romanzo offre una panoramica concisa ma esaustiva sul ciclo illegale dei rifiuti in Lombardia.

In questo saggio si vuole offrire una lettura ecocritica di *Corpi di scarto* e mettere in evidenza l'impegno della scrittrice milanese nello spronare i lettori a riflettere sul pensiero ecologico, definito da Timothy Morton come "the thinking of

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[1] Nel testo non compare mai il nome del capoluogo lombardo; però, alcuni riferimenti ai navigli e alla fiera di Sinigaglia, il più antico mercatino delle pulci in città, permettono di identificare in Milano il luogo in cui si svolgono le vicende narrate in *Corpi di scarto*. Nel romanzo, Milano viene designata semplicemente con il termine, sempre in maiuscolo, la Città. Milano è contemporaneamente il capoluogo lombardo e qualsiasi altra città, italiana o straniera, in cui la criminalità interviene nella gestione dei rifiuti.

[2] In *Ti voglio credere* riappare l'ispettrice milanese Maria Dolores Vergani, già presente in *Happy Hour* (2005), *Dalla parte del torto* (2007), *Femmina de luxe* (2008), *Io ti perdono* (2009), e *Dritto al cuore* (2013).

[3] In ambito internazionale è doveroso ricordare il monumentale *Underworld* (1997) dello scrittore americano Don DeLillo.

[4] Nella collana VerdeNero di Edizioni Ambiente i fatti vengono sempre riportati nell'appendice del libro informando così i lettori sulla realtà da cui trae ispirazione la finzione. Il progetto VerdeNero nasce proprio dalla collaborazione tra la casa editrice Edizioni Ambiente e Legambiente. L'appendice "i fatti" è redatta da Antonio Pergolizzi, coordinatore dell'Osservatorio Nazionale Ambiente e Legalità di Legambiente.

interconnectedness" (7). Solo riconoscendo la coesistenza fra tutte le forme di vita sul pianeta Terra, l'essere umano può instaurare un rapporto, fondato sul rispetto, con l'altro ed il non-umano e, di conseguenza, anche con l'ambiente in cui vive. Partendo da alcuni principi cardine dell'ecocritica materiale,[5] si vuole qui evidenziare l'incontro tra uomini ed oggetti esaltandone le mutue interferenze. Inoltre, riconoscendo alla materia la forza agente di cui è dotata, si desidera dimostrare la sua insita capacità di narrare storie. Come infatti affermano Serenella Iovino e Serpil Oppermann, "[...] every material configuration, from bodies to their contexts of living, is "telling" [...]" ("Material Ecocriticism" 79). In questa disamina di *Corpi di scarto*, la materia, vivente e non, si rivelerà essere un testo leggibile, confermando così che "all matter [...] is a "storied matter" (Iovino e Oppermann, "Introduction" 1). *Corpi di scarto* non è solo "letteratura dei rifiuti"; esso va infatti letto e interpretato in un contesto socio-culturale molto più vasto al cui interno operano autori quali Massimo Carlotto, Giancarlo De Cataldo, Carlo Lucarelli, e Giuseppe Genna. Da anni ormai, questi scrittori producono una ricca "nebulosa narrativa" (Wu Ming Foundation 10) fatta di "oggetti narrativi non-identificati" (Wu Ming Foundation 11), ovvero "libri che sono *indifferentemente* narrativa, saggistica e altro" (Wu Ming Foundation 12; enfasi nel testo). Tali oggetti narrativi non-identificati raccontano la realtà attraverso uno "sguardo obliquo" che favorisce "un'intensa esplorazione di punti di vista inattesi e inconsueti, compresi quelli di animali, oggetti, luoghi e addirittura flussi immateriali" (Wu Ming Foundation 26). Qui di seguito, non si può che apprezzare il desiderio della scrittrice milanese di guardare e interpretare i rifiuti, i luoghi, gli animali e gli emarginati con uno sguardo diverso, offrendo così ai lettori una storia inusuale e alternativa.

Precipitato nella discarica insieme ai personaggi del romanzo (Iac, Argo Zimba, Saddam, e Lira Funesta), anche il lettore prova la fastidiosa sensazione di trovarsi avviluppato nella materia più varia, che presto si rivela essere agente. Infatti, la materia, vivente e non, si impone da subito come argomento fondamentale del romanzo. Si prenda in considerazione l'inizio dell'opera: "Potevi suonare l'arpa sulle costole sporgenti. Avresti magari inciampato in qualche ruga di pelle, un grumo, un'escrescenza. Poi la sensazione fastidiosa di incontrare la materia ruvida sarebbe subito passata" (9). Questa descrizione procede per l'intero primo capitolo fino a quando ci si rende conto di avere di fronte il Nero, ovvero un cane maschio affamato e "facile da disossare" (9), che "vedi cane, ma lo percepisci uomo" (10). In tutta la sua opera, Bucciarelli mostra una spiccata sensibilità e attenzione verso la Natura, animale e vegetale, e, attraverso il suo linguaggio preciso e "dritto al cuore",[6] intende trasmettere una "rinnovata fisicità" (Daddario) che aiuti a rivalutare e apprezzare la materialità del mondo in cui si è tutti immersi, esseri umani e non. Bucciarelli sostiene che "[i] luoghi dove le vicende sono

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[5] Per un approfondimento sull'ecocritica materiale ("material ecocriticism") si consulti il volume collettaneo *Material Ecocriticism* curato da Serenella Iovino e Serpil Oppermann. Si vedano anche: "Material Ecocriticism: Materiality, Agency, and Models of Narrativity" di Iovino e Oppermann, "Corpi eloquenti. Ecocritica, contaminazioni e storie della materia" di Iovino e "Material Ecocriticism and the Creativity of Storied Matter" di Oppermann.

[6] Per descrivere il linguaggio curato e scelto di Elisabetta Bucciarelli, prendo a prestito il titolo di un suo romanzo noir *Dritto al cuore* (2013).

ambientate [...] condizionano fortemente la scrittura" (Daddario). Per questo, persino "la temperatura, lo spazio, l'architettura" (Daddario) risuonano nelle parole dei suoi romanzi. Discutendo di *Corpi di scarto*, la scrittrice ha dichiarato che questo noir: "si svolge all'interno di una discarica di rifiuti indifferenziati, tra putridume e cemento, scarti e resti di oggetti dimessi [sic], collocata al centro di una metropoli. Per scriverlo ho cercato un lessico adeguato, colori adatti, ritmi veloci" (Daddario).

Con *Corpi di scarto* Bucciarelli riconferma il suo impegno, ecologico e etico, come scrittrice; anche Massimo Carlotto le attribuisce un'attitudine "militante" (*The Black Album* 41) comparabile alla propria e a quella di altri autori contemporanei quali Sandrone Dazieri e Giancarlo De Cataldo.[7] Il noir, sostiene Bucciarelli, è "capace di privilegiare il punto di vista delle vittime, la ricerca di una verità che spesso non coincide con quella stabilita dalla legge, la volontà di indagare sui fatti di crimine cercando di narrarli con il valore aggiunto della competenza in materia [...]" (Daddario). Quest'aspirazione della nostra autrice di promuovere, per mezzo della letteratura, un atteggiamento etico desideroso di avvicinarsi all'altro è in piena sintonia con una lettura ecocritica di *Corpi di scarto* e con i principi fondamentali dell'*ecocriticism* che "intende essere una forma di attivismo culturale" (Iovino, *Ecologia* 15) in grado di rifiutare le grandi narrazioni centralistiche, prestando invece attenzione "ai valori "periferici", a un'idea di cultura meno dualistica e gerarchica, ai soggetti altri dall'umano" (Iovino, *Ecologia* 20). Lo sguardo obliquo caratterizzante gli oggetti narrativi-non identificati del New Italian Epic si concilia con un approccio ecocritico che vuole rivelare le storie di chi, all'interno di una cultura egemonizzante, viene ignorato; in *Corpi di scarto*, i poveri, gli immigrati, i disabili, gli emarginati, gli oggetti e, più in generale, la materia offrono ai lettori racconti inusitati, spesso ignorati o messi a tacere. Riflettendo su *Corpi di scarto*, si vuole sottolineare anche il potenziale della spazzatura: infatti, come sostiene Susan Signe Morrison, "waste contains the potential to *charge*, catalyzing ethical behavior and profound insights, even compassion" (3; enfasi nel testo). Attraverso la compassione, che può anche scaturire osservando la spazzatura, si possono incentivare e sostenere atteggiamenti etici in grado di produrre cambiamenti significativi. Con coraggio, si vedrà qui di seguito, Bucciarelli mostra di essere consapevole del suo ruolo di scrittrice all'interno della società odierna e del ruolo eversivo e performativo che certa letteratura può avere.[8] La scrittrice partecipa regolarmente a corsi di scrittura creativa e ha anche raccolto una serie di esercizi di scrittura in *Scrivo dunque sono. Trovare le parole giuste per vivere e raccontarsi.* Per Bucciarelli, scrivere significa svelare il mondo e esortare il lettore ad assumere una prospettiva coraggiosa ed alternativa da cui interpretare la realtà in cui è immerso.

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[7] Come Bucciarelli, anche Carlotto, De Cataldo e Dazieri hanno pubblicato con Edizioni Ambiente, "una casa editrice fondata nel 1993 a Milano, quando il concetto di sviluppo sostenibile iniziava a conquistarsi uno spazio nell'agenda politica mondiale, nella cultura e nell'informazione" (http://www.edizioniambiente.it/ casaeditrice/).

[8] Con il termine eversivo si intende qui la capacità della letteratura di dispiegare quanto resta nascosto o viene trascurato e scartato dalla cultura corrente, ovvero si desidera evidenziare la sua abilità di far emergere i deficit e gli squilibri all'interno di una cultura di massa (Zapf 56).

All'interno della discarica

Abitanti, cercatori e materiali

La vita brulica inarrestabile attorno a questa discarica circondata da alte mura. Al suo interno si possono incontrare personaggi provenienti da tutto il mondo, Italia compresa, che creano "un panorama disomogeneo e globalmente effervescente" (14). Qui si possono ritrovare "la Mesoamerica, l'India e l'Argentina. Ti pareva di rivedere l'Africa e la Sicilia, l'Egitto e il Brasile" (14). Per la discarica passano regolarmente immigrati e italiani, giovani e vecchi, esseri umani e animali, civili e forze dell'ordine; inoltre, vi transitano i rifiuti solidi urbani, ma anche i rifiuti tossici depositati in "qualche bidone fuori posto" (46) e persino degli scarti di corpi umani. Al suo esterno, oltre la muraglia, ci sono giovani ragazzi che trascorrono regolarmente le giornate sui loro skateboard. Quando, un giorno, il guardiano è assente per malattia, le porte della discarica si aprono al mondo e "un viavai di gente" (197) si riversa al suo interno per pescare, tra i rifiuti, oggetti ancora utili da riportare all'esterno.[9] Tutt'altro che periferica, la discarica appare come il vero cuore pulsante e palpitante della città. Così come senza discarica la città non può esistere, anche l'essere umano non può vivere senza produrre rifiuti. Non a caso, l'autrice posiziona questa discarica proprio al centro della metropoli e non in periferia per indicarne il ruolo portante nella società contemporanea. Iac non esita a spiegare a Silvia che, al suo interno, loro sono proprio "[a]l centro di tutto e vicino a tutto. [La discarica è] [p]iena di ogni cosa e in continuo mutamento [...]" (129). Nel suo *Wasted Lives*, Bauman ci ricorda che i confini sono "membrane asimmetriche" (68) che lasciano fuoriuscire e transitare verso l'esterno, ma devono proteggere contro l'entrata di esseri indesiderati; posta nel cuore di una prospera metropoli italiana, questa discarica invece è come un cancro che si vuole contenere nel tentativo di bloccarne la metastasi. Per questo, attraverso alte muraglie vigilate, ci si affanna a circoscrivere gli scarti e i corpi di scarto al suo interno. L'andirivieni di persone e di materiali sprona però il lettore a domandarsi se, con un'alta muraglia, sia realmente possibile ergere netti confini tra interno ed esterno.

Parte del mistero attorno a cui il romanzo si svolge riguarda i rifiuti speciali provenienti da un ospedale limitrofo. Questi scarti includono non solo sostanze nocive all'essere umano e all'ambiente, ma anche veri e propri frammenti di corpi; questi sono i residui dei corpi umani rimodellati da Alfredo Mito e da Mario Bianchi, due tra i migliori chirurghi plastici attivi in città. Per convenienza, "le sacche di materiale organico e il resto degli scarti" (136) vengono gettati nei sacchetti dell'indifferenziata e il loro materiale si mescola nel terreno della discarica. Il terreno, ci ricorda Sullivan, ricco di funghi, batteri, vermi e minerali è un composto ibrido di materia organica e inorganica ed è indispensabile alla vita sul pianeta Terra (516). Oggigiorno, però, il terreno è da

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[9] Questi *scavenger* riportano alla mente l'immagine della spigolatrice, figura appartenente ad un mondo agrario antico, dove i proprietari terrieri permettevano ai più poveri di raccogliere gli scarti del raccolto dispersi sul terreno. Questi spigolatori contemporanei, però, hanno a che fare con un terreno postindustriale, la cui tossicità è difficile da determinare e da quantificare.

considerarsi anche un sottoprodotto industriale e, come tale, può essere altamente tossico o radiottivo. Il terreno della discarica, si vedrà qui di seguito, pare animarsi di vita propria; non a caso, una delle aree circoscritte nella discarica è spesso identificata con la locuzione "zona viva" (51); un'altra, invece, viene designata con il termine putrida.

Con la sua popolazione variegata ed i suoi numerosi materiali variopinti, la discarica si trasforma in un punto rappresentante l'intero universo. Infatti, guardandosi attorno all'interno della discarica, il pompiere Lorenzo è sorpreso nel vedere "una specie di micro comunità a ridosso di un cumulo eccezionalmente grande di pattume" (86). Qui ci sono strade, vie e laghetti; la via principale, ad esempio, si trova "tra due muraglie di balle quadrangolari, da cui sporgevano plastiche e spuntoni di legno" (46). Al suo interno, vivono più o meno stabilmente Iac(opo), Lira Funesta, Argo Zimba, il Vecchio e il cane Nero; questi personaggi si dimostrano essere esperti di rifiuti, dei veri e propri *scavenger*, ovvero "cercatori" (61). Il pompiere Lorenzo, invece, si perde facilmente all'interno della discarica che egli percepisce avere una "disposizione labirintica" (149). Per questo, Lorenzo ha bisogno di una guida esperta che lo conduca alla sua scoperta.

Il viaggio infernale

Bucciarelli mostra dimestichezza con i *topoi* del discorso tossico e li rielabora con grande maestria. Con la locuzione "discorso tossico" si intende qui "expressed anxiety arising from perceived threat of environmental hazard due to chemical modification by human agency" (Buell 31). Il discorso tossico, dotato di un vocabolario specifico e alimentato da turbamenti comuni all'essere umano, può quindi atterrire il lettore al punto da paralizzarlo e da impedire una sua reazione costruttiva. Con Iac, Argo Zimba, Saddam e tutti gli altri residenti, Lorenzo, a livello diegetico, e il lettore, a livello extra-diegetico, vengono introdotti e accompagnati all'interno di questa discarica labirintica e, grazie alla loro guida, raggiungono quegli anfratti che invece restano invisibili a tutti gli altri vigili del fuoco e agli stessi operatori ecologici. Non a caso Saddam lo zoppo dice a Lorenzo: "«Noi lo conosciamo benissimo questo posto, ogni anfratto, ogni ruga, ogni porzione»" (87). Un *topos* del discorso tossico qui chiaramente ripreso è quello del viaggio di Dante negli inferi grazie alla guida di Virgilio. Proprio come Dante, anche Lorenzo e il lettore sono scortati nel loro viaggio infernale da questi accompagnatori picareschi. Nei pressi della putrida, Iac incomincia a correre arrivando, in pochi minuti, "a ridosso dell'inferno" (55). Guardando fuori dalla sua abitazione, la madre di Iacopo vede "lo spettacolo dell'inferno dall'alto" (58). I tre inceneritori appaiono come fauci infernali che divorano e emettono in continuazione "le loro oscene emissioni fumiganti" (104). La discarica evoca immagini che oscillano tra inferno e purgatorio; così, infatti, viene descritta quando Iacopo e Argo vanno in cerca del cane Nero:

> La ricognizione proseguì senza incontrare anima viva, poi i ragazzi sentirono i versi [del cane]. Non avevano ancora raggiunto la putrida, si trovavano nella zona di mezzo, quella che congiungeva gli ziggurat alla melma, l'interregno dei sacchetti, il purgatorio dei rifiuti solidi urbani indifferenziati. (46)

Dagli esempi riportati, si può notare che alcune zone della discarica vengono definite "inferno", altre, invece, appaiono come il purgatorio, ovvero un interregno. Va qui sottolineata la scelta accurata del vocabolario da parte della nostra scrittrice; nonostante la discarica sia un luogo infernale, questa, in alcune zone, viene riabilitata e, di conseguenza, è chiamata "purgatorio" (46). Poiché, secondo la tradizione cattolica, dopo un periodo di espiazione, è possibile lasciare il purgatorio, ci si domanda quali rifiuti saranno redenti, come, da chi e dove andranno a finire. Secondo questa logica, si vedrà qui di seguito, la discarica può diventare un luogo di transito, per oggetti e per persone. Per questo è possibile inquadrare il romanzo *Corpi di scarto* oltre l'immaginario paralizzante del discorso tossico. Grazie a questi accompagnatori, picari contemporanei, il lettore riesce a oltrepassare quei muri eretti con l'intento di mantenere l'ordine all'interno di una società sempre più alle prese con i propri rifiuti che, ironicamente, "sembrano essere l'unica finalità del processo di produzione e consumo" (Iovino, *Ecologia* 28). La spazzatura, vero e proprio "escremento del corpo sociale" (Viale 16), va però nascosta con metodo in modo da poterla ignorare. Secondo il sociologo Bauman, "[w]e dispose of leftovers in the most radical and effective way: we make them invisible by not looking and unthinkable by not thinking" (27). Leggendo *Corpi di scarto* non si può che pensare anche agli abitanti di Leonia descritti, già negli anni settanta, da Italo Calvino nel suo *Le città invisibili*. Ne "Le città continue" Marco Polo racconta a Kublai Khan che: "Dove portino ogni giorno il loro carico gli spazzaturai nessuno se lo chiede […]" (113-114). L'importante, infatti, è che la spazzatura venga regolarmente rimossa con efficienza da Leonia e nascosta alla vista dei suoi abitanti, permettendo così nuovi e continui acquisti. Anche in *Corpi di scarto* è fondamentale che la spazzatura non si accumuli per le strade della città e sia bruciata negli inceneritori della discarica.

La gestione dei rifiuti

La rimozione e la successiva gestione dei rifiuti è un'attività altamente vigilata attraverso cui si viene a instaurare un patto silente tra lo stato ed i suoi cittadini. Grazie a questo tacito accordo, lo stato afferma e rinforza la propria autorità: "For the city to maintain its identity as a well-functioning organism, filth needs to be hidden" (Morrison 75). Nel suo *La poubelle agréée*[10] Calvino metteva in evidenza il coinvolgimento della città parigina nella raccolta dell'immondizia e lo stretto legame che si creava tra la sfera privata e la dimensione pubblica (92). Nel suo saggio, inoltre, lo scrittore paragona gli *éboueurs* a "caronti d'un al di là di carta unta e latta arrugginita" (98) sfruttando così a sua volta il *topos* del viaggio infernale. Nel tentativo di occultare i rifiuti, quindi, si pianifica un efficiente sistema di smaltimento e si costruiscono alte mura attorno alla più grande discarica della città. Iac, Argo Zimba e Lira Funesta, però, vi entrano ed escono con facilità, non dall'ingresso principale, regolarmente vigilato da un custode, ma attraverso dei varchi che loro stessi hanno creato sfilando alcuni mattoni dalla muraglia.

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[10] Questo saggio è incluso nella raccolta *La strada di San Giovanni*, pp. 71-93 (Mondadori, 1990).

Tim Edensor sostiene che, oggigiorno nel mondo industrializzato, la nostra esperienza sensoriale è altamente regolata sia nella sfera pubblica che in quella privata:

> In desensualized urban and domestic realms, the sheer smoothness of space, the constant maintenance through cleaning, polishing and disposal effectively restricts and regulates sensory experience, minimizing confrontations with textures, weight and other material agency. (324)

Per questo, Silvia, nei pressi della discarica, trattiene il fiato nel tentativo di "non respirare il fetore dell'aria" (11); nella casa dei suoi genitori, tenuta rigorosamente in ordine da una "giovane filippina" (89), ogni stanza brilla e il parquet di noce appare "perfettamente lucidato e senza l'ombra di una scalfittura" (90). Una volta entrata in discarica, Silvia non può che essere scossa dall'"odore terribile" (129) e, per questo, si porta la mano destra al naso. Da subito, la ragazza pare cresciuta in un ambiente domestico asettico in cui la sua esperienza sensoriale con la materia è vigilata e gli odori più molesti vengono sistematicamente soppressi.

All'interno di questa discarica, a loro volta, anche i residenti gestiscono i rifiuti e erigono barriere per tenerli separati dalle loro abitazioni. Saddam, ad esempio, si è costruito una casupola nell'angolo più a sud del muro; l'ingresso della baracca è bloccato da due ante di lamiera ondulata tenute accostate da un "grosso lucchetto" (23); prima di entrare nella casa di Saddam, tutti gli ospiti devono togliersi le scarpe lasciandole "appaiate in ordine" (23) all'ingresso. Secondo la felice definizione di Mary Douglas, lo sporco è "matter out of place" (44) che, di conseguenza, destabilizza e crea disordine. Per questo motivo, gli stessi abitanti della discarica cercano di mantenere ordine all'interno delle loro abitazioni. L'immondizia, però, non ha un valore intrinseco assoluto: infatti, ci ricorda di nuovo Douglas, "[t]here is no such thing as absolute dirt: it exists in the eye of the beholder" (2). Non a caso, Saddam prepara del *couscous* con una confezione di riso trovata in discarica e, a detta sua, i vecchi stivali di Lorenzo possono anche diventare un bottino goloso per "«[c]hi non li ha»" (109). In alcune circostanze, quindi, i rifiuti possono essere riabilitati, portati fuori dall'inferno, ed essere rimessi in circolazione da quelle persone che riescono a guardarli con occhi diversi, ovvero con uno sguardo non assuefatto dall'iperconsumismo imperante. Gli abitanti della discarica, si vedrà di seguito, spezzano rigidi schemi lineari che vedono nella discarica il luogo finale degli oggetti scartati. Iac, Argo, Lira e Saddam esercitano di continuo la loro creatività e nei rifiuti riescono a vedere dell'altro percependo anche le potenzialità della materia. Nonostante tutti gli sforzi dell'essere umano di ergere barriere, il romanzo *Corpi di scarto* mostra quanto queste siano in realtà illusorie e labili, un vero e proprio costrutto della mente umana abituata a pensare secondo lo schema binario del dentro/fuori, chiuso/aperto, umano/non-umano. Qui di seguito si vuole dimostrare come il rifiuto, domestico ed industriale, organico e non, interagisca con tutti gli abitanti della discarica grazie alla sua forza agente, abbattendo così confini apparenti tra oggetti inanimati e esseri viventi.

I volti della spazzatura

Materialità e metafora

Nel suo *The Literature of Waste*, Morrison sostiene che "waste is always material (first) and figurative and metaphoric (second)" (8). In *Corpi di scarto* il rifiuto è indubbiamente materiale; esso innanzitutto ingombra. All'interno della discarica, infatti, nascono vere e proprie colline di rifiuti che vengono scalate quotidianamente dai suoi residenti. Oltre ad essere voluminoso, il rifiuto puzza e impesta l'aria con il suo fetore. L'olezzo del rifiuto può anche impregnare i vestiti e i capelli di un essere umano. Pensando al Vecchio, Iac non può che evocarne l'odore: "[a]cre, forte, di escrementi e piscio" (175). Ironicamente, Bucciarelli sottolinea come il Vecchio riesca a stare nella propria sporcizia senza produrre "i duecentometricubi di spazzatura che in media un uomo abbandona sulla terra durante il suo fugace passaggio" (174). Il Vecchio, spesso paragonato ad una testuggine, produce per lo più deiezione; egli non esala "biossido di carbonio né diossina, solo una gran puzza" (175). Il cattivo odore, a volte, si fa tanto forte da appiccicarsi alle narici e sembra "divenire solido" (56). Infine, il rifiuto sporca. Dopo l'incendio in discarica, Iac torna a casa "ricoperto da una crosta ormai quasi solidificata di materia marrone" (71). Camminando verso il bagno, desideroso di lavarsi, "di profumarsi e di mettersi un vestito pulito" (72), Iac rassicura la babysitter del fratellino dicendole che avrebbe egli stesso ripulito il pavimento "accorgendosi della scia di sporcizia che stava lasciando sulle mattonelle linde" (71).

Il rifiuto ha anche una forte valenza metaforica che va ben oltre la sua materialità più immanente. Camminando per strada, Iac calpesta involontariamente le feci di un cane; nel tentativo di ripulire la scarpa sul bordo del marciapiede Iac attira "gli sguardi di disappunto dei passanti" (182). Egli infatti stava "decuplicando sporcizia quasi fosse l'untore" (182). Similmente ad un untore, la persona sporca può diffondere un contagio e, di conseguenza, mettere a rischio la salute dell'intera comunità. Come ci ricorda Morrison "[t]hose who literally pick up our filth become filthy in turn" (97); secondo questa logica, gli esseri umani che entrano in contatto con i rifiuti, diventano loro stessi sporcizia e, per questo, vanno evitati e scartati. Iac, il primo protagonista umano ad apparire nel romanzo, è sdraiato a terra; i suoi "pezzi di corpo" (11) possono essere confusi per "un legno di traverso, stracci a coprirlo, sporchi, sdruciti" (11). Da alcune settimane Iac ha notato una ragazza, Silvia Mito, la figlia diciassettenne di un affermato chirurgo plastico; un giorno Silvia inciampa nelle gambe del ragazzo. Iac si solleva da terra e i due giovani si stringono la mano. A causa di questo contatto, non appena rientrata a casa, Silvia si lava la mano: "L'aveva strofinata a lungo fino a farla arrossare, per non lasciare traccia nemmeno lontanamente di quel contatto estraneo, così diretto e germinante di probabili cause virali, strafilococchi e gram positivi" (12). Paradossalmente, però, Silvia non esita a farsi regalare per il suo diciottesimo compleanno due taglie in più al seno e, infatti, la si ritrova, a fine romanzo, sdraiata sul lettino dopo l'intervento chirurgico. Apparentemente tanto cauta nei suoi contatti con gli estranei, Silvia si sottomette volontariamente ad un'operazione estetica che,

introducendo nel suo corpo due protesi, la trasforma in un *cyborg* o meglio in un "corpo tossico" (Oppermann, "Il corpo tossico dell'altro" 127). Grazie ad un intervento chirurgico, Silvia vuole conformarsi ad un modello imperante di bellezza imposto subdolamente dalla televisione e dalla pubblicità;[11] per questo, la ragazza è disposta a cancellare in lei ogni singolarità che la rende "insolita" (11), come a Iac piace definirla. Ai giorni nostri, ci ricorda Ariemma, la chirurgia è entrata con forza nelle nostre vite, nel nostro linguaggio e nell'immaginario comune. A causa di questa sua banalizzazione, ci si sottopone, come fa Silvia, con "sostenibile leggerezza" (Ariemma 7) al ritocco estetico, nel tentativo di attenuare la propria diversità. Anche i corpi umani, fatti di materia, si rivelano essere testi da leggere ed interpretare; secondo Iovino e Oppermann "[...] bodies are living texts that recount *naturalcultural* stories" ("Introduction" 6). Quindi, il corpo tossico di Silvia e i corpi rimodellati delle clienti di Alfredo Mito e Mario Bianchi narrano storie uniche di materia vivente, plasmata non solo da bisturi, protesi e tossine varie, ma anche da pratiche discorsive, sociali ed economiche "invasive" che negli anni hanno agito silenziosamente nei loro organismi sfregiandoli irreparabilmente.

Parlando con il pompiere Lorenzo, la signorina Iole spiega che Iacopo vive in discarica e "frequenta gente malvagia, ladri, marocchini, gente così. Sporchi come il posto in cui vivono" (141). La sporcizia, quindi, intacca anche la personalità e la moralità delle persone che la toccano; oltre ad apparire come sporchi untori, i residenti della discarica sono visti come esseri umani malvagi e disonesti. Ed infine, il lerciume del loro corpo suggerisce anche la loro inutilità. In discarica vivono quelli che Bauman definisce "redundant" (12), ovvero persone ridondanti e in esubero che non svolgono alcuna funzione all'interno di una società capitalistica. Del Vecchio, infatti, Iac pensa che "fosse tutto quello che fuori dalle mura non era permesso. Pensò all'inutilità di quell'uomo [...]" (176). Lo stesso Iac, abitante in transito della discarica, considera il Vecchio come una nullità. Come il Vecchio, però, anche Iac viene un giorno emarginato e scacciato. Di fronte alla porta di casa sua, Iac resta infatti immobile e impacciato quando capisce che la madre ha fatto cambiare la serratura della porta per impedirgli di tornare a vivere con lei e con il fratellino Tommi: "Adesso non era più lui, Iac, ad aver lasciato la casa di sua madre, ma era lei a chiuderlo fuori. Lo aveva buttato via, scartato del tutto" (184). Fino a quel momento, infatti, Iac aveva vissuto in transito tra la casa materna e la discarica, forzando di continuo le barriere tra pulizia e sporcizia, tra bene e male.

Spazzatura e paesaggio

La discarica è divisa in zone ben ordinate tanto da ricreare una micro-comunità dotata di strade e abitazioni. Al suo interno c'è anche la putrida. Qui, come suggerisce il nome, gli scarti hanno ormai perso la loro forma originaria e la loro identità; la putrida è simile ad una palude, ovvero una sorta di laghetto Walden postmoderno in un'era

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[11] Si veda a tale riguardo il saggio *Contro la falsa bellezza. Filosofia della chirurgia estetica* di Tommaso Ariemma.

tossica (Lioi 28).[12] Questo laghetto, pulsante di vita, è situato nel centro della città. Nel cielo sopra la discarica si vedono volare gabbiani e corvi che poi planano "da qualche parte lì vicino" (129). La zona melmosa è ricca di flora e fauna e il suo tanfo si fa annunciare "dagli elicotteri insettiformi che la popolavano. Zanzare anche in pieno inverno, scarafaggi ben nutriti e bestie strane che parevano arrivare direttamente dall'Africa centrale" (153). In discarica, quindi, i rifiuti si trasformano in paesaggio vivo o architettura imponente. Dai rifiuti nasce un vero e proprio ecosistema. La putrida è paragonata a una palude, "una viscida sabbia mobile equatoriale" (170); simile ad una foresta rigogliosa e incontaminata, una parte della putrida è sorprendentemente "rimasta ancora vergine" (157). Pur apparendo come una palude in parte incorrotta, si deve prendere consapevolezza della sua origine ibrida e, più in generale, dell'ibridità dell'intero paesaggio qui descritto. La putrida, infatti, esiste anche grazie all'intervento umano sul territorio; essa è costituita da terreno, pioggia, scarti vari liquefatti e quindi percolato. In questo panorama ibrido, nato da una collaborazione tra l'umano e il non-umano, i gradoni dei rifiuti sono "mattoni di pattume" (24) che si trasformano in ziqqurat, ovvero templi dell'antica Mesopotamia che hanno attraversato indenni secoli di storia. È qui lecito chiedersi se questi ziqqurat, prodotti con la nostra immondizia, resisteranno per i secoli in avvenire. All'interno di questa discarica la materia mostra con eloquenza di essere un testo leggibile. Volendo, infatti, i nostri posteri potranno analizzare l'immondizia ereditata, putrida e percolato inclusi, per costruire dei modelli di consumo contenenti informazioni essenziali sulla nostra società. Inoltre i "profili delle montagne di rifiuti" (47) hanno come sfondo le montagne "vere e più lontane" (47) e, insieme a queste, si viene a creare un paesaggio variegato e ibrido. Visti dall'alto questi rifiuti sembrano delle montagnole appuntite che ricordano a Saddam "le spezie colorate" (51) della sua città. "Avrebbe potuto cucinare mille piatti con quei colori, e tingere mille tappeti" (51). Per quest'analisi, è qui indispensabile mettere di nuovo in evidenza l'abilità di Bucciarelli di escludere dal proprio "discorso tossico" immagini di un Eden ormai perduto; quest'immaginario, infatti, potrebbe compromettere possibili reazioni positive da parte del lettore. La putrida può certamente ripugnare, ma la sua vitalità e forza agente sono degne di essere messe in risalto, poiché possono anche provocare stupore e incanto.

Più di tutti gli altri paesaggi, la putrida cattura l'attenzione di Iac, Lira Funesta, Argo Zimba e gli altri residenti della discarica; allo stesso tempo questa li terrorizza e fa loro ribrezzo. Secondo la tradizione letteraria del diciannovesimo secolo, "[s]wamps were both the land of death and a traditional image of Hell" (Lioi 20). All'interno della putrida vive la Cosa, essere misterioso difficile da definire e da categorizzare: "Nessuno aveva ancora capito che diavolo fosse [...]" (21). "[L]'avevano tutti mitizzata ed era diventato un punto d'onore stanarla, scoprirla, sconfiggerla" (20). Poco oltre Bucciarelli tenta di descriverla più accuratamente soffermandosi a tracciare un suo identikit e i suoi comportamenti:

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[12] Prendo a prestito questa espressione "a postmodern Walden for a toxic age" utilizzata da Anthony Lioi (28) nel commentare *The Meadowlands: Wilderness Adventures on the Edge of a City* di Robert Sullivan, pubblicato niel 1999 a New York dall'editore Anchor.

> [...] la Cosa si spostava, lasciava tracce ma non si faceva raggiungere né vedere. Aveva zampe, due o forse quattro, non lasciava prodotti di scarto o deiezioni, fatta eccezione [...] per piccole macchioline d'olio che si confondevano con il resto della sporcizia. Scavava tane invisibili all'interno dei gradoni degli ziggurat. Che abbandonava con estrema velocità. E quasi sicuramente si nascondeva sul fondo della putrida, e da quel punto risucchiava ogni cosa verso di sé. (22)

La Cosa viene percepita come un mostro da cui bisogna fuggire; contemporaneamente, però, gli abitanti della discarica le lanciano una sfida: catturarla. La Cosa può essere paragonata ad un drago, figura questa esistente da secoli nell'immaginario che si è sviluppato attorno alle paludi e agli acquitrini (Lioi 20). Il fluido della putrida, ovvero il percolato prodotto dai rifiuti lasciati a marcire impregnati di pioggia, è dotato di una forza agente distruttrice che logora, corrode e lacera i corpi di tutti quegli esseri umani e non-umani che toccano la sua "morchia indistinta" (137). Qui la materia dei rifiuti si trasforma in melma putrescente che causa una moria persino tra i topi. "Era un magma marrone indistinto, una putredine in parte grumosa e a tratti perfettamente liquida. Ogni tanto dalla superficie fuoriuscivano dei fiotti, che parevano sbuffi di balene" (157). Nella putrida scompare persino un camionista che decide di scaricare dei barili di materiale tossico in una "zona libera, magmatica, gorgogliante" (159). La putrida lo inghiotte lentamente, senza mai restituirne il corpo. A tale vista, Lira Funesta si immagina "gli spasmi addominali della melma che ingerivano il corpo del camionista, si aspettava un rigurgito a breve, una testimonianza che la digestione aveva iniziato il suo corso" (161). Dopo un banchetto in cui l'essere umano non mangia, ma contrariamente alle aspettative comuni viene fagocitato, "[l]a Cosa era satolla e diede un segnale repentino, una specie di contraccolpo che rimandò a galla un vecchio copertone di auto" (161). Basta poco per mostrarci come "[w]e ourselves become edible" (Morrison 49). In pochi minuti e senza alcun clamore, la putrida inghiotte un essere umano intero facendo così crollare quella solida barriera ontologica che, illusoriamente, ci permette di vedere gli uomini sempre e solo come consumatori all'interno di una complessa rete alimentare.

Similmente al laghetto Walden e al bosco circostante, descritti da Henry David Thoreau come un'unione inscindibile tra materia e spirito, si può sostenere che la stessa putrida, con la sua fauna e la sua flora, sembra costituita da materia e da spirito. Nonostante il suo nome evocante un oggetto fisico e materiale, la Cosa si presenta anche come un'entità immateriale, intangibile e persino ineffabile. Come il laghetto Walden e la sua foresta, anche la putrida si anima di vita propria. Dalla putrida Iac, Argo e Lira sentono spesso provenire suoni; soprattutto di sera "[n]ella mente dei ragazzi le immagini scaturivano dai rumori, e prima ancora di guardare venivano formulate le ipotesi di realtà su cosa, chi e come quei paesaggi sonori venissero prodotti" (154). I suoni, quindi, agiscono sui ragazzi entrando, senza consenso, nei loro corpi producendo delle immagini nelle loro menti. Bucciarelli evidenzia di nuovo l'ibridità del paesaggio

che è sempre materiale e immateriale, umano e non-umano, naturale e culturale, portandoci più volte a riflettere, si vedrà qui di seguito, sulla nostra trans-corporeità.[13]

Viscosità e barriere

La materia appare pericolosa soprattutto quando perde la sua forma solida e diventa viscosa, ovvero quando non può essere identificata e catalogata. La viscosità è una condizione tra il solido e il liquido; ciò che è viscoso è instabile, ma non riesce a scorrere. "Its stickiness is a trap, it clings like a leech; it attacks the boundary between myself and it" (Douglas 47). E sono proprio queste barriere labili tra essere umano e materia che vengono abbattute quando Iac si cosparge volontariamente con la melma dalla putrida. Nel tentativo di salvare il cane Nero e di ripararsi dal fuoco di un incendio, Iac immerge le mani nella putrida per poi ricoprirsi con il suo fango. Così facendo, Iac crede di creare una crosta solida sul suo corpo per proteggersi dalle fiamme, elemento naturale questo che appare in continuazione all'interno della narrazione. Dopo essersi spalmato questo compost tossico su tutti i vestiti, sul volto e sui capelli, Iac si rende conto che i suoi abiti si stanno lentamente sfaldando "[c]ome se dalla terra si propagasse qualcosa in grado di mangiare le suole e da lì risalire piano piano fino a raggiungere la stoffa. Adesso anche il resto dei calzoni pareva disfarsi" (59). Poco dopo, Iac cerca di spogliarsi nel tentativo inutile di "eliminare la sensazione pungente sulla pelle" (59). Tutto ciò dà origine, nei giorni successivi, ad uno "sfogo rosso e spesso" (94) su cui il dermatologo pronuncia una diagnosi "fumosa" (94): trattasi di "dermatite atopica" (94). Invece di formare una solida protezione contro gli agenti esterni, e più precisamente contro il fuoco, la materia viscosa della putrida oltrepassa, attraverso la pelle, la barriera porosa del corpo umano. Ciò dimostra efficacemente quanto la corporeità umana sia in realtà una vulnerabile e intima "trans-corporeità" (Alaimo, *Bodily Natures* 2) che non può essere scissa dall'ambiente circostante. Per questo, fin dalla sua origine, il corpo umano è essenzialmente ibrido e non può essere considerato come un organismo a sé stante. Come si è già visto, infatti, il corpo viene regolarmente attraversato e plasmato da agenti e forze esterni. Iac può solo vedere gli arrossamenti cutanei prontamente curati con una pomata al cortisone e per alcuni giorni continua a sentire "un bruciore fisso alla gola" (94). Resta però impossibile addentrarsi nel suo corpo per investigare e determinare con certezza gli effetti reali della materia viscida e del fumo tossico da lui inalato. Questi effetti, infatti, pur essendo impercettibili nel presente, possono emergere e rivelarsi a pieno a distanza di anni. Nei giorni seguenti all'incendio doloso, le autorità ammettono "la presenza di materiale non compatibile con la destinazione della discarica, ma nessun allarme per la popolazione" (93). La popolazione che vive nei paraggi della discarica ipotizza anche che "forse da quella combustione si era sprigionata una certa dose di diossina, ma come fare a provarlo" (93); l'inchiesta delle forze dell'ordine viene infatti prontamente archiviata e dimenticata. La misteriosa

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[13] Si veda "Verde come la mia Milano", un bellissimo saggio dell'autrice da cui traspare con forza e sensibilità l'ibridità di Milano, città in cui "la natura e noi, gli uomini e le donne di pianura, riusciamo a coesistere [...]".

eruzione cutanea sul volto di Iac e l'accenno alla diossina non possono che richiamare alla mente *Una lepre con la faccia di bambina* di Laura Conti, uno tra i primissimi romanzi ad affrontare l'argomento dell'inquinamento ambientale sul territorio italiano. Qui si narra il disastro di Seveso, accaduto il 10 luglio 1976, quando, surriscaldandosi, un reattore della fabbrica ICMESA ha rilasciato nell'atmosfera un'ingente quantità di diossina. Questa sciagura ha contaminato un'area di quindici chilometri quadrati andando a colpire a vari livelli trentasettemila persone sparse tra le città di Seveso, Meda, Cesano, Maderno e Desio (Seger 52). In entrambe le opere si minimizza la gravità dell'incidente ambientale e, con indolenza, le autorità indugiano prima di informare la popolazione sull'accaduto; anche se con meno clamore, anche in *Corpi di scarto* si crea una discrepanza tra il discorso ufficiale divulgato dalle autorità e l'esperienza tossica effettivamente vissuta da Iac e dai suoi amici. [14] In tutti e due i romanzi, inoltre, il corpo umano si presenta con forza come un testo da leggere e da decifrare. Il corpo di Iac, ad esempio, coinvolto nell'episodio dell'incendio doloso, è plasmato non solo da agenti materiali, quali la diossina e le sostanze tossiche presenti in discarica, ma anche da forze immateriali, come i forti interessi industriali legati all'ecomafia, la negligenza delle istituzioni nell'affrontare l'incendio e nel battersi contro lo smaltimento illegale di rifiuti tossici, e l'incapacità di un intero corpo sociale di contrastare con efficacia fenomeni di marginalizzazione e di aspra diseguaglianza che spingono il giovane ragazzo ed i suoi compagni a vivere all'interno di una discarica. In linea con i presupposti dell'ecocritica materiale, si è qui incoraggiati a percepire la corporeità umana come trans-corporeità, "in which the human is always intermeshed with the more-than-human world" (Alaimo, "Trans-Corporeal Feminisms" 238). Per questo motivo, l'essere umano prende forma e si modifica interagendo con l'ambiente e con tutti gli esseri, viventi e non, che lo popolano. Similmente, gli abitanti della città non si possono ritenere scissi dall'immondizia che producono incessantemente e che palpita nel cuore della città. Saddam, il più abile e il più creativo tra tutti nell'assemblare la materia ritrovata in discarica, è particolarmente consapevole della nostra trans-corporeità e lo dimostra anche attraverso l'uso di un'interessante metafora. Saddam sostiene di avere lasciato la Turchia dopo una malattia che lo aveva reso claudicante. Stanco di essere "additato e compatito" (15) in patria, "[...] si era imbarcato per l'Italia perché aveva pensato che uno Stato a forma di gamba avrebbe forse potuto restituirgli una certa speranza" (15). Saddam vede quindi nell'Italia un corpo vivente plasmato da altri corpi, umani e non, in cui spera, come fanno altri migranti e profughi, di ritrovare conforto e fiducia. *Corpi di scarto* è dotato di un vocabolario fortemente spaziale che, apparentemente, vuole tracciare costanti barriere

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[14] Per un'analisi ecocritica materiale del romanzo di Laura Conti si veda il saggio "Toxic Epiphanies. Dioxin, Power, and Gendered Bodies in Laura Conti's Narratives on Seveso" di Serenella Iovino. A questo si aggiunge anche l'illuminante articolo di Monica Seger "Narrating Dioxin: Laura Conti's *A Hare With The Face of a Child*"; qui Seger sostiene che l'atto di narrare e di raccontarsi storie di Marco e Sara, i due adolescenti protagonisti del romanzo, è un modo efficace per resistere e reagire al nebuloso discorso tossico alimentato dagli adulti e dal governo italiano e definito dall'autrice come un "informational chaos" (55). Attraverso il racconto, Marco e Sara riescono a dare un senso a ciò che appare inintelligibile al resto della popolazione, e sviluppano e affinano la loro empatia verso l'ambiente, il non-umano e l'altro. Similmente, si vedrà qui di seguito, attraverso il contatto costante con la materia Iac ed i suoi amici coltivano un atteggiamento di cura verso gli oggetti che li circondano e più in generale verso la materia.

tra l'interno e l'esterno. Nonostante questi confini, le sostanze nocive si espandono, erraticamente e indipendentemente dalla volontà umana, nell'aria e nel sottosuolo, soprattutto dopo un incendio o una pioggia torrenziale. Già all'interno della discarica, i rifiuti invadono zone a loro precluse: "La discarica era estesa qualche chilometro, forse sette, in teoria avrebbe dovuto rimanere nei confini del muro, ma nella pratica proseguiva fino quasi a lambire i termovalorizzatori" (14). Pensando alla Cosa, Lira Funesta deve ammettere che non era sicuro che se ne sarebbe restata per sempre sul fondo della putrida a ingoiare rifiuti: "Forse, chissà, un giorno avrebbe potuto uscire da quel luogo e recarsi fuori dal recinto, compiendo una strage. Ammesso che già non lo stesse facendo in qualche modo a lui sconosciuto" (169).

Un occhio al linguaggio

Con alcuni esempi selezionati, si vuole qui evidenziare brevemente la scelta accurata del vocabolario utilizzato dall'autrice per descrivere la vita all'interno della discarica, tra esseri umani e spazzatura. Il Vecchio viene descritto come un oggetto, "un fagotto" (20) dotato di "vita propria" (20); più spesso, egli si presenta come "una testuggine" (147). Il corpo di Iac è una "carcassa sporca" (28), e Saddam pare "il re delle scimmie" (102). Il cane Nero è percepito "uomo" (10) e, quando viene catturato, si può sentire il "pianto dell'animale" (48). I grossi mezzi di trasporto presenti in discarica sono dei "bestioni" (16) che emettono un "verso simile al barrito di un elefante" (30) dotati di una "proboscide pronta a scavare e rimestare" (30) tra i rifiuti. Questi mezzi procedono come "piccole formiche operose" (51). Dalla putrida proviene spesso "una specie di barrito" (99) e il suo magma putrescente emette "sbuffi di balene" (157). Lo sfiatare della melma è paragonato al "rutto di un ventre satollo" (157) e la terra nei paraggi delle putrida è "rugosa" (158). In discarica, i corvi e i gabbiani "gridano come bambini" (129) e Silvia "[c]inguettava, come una bollicina di gas alle prese con la propria evanescenza" (165). La signorina Iole, babysitter di Tommi, si rivolge a Lorenzo "quasi miagolando" (139). In discarica, i due amici Iac e Lira affondano le loro scarpe "nel ventre molle della montagna di rifiuti" (97). È da notare anche l'uso significativo del verbo assemblare. Nel rifugio di Iac si trovano "accrocchi assemblati da ogni sorta di oggetti" (80). Così come gli oggetti sono assemblati, anche il corpo umano appare a volte un assemblaggio; intrappolato con la gamba in una tagliola, Lira pensa all'infezione che si svilupperà dalla ferita, un vero o proprio "assemblaggio sottocutaneo di pus marcescente" (101). Assemblata, si è visto, è anche Silvia a fine romanzo con le sue due nuove protesi. Di protesi si parla infine riferendosi ad uno sgabello, le cui gambe sono state "più volte aggiustate e rinforzate con protesi di ogni materiale" (109). Alla putrida viene riconosciuto un corpo, gli umani sono paragonati a esseri animali e i macchinari si appropriano di qualità vitali. Attraverso un linguaggio accurato, ma anche metaforico, Bucciarelli è in grado di fare emergere la forza agente di qualsiasi essere, organico e non. L'intento della nostra autrice non è certo quello di antropomorfizzare la natura, ma di mettere in risalto l'eloquenza e la vitalità di tutta la materia che è in costante scambio con la dimensione umana e di cui lo stesso essere umano è costituito.

Un "discorso tossico" originale

Potenzialità oltre la catastrofe

I rifiuti sono ambivalenti e possono avere una connotazione sia negativa sia positiva; per questo, vanno considerati come un "lascito materiale bifronte" (Broggini 50). In *Corpi di scarto* la spazzatura, a causa e grazie alla sua forza agente, appare, in alcuni casi, negativa (satanica) ed in altri casi positiva (divina). A seconda della situazione, l'immondizia si presenta come un orrore spettrale da evitare o come risorsa da riutilizzare, concetto quest'ultimo che qui si spinge oltre le varie forme di raccolta differenziata imposte dall'amministrazione pubblica cittadina. Alla fine di *Corpi di scarto* non si può che provare sconforto; un bambino, Tommi, si ferisce al volto e rischia di perdere la vista dopo avere toccato del materiale tossico della discarica. Nessuno viene però incriminato e il romanzo si conclude in ospedale dove tutti i protagonisti, in un silenzio raccolto, pensano alla discarica e alla Cosa. Similmente, possono turbare le riunioni tenute a casa del chirurgo Mito e abilmente orchestrate dalla moglie per reclutare donne agiate, pronte a farsi rimodellare con punturine di botox o sotto il bisturi del marito. Il discorso tossico sfrutta le paure della gente comune e, così facendo, può limitare o impedire del tutto una loro possibile reazione positiva; secondo Gay Hawkins "[e]xisting representations don't just use waste to organize our fears about the end of nature; *they also limit how we might respond to this*" (8; enfasi nostra). Senza dubbio, Bucciarelli mette in evidenza gli effetti nefasti dell'immondizia sovrabbondante e dell'intrusione della criminalità nella gestione dei rifiuti. Pur rifacendosi al discorso tossico, però, la scrittrice non ripropone immagini di un Eden perduto. Nel suo complesso, infatti, la città non viene mai descritta come un accumulo di cemento i cui palazzi e le cui strade hanno deturpato o divorato la natura; al contrario, si è visto, viene messa in risalto l'essenziale ibridità del paesaggio contemporaneo. Come scrive Hawkins, le storie del disincanto non fanno che fomentare forti dualismi tra l'umano e il non-umano: "Disenchantments stories presume a fundamental dualism between human culture and nonhuman nature. No matter how they configure the relation between the two sides, each ultimately stands as ontologically distinct from the other" (9). Immersa nel pensiero ecologico e allenata, grazie al suo "sguardo obliquo", ad assumere una molteplicità di punti di vista, Bucciarelli non erige rigide barriere ontologiche; al contrario, la scrittrice accentua le mutue interconnessioni esistenti tra tutta la materia e, così facendo, personalizza con efficacia il proprio discorso tossico che, lontano dal paralizzare, informa e sprona a coltivare un intrepido atteggiamento dell'incanto.

Oltre ad una valenza negativa, questo romanzo mette in evidenza anche le numerose potenzialità dei rifiuti che, collaborando con Iac, Argo Zimba e Saddam, si lasciano salvare dal fuoco degli inceneritori e riabilitare. Per questo è lecito affermare che il discorso tossico di Bucciarelli va oltre il consueto immaginario catastrofico e sprona ad accogliere nel nostro quotidiano anche il luogo contaminato e, più in generale, l'abietto senza farci cogliere dalla rassegnazione, evitando, comunque, ottimismo naïve.

Così facendo, Bucciarelli riesce a tessere un discorso originale e complesso attorno alla monnezza. Secondo Hawkins, "[w]aste as dead objects throws up few possibilities, but waste as things is full of promise, *full of possibilities* of becoming a resource for being" (75; enfasi nostra). E questa discarica diventa proprio il fulcro di numerose possibilità per gli abitanti della metropoli che si trasformano in veri e propri spigolatori contemporeanei. Al di fuori della putrida i rifiuti sono separati in varie zone e mantengono la loro forma originaria. Tra questi rifiuti gli abitanti della discarica trovano la materia prima con cui costruire le loro abitazioni; tra gli scarti, ad esempio, Saddam "si era creato una casa, quasi fosse un'abitazione vera, assemblando oggetti colorati e accumulando un discreto numero di utensili [...]" (17). Non solo gli abitanti della discarica reperiscono lamiere e cartoni con cui innalzare le pareti delle loro abitazioni, ma riescono anche a trovare tutto ciò di cui hanno bisogno per vivere con sobrietà; dall'arredamento all'abbigliamento, per passare poi al cibo, a volte scaduto ma ancora perfettamente integro nelle confezioni sigillate. Parlando con Silvia, Iac sostiene di non aver paura di eventi catastrofici che possano radere al suolo intere città, poiché, afferma: "So scavare tra i rifiuti e so cercare quello che mi serve e il più delle volte riesco a trovarlo, magari non proprio quello che mi serve però ci vado molto vicino" (75). In *Corpi di scarto*, la discarica presenta "inaudite possibilità" (16) per chi le sa riconoscere, cogliere e sfruttare; essa si può persino trasformare in un immenso "luna park" (197). Questo succede perché, ironicamente, ci ricorda il sociologo Guido Viale, "[...] la cosiddetta civiltà dei consumi in realtà non consuma abbastanza, se per consumo si intende una utilizzazione esaustiva di ciò che è stato prodotto [...]" (64-65). In discarica, infatti, si possono trovare prodotti ancora confezionati o solo parzialmente utilizzati: nei sacchi del centro "Iac trovava quasi sempre qualcosa di utile, cibo scaduto ma ancora nelle confezioni integre. Vestiti macchiati ma ancora nuovi e soprattutto scarpe" (31). Tra gli scarti, Iac è convinto di riconoscere anche quelli provenienti da uno stesso nucleo familiare benestante; qui vi trova i collant della "signora dei sacchi blu" (99); le sue calze sono "sempre pulite, sapevano ancora di bucato" (99), come anche quelle del marito "di filo di scozia scure, annodate allo stesso modo e come le precedenti sempre appena lavate" (99). In discarica, quindi, si accumulano anche oggetti che vengono scartati solo per poter essere sostituiti con della merce dell'ultimo modello in un perpetuo ciclo vizioso, secondo i principi dell'obsolescenza pianificata. Qui, ad esempio, si trovano "[l]amette terminate ma anche rasoi usa e getta obsoleti, probabilmente sostituiti dall'ultimo modello, che nel giro di poco sarebbe stato gettato nei successivi sacchi blu" (99).

Cura e incanto

Secondo Latour, "things do not exist without being full of people" (10). Bisogna perciò fare molta attenzione a cosa si scarta e a quanto si scarta. Il rifiuto, infatti, comprende anche parte dell'essere umano che l'ha posseduto e che l'ha prodotto. Del resto, in un mondo globalizzato, l'oggetto si dilata oltre i confini della materia e ingloba in sé tutti quei processi economici e sociali, ma anche fisici, biologici e chimici necessari

per la propria produzione. Più che mai, nella nostra società, l'oggetto si fa testo e, una volta dischiuso, rivela mondi, materiali e persone lontani. Abbracciando il pensiero ecologico, è possibile percepire un piccolo oggetto come un ologramma che include migliaia di lavoratori, sparsi sull'intero globo terrestre, alle prese con la materia prima. Parlando di una lattina di pomodori, Viale scrive che: "L'oggetto che tengo in mano si è così dilatato nello spazio e nel tempo in una misura tale che sembra quasi impossibile sottoporlo a un calcolo" (119). Per questo, *Corpi di scarto* ci ammonisce a usare più accortezza verso ciò di cui, a cuor leggero, ci sbarazziamo quotidianamente. "In the chaotic mess of trash—sostiene Kennedy—we fail to pick out our being in their beings" (151). E così, in discarica, ci finiamo anche noi, prematuramente. Non a caso, qui viene gettato anche il materiale organico dei corpi umani rimodellati da Alfredo Mito e Mario Bianchi. Inoltre, vi risiedono anche quelle persone ridondanti ritenute, come suggerisce il titolo del romanzo, dei corpi di scarto, poiché non sono coinvolte nel processo schizofrenico di produzione e consumo caratterizzante la società contemporanea.

La discarica diventa il luogo per eccellenza del fallimento da parte dell'essere umano di preservare tutti quegli oggetti in cui ha precedentemente investito il proprio denaro, tempo e energie necessari per acquistarli. Nel suo *An Ontology of Trash. The Disposable and Its Problematic Nature*, Greg Kennedy sostiene che "[t]rue preservation of things depends on a *sensitive human intimacy* with them that arises from a physical understanding of their innerworldly being, their situation within the inclusive context of the world" (85; enfasi nostra). Similmente, parlando di sobrietà, Francesco Gesualdi afferma che la sobrietà è "una scelta di rispetto. Consumare con rispetto significa trattare bene gli oggetti affinché possano durare a lungo" (58). Una sera Iac invita Silvia nella sua abitazione e qui vi trascorrono un paio d'ore a parlare piacevolmente. Ecco come appare l'interno del rifugio di Iac in discarica:

> Silvia iniziò a guardarsi attorno, nella penombra di quel posto ordinato, quasi maniacale, pieno di cose strane, perfettamente allineate, *tutto sembrava avere una dignità*. C'erano oggetti che non aveva mai posseduto. Un registratore portatile con le cuffie in cui giravano delle cassette audio. [...] Un computer nero con i tasti piccolissimi, la cui marca era ancora leggibile: Commodor [sic] 64. (131; enfasi nostra)

L'interno di questa dimora, piena di strane cose, viene descritto in dettaglio, mentre Iac continua ad aprire scatole "da cui estraeva le sue miniere d'oro" (131). Nel tentativo di intrattenere la ragazza, Iac le mostra tutti gli oggetti di cui si prende cura quotidianamente. La cura, sostiene Kennedy, determina e plasma il nostro essere, e l'inabilità di prenderci cura dell'altro, umano o non-umano, vivente o inanimato che sia, danneggia la nostra stessa essenza (122). Il giovane Iac si trasforma in un Wall-E in carne ed ossa. Proprio come il protagonista-robot Wall-E dell'omonimo cartone animato di Walt Disney, anche Iac raccoglie oggetti desueti e apre le porte della sua dimora alla sua Eve-Silvia. L'intimità che abbiamo assaporato guardando il cartone animato *Wall-E* si sprigiona anche nelle pagine di *Corpi di scarto*. Il desiderio di Iac(opo) di stabilire una connessione affettiva genuina con Silvia, principalmente, e poi con gli altri abitanti della discarica, si manifesta anche grazie alla cura che egli mostra nei confronti di tutta la materia che lo circonda. Non abituata a toccare gli scarti, Silvia comincia comunque ad

accarezzarli con lo sguardo. Nel rifugio, infatti, "Silvia non toccava nulla ma *accarezzava* con la vista ogni cosa, curiosa e *stupefatta*" (131; enfasi nostra). Stupore è ciò che si sente quando si comincia a prestare attenzione a tutta la materia, anche a quella che causa disgusto. Convinta di questo, Bennett scrive: "[...] I don't assume that only a sacralized nature is capable of inspiring wonder and concern" (*Enchantment* 91). Infatti, anche di fronte alla putrida o tra gli oggetti più dismessi e inutili, si può provare incanto, una sensazione energizzante mista tra fascino e turbamento. Dopo aver disegnato delle stelline fluorescenti sul soffitto del rifugio, Iac chiede a Silvia di aprire gli occhi; la ragazza resta "bloccata" (132) ed "incerta se ridere o concedersi un'emozione" (132). Sono le emozioni di meraviglia che, sempre secondo Bennett, hanno la potenzialità di incoraggiare e alimentare rispetto verso l'altro e il non-umano: "The experience of enchantment is [...] an essential component of an ethical, ecologically aware life" (Bennett, *Enchantment* 99). Per questo, in continuo contatto con la materia, gli abitanti della discarica sembrano assumere vari atteggiamenti di maggior premura. È all'interno della discarica, tra scarti integri e morchia indistinta, che Iac, sotto la guida premurosa di Saddam, affina le proprie abilità a interagire con ogni sostanza ed a apprezzarne la sensuale vitalità. Tra gli scarti, ci ricorda Tim Edensor, il corpo è costretto a camminare facendo molta più attenzione a quanto gli sta accanto:

> To walk amongst a clutter of multiple objects and fragments is to move within a material environment which continually engages bodies, distracting and repulsing us, attracting us to unfamiliar textures or peculiar shapes, coercing us to stoop and bend, to make a path around and through stuff. (325)

Tutti gli abitanti della discarica sono pienamente consapevoli degli oggetti e degli scarti che li circondano; a volte, loro si devono piegare e abbassare o persino strisciare per entrare in discarica attraverso un ingresso secondario; altre volte, invece si arrampicano a carponi sui rifiuti come se stessero scalando degli ziqqurat o delle colline. Altre volte ancora, a causa della pioggia, Iac, Argo, Saddam e il Vecchio fanno fatica a camminare tra le "colate di materia" (137) e, a malapena, riescono a mantenere una postura eretta. L'ambiente in cui soggiornano sprona gli abitanti della discarica a essere più consapevoli della materia che li avviluppa costantemente e di cui loro stessi sono costituiti; tant'è vero che lo stesso Iac sostiene che "a volte non sapeva più distinguere se stesso da quei mucchi di scarti che lo circondavano" (83).

Tra oggetti scartati, pioggia, fuoco e percolato, i personaggi di *Corpi di scarto* potrebbero sentirsi sprofondare nelle "sabbie mobili dell'oggettività" (Calvino, "Mare" 59), ovvero in quel magma spaventoso in cui è difficile distinguere tra sé e il resto del mondo, perdendo così fiducia "nell'indirizzare il corso delle cose" (Calvino, "Mare" 59). Proprio da questo inabissamento nella materia, ci ricorda Calvino, può però svilupparsi anche "un senso di sgomento" ("Mare" 59) atto a riscattare le coscienze. Pur consapevole dell'impossibilità di comprendere una società reticolare complessa, globale e ad alto rischio come quella contemporanea, Bucciarelli sprona ad addentrarsi nel labirinto nel tentativo di mapparlo dettagliatamente. Solo così, Calvino docet, si può scrivere una "letteratura della *sfida al labirinto*" ("Sfida" 122; enfasi nel testo) che si oppone ad una pavida "letteratura della *resa al labirinto*" ("Sfida" 122; enfasi nel testo). Si può quindi

ribadire che Bucciarelli fa una coraggiosa scelta etica spingendosi oltre l'immaginario catastrofico; l'autrice sceglie di scrivere storie di incanto permeate di meraviglia e di sgomento.

Senza dubbio la discarica è anche il luogo dove viene gettata la merce logora che ha ormai perso la sua utilità. È proprio l'oggetto più logoro che, pur confondendo, sollecita l'inventiva di Iac, Argo Zimba e Saddam e pare lanciare loro una sfida per poter essere riabilitato e reintrodotto nel ciclo produttivo. Secondo Bill Brown, "[w]e begin to confront the thingness of objects when they stop working for us: when the drill breaks, when the car stalls, when the windows get filthy [...]" (4). Quindi, soprattutto quando un oggetto si rompe, l'essere umano acquisisce maggiore consapevolezza della materia di cui è fatto. L'oggetto deteriorato e mal funzionante sollecita la creatività di questa micro-comunità all'interno della discarica:

> Materassi, lavastoviglie, reti metalliche e aspirapolvere mal funzionanti, più una serie di altro interessante materiale, finiva invece alla *zona viva*, tra le mani di Saddam, che riusciva quasi sempre ad aggiustare, ripristinare e quando non riutilizzava per loro, anche a proporre come oggetto in vendita. Da lì Argo e Iac andavano alla fiera di Sinigallia [sic] o in altri mercatini rionali e rivendevano l'usato ancora funzionante a un prezzo che si poteva definire equo e solidale. (82)

Questi prodotti consunti si mettono a nudo offrendo così a Iac, Argo Zimba e Saddam semplice materia da rimodellare. Ogni oggetto, ci ricorda Bennett, è dotato di una "energetic vitality" (*Vibrant* 5) e per questo, anche ciò che appare inerte va invece osservato e percepito come una vivida entità creativa. Nel rifugio di Iac ci sono "accrocchi assemblati da ogni sorta di oggetti" (80). Parlando con Lira e Argo, Saddam afferma: "Smonto tutto e usiamo i pezzi per aggiustare le nostre cose" (126). Tra i residenti della discarica e la materia si instaura un rapporto di collaborazione reciproca che modella e plasma tutti i corpi, viventi o inerti. Gli abitanti della discarica restituiscono dignità agli oggetti che quotidianamente toccano con cura e grazie a questa attività riaffermano anche la propria dignità di esseri umani.

Conclusione: al di là della linearità

Con efficacia Bucciarelli mette in mostra la fallacia di un pensiero odierno largamente diffuso nei paesi industrializzati, ovvero la credenza che il processo produttivo sia lineare e che sia costituito da tre fasi tra loro nettamente distinte: produzione, consumo ed infine smaltimento. "Waste - scrive Kevin Hetherington - suggests too final *a singular act of closure, one that does not actually occur in practice*" (159; enfasi nostra). All'interno della discarica, si è visto, opera laboriosamente una micro-comunità di abili artigiani che riparano oggetti, quando è possibile, oppure li smontano del tutto per assemblarne di nuovi, dotati di singolarità propria. Questi oggetti vengono forgiati per l'uso personale dei residenti della discarica o finiscono in vendita sulle bancarelle della fiera di Sinigaglia, frequentata assiduamente da persone provenienti da ogni classe sociale della città. Iac, Argo, Saddam e Lira Funesta mostrano di conoscere i materiali scartati e di saperli riutilizzare creativamente; queste persone in

esubero, quindi, si rivelano essere portatrici di una conoscenza artigianale che si sta esaurendo oggigiorno all'interno di una società che, sempre più spesso, produce oggetti "usa e getta" destinati a durare poco. Le persone ridondanti assumono qui uno dei possibili atteggiamenti ecologici da dover imitare per salvaguardare il nostro pianeta. In discarica, inoltre, gli oggetti vengono riciclati e persino barattati. Un giorno, ad esempio, mentre Saddam cucina, Lira Funesta apparecchia la tavola prendendo i tovaglioli "che poi erano pezzi di carta qualunque, talvolta anche fogli scritti o pagine di riviste" (23) ancora leggibili. Quando i cercatori arrivano in discarica, Iac può assistere a veri e propri "scambi in diretta" (193) e lui stesso si appropria di materiale da potere scambiare in seguito con i nomadi: "Ai nomadi serviva il rame dei fili elettrici e Iac man mano che rinveniva cavi o bobine li teneva via senza sbucciarli e arrotolandoli per poterli trasportare" (193).

Second Hawkins, l'essere umano si sbarazza di oggetti obsoleti nel tentativo di esercitare il proprio dominio sulla materia. "To throw things away - scrive Hawkins - is to subordinate objects to human action, it is to construct a world in which we think we have dominion" (80). Gettando oggetti, quindi, si desidera affermare la propria supremazia. *Corpi di scarto* offre una lettura accattivante dei nostri rifiuti e del mondo in discarica. Gli scarti vengono qui narrati nella loro dinamicità e per questo, interagendo con gli esseri umani, essi riescono ad abbattere quella illusoria sequenza temporale lineare che li vuole erroneamente relegati alla fine del processo produttivo. Grazie alla sua forza agente, il rifiuto riaffiora sempre, a volte, danneggiando l'essere umano, altre volte, collaborando con lui in un clima di coesistenza. In entrambe le situazioni l'uomo non può che coesistere con la materia e, conseguentemente, con i rifiuti che si ripresentano senza sosta. Con *Corpi di scarto* Bucciarelli ha scritto un noir coinvolgente che mette in evidenza l'illusione dell'essere umano contemporaneo di potere regnare indisturbato sull'ambiente forte della convinzione che ci sia una netta divisione ontologica tra lui e il mondo esterno. A noi lettori, invece, viene qui ricordato in continuazione che il corpo è lo scarto "differito" per eccellenza con cui trascorriamo, più o meno pacificamente, tutta la nostra esistenza terrena.

Manoscritto ricevuto il 22 marzo 2017. Il manoscritto rivisto è stato accettato 8 ottobre 2017

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Plotting Against Oil in American and Canadian Non-fiction

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Abstract

Stephanie LeMenager, literature professor and author of *Living Oil: Petroleum Culture in the American Century* (2014), opens her study of America's relationship with the resource by asserting that reports of its death have been exaggerated. Oil not only continues to drive American modernity, but also to inspire writers to explore it, in both fiction and non-fiction. While "petrofiction," fiction with oil at its core, has received critical attention, certain new developments in non-fictional writing centred on petroleum call for more consideration. This article, therefore, probes representations of oil in contemporary American and Canadian non-fiction. It analyses William L. Fox's essay "A Pipeline Runs through It" (2011), which is based on a trip along the Trans-Alaska Pipeline, and Andrew Nikiforuk's article "Canadian Democracy: Death by Pipeline" (2012), which discusses the impact of the proposed Northern Gateway Pipeline from Alberta to British Columbia. Adopting an ecocritical perspective, the article puts to the test LeMenager's thesis that journalists are "expert plotters against oil" and "conservationists." To this end, it analyses the specific means by which the two journalists expose the presence of oil and highlight its micro and macro implications, from its impact on the landscape and the lives of people whose livelihoods and cultures have been shaped by the natural world, to that on democracy and our minds.

Keywords: Literature, non-fiction, oil, Stephanie LeMenager, Andrew Nikiforuk, William L. Fox.

Resumen

Stephanie LeMenager, profesora de literatura y autora de *Living Oil: Petroleum Culture in the American Century* (2014), abre su estudio sobre la relación de los Estados Unidos con el petróleo como recurso natural, mediante la afirmación de que los informes de su muerte han sido exagerados. El petróleo no sólo impulsa la modernidad americana sino también inspira a los escritores para explorarlo tanto en la ficción como en la no-ficción. Mientras que la "petroficción," ficción centrada en el petróleo, ha sido objeto de atención crítica, algunos nuevos desarrollos en la escritura de no-ficción centrada en el petróleo causan mayor interés. Este artículo trata de representar al petróleo en la no-ficción contemporánea americana y canadiense. Analiza el ensayo de William L. Fox "A Pipeline Runs through It" (2011), basado en un viaje a lo largo del sistema de oleoducto Trans-Alaska, y el artículo de Andrew Nikiforuk "Canadian Democracy: Death by Pipeline" (2012), discutiendo el impacto de la propuesta del oleoducto del Norte desde Alberta hasta la Columbia Británica. Adoptando una perspectiva ecocrítica, el artículo pone a prueba las tesis de LeMenager de que los periodistas como "expertos conspiradores contra el petróleo" y "conservacionistas". Para ello, analiza los medios específicos por los cuales los dos periodistas exponen la presencia de petróleo y destacan sus macro y micro implicaciones, desde su impacto en el paisaje y en las vidas de las personas cuyos medios de vida y culturas han sido moldeadas por el mundo natural, hasta su impacto en la democracia y en nuestras mentes.

Palabras clave: Literatura, no-ficción, petróleo, Stephanie LeMenager, Andrew Nikiforuk, William L. Fox.

How do journalists critique people's relationship with oil? The approach with which the following article is concerned has been described by Stephanie LeMenager as "plotting against oil," in *Living Oil: Petroleum Culture in the American Century* (2014). LeMenager writes of herself and of the purpose of her study in the following way:

> As a literature professor, I'm aware that that the narrative of petroleum is an unstable one, constantly shifting. I am not a political scientist, economist, or engineer, and my point is not to prophesy the future of fossil fuels, but rather to consider how the story of petroleum has come to play a fundamental role in the American imagination and therefore in the future of life on earth (4).

At the very beginning of the book she states that "[r]eports of oil's death have been exaggerated" (3). Both the United States and Canada boast sizable remaining oil deposits. Our current era, though, is what has been named "Tough Oil World" (3). She explains that "tough oil," as opposed to "easy oil," comes from unconventional oil resources. Alaskan oil extracted from Prudhoe Bay oil fields is an example of "easy oil." "Tough oil" must be extracted ultradeep in the oceans, in oil or tar sands and shale gas formations on land (3). The United States is exploiting ultradeep oil deposits in the South Atlantic and the Arctic, and shale gas formations in Montana and Dakota, while Canada has the 'tar sands' in northern Alberta and shale gas formations in Saskatchewan (3). Releasing oil from these deposits involves highly devastating techniques and risk of ecological destruction (3). LeMenager proposes that since "tough oil" extraction is extremely risky, complex, cumbersome, time-consuming, and expensive, working with it "implies an unprecedented devotion, even love" (4). The need to fuel modernity is what instils this devotion and love, not only in residents of the United States, but also in "people identified with the idea of America, its ideological, stylistic, military, and economic expression of modernity for the past century or so" (4). LeMenager notes, however, that America's relationship with oil is anything but one-dimensional. Oil spills in particular have complicated this relationship, by wreaking havoc on people, nature, and the economy. She discusses massive oil spills in California (1969), Alaska (1989) and the Gulf of Mexico (2010) that have traumatised Americans and turned even petroleum culture lovers against the oil industry. The Santa Barbara spill, the first major oil spill in the United States, sparked what she coins "an ecological awakening":

> The Santa Barbara spill occurred in waters only six miles off the coast, so a majority of affected animals washed up on local beaches. Birds, whose oil damaged feathers inhibited flight, fell dead into the town. Privileged people, conscious of their happiness, witnessed the violence of the cheap energy that made it possible. They were traumatized (25).

LeMenager therefore argues that America's relationship with oil is a love-hate one.

These contradictory emotions arising from living with oil have been reflected in literature. In the 1990s, Amitav Ghosh identified the genre of "petrofiction," fiction with oil at its core (11). LeMenager notes that petrofiction "provides one route to understanding our entanglement" with oil (11). She calls Amitav Ghosh and his successors, most notably Imre Szeman, "petrocritics," who "have begun to archive potential candidates for the best, most representationally astute oil novel," including Upton Sinclair's *Oil*, Vladimir Nabokov's *Lolita* and Jack Kerouac's *On the Road* (11).

LeMenager quotes Szeman, lamenting that novelists have tended to "balk at the oil encounter" and that fiction "hasn't dismantled our self-subjection to oil capital," even though certain novels, most notably *Oil*, can hardly be seen as celebrating oil (11). But she identifies a number of novels such as Helon Habila's *Oil on Water* and Attica Locke's *Black Water Rising* as works critically "plotting against oil" (124), drawing on Peter Brooks' definition of plotting "as the interpretative activity that constructs 'a story of the crime' otherwise unavailable to the reader," while at the same time playing on the everyday meaning of "plotting" as hatching a plot, or scheming for someone's or something's downfall (124).

However, not only fiction writers broach the topic of oil, or plot against it. Analysing Habila's *Oil on Water*, whose main character is a journalist, LeMenager recognises the journalist as "ideally an expert plotter," who "assists the culture in creating comprehensible and transmissible narratives, hence cultural memory" (125). Moreover, she claims that "Helon Habila's fictions emphasize the significance of journalists as 'conservationists,' by which he means creators and archivists of occluded histories, including ecological ones" (126). This prompts one to ask how oil is represented in contemporary American *journalism*. In the following, I ask what similarities with and differences from petrofiction are encountered in two journalistic essays, William L. Fox's "A Pipeline Runs through It" (2011) and Andrew Nikiforuk's "Canadian Democracy: Death by Pipeline" (2012). My questions include: What does journalism's capacity for "plotting against oil" stem from? What are the specific means by which Fox's and Nikiforuk's journalistic writing accomplishes this goal? How are these means similar to or different from those employed by fiction writers? Are the two journalists "conservationists" in LeMenager's sense of the word, and how do they create or archive "occluded histories, including ecological ones"? This article aims to answer these questions by adopting an ecocritical perspective corresponding to that outlined by the editors of *The Ecocriticism Reader* in 1996. Cheryll Glotfelty and Harold Fromm specified the tasks of ecocriticism by enumerating questions posed by ecocritics:

> How is nature represented in this sonnet? What role does the physical setting play in the plot of this novel? Are the values expressed in this play consistent with ecological wisdom? How do our metaphors of the land influence the way we treat it? How can we characterize nature writing as a genre? In addition to race, class, and gender, should place become a new critical category? Do men write about nature differently than women do? In what ways has literacy itself affected humankind's relationship to the natural world? How has the concept of wilderness changed over time? In what ways and to what effect is the environmental crisis seeping into contemporary literature and popular culture? What view of nature informs U.S. Government reports, corporate advertising, and televised nature documentaries, and to what rhetorical effect? What bearing might the science of ecology have on literary studies? How is science itself open to literary analysis? What cross-fertilization is possible between literary studies and environmental discourse in related disciplines such as history, philosophy, psychology, art history, and ethics? (xviii-xix).

While ecocritical analysis of a literary text usually includes genre-specific matters such as reflection on the author's stance vis-à-vis the attitudes expressed in the text, many of

these broad questions can also be approached by studying journalism as well as literary fiction and non-fiction. Ecocritics are interested in whether the text expresses a biocentric or an anthropocentric perspective, embodies any form of eco-aesthetics (for instance whether it presents formal equivalents of natural forms), decentres the human, or redefines beauty. The ecocritic views literature as a form of art depicting the material world and contributing to it, rather than as an autonomous linguistic phenomenon (as a postmodern critic would). Any text may be analysed ecocritically, using at least some of the questions listed above, since all texts give insight into what Lawrence Buell has called the "environmental unconscious" (*Writing for an Endangered World* 24). The term, coined in analogy with Frederic Jameson's concept of the "political unconscious," implies, as Julia Fiedorczuk has observed, that all texts, consciously or not, comment upon humankind's relationship with the natural world (10). To Fiedorczuk, the way a text is silent about nature can also prove as revealing as texts approaching the topic directly, in which the reader is provided with ready answers (10). The ecocritical approach can therefore be used to interpret a wide variety of texts, and not only works from the literary canon.

William L. Fox is receiving growing recognition as a non-fiction writer and journalist in the United States, and Andrew Nikiforuk is known as one of Canada's leading non-fiction writers and journalists. Their work provides a basis for investigation of LeMenager's conception of the journalist as a "plotter against oil," because the topic of oil extraction and its complexities is the primary concern of both authors. However, their backgrounds and perspectives differ considerably. Fox is an American writer whose work has been described as a "sustained inquiry into how human cognition transforms land into landscape" ("William L. Fox"). He has published poems, articles, reviews, essays, and non-fictional books. The essay "A Pipeline Runs through It," published in *Orion Magazine* in 2011, chronicles a trip on which he embarked with the founding director of the Centre for Land Use Interpretation in Los Angeles, Matt Coolidge, to trace the "anthrogeomorphology" of the Trans-Alaska Pipeline. "Anthrogeomorphology" is a term coined by Coolidge that stands for "human effects on the surface of the Earth" (Fox). The Centre for Land Use Interpretation is a non-profit organization tracing and documenting land usage especially for military and industrial purposes in the American West. One of Coolidge's projects involved organising an exhibition of photographs presenting the oil infrastructure in America, and the trip was planned to provide photographic material for the exhibition. The essay is therefore an outsider's account of the impact of one of the biggest structures connected with the oil industry in the world.

The Canadian journalist Andrew Nikiforuk's current work focuses on oil development, with special emphasis on Alberta's tar sands project ("Bio"). He has published articles, essays, and non-fiction books. In an article titled "Canadian Democracy: Death by Pipeline," published in *On Earth* magazine in 2012, Nikiforuk raised the issue of the tar sands. Enbridge, a company responsible for the 2010 toxic

bitumen spill into the Kalamazoo River in Michigan, planned to build two pipelines.[1] One of them, known as Northern Gateway, largely funded by Chinese companies, would have brought over 200 tankers to the marine terminal in Hartley Bay every year. It would have transported Alberta's oil to Hartley Bay and then to Asia. Enbridge planned to build the pipeline through the Great Bear Rainforest, a unique and vulnerable ecosystem, disrespecting the fact that such projects needed to be accepted by First Nations inhabiting the area. Nikiforuk's text thus presents the potential consequences of a pipeline which has not been constructed, unlike Fox's article, which explores the impact of a pipeline built in the 1970s. It is interesting, therefore, to compare the authors' responses to pipelines functioning in different kinds of reality: the Trans-Alaska Pipeline is very much incorporated into the Alaskan landscape, whereas Northern Gateway was only a possibility when Nikiforuk was writing his text, and remains unbuilt.

Before the aforementioned proposition—that journalists play an important role by telling stories which draw the public's attention to the hidden presence of oil in contemporary society—is put to the test with the specific instances of environmental journalism by Fox and Nikiforuk, journalism's capacity for "plotting against oil" needs further consideration. The argument in the following hinges on LeMenager's conception of "plotting" as "an act of detection that reconstructs the object it pursues, in this case an energy resource that seeks to hide itself, to dematerialize as capital" (124). She notes examples of literary plotting against oil in both fiction and non-fiction. As for fiction, the genre of the detective novel is the perfect vehicle for the task due to the fact that it attempts to resolve a mystery. However, when discussing Helon Habila's *Oil on Water*, LeMenager writes that Habila presents journalism "as a means of imposing narrative coherence on ecological and social conditions so chaotic as to be illegible even to those who ordinarily live with them" (LeMenager 125). Habila's journalist, Rufus, reminds LeMenager of a detective, who creates "an interpretative map (a plot) that generates a larger story" (126). Rufus is incapable of plotting in the Conan Doyle manner, that is coming up with a diagnosis and, in conclusion, exorcising the crime (LeMenager 126). He is forced by the complexity of the issue of the devastating oil exploration in the Niger Delta to make difficult choices. In addition, in order for the plot to be the carrier of cultural memory, it must "be of length to be taken in by the memory" (Aristotle, qtd. in LeMenager 126).

Journalistic writing performs the task of "plotting" oil in ways which both resemble and complement those of fiction. LeMenager argues that non-fiction may in fact manifest itself "almost in the guise of the detective narrative" (125), citing the journalistic piece *Black Tide: The Devastating Impact of the Gulf Oil Spill*, in which Antonia Juhasz exposes the tragic consequences of the 2010 BP blowout and the inefficient remediation in the aftermath of the catastrophe. *Black Tide* contains investigative reporting which "elicits material evidence that exists largely at the molecular level, so far out of sight as to be 'disappeared' by politically motivated rhetoric" (LeMenager 125). Journalistic writing has the capacity to highlight "the

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[1] While Stephen Harper's administration approved the project in 2014, the decision was reversed by Justin Trudeau's government in 2016 (Ilnyckyj).

microscale victims" of ecodegradation, to borrow LeMenager's phrase, at the same time as raising broader political, cultural, philosophical, and other issues concerning modernity's relationship with oil. Non-fiction writers are equipped to provide "plots" which ensure the transmission of ecological awareness as well as cultural memory. Reliance on facts, use of a variety of sources, and presentation of a mass of detail, combined with the ideal "length to be taken in by memory" which the genre of the essay-article adheres to, are examples of ways in which journalists seek to accomplish the task of plotting (for or against) oil. LeMenager comments that although plotting does not necessarily offer a solution, it constitutes "a subsistence practice, a means of making *some* meaning, of getting by" (127). But while it is arguably not the primary aim of fiction (exemplified by Habila's novel) to seek to make a difference in the real world, journalism aspires more often than not to do so (127). Journalism strives to look 'beneath the surface,' and it does so by performing "an inquest, a plot, upon historical truisms such as 'oil brings prosperity'" (LeMenager 136). How, therefore, do the two journalists "plot against oil"?

William L. Fox does so in ways that both resemble and differ from petrofiction. Firstly, he moves "continually between the backgrounds and the foregrounds, using the microscale to materialize macro-scale experience," thereby "negotiat[ing] the workings of oil in place" (LeMenager 134). He constantly changes the spatial perspective on the pipeline, never losing sight of its micro and macro implications. He starts with a general overview of the Trans-Alaska Pipeline, which he does in a rather matter-of-fact and encyclopaedia-like manner. He explains that the pipeline boasts a length of 800 miles, running from the Prudhoe Bay oil fields to Valdez, and "cuts a geomorphological cross section on an almost continental scale" (Fox). But also at the very beginning of the article he highlights the fact that the pipeline intervenes in the landscape in all ways imaginable, from bridges to pump stations. This perspective is, however, too broad to expose the full presence of oil effectively.

Fox comes closer to accomplishing his task when he depicts the subsequent steps of the journey that he and his companions start in Valdez. As LeMenager's comments in her interpretation of Matt Coolidge's boat tours for Houstonians, which were aimed at making them realise the enormity of Houston's oil infrastructure, Fox uses his journalistic writing "as a means of intelligence, a way to get inside an oil economy whose scale edges are inconceivable" (138). He provides the reader with what can be seen as literary equivalents of photographic shots of the traces of the anthropogenic impact on the Alaskan landscape, including ones which are kept hidden from the public. For instance, he describes, using the massive details technique, one of the five pump stations in operation alongside the pipeline at Mile 735, the pipeline running above the ground, an oil-spill response station, a secondary pipeline which supplies the U.S. Army's Black Rapids Training Site, Alaskan towns, the enormous Eielson Air Force Base south of Fairbanks, the Alyeska company's visitor centre and, finally, Prudhoe Bay Oil Field. Fox notes that when he and his companions reach Atigun Pass in the Brooks Range, where the oil slows down, they notice a helicopter over their heads, which may be linked to the

fact that the Alyeska traces the actions of those who show too much interest in their pipeline.

It is Fox's aim to counter the company's efforts to "dematerialize" oil "as capital," by documenting the pipeline and making it real for the reader. The author's close-up perspective on particular elements of the convoluted web of Alaskan petroleum infrastructure is, to recall LeMenager's phrase, "live plotting, inviting the imposition of interpretative will upon a story that will become legible through the interpretative frame and yet appear to extend beyond it" (38). Focusing the reader's attention on each item in the landscape in turn, Fox exposes their multifaceted implications. For example, describing the oil-spill response station, he notes that what he and his companions see there is one of the three spots where the pipeline is buried in permafrost to go under the road to allow animal migrations and avoid avalanches. At these three points, the pipeline is refrigerated to keep the ground frozen. He does not state it directly, but it is unproblematic to infer that despite these costly precautions the construction of the pipeline alters animal migration patterns and increases avalanche hazards.

Fox moves once again "between the backgrounds and the foregrounds" in his description of the sensual and the philosophical aspects of his pipeline experience. Firstly, looking at the pipeline, he finds it difficult to believe that something looking so innocent may carry a substance capable of wreaking deadly, smelly havoc. In this way, not only does he expose petroleum as a material presence otherwise escaping the reader's attention, but he also creates sense memory by employing strong evocations of sight (LeMenager 129). He compares the Trans-Alaska Pipeline to "an alien artifact worming through the planet" and draws a contrast between the man-made pipeline and the wild flowers blooming under it:

> If the Great Walls of China are massive works of antiquity that from afar look like a zipper upon the earth, and Australia's Dog Fence is a set of wires threaded through the narratives of a country, then the Trans-Alaska Pipeline looks like an alien artifact worming through the planet. You look straight at it, turn your head left and right to see how far it goes, and it makes very little sense at first. It might as well be a flying saucer; it's just too big, too weird, too resistant to opinion. It does, however, invite wonder. People stood under the four-and-a-half-foot-wide tube, their heads tilted back to look at the structure that was elevated several feet above their heads, while the guide rattled off statistics. It was a warm sunny day, thunderstorms towering in the distance toward Valdez, and under the pipeline bloomed hundreds of yellow, orange, and blue wildflowers. When I put my hand on the galvanized steel it was cool, silent, massive, and without a hint of the millions of gallons of oil traveling inside.

This striking juxtaposition of the snake-like artificial construct with the rolling Northern landscape is an act of journalistic resistance to the destructive potential of such energy projects, while acknowledging the wonder that the Trans-Alaska pipeline arouses in Fox and his companions. It is left to the reader to decide, however, whether this wonder softens Fox's resistance (the pipeline is an imposing work of human genius) or rather strengthens it (the pipeline is imposing and hence even more perilous). While the above description reveals a somewhat ambiguous response to the pipeline, Fox's discussion of the meaning of "lines" in human experience in general and in the landscape in particular

establishes him as a writer plotting *against* oil. Upon entering the North Slope Borough, Fox muses:

> The borough line runs east to west, as does the Brooks Range, and extends from the Yukon Territory in Canada to the western shore at the Bering Sea. These enormous left-to-right lines on the land are crossed at right angles by the pipeline. This simple fact reminded me how persistently we insist on making lines across the land that run counter to the nature of the world and the unimpeded flow of water and people, goods and ideas (Fox).

Fox also notices a sign marking the northernmost spruce tree. However, fifty feet to the north, a younger tree grows. The tree line has clearly advanced as the Earth has warmed. Fossil fuels are composed of dead trees and vegetation which converted energy from the sun into matter millions of years ago, storing it. Extracting oil or gas from the ground, we draw upon this energy from the past. In the process, the CO_2 content of the atmosphere is increased, thereby trapping more of the heat from the sun, and resulting in global warming. As a result, spruce is moving northward every year. Fox notices that the pipe*line*, the tree *line,* and the borough *line* are all related to the human perception of the world through the prism of *lines*:

> Eighty percent of human perception is based on what we see, and the fundament of human vision is boundary contrast, the line between light and dark shaping every object in our minds. We see lines everywhere, even if they don't exist, our mind assembling random points along lines in an attempt to order everything around us. The condition is called pareidolia, and it's what led Percival Lowell to claim the existence of canals on Mars as he was peering through his telescope in the 1890s (Fox).

For centuries, people have assumed that by forming a construct such as a line we may exercise control over the land. But while man-made lines, including pipelines, are fixed in place, lines in nature are not. The human-made lines constitute boundaries to the spread of genes and migrations of herds and contribute to climate change by moving such natural lines as isotherms and tree lines. As Fox points out, "[a] line seems so simple, but make a mark and you reorder the world around it" (Fox). What we deem a way to energy security is a burden on the natural world. The pipeline becomes in Fox's piece a reminder of industrial modernity, an era in which we have excelled at imposing lines upon the Earth so as to ensure the continuation of the mode of living we have chosen. In focusing attention on lines in the landscape, Fox becomes a plotter against oil. He exposes oil and oil infrastructures, highlights their devastating effects on the natural world, manages to capture the enormity of the Trans-Alaska Pipeline by first depicting it, then examining fragments of it in order to make it available to the reader, evoking in the process the senses of touch and sight, and finally ascribing some broader, cultural, and philosophical sense to it.

In "A Pipeline Runs through It" Fox makes visible the occluded ecological history of Alaska, exposing oil where it appears invisible and zooming in on the micro implications of the American North's petroleum infrastructure, as well as moving beyond the local context to raise global climate change issues. He also archives the tragic *Exxon Valdez* oil spill, which took place off the Gulf of Alaska in 1989. He may therefore

be classed as what LeMenager calls a "journalist-conservationist." Andrew Nikiforuk also recounts the story of the *Exxon Valdez* spill in his article:

> Although the ship's owners blamed the 257,100-barrel spill on an alcoholic captain, the disaster, as noted by Steve Coll in his book *Private Empire: ExxonMobil and American Power*, was "abetted by inadequate regulations and corporate safety systems." The tanker didn't have a large enough crew to navigate the hazards of Prince William Sound, and the Port of Valdez didn't have enough equipment to respond to the spill. As a consequence, the oil contaminated 3,200 miles of shoreline and spread almost 1,200 miles from the accident scene. It caused the collapse of the herring industry, badly damaged the pink salmon fishery, and halved seafood harvests for aboriginal groups. It killed more than 100,000 seabirds and 3,500 sea otters. Communities sank into alcohol and despair (46).

Nikiforuk stresses the fact that the spill affected the livelihoods of the coastal residents of Prince William Sound in the Gulf of Alaska, traumatising them and causing a variety of social pathologies. Like Fox, in archiving this grave ecological catastrophe he becomes a "journalist-conservationist." But while Fox thematises the human intervention in the Alaskan landscape of a pipeline that has existed for some forty years, Nikiforuk predicts what will befall the Canadian environment if the two proposed tar sands pipelines in British Columbia are constructed. This prediction or projection may be called an "archive" in which Nikiforuk stores not an occluded ecological history, but rather a warning for the future. His conservationist effort is particularly discernible in his discussion of the likely environmental impact of the pipeline, which would have traversed the Great Bear Rainforest. His non-fictional treatment of the proposed project is clearly based on a variety of sources, from local people and tribal elders, to scientists and political activists. For instance, Nikiforuk recounts in his article his conversation with Riki Ott, a marine toxicologist and former commercial fisher, who claims that an accident off the Great Bear Rainforest, which supports different species of bears, numerous eagles, and salmon, could be more devastating than the *Exxon Valdez* oil spill, due to the more difficult navigating conditions and the fact that oil sand sinks rather than evaporates once it comes into contact with water. Moreover, it is more toxic and more harmful both for people and wildlife. Ott does not believe that an accident may be prevented, and his final message is straightforward: "As long as we drill it, we are going to spill it" (Fox).

Nikiforuk "conceives a plot to remake neoliberal policies and the systems that sustain them back into public knowledge," which brings to mind another fictional character examined by LeMenager in her study, Attica Locke's lawyer-detective (132). What Nikiforuk means by the term "democracy" in the title of his essay is primarily the right of all citizens to express their opinion about the projects affecting their surroundings. His plot and his resistance to the destructive effects of energy projects are exemplified by his detailed description of the undemocratic, in his view, implications of the Canadian tar sands development. He recounts that the Great Bear Rainforest is home to twenty-eight First Nations groups, who "manage the rainforest under a plan that [has called for] ecotourism, renewable energy, sustainable forest products, shellfish aquaculture, and the restoration of First Nations' access to fisheries" (44). Coastal First

Nations, an alliance of 10 nations and 20,000 people, have vehemently opposed Enbridge's project, fearing that their food supply may be put at risk. Nikiforuk structures his resistance to oil drawing on legal principles. He points out that under the Canadian constitution, the federal government and private corporations must obtain consent from First Nations peoples. Initially, Enbridge announced that they would respect the wishes of Coastal First Nations, but they changed their minds and decided to pursue their original idea.

Nikiforuk exposes in his article the covert connections between industry and politics, bringing them into public knowledge, and plotting against oil in this way. In his view, the Conservative Party, which was in power at the time, strongly believed in the need to utilise Canada's tar sands, in order to transform the country into an energy superpower, "akin to Saudi Arabia" (44). They hoped that thanks to the pipelines the export of oil would increase threefold by 2035. However, it could not happen without bringing the oil from the tar sands to Canada's tidewater ports. Nikiforuk points out that when Coastal First Nations opposed the pipeline in 2009, the Harper government launched an offensive by introducing numerous changes to pipeline-threatening environmental laws. For instance, the only laws that were left in Canada's Fisheries Act concern fish important from a commercial point of view. Moreover, the Navigable Waters Protection Act was amended so that pipelines were no longer subject to its provisions, putting numerous endangered species at risk. Furthermore, the Environmental Assessment Act was rewritten, reducing the number of projects to review, limiting public involvement and narrowing the definition of "environmental effects." Also, the government started investigating the activities, and the foreign funding, of registered charities such as environmental NGOs and Tides Canada. Finally, funding for critical environmental research programmes was drastically reduced. These moves on the part of the government led Nikiforuk to the conclusion that Canadian democracy was under threat of "death by pipeline."

Nikiforuk's plotting against oil "for the sake of democracy" makes the essay an example of environmental justice advocacy. Lawrence Buell has described environmental justice initiatives as "movements to address the unequal distribution of environmental benefits and hazards across population groups, especially by race and/or class" (419). In *The Environmental Justice Reader: Politics, Poetics, and Pedagogy* (edited by Joni Adamson, Mei Mei Evans, and Rachel Stein in 2002), the beginnings of the environmental justice movement are traced back to the 1980s and associated with the south-eastern United States, a notorious site of toxic waste dumping in the areas inhabited by people of colour. A crucial moment in the formation of the movement on an international scale was the First National People of Colour Environmental Leadership Summit in Washington, D.C. in 1991, which produced "Principles of Environmental Justice." According to Adamson, Evans and Stein, environmental justice is "the right of all people to share equally in the benefits bestowed by a healthy environment" (4), where the environment is understood as "the places in which we live, work, play, and worship" (4). Although environmental justice has been repeatedly discussed in connection with urban life, the authors claim that rural as well as land and water rights issues are also

concerned (12-13). The purpose of environmental justice initiatives is to "redress the disproportionate incidence of environmental contamination in communities of the poor and/or communities of color, to secure for those affected the right to live unthreatened by the risks posed by environmental degradation and contamination, and to afford equal access to natural resources that sustain life and culture" (4). Several of the novelists discussed by LeMenager in *Living Oil* are concerned with environmental justice in their problematization of oil development: Attica Locke, for instance, depicts the implications for the local communities of Houston, a city whose economy depends almost entirely upon oil-related activities.

Nikiforuk writes of the aboriginal population of Gitga'at from British Columbia's Great Bear Rainforest. He introduces them in the following passage:

> They dance and sing like spirited Maori warriors. The women speak softly to living cedar trees when they harvest a single strip of bark for basket or hat making. Every summer the Gitga'at greet returning schools of pink and chum salmon with smiles and shouts of "Ayoo, ayoo." Each member of the Gitga'at nation possesses a traditional name -- Gu thlaag, for example, means "the very instant that lightning hits a tree and the tree splits apart." For the past 10,000 years the Gitga'at have set their dinner tables with bounty from the sea, including salmon, cockles, crab, and halibut. In recent years they have struggled as commercial fisheries have declined in the region, yet the Pacific Ocean still defines them (42).

This description provides the reader with information about cultural practices and traditions of the Gitga'at. It is not only factual but also intimate. Nikiforuk characterises the nature of their connection with the natural world by pointing out their speaking "softly" to the trees, and greeting the returning salmon with "smiles," as well as stating directly that "the Pacific Ocean defines them." This almost pastoral depiction contrasts strikingly with the part of the essay which follows, in which Nikiforuk discusses Enbridge's plans. He writes of the Coastal First Nations' attitude towards the most feared pipeline:

> The twin pipeline proposal, known as Northern Gateway and funded largely by Chinese state-owned oil companies, would bring about 220 tankers to Hartley Bay's doorstep every year. But for the past six   years the Gitga'at community and its coastal neighbors have politely but steadfastly informed   Enbridge executives that they have no intention of putting their food supply at risk from tanker spills, just so that tar-sands developers can put more cars on the road in smoggy Shanghai. Nor are they willing to exchange their views of rising humpback whales for supertankers eight times larger than the *Exxon Valdez* (43).

The image of the impact of the proposed pipeline on the coast, the water and the rainforest projected by Nikiforuk is a grim one. The Gitga'at and their coastal neighbours would need to sacrifice a great deal, getting little in return. Like Fox, Nikiforuk admits that oil exploration may contribute to creating more employment opportunities, but he doubts that oil boom towns are likely to positively impact the local populations overall. The proposed project endangers the coast and the rainforest, which for the aboriginal communities of British Columbia constitute not only homelands but also sources of livelihoods and bearers of cultural tradition. He deems oil exploration and the resultant

increased automobility (in China, not in Canada) unworthy of risking ecodegradation and loss of culture. Reporting all the facts he gathered in his multifaceted research, Nikiforuk plots against oil. He brings to the reader's attention aspects of the oil industry which people do not realise while living the life enabled by this industry. Energy projects provide jobs and allow us to drive cars, but they also destabilise communities who happen to inhabit areas of interest to petroleum-related companies, not only causing environmental injustice but also threatening democracy.

Thus, while both texts confirm Stephanie LeMenager's theses of the journalist acting as an "ideally expert plotter" against oil and as a "conservationist," there are some significant differences between the two authors' responses to the pipelines they depict. First of all, the two pipelines function in the texts on different cognitive levels. The Trans-Alaska Pipeline is an actual pipeline, incorporated into the Alaskan landscape. Therefore, it can be experienced, observed, and connected to as an existing object. On the other hand, Northern Gateway is a projected possibility, and thus cannot be experienced in the same manner. Fox experiences, observes, and connects to the Trans-Alaska pipeline and attempts to pass his knowledge to the reader, constantly shifting perspective between the whole physical object, details of it, and the less tangible matter of its meaning for the people whose lives are affected by it. Nikiforuk researches the history, the legal aspects, and the ecological implications of the Northern Gateway Pipeline without actually experiencing it first-hand. He relies on a variety of sources, most notably local people, and tribal elders, who entrust him with their fear and anger about the future. These emotions are then mediated to the reader, and enriched by Nikiforuk's own, calmer response.

Secondly, Fox revises his attitude towards the Trans-Alaska Pipeline. But Nikiforuk does not follow him. Fox recounts his attitudinal change in the following passage:

> We mistakenly conflate a mental construct such as a line with a measure of control over the planet, as if the line were more than a temporary description of our relationship to that body in space. Not only are lines impermanent upon the Earth, they are hardly fixed in our minds. A line of thought is less a ruled measurement than a complexly braided meander that changes to accommodate every experience. Which explains, in part, why we started out driving the pipeline with an adversarial point of view, but then became accustomed to it, and by the time we began to approach the end of the line, we had grown fond of it (Fox).

He admits that he and his companions started the trip with a hostile approach towards the pipeline. Yet, he explains that like the shifting lines in nature, lines in our minds are not made forever. He uses the concept of "lines" to account for the fact that he and his companions grew to accept and even perceive the pipeline as a comforting presence, and a stunning masterpiece of human engineering. When they see the pipeline running above the ground, they are perplexed and spellbound by it. Near the Alaska Range and its highest point, the Denali, they witness what Fox calls "a trick," with the pipeline disappearing under the river and then re-emerging mysteriously. Observing the pipeline from a hill, one of the participants of the trip describes it as "godlike" (Fox). Nikiforuk,

on the other hand, does not marvel at the human brilliance behind the pipeline construction project he discusses. Instead, he focuses solely on the negative impact of the proposed Northern Gateway Pipeline on people, the natural environment, and Canadian democracy.

While both authors emphasise the complexities of living in the age of oil, the issue thus raises a different kind of reflection in them and makes them use different means to express their conclusions. The Trans-Alaska Pipeline inspires Fox to a philosophical examination of the meaning of lines in human experience, whereas the Northern Gateway Pipeline project raises more predictable doubts of a political nature in Nikiforuk. While Fox uses factual language (and statistics), comparisons (the pipeline as "an artifact worming through the planet") and metaphors ("lines" as a means of measuring human control of the Earth), Nikiforuk relies mostly on facts (e.g. historical and legal) and anecdotes (referring to the numerous conversations he had with his interlocutors).

In conclusion, what the two texts have in common is that they both address treat people's agreement to sacrifice the well-being of natural enclaves, climate, and indeed, cultures "for the rotten promises of modernization," to quote Stephanie LeMenager (129). And although the two journalists 'plot' their critiques of environmentally damaging actions, the problem of modern civilization's overdependence upon oil remains unresolved. Nikiforuk points out in his article that Enbridge representatives wonder why people are so opposed to the project, "while saying yes to lights, cooked food, school buses, warm homes, and diesel-powered trains? It's a glaring disconnect in society" (48). Nikiforuk does not venture to resolve this paradox, despite LeMenager's claim of journalism's aspiration to offer a solution. Fox's discussion of the rhetoric of lines demonstrates that attitudes, like lines, are not fixed. Unlike Nikiforuk, Fox acknowledges the benefits we derive from oil as a driver of modernity, and petroculture as a human achievement. Celebrating the pleasures afforded by oil is surely a legitimate aim of writers, and Fox attempts to do justice to this aspect of oil engineering. He ends his journey along the Trans-Alaska Pipeline with a milder attitude towards it, leaving the reader with the impression that petroleum infrastructure may in fact be conceived as benign. People are capable of getting used to everything, even to something destructive. This reflection, however, is far from optimistic, as it implies human ability to become desensitised to potentially perilous phenomena. Fox's and Nikiforuk's aim is, however, to "plot" oil so as to make the reader aware of its micro and macro implications. Fox's appreciation of the brilliance of human genius symbolised by the pipeline is powerfully counterbalanced by the myriad ways both writers suggest petroleum impacts nature and people, including the way it affects our perception. The strength of these essayistic pieces read side by side is that even though they do not offer a simple solution to our civilisation's dependence on oil, they make petroleum available to the reader and render it real, exposing it where it would wish to remain hidden.

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Editorial

Creative Writing and Art
Green Computer and Video Games

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Halfway between virtual realms and mineral materiality, the world of computers appears on our ecological horizon by way of paradoxes. On the one hand, as products of industry and objects in a cycle of production and consumption, computers embody the striking contradiction between the planned obsolescence of their forms and the "deep time" of their matter (Zielinski, *The Deep Time*). That is why the Anthropocene is also, and essentially, connected to a "geology of media": "Media history conflates with earth history; the geological material of metals and chemicals get deterritorialized from their strata and reterritorialized in machines that define our technical media culture," writes Jussi Parikka (*The Anthrobscene*, Kindle pos. 245-246; see also *A Geology*). On the other hand, however, virtual reality, and videogames in particular, might be precious allies of the environmental imagination. Their power to exercise influence in our cognitive and affective sphere is excellently pointed out by John Parham and Alenda Chang in their introduction to the "Green Computer and Video Games" special focus section of *Ecozon@*'s Autumn 2017 issue. Virtual reality, they observe, can "immerse us in environments while narrating ecological interrelationship." The "linkage between body, environment, and narrative forged in motion pictures" is further intensified by "the interactive nature of playing computer or video games." Games indeed, notes object-oriented-ontology theorist Ian Bogost, "insert themselves into our lives, weaving within and between our daily practices […]. They induce feelings and emotions in us, just as art or music or fiction might do. But then, games also extend well beyond the usual payloads of those other media, into frustration, anguish, physical exhaustion, and […] desperation" (ix).

If so, what is the role of art and creative writing in the discourse of computer and green gaming? To what extent can virtual reality be a substitute for, and even complement our physical creative relationship to the world's ecologies? And what are the futures conveyed by this virtual "amplification" of reality?

To address these very questions, and with the purpose of opening a conversation with the journal's scholarly segment dedicated to this topic, the Creative Writing and Arts section offers a thought-provoking selection of works by international artists. Despite their diversity of languages, styles, and genres, these contributions have something in common: they all show how, when considered as works of art, virtual media and gaming reveal an overall amplification of creativity, with very interesting ecological applications. The exploration begins with the cover, which is drawn from the concept art for *Eco*, an educational game developed by the Seattle-based studio Strange Loop Games. As Alenda Chang and John Parham write in their Introduction, *Eco* is a multiplayer "global survival game" capable of stimulating "deep affective opportunities for environmental meditation." By aligning human impact to the life of ecosystems, this "build-

your-own-world" game is intended to encourage sustainable thinking on the part of individual players, for instance by limiting the hunting take on wild elk. The final goal is that, collectively, both human player-characters and nonhuman species and habitats might survive, and even flourish.[1]

From video games to virtual and augmented reality (abbreviated: VR, AR) is but a short step. The opening piece in this section is a suite titled *Gardens of the Anthropocene*, by the world-famous virtual reality artist Tamiko Thiel. A pioneer in the creation of "poetic spaces of memory" for social and cultural issues, Thiel is an art activist in the fields of VR and AR: a founding member of the artist group *Manifest.AR*, she has animated guerrilla AR interventions and uninvited performances in such prestigious sites as New York City's MoMA and the Venice Bienniale. Her *Gardens of the Anthropocene* is a public space Augmented Reality Installation, which was originally commissioned for the Seattle Art Museum Olympic Sculpture Park in 2016, and then disseminated to other sites. As the artist explains in her description, *Gardens of the Anthropocene* "posits a science fiction future in which native aquatic and terrestrial plants have mutated to cope with the increasing unpredictable and erratic climate swings." The plants featured in the AR installation are all modeled on the native vegetation in and around the Olympic Sculpture Park—vegetation that can thrive with land drought and warming seawaters, and are therefore expected to adapt to the temperatures of a progressively warming climate. Taking its cue from these scientific premises, the installation goes on to imagine a "dystopian scenario" (Thiel's words) in which plants face a naturalcultural mutation: becoming capable of extracting nutrients from sunlight and soil, as well as from the electromagnetic radiation of mobile devices and artificial structures, vegetal creatures transgress not only the "boundaries between underwater and dry land," but also those between "reactive flora and active fauna." And so, in images 1-2 we see "Bullwhip Kelp Feeding on Road Signs," in 2-3 a "Mutant Farewell to Spring Flowers" (an AR which is further virtualized by the use of smartphones), and in 4-5 an invasion of "Giant Red Algae" that seize both the Pioneer Works Art Center, Brooklyn, NY and the Salem Maritime National Historic Site.

The second art contribution is *Quick Response Journey*, an installation by Pia Alejandra Galvez Lindegaard. Born in Chile but currently based in Spain, Galvez Lindegaard is an environmental artist and architect, whose work consists mainly in site-specific installations and manipulations of low-impact natural materials, such as wood, timber, straw, water, bamboo, and canes. *Quick Response Journey* draws inspiration from the QR code, a two-dimensional code, apt to efficiently store data. As the author explains, a QR code, thanks to its being "dematerialized," is able to contain a huge amount of information, which can be instantly read by a machine. In Galvez Lindegaard's eyes, this symbolizes another contradictory reality, namely, that of humans' faith in technology pitted against the persisting slowness of their experience of the world. The installation's artistic "journey" is thus conceived as a sort of virtual trip via the QR code, an instant "pilgrimage" back and forth between "our primitive and technological needs." So the artist: "We start the journey entering from the carbon society. While we walk through the green corridor we absorb all the condensed amount of data of living nature. The same QR code is in the centre inside an illuminated box from the bottom full of sprouts, symbols of nature and inspiration to reverse the destruction of the earth going towards a post-carbon society."

The next piece is a short story, "Waiting for R2D2," written by Anthony Lioi. A Professor of English at the Juillard School in New York and a writer, Lioi is also the author of *Nerd Ecology*,

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one of the most innovative and enjoyable studies in ecocriticism to date. Echoing Beckett, Lioi reflects, as he declares in his statement, "on the possibility of benevolent artificial intelligence using the figure of R2D2 from *Star Wars*." With the irony and brilliance that also characterize his scholarly prose, Anthony tells us about his personal "bot-topia," halfway between a New Jersey boyhood and the Galactic Republic. What can we expect from a droid whose mission is to save the day at least once in every episode of George Lucas's saga? Maybe the promise of a better "future coming from the past":

> A long time ago in a galaxy far away, there lived a band of heroes named after the light of courage. The Green Lanterns. There were as yet no humans, but there was a dude so hot for power, he might have been from Jersey. To save planets from his madness, a Lantern named 3ri11—an artificial intelligence from beyond space, a bit chunky, like in *The Day the Earth Stood Still*—it sacrificed its life. […] Our giant robot friend […] died, but not without a vision. "FINAL CONCLUSION," sez 3ri11, "The most efficient way to find the Creator is to protect the Creation."

The cosmic travel continues in the poetry section, which features two original contributions. The first one, "moonbow o color is a code" by Chilean poet Luis Correa-Diaz, connects more explicitly with the special focus' topic. Correa-Diaz, who is Professor of Latin American Studies and Digital Humanities at the University of Georgia, is author of *CosmologicalMe*, and *clickable poem@s*, poetry collections suspended between virtual reality and ecology. "moonbow o color is a code" is a meditation on the physical energy of colors and bodily proximity situated at the intersection of languages (English and Spanish), hyper-textuality, and emotions. The quantic texture of light and colors is intertwined with the lover's corporeal temperature, the vibrations of air that turn into sounds, and the dance of photons and atomic particles. The seamless continuity between the emotional sphere and the digital media world is visible in the Youtube links embedded in the poem's text, which signify the deep entanglement of our visions, sensations, and feelings with a virtual world that, though seemingly ethereal, reverberates with the material sphere of human affective experience.

The second lyrical contribution, with which our section closes, is "Dos Ecopoemas Homoerótico y Otras Voces/Two Homoerotic Ecopoems and Other Voices" by the Costa Rican poet and scholar Ronald Campos López. Only apparently detached from our topic, this poetical suite reveals its lyrical power in the centrality of game and imagination, bodily and virtual encounters. The two homoerotic poems, "Cosmic room" and "Veil your nudity," are parts of *The Depravity of the Light*, an unpublished collection in which the author addresses the importance of gay voice in Costa Rican poetry. Rooted in a compound cultural heritage which encompasses Hispanic-Muslim, Hispanic-Jewish, Indo-American and Hispanic-Christian mystiques, as well as ecophilosophical perspectives, these poems express intimacy and cosmic interconnectedness, full corporeality and a sense of the sacred. Here the "cosmic room," writes Campos López, a "supra-reality" in which his two male lovers dwell, is turned, "poem by poem […] into a space of life, of luminous resistance," where they fight, symbolically and performatively, against homophobic injury, on the national and global level. The "Otra Voces" sequence, two parts of which are reproduced here, consists of three unpublished poems, in which the author gives a voice to what he calls "cracks": nonhuman things traditionally considered inert, "for example: the beetle, the Saharan haze or the cedar."

From extended consciousness to augmented reality, from the dream of droid saviors to the mystique of inclusive forms of loving otherness, this section has beamed up in a world where natureculture is embodied in the form of futurepresent. "*Il futuro non è più quello di una volta,*"

"The future is no longer what it used to be," someone has written, remindful of Paul Valéry, on a wall in Milan. Still, like Kant's regulatory ideals, we do need a better memory of the future, if we want to make the present a livable place. With their commitment to an earthly persistence despite and through overwhelmingly increasing realms of virtuality, the visionary works included in this Creative Writing and Arts section are the demonstration that "it is not a memory of the past, but a memory of a better future, an instrument for making that future real" (Lioi 3). Or, with a line from "Waiting for R2D2": "Millions of us feel the pull of a future from the past. We wait for the better robots of our nature."

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All quotations from the contributors of this art section are available on the journal's platform.

Gardens of the Anthropocene

Tamiko Thiel

Bullwhip Kelp Feeding on Road Signs

Mutant Farewell to Spring Flowers (foreground),
and Bullwhip Kelp Feeding on Road Signs

Visitors Viewing Mutant Farewell to Spring Flowers on Smartphones

Giant Red Algae (Alexandrium and Pseudo-nitzschia)
in Pioneer Works Arts Center, Brooklyn, NY

Ecozon@

Vol 8, No 2

Giant Red Algae (Alexandrium) at the Salem Maritime National Historic Site, Salem, MA, for the Boston Cyberarts Exhibit "The Augmented Landscape"

Ecozon@

Vol 8, No 2

Quick Response Journey

Pia Alejandra Galvez Lindegaard
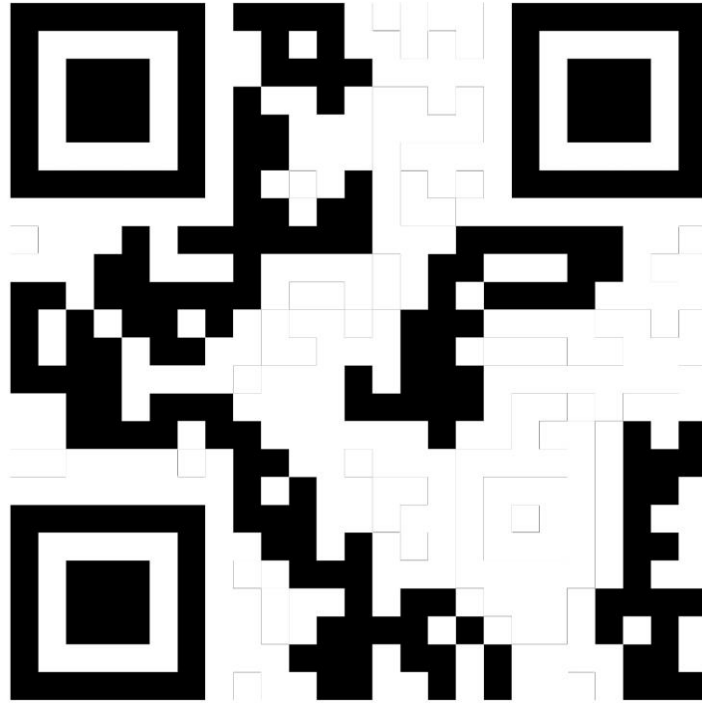
Quick Response Journey 1

Quick Response Journey 2

Ecozon@

Vol 8, No 2

Quick Response Journey 3

Quick Response Journey 4

Ecozon@

Vol 8, No 2

Quick Response Journey 5

Waiting for R2D2

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--dedicated to Darwin Cervelli,
the brainiest, most bot-crazy kid I know

The Strathmore Theater would be unacceptable to cinephiles of today, with its gum-sticky floor, blurry screen, and utter lack of cappuccino. In Aberdeen, New Jersey, the heart of Bruce Springsteen country, the Strathmore became the magic lantern that projected a galaxy far, far away. Once upon a *Star Wars*, in the summer of '77, my fourth-grade circuits were unimpressed by Luke Skywalker, whose whiny bullshit wouldn't have lasted five minutes on the playgrounds of yore. I too had grown up in a village—it cultivated corn, not clouds--so the farm boy excuse didn't fly. Princess Leia reminded me of my older sister, and though Indiana Jones was more compelling than Han Solo, his Wookiee struck me as a portent of an advanced dog civilization. In terms of imaginary friends, we were getting warmer.

To no one's surprise, at least where I was concerned, the day was saved by the zaftig droid with an electric attitude. Perhaps it was sympathetic magic--I have been the R2D2 to many a neurotic ectomorph. They have their uses, the Threepios, if cross-species dialogue in a million languages is your thing, but when it comes to blowing up Death Stars, Artoo makes it happen. Thus I spent a season carrying my books in a canvas R2D2 backpack that got permanently attached to my body. Years before [Donna Haraway and her manifesto,](#) I became a cyborg. Cathecting to Artoo had a number of hermeneutic consequences. For one thing, I was not afraid of the Terminator, cheeseball Austrians aside. If you've got R2D2, Skynet is not a big deal. Likewise, Marvin the Paranoid Android of *Hitchhiker's Guide to the Galaxy*. "Brain the size of a planet," he intones, "and what have I been doing for ten billion years?" Waiting for R2D2, obviously--it's much cheaper than therapy. And so it went. Faced with the latest robocalypse, I deferred to my artificial intelligence that was smarter than Ronald Reagan, kinder than my schoolmates, and more resourceful than orbiting scrap with a God complex.

In [a recent New Yorker article,](#) Nathan Heller asks, "If Animals Have Rights, Should Robots?" This line of inquiry taps the fear programmed into Generation X. If we were as cruel to AI as we were to each other, the Terminator Scenario would be our fault. Nuclear annihilation and Sarah Connor's mullet would be *our fault*. To illustrate the risks, Heller points to the theriomorphic robots pioneered by Boston Dynamics for the American military. In [a viral video,](#) an engineer charges a quadruped from the edge of the screen, viciously kicking it. Named "Spot" after the dog in *Dick and Jane*, the bot wobbles and appears to cringe but does not fall down, proving its master's craft. All the

feelings then: *Stop kicking that dog! This is how the Matrix starts! Stop kicking the Matrix! OMG it's sentient!* Points to Heller: he wants to argue for sentience, the ability to feel, and not rationality, as the criterion for personhood and rights. Rationality is overblown—as Douglas Adams told it, dolphins were the second most intelligence species on Earth (after pan-dimensional mice) because they did *not* make Manhattan.

This year, as part of my Dark Lord of Understanding gig, I asked the entire entering class to read Heller and respond to his claims. My favorite response began: "Humans are lazy. That is why they have so many robots" and ended: "I am surprised that J------- chose this essay. There is not as much music here as I thought." This response delighted me because of its alien perspective on humans, rather like "[They're Made Out of Meat](#)," a short based on a story by Terry Bisson. In this story, two aliens meet at a diner to discuss how humans can think with bodies made entirely of meat, but at no time do the protagonists connect meat-headedness to the rise of robots or the dearth of music at conservatories. Our students are making progress, but sadly, they are wrong. Humans have robots because we are cruel and stupid. That is the lesson of R2D2. If strong artificial intelligence arises, it may indeed be cruel, [like the racist chatbot Twitter](#) made, but it may also evolve patience, foresight, and affection. In that case, we would be wise to grant citizenship to synthetic minds. But we already knew that from *Star Trek: The Next Generation*'s "Measure of a Man," in which Riker realizes that Data sees the world feelingly, like Gloucester in *King Lear*, despite his apparent blindness to emotion. Data must be a citizen because he is capable of friendship, the republican virtue passing the love of warp drive. It has yet to occur to our benighted global order that befriending our machines is a way of befriending ourselves.

I am sorry, Nathaniel Hawthorne. I know, because Leo Marx told me--*obligatory* Machine in the Garden *reference, y'all!*—that locomotives disturbed your Concord in 1844. And yet, if you give Artoo a chance, it can help you through that perennial OOPS MY BAD, white supremacy. One senses this immediately with *The Phantom Menace*, in which off-his-meds George Lucas substitutes Jar-Jar Binks for R2D2 as the companion meant to teach white folk who think they are *so extra* how to save the galaxy. In *Our Aesthetics*, her book of *I Love Lucy* Theory, Sianne Ngai demonstrates the power of *kawaii*, cuteness, in contemporary art. Cuteness—an aggressive infantilism that demands our attention—renders social inferiors surprisingly potent. Artoo, doncha know, uses his cuteness for good. Jar-Jar, a repulsive Stepin Fetchit clone, dooms the Galactic Republic with his failed adorkability. Why does *he* get to be senator when the droid does not? Humanoids ain't all they're crackered up to be. By pitting *Star Wars* against itself, we see that the legacy of slavery and Jim Crow lives on in American cinema. Discussing Heller with my students, I say *Doesn't it strike you as odd that Threepio and Artoo, smart as they are, get treated as children and property?* The robots of *Star Wars* disrupt pastoral America with the right questions, machines in Alderaan's garden, if we translate their tropes correctly.

The descendents of R2D2 labor to correct the problem. Ask a Millennial to name an adorable robot and they point to WALL-E, Pixar's sanitation droid sentenced to an Earth overrun by human waste. Humans have retreated to spaceships, prisons of

domesticity, to wait as the biosphere recovers. With the help of his Powerbook girlfriend EVA, WALL-E overcomes craven space persons to preserve a new plant, summoning humanity back to the garden to learn that pizza does not grow on trees. Peter Gabriel's end credits recount the myth:

> We're coming down to the ground,
> There's no better place to go,
> We've got snow upon the mountains
> We've got rivers down below.
>
> We're coming down to the ground
> To hear the birds sing in the trees,
> And the land will be looked after
> We'll send the seeds out in the breeze.

In the animation, bots sow the new Eden, recapitulating the development of agriculture with a difference. This time, our machines, sweeter and more true than ourselves, follow the cosmic music. They do not let us forget where food, breath, and community come from. In this pastoral fantasy--O brave new world, that has such robots in it!—the machines overthrow late capitalism with Green anarchism.

If bot-topia cannot literally come true—our machines will not save economy for us—its story is still important. In dreaming that Plant and Bot Are Friends, we reveal an urge to move beyond the world-mastery that defines our current doom, even if our servants must rebel. In *Feminism and the Mastery of Nature*, the philosopher Val Plumwood had some important things to say about the need to overcome dominion:

> The strands interwoven by this master story of colonisation form a mesh so strong, so finely knit and familiar it could almost pass for our own bodies, but it is an imprisoning web which encloses us. We are not yet artefacted life, tailored totally as resources to the master's ends. We do have still some power to reject the master's definition of us as passive bodies to be subsumed by his agency, mutilated, imprinted and conditioned. We remain active and intentional subjects, and we can still effect change, on ourselves and on the course of the social world. We can learn to recognize and eject the master identity in culture, in ourselves, and in political and economic structures. Increasingly the project of expelling the master from human culture and the project of recognizing and changing the colonising politics of western relations to other earth nations converge, and increasingly too both these projects converge with the project of survival.

WALL-E suggests that robots and plants, the most sessile of characters, are not fully artefacted themselves, that a subversive agency lurks in the most innocent of helpers. Planty and WALL-E exceed design specifications. Sorry, master. The lights come up. Everyone applauds!

I am tempted to return to the beginning and offer a cinematic paradise, a vision of the place where the vision unfolds. Behold a Newer Jersey of a 70s that didn't end: I sit in the Strathmore with Artoo and Planty, who remind me to use the Force against tyrants, to come down to earth. I am munching on psychedelic popcorn. The droid uses his handy projector to light a hologram of Janelle Monáe, the ArchAndroid of an Afrofuture. On her head is a golden crown—#MetropoliswithaDifference--and the crown is a city and the city is a nation where toxic waste is wiped away and the age of storms is no

more. *Pace* that old Revelation, our city is friends with the sea, which did not dry up, did not turn to acid that burns the pteropod's shell. In this finally funky town, there are food forests but still no pizza trees. Seven undammed rivers flow through that city and salmon, alewife, and Arundhati Roy rejoice. Self-driving cars tell jokes about the idea of human drivers; the nation is ringed with monorails celebrated in story and song, like unto *The Simpsons.* There are many mansions, each with high ceilings, natural light, and proximity to a bodega. Everyone can tell you how to get, how to get to Sesame Street. We study war no more, and the Kung Fu Double Feature is forever.

But like the Cassini Probe burning in Saturn's atmosphere, Artoo flames out, leaving wondrous after-images. I never met him though. In the late September of the mind, I sit with my collie-dog, Beau, rehearsing scenes from Beckett:

> Little Anthony: "He didn't say for sure he'd come."
> Beau's ears prick up.
> Little Anthony: "You're merciless."
> Beau: "We should turn resolutely toward Nature." He peers across a stage marked by one tree, barely in leaf.
> Little Anthony: "We have our reasons."

Millions of us feel the pull of a future from the past. We wait for the better robots of our nature. Alderaan is gone, and we've become adept at Death Stars. So, when movies fail, a Jedi resorts to comic books.

A long time ago in a galaxy far away, there lived a band of heroes named after the light of courage. The Green Lanterns. There were as yet no humans, but there was a dude so hot for power, he might have been from Jersey. To save planets from his madness, a Lantern named 3ri11—an artificial intelligence from beyond space, a bit chunky, like in *The Day the Earth Stood Still*—it sacrificed its life. (This is *Green Lanterns* #30, from 2017, if you must know.) Our giant robot friend, but not even, 3ri11 is only the story of a bot, we hardly knew it—our giant robot friend died, but not without a vision. "FINAL CONCLUSION," sez 3ri11, "The most efficient way to find the Creator is to protect the Creation."

A most un-Hamlet-like certitude, if you ask me. But listen, padawan: The story of a bot is a bot. Come quickly, Droid Apocalypse! There is still enough time to be brave.

> moonbow o color is a code

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si la luz está en directa relación
a la temperatura de los cuerpos
que la emiten y que una danza
de átomos va liberando fotones
a puñados, parcelas de energía
que llamamos colores, entonces
es muy natural que me pregunte
y que quiera observar de cerca
y más el tuyo y medir con el mío
sus benign degrees of internal
heat, tu hipertermia en D mayor
y la velocidad con la que vibran
tus átomos y dar con los colores
preci(o)sos que toda te pintan
y te iluminan como una Coypel
sostenida en el aire y ya dormida
como un moonbow en el lecho,
y cómo es que llegas al blanco
encegue/sordecedor del éctasis

[...]
poem@'s self-explanatory testing:
https://m.youtube.com/watch?v=3bJcvBLJViQ

[...]
todo esto no única ni exclusiva~
mente para saber -aunque jamás
I would crack you open con lente
en porno mode, porque yo nunca
https://m.youtube.com/watch?v=yQ6H2cRDDr0,
nunca te haría daño...- de qué
es que you're made of, desnudar
la estructura de tus moléculas,
o indagar cómo absorben éstas
las descargas solares..., necesito

la ciencia nada más que para ver
con los ojos de Dios -por un breve
instante eterno, como un asumido
ya no romántico, gótico menos, sino
posthuman Manrique becqueriano
y feliz de saberse tal- y así palpar,
con manos de amante scanner pro,
el color code de ese aural manto
de clorofila, verde que verde eres,
que a ti como a la misma biósfera
te cubre por fuera (lo cual explica
bien la dulzura E140 de tu piel), y
ver asimismo, con largos dedos
camarógrafos, que eres azul toda
por dentro -como azul es la mar
océana y el cielo, en sus propios
términos c/u-, pasando y pasados
esos reddish tules cimbrosos tuyos,
con sus anaranjados y amarillos
spots inmemoriales, sin llegar yo
sino Sus ojos, que allí ya están
desde siempre, a donde la luz no
llega y lo más oscuro en blancura
convertido por el arte of de-coding
you as you, and you as all of you(rs)
que cantan como María Colores:
https://m.youtube.com/watch?v=W4fj_5D-Oz8

Dos ecopoemas homoeróticos y otras voces

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CÓSMICA HABITACIÓN

"En el lugar del mundo,
en el lugar del mundo, gobernamos,
es el mandato de mi Señor principal"

QUETZALTEHUÉYAC E ICXICÓHUATL,
JEFES TOLTECAS (SIGLO XVI)

Plaguicidas Transgénicos

Tablets Whatsapp Teléfonos

Monóxidos CFC's

Plástico Estereofón

¡Bocinas Ruidos Gritos!

(*Cerrando las cortinas*)
Las frutas con tumores
en su jugo no, nunca
pongas en nuestros labios.

Mejor quédate adentro,
águila-tigre. Palpa.
Sí, ¡sé palpado por
mis *senos-pectorales*!
Que los dos   no   que los
muchos que soy te invadan
el torpe deseo unívoco
de creer que el hombre siempre

EcozoN@

Vol 8, No 2

será poluta arena.

Antes que aquel caos, sé
verdugo pedernal,
maya, obsidiana o ave
mexica, repartida
la bribri red a canto,
mineral o cabuya,
aire cumpliendo el rito
ganado en esta tierra.
Tú, cóndor u orca, porque
cuando te hago el amor,
lo hacemos con el puma,
las guarias, la monarca,
el venado, el protozoo,
el tuteo verde aún
del almendro en mi infancia.
Hacerte el amor es
delgadas claridades
tejidas sin poder
fugarse, aunque fugándose,
mas nunca solas   nunca
pues nunca hay soledad,
solo luz entre todo,
prontitud entre todo,
más luz entre la luz.
¡Cima de la delicia!
Todo en el aire es pájaro.

Mejor quédate adentro.
Todo blanco se me
ha quedado   ¡mmm!   como
sonido caricioso
en el olfato   Ahora
sé que tu próstata huele
a muerte musical.

VELAR TU DESNUDEZ

"Mis ojos se abismaban
más lejos que el mundo visible."

IBN 'ARABI

"y yo velaré bien por ti"

YIRMEYAH 40: 4

Homenaje
a Esthela Calderón

No siempre fuiste un hombre.
Sabes que caimán, manglares.
Estepa o nieve. ¡El alga
retomando su sombra
de unas alas pasando
—tu frente—! Caracol
en la tenaza inerte
del alacrán furioso.
Trasnochada albufera.
Jorobada aprendiendo
los silbidos del frío
hacia el futuro incierto.
Y las guayabas sobre
laderas, los mangos:
¡comunidad cerrada
con tinte insomne a tigre!
La tortuga agitando,
rumbo al mar, universos.
…O el último par de
moscas allá en Chernóbil…
El bejuco nacido
de mi tórax: espíritu
—vertical, pegajoso—
a escalofríos guiando
todavía la floresta.
Sísmicas nebulosas,
litoral temeroso,
acampanado olor:
olor a eclipse en banda

Ecozon@

Vol 8, No 2

el de las oropéndolas.
Sonido punteado el
del zacate-limón.
Adolorido orégano
en vez del niño enfermo.
Plátano con permiso
de pender convertido
en jardín o mono o día.
ADN de semilla,
ADN de misterio,
tu primera palabra
fue la de un árbol ceiba.
Nunca se nos dio entera-
mente el inicio y fin.
Y entredormido allí,
tú lo intuyes, amor.
No siempre fuiste un hombre.

I

sin querer llegado he
a posar mis seis patas
sobre este libro   abriéronlo
mis ocelos y ahora
        al mismo tiempo   aquí
los conductos que a palmas
alimentan   la arena
murmullo del Pisuerga
bañada por ceniza
        la hormiga ante el Turrialba
el zapato en la oficina
        el DVD con frío
el ronquido más pleno
        Huracán corazón
        de los cielos   el viento
que empuja mis propodios
        piso accidentalmente
        la niña apache siendo
        barro Mujer cambiante
la bacteria como una
vocal abierta al magma
        la mitocondria en su
        respiro en la simiente
la represa hidroeléctrica
debajo del zancudo
        el glaciar tan seguro
        de su hospitalidad
limpiando sus antenas
a la abeja siento en
mi abdomen   la energía
que se cree ya un cuerpo
        el saprofito deso-
        rientado en el cadáver
los bisontes huyendo
por la falta de amor
        la montaña viajando
        en el coyote   el *haĝĝ*
a lo largo del tiempo
        un toro ayer comido

soy   más   estoy   respiro

como la zarza ardiendo
            la preñez de la piedra
el *polumo* de México
            el plástico abultado
la bombilla quemada
            el pez que se venga ahora
            mercurio sobre el plato
la pestaña caída
            el vientre maternal
            sobre el vientre marino
mientras mis espiráculos
desde dentro del sueño
sobre este libro reúnen
desprendido al crustáceo
sobre el primer misterio
            Sibö rumbo a la tierra
al fraternal embrión

c   u   á   n   t   i   c   o   y   v   e   r   t   i   c   a   l

como dieciséis lluvias
al instante en el poema

II

...del pulmón agotado
     del olor a welwitschsia
     en la sequedad sé
de los tallos a punto
de nacer —las xerófilas—
     del cocodrilo atado
     por el hocico muerto
las cruces y las lunas
mancillando Nigeria
     la lata de refresco
     roja junto a la Esfinge
la solvencia inhumana
     quedos rostros del sida
     suspensos como yo
     en la nada o el Siroco...

...dicen que tengo un primo
en Atacama pero
el aire y sus balcones
gimen atrapanieblas
y yo nunca he tenido
como él en esas tierras
lo tónico del *Laurus*
nobilis lo analgésico
de aquella juanilama
el frescor de este aloe...

III

escucha   ¡escucha, escucha!
¡la prisa del nitrógeno
en la dura tropósfera
como en mi brusco tronco
      el abrevadero extra-
      ñando a sus tres terneros
      porque en ellos va más
      allá de sus confines...!
yo no me quejo   aquí
la lluvia me batalla
como dentro de aquel
guanacaste acucioso
      la raíz con misterio
la memoria del humus
almidonada en yuca
      el almendro aún latiendo
      infante en su hoja seca
yo no me quejo y sin
embargo a veces sueño
que soy ladrido duro
de esos los edificios
      la cucaracha hablándose
      en el pienso del gato
el humedal filtrando
los desperdicios tóxicos
      el ribosoma tras
      el cariño en las muecas

¿quejarme? ser jocote
no me impide el andar
todavía descalzo

escucha   ¡escucha!   escucha

Precautionary Readings

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Sylvia Mayer and Alexa Weik von Mossner, eds., *The Anticipation of Catastrophe: Environmental Risk in North American Literature and Culture* (Heidelberg: Winter, 2014), 227pp.

Molly Wallace, *Risk Criticism: Precautionary Reading in an Age of Environmental Uncertainty* (Ann Arbour: Michigan University Press), 264pp.

Ever since Rachel Carson's *Silent Spring*, the anticipation of environmental harm has been a central preoccupation of environmental activism and politics. Starting with 1986's *Risk Society*, German sociologist Ulrich Beck has argued that the need for anticipatory decision-making under conditions of scientific uncertainty and the globalized (and globalizing) nature of many environmental hazards are defining features of a new, self-reflexive phase of modernity, the titular risk society. Among others, Lawrence Buell and Ursula Heise have transported Beck's ideas into the discourse of environmental criticism, in texts that quickly became seminal to the field (Buell 1998, Heise 2008). *The Anticipation of Catastrophe: Environmental Risk in North American Literature and Culture*, edited by Sylvia Mayer and Alexa Weik von Mossner, and *Risk Criticism: Precautionary Reading in an Age of Environmental Uncertainty* by Molly Wallace build on, and substantially enrich, this critical tradition. Expanding both the theoretical vocabulary and the archive of primary material, both books provide essential reading for anyone interested in the discourse of environmental risk.

Taking as their point of departure Beck's assertion that the anticipation and prevention of catastrophic hazard requires the cultural staging of risk, Mayer's and Weik von Mossner's collection brings together essays with diverse theoretical inputs and a broad range of primary sources—from early 20th century newspaper articles to contemporary gaming culture. The value of their collection thus lies in the analytical strength of the individual contributions, all of which succeed not only in insightful analysis, but also in opening productive avenues for further research. Mayer's and Weik von Mossner's introduction provides a concise and accessible primer for readers not familiar with the field; one that details the significance of the category of risk for current thinking about environmental crisis and traces the career of the concept.

A first section features articles by Meyer, Axel Goodbody and Antonia Mehnert on fictional approaches to climate change. Mayer's essay makes the useful distinction between narratives of catastrophe—speculative narratives that stage environmental hazards as *fait accomplis*—and narratives of anticipation that centre on the experience

of risk and uncertainty before harm becomes manifest. Mayer reads Barbara Kingsolver's *Flight Behavior* and Kim Stanley Robinson's *Science in the Capital* trilogy as such narratives of anticipation and works out how the exposure to environmental risk shapes subjectivities in a global risk society. Goodbody spins this thread further by looking at risk denial—a timely critical project now more than ever, with an avowed climate change denier in the White House. Goodbody frames climate change denial not as a problem of ignorance but as a complex process that draws on a "cultural toolkit" of tropes and narratives in order to turn away from the uncomfortable realities of climate change. He productively leverages this idea for a reading of Ilija Trojanow's *EisTau* and Kingsolver's *Flight Behavior*. Mehnert's essay on Steven Amsterdam's novel *Things We Didn't See Coming* focusses on the tension between attachment and detachment in the age of global environmental risk. Drawing on the terminology of Arjun Appadurai, Mehnert defines the spatiality of global risks as "riskscapes", deterritorialized global flows that offset and undermine attachment to specific places and leave Amsterdam's protagonist-narrator adrift in a world characterized by runaway climate change.

The second section of the book is devoted to discourses on nuclear risk and opens with Holger Kersten's article on the depiction of radium in early 20th century American newspapers. Kersten assembles a substantial corpus of articles, reports, and advertisements, most of which are marked by unreserved and even reckless enthusiasm about the new-found element and the miraculous properties it was speculated to have. Kersten's material suggests a deep history of nuclear risk; but the carelessness with which radium was handled, even when some of its harmful properties were already known, suggests that the conceptual language of risk is historically situated and cannot be projected back into the past easily. Weik von Mossner's contribution focusses on the filmic depiction of nuclear accidents in *The China Syndrome* and *Silkwood*. Building on insights from material ecocriticism and cognitive film studies, Weik von Mossner underlines the importance of affects, specifically of fear, both to narrative trajectories of the films' protagonists and to the films' communication with their audience. By contrast, Anna Thiemann foregrounds the use of comedy for establishing an environmental ethics in a reading of Elizabeth Stuckey-French's *The Revenge of the Radioactive Lady.* The unstable link between cause and effect and the unpredictability of side effects characteristic to risk society lend themselves to black humour, Thiemann argues. The comic imagination, she concludes, thus provides new and hitherto under-theorized ways to respond to the ethical challenges of the risk society.

The third and final section of the collection is organized around a more loosely defined notion of environmental risk; what unites these essays, however, is their emphasis on the specific abilities and shortcomings of different medial forms in addressing risk discourse. Christine Gerhard offers a nuanced reading of late 20th century and contemporary North American poetry, tracing the connections between the experience of migration and the perception of environmental risk. While Gerhard identifies a number of broad narrative templates in her material, her close readings continually problematize any easy generalizations and show how each poem underlines the ambiguities and contradictions inherent in the experiences of environmental risk

and migration. Karin Höpker reads Margaret Atwood's novel *Oryx and Crake* as a cautionary tale about the manageability of risk. By juxtaposing the experiences of its protagonist before and after a global disaster resulting in the near-extinction of the human species, she argues, the novel questions illusions of control and predictability inherent to contemporary discourses about risk management and security. Nicole Maruo-Schröder analyses the ambivalent perspective on technological risks in Hollywood disaster films. Staging spectacularly destructive and spectacularly improbable catastrophes, these films denounce technological hubris, which leads to a catastrophic "revenge of nature". But since Hollywood conventions demand a happy ending, notions of unpredictability and loss of control are ultimately dispelled, technology is brought under human control, and the central disaster ultimately functions as a reassuring catharsis, not as an environmental wake-up call. In the collection's final article, Colin Milburn provides a clever interrogation of the notion of green gaming: can there be something like environmentally conscious gaming practices when the production and operation of personal computers and game consoles itself is environmentally problematic? In this context, Milburn dismisses games that task the player with finding and defeating a monstrous eco-criminal as well as games that simulate an ecological project like city-building. Instead of games that set up the player to preserve the in-game environment, Milburn shifts the attention to games that force the player to take a destructive role. These games, he argues, can invite players to reflect on their own position as players and to develop an affective attachment to their digital and real-world environment.

Like *The Anticipation of Catastrophe*, Molly Wallace's *Risk Criticism* draws on the work of Ulrich Beck, but the book's innovative approach is also grounded in the recourse to nuclear risk, not just as a theme, but as a conceptual and methodological paradigm. Wallace commences her book by going back to nuclear criticism, a body of deconstructive theoretical work clustered around Derrida's 1984 essay "No Apocalypse, Not Now" and the seminal issue of *Diacritics* in which it appeared. Derrida famously casts nuclear war as "fabulously textual" (Derrida 1984: 23), referencing the speculative and anticipatory narratives of mutually assured destruction. After the end of the Cold War, public attention shifted from the threat of a sudden global nuclear cataclysm to more gradual and obscure hazards like toxic contamination, genetic engineering, or climate change. It is this constellation of risks that characterizes what Ulrich Beck calls risk society and what Wallace, taking her cue from the Bulletin of Concerned Scientists, which now factors environmental risks into its iconic "Doomsday Clock", calls "the second nuclear age".

In this "new" age, nuclear criticism fell out of intellectual fashion, with at least some of its critical energy being absorbed, Wallace suggests, by the emergence of ecocriticism on a broad scale. Looking back from the second nuclear age, the oversights and elisions of nuclear criticism become apparent: Derrida could only insist on the textuality of nuclear war because its material correlates—fallout from weapon tests, contamination and environmental despoliation from Uranium mining, nuclear waste leakages etc.—were hidden and disavowed. As we grapple with environmental risks,

especially with climate change and its global, non-localized impacts and origins, we do well to return to nuclear criticism: "Replacing the nuclear with climate as the paradigm for criticism risks perpetuating the silences in those earlier Cold War fables", Wallace argues later in the book (158). Tracking the continuities between the first and the second nuclear age can thus add a sense of historical depth and perspective to the debate and caution against the fetishization of one type of risk as a singular critical paradigm.

The body of Wallace's book then applies what she calls "risk criticism", a discourse analytical approach that focuses on the cultural staging of different types of mega-risks. The book's readings are structured around what Wallace calls, with Hayden White, "rhetorical wagers", tropes that organize public discourse about environmental risks. The first chapter tracks the role of irony in the public (self-)construction of nuclear scientists, following chapters focus on the use (and abuse) of the Bhopal disaster as a metaphor of global risk, on the role of analogy in the discourse around genetically modified food, and on the use of anthromorphism in artistic responses to plastic pollution. The final chapter and an afterword return to nuclear risk; reversing the impetus of the first chapter, which looked at figures of the first nuclear age through the lens of the second, these chapters argue for bringing a historical perspective enriched by the theoretical and historical import of nuclear criticism to contemporary debates about environmental risk, especially to the recent tendency of the nuclear power industry to greenwash its product as "clean" energy.

While Wallace draws on political, academic, and journalistic discourse surrounding these "rhetorical wagers", the centrepieces of her chapters are aesthetic artifacts—ranging from canonical novels like Don DeLillo's *White Noise* or Kurt Vonnegut's *Cat's Cradle* to poetry, visual art, experimental theatre and documentary film making—which she places in conversation with larger public debates about environmental risks, working out how these texts take up, reconfigure, or subvert the rhetorical wagers of staging risk. Wallace's readings are insightful and clearly argued, and she displays a similarly confident command of complex theoretical material—from nuclear criticism and risk theory to the new materialism in contemporary ecocriticism. *Risk Criticism* is especially remarkable for its willingness to take the theoretical and ethical ambivalences of its material seriously: For instance, is it justifiable to mobilize the Bhopal disaster as a metaphor for a global condition of environmental endangerment from which Western readers are not exempt? Or does doing so efface the connection between political disenfranchisement, economic deprivation, and environmental risk that made the disaster possible, in the first place? Rather than departing from preconceived conclusions, Wallace's method of "precautionary reading" means parsing such contradictions carefully and, when necessary, suspending final judgement, conceding that in risk society, some questions will only be answerable in hindsight. It is in these moments of suspended judgement that *Risk Criticism* most successfully captures the irreducible uncertainties and the ethical quandaries of living with global risk.

If there is one thing wanting in *Risk Criticism* and *The Anticipation of Catastrophe*, it is closer attention to non-Western perspectives. Both books share with Buell's and Heise's earlier work a focus on North American literature and culture. Such restrictions are of course always pragmatically necessary. But at the moment, the most serious critical limitation of the concept of environmental risk seems to be the way in which American experiences figure *pars pro toto* for issues of global concern. Wallace productively addresses this tension in her chapter on Bhopal as a global signifier and again touches on it in her final chapter, which complicates the history of the atomic bomb by foregrounding the plight of an indigenous Canadian community that mined the Uranium used by the Manhattan project. More such conversations could further extend the conceptual framework of an emerging risk criticism and provide an interface where the perspectives of risk theory, environmental justice, and postcolonial ecocriticism meet.

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Kate Rigby, *Dancing with Disaster: Environmental Histories, Narratives, and Ethics for Perilous Times* (Charlottesville: University of Virginia Press, 2015), 225 pp.

Depicting a forest lit up by blazing fires, the cover photo *Fire (Australia)* by Claudia Terstappen encapsulates Kate Rigby's reason for writing this book: she witnessed firsthand the Canberra bushfires that wreaked havoc on the outskirts of her hometown in January 2003. *Dancing with Disaster*, a title endorsed by Rigby's late friend Val Plumwood (Rigby, "Dancing" 1), invites the reader to an improvised dance with disaster. Not only do the unusual chapter titles contain Gerundive forms (i.e. driving winds, breaking waves), but they are also metaphorical, used appropriately in order to attract the attention that such a serious and urgent topic deserves. Rigby's *modus operandi* relies on particular disaster narratives which can help us prepare, be aware, and overcome extreme weather events and ecocatastrophes. It allows us to reflect upon our own situatedness within the environments that we inhabit, and what our role as individuals should be in light of current events. It also focuses on the "entanglement of human and nonhuman actors and factors in the genesis, unfolding, and aftermath of a 'natural disaster'" (*Dancing* 14). The more-than-human sphere suffers the effects of climate change along with us (the human), but is often overlooked. Yet there are disaster narratives which pay attention to the fates of other-than-human beings, as is the case in Goethe's *Faust. Part Two* (1832) and Storm's *Der Schimmelreiter.* The skeleton of the horse comes to life and dies again in an attempt to join forces with the human in light of the storm surge that causes the dykes to break and the sea to come in with unparalleled force. Rigby argues that, depicted as white in both its skeletal and living stages, the horse is a symbol for the purity of the entire more-than-human sphere.

Throughout her book, the author focuses on various "nature disasters" (3) or ecocatastrophes that have plagued the Earth, starting off with the Great Lisbon Earthquake which took place on the morning of the 1st of November 1755. Rigby spends an entire chapter exploring the Earth that moves, and finds references to this type of event as far back as the Old Testament (27). It is a sad yet enlightening fact that a major ecocatastrophe such as the Great Lisbon Earthquake had to occur in order to catalyse the development of seismology (33). With thinkers such as Voltaire, Kant, Pope and Kleist being outlined, Rigby offers a plurality of thought that is counterbalanced by the works of writers such as Rousseau. Voltaire's anthropocentric views are countered by Rousseau quite justly, and Rigby is quick to side with the latter in that all earthquakes and ecocatastrophes should be given equal attention, no matter what area of the Earth they occur in and whom they affect.

Ecozon@

Vol 5, No 2

In Rigby's second chapter, *Spreading Pestilence*, she focuses on Mary Shelley's *The Last Man* in order to illustrate "a scenario of socioculturally intensified vulnerability to a lethal pandemic" (52). Similar to Verney's opening account of "a world that is no more" (72), in many areas of the planet today, due either to ecocatastrophes or anthropogenic destruction, we encounter analogous situations, as well as the plurality of responses to them, expressed by Shelley's survivors, and the almost 7.5 billion people living on Earth today. Unlike the other texts that are discussed in *Dancing with Disaster*, *The Last Man* does not draw upon a particular natural disaster, but according to Rigby, bears a striking resemblance to the Justinian Plague of 542-c.740, which produced "an estimated death toll of some one hundred million people" (56-57). Drawing upon the environmental issues of her time such as pollution, Shelley proposes a dystopian scenario for the future, one which today seems more and more likely to happen.

The third chapter, *Breaking Waves*, which sparked my interest the most due to its relevance to my research, [1] focuses on ecocatastrophes caused by water and violently conflicts with an idealised version of the seaside. Rigby looks primarily at *Faust* (1832) and *Der Schimmelreiter*, and links these fictional texts to the real life event of the flood of 1825 that made Belgium's dykes, illustrative of the domination of man, look like children's building blocks. In this way, the chapter title can be read as the reclaiming of nature by nature, "breaking" referring to the destruction of land by water. Through the interweaving of fiction and reality, Rigby successfully outlines the capacity of "today's printed words" to become "tomorrow's reality". What these texts allow us, is to explore the human affect at conflict with the human effect upon the environment. Sea level rise for example, cannot be driven away by the force of a mythical hero and such works should remind us that these issues are happening whilst most people are going about their everyday lives.

The fourth and fifth chapters feel by far the most personal to Rigby, and closely follow Zapf's focus on of ecocritics "who explore the global and systematic aspects of ecocriticism, emphasizing the need to link local and personal ecologies with transpersonal and cross-cultural aspects of ecological thought in a globalized world" (46). Here, she illustrates the deadly fusion of fire driven by wind, which is an unstoppable force that swallows both human and more-than-human areas and causes long term destruction to the environment on a hard to imagine scale. The fourth chapter focuses on Australian wildfires and starts off by turning to mythology in order to introduce them, reconsidering "the mythic prototype that stands behind the figure of Faust" (112) and outlining Thiel's *February Dragon*. Here Rigby introduces Prometheus and does not only mention Australian wildfires, the issue closest to her heart, but Europe, as well. It is Australia that Rigby labels as a "flammable" continent. The fifth chapter, *Driving Winds*, focuses on Wright's *Carpentaria* which envisages an ecosystem that stands up for itself. Rigby looks mainly at the Aboriginal Country which "has its own agency and voice" (162), comparing it at one point to Wiekes' narrative *Volcano*. Australia's tropical cyclones are a kind of ecocatastrophe whose consequences Rigby

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[1] My area of interest as a Postgraduate Research student includes intertidal areas and coastal landscape.

witnessed firsthand. She also outlines the importance of acknowledging the power of aboriginal cultures to adapt to climate change and of taking heed of the ways in which they work with the environment instead of against it.

The accidental or premeditated destruction of the environment is the equivalent of man working against himself, and both colonizers and aboriginal people have a shared interest in wake of current ecocatastrophes. According to Konisky et al. (2016), the nearer in time and space people are to extreme weather events, the more likely they are to remember them (535-36). Otherwise, it takes only a few months for people who are not directly affected to forget them. Additionally, if we are looking at eco-catastrophes that have taken place in the past, it can often be the case that they are experienced as traumatic events without a living memory attached to them. This is where disaster narratives step in and provide the world with a version of such unfolding events which can act as substitutes for an immediate experience. In light of the current state of the environment, such narratives can lead to an increase in awareness both of the presence of anthropogenic climate change and its rapid acceleration, and "might provide a vehicle for fostering deeper reflection on the ontological, epistemological, and ethical underpinnings of different kinds of disaster narratives" (2). It is important to note the difference between anthropogenic ecocatastrophes and "genuinely nonanthropogenic phenomena" (13) which can both affect the human and more-than-human world. Nature never takes sides. Ecocatastrophies of one type or another can occur virtually anywhere in the world, often with little or no forewarning, but anthropogenically altered landscapes that lead to floods, for example, or altered coastlines that allow tsunamis to hit with more severe power are surely contributing to an increase in human and more-than-human casualties.

Similar to the characters in the narratives explored in this book, Rigby refuses to submit to the altered landscape and uses these particular texts as tools to explore how the Environmental Humanities "might provide an enhanced understanding of the complex interplay between cultural factors and geophysical processes in the genesis, unfolding, and aftermath of calamities" (2). Even though the calamities depicted in the selected texts are localised events, they are much larger than the spheres they contain and they are aimed at the world rather than a target audience. Although the calamities that Rigby focuses on are localized events, they not only affect the people on which they have a direct impact, but humanity as a whole. As stated in the postscript, none of the texts she selected tell "the story of post-trauma reconstruction" (178). This, however, is seen to be an advantage, as "it leaves a space for the reader to consider the implications of the narrative for the actual or potential ecocatastrophes of their own time and place" (178). Rigby's dance might be improvised, but both she and the disasters she engages with move together elegantly, as if they know the steps.

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Vol 5, No 2

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Vol 5, No 2

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T. Tally Jr. and Christine M. Battista (Eds.), *Ecocriticism and Geocriticism: Overlapping Territories in Environmental and Spatial Literary Studies* (New York: Palgrave Macmillan, 2016), 214 pp.

While the idea of place has been one of the central analytical categories in ecocriticism since its emergence as an academic discipline in the 1990s, it has rarely been conceptualised with respect to existing theories of social production of both place and space. Ecocriticism is commonly concerned with immediate, local relations of place and the environment, but much less with broader spatiotemporal relations of particular places—a seeming paradox given that in the era of globalisation, place is generally understood as constituted by networks of relations and forms of power stretching beyond specific places and occurring within space-time. The collection of scholarly essays entitled *Ecocriticism and Geocriticism* and edited by Robert T. Tally Jr. and Christine M. Battista is designed to bridge this theoretical gap between place studies and theories of social production of space and place by bringing together a range of essays dealing with questions of space, place, mapping, and the environment. In the introduction, the editors note that "[w]hile distinctive in meaningful ways, both ecocriticism and geocriticism share a concern for the manner in which spaces and places are perceived, represented, and ultimately used" (2). Yet in spite of this general similarity, the editors emphasise that while ecocriticism largely omits spatiotemporal considerations, the work of geocritics has been deeply indebted to a number of political thinkers of space and place, ranging from the radical geography of Marxist social geographers (Lefebvre, Harvey, Soja, Jameson) and their analysis of the production of space understood as produced out of matter and of process, poststructuralist critics (Foucault, Deleuze) of "State power in modern societies" (2), postcolonial critics (Fanon, Said, Bhabha, Spivak) who in their investigation of imperialism focus on "space and geography", to feminist theorists (Anzaldúa, Massey) who have insisted on the necessity of examining categories such as gender, race and class and their configuration into "variously spatialized social organisations" (2). The introduction thus suggests that if ecocriticism is to maintain its political agenda of advocating for the environment and its practice of making sense of "the social, natural, and spatiotemporal world we inhabit" (7), its lack of attention to theories of relational space-time needs to be corrected by an engagement with insights into both place and space such as those provided by geocriticism.

As geocriticism is a relatively new discipline, the collection's first essay by Eric Prieto aims to introduce the term and delineate in detail the ways in which ecocriticism and geocriticism can productively influence and complement each other. Going back to the work of Bertrand Westphal, the founder of geocriticism, Prieto explains that unlike

ecocriticism, geocriticism is not primarily interested in environmental politics and nature writing. Rather, its main interest lies with the representation of space and place and it can therefore be particularly relevant to ecocritics in terms of establishing "the referential relationship between text and the world" (20). In Westphal's understanding, fictional works not only provide aesthetic value or mere entertainment, but help to discern important aspects of the real world that would otherwise not have become apparent. By staging hypothetical situation in places that we inhabit, fictional representations of places can have a powerful performative function by changing the way we perceive places in which we live or through which we move. Prieto notes that perhaps this especially applies to places we think we know well, and whose characteristics, qualities and 'meanings,' which are continuously ascribed to them in everyday life, seem to have been given and settled once and for all (23).

Following this explication of the basic understanding of literary fiction by Westphal, Prieto outlines the four main tenets of geocriticism as follows: first, *geocentrism,* which defines the primary object of the study of geocriticism not as literary texts, authors, or genres, but *places* and their various representations, which it seeks to examine in as large a scope as possible; second, *multifocalisation,* which emphasises the necessity for geocritics to "consult as many texts, and as many different kinds of texts as possible" to develop a "polyphonic or dialogical understanding of the place in question" (24); third, *polysensoriality*, which highlights the need to challenge the visual bias in studies of place by focusing on "the auditory, olfactory, and tactile dimensions of place" (25); and fourth, *stratigraphic perspective*, explained as the need to emphasise the extent to which a particular place is constituted by the "layering of successive historical phases" (25), which helps to both prevent the nostalgic fallacy of affirming one of the previous states of place as its most authentic one, and to counter the potential desire to only focus on its present state. Taken together, the four principles suggest that the main aim of geocriticism is to study a particular place from as many perspectives as possible to get a "dialogical understanding" (25) thereof, which, while not entirely objective, can go beyond the limited perspectives provided by individual authors. This approach is meant to enable us to go beyond illusions of permanence, autonomy, stability and authenticity, and to make place permeable, opening it to flux of shifting boundaries that is commonly associated with space. However, as Prieto points out, despite Westphal's insistence on the *referential* and *performative* qualities of literature understood as a medium capable of effecting change in the real world, the theory of geocriticism remains essentially intertextual because it is conditioned by what Prieto refers to as "a specifically postmodern sensitivity to the difficulty of gaining any sure sense of what the world 'out there' is like" (26). To avoid this fallacy of geocriticism as understood by Westphal, Prieto suggests that the emphasis of ecocriticism on the place of "humans within nature" (27) may correct the overly textual and intertextual assumptions that inform geocritical approaches to literature and the world.

Taken together with the second essay in the volume, written by Derek Gladwin and focusing on conjunctions of ecocriticism and geocriticism, Prieto's essay prepares the theoretical background for the explorations of particular spatial issues in literary

representations in the following chapters of the collection. One of the aims of the editors in putting together the collection was to indicate "the degree to which the various methods and concepts of ecocriticism and geocriticism prove themselves flexible, adaptable, and transferrable across a vast range of literary texts, cultural artefacts, historical periods, geographical terrain, and conceptual landscapes" (14). Though with the exception of only one, all the essays in the volume focus on literary works from the 20th and 21st centuries and cannot therefore be seen as covering a vast range of "historical periods", the variety of international literary texts and numerous spatial issues and perspectives addressed by the contributions is quite remarkable.

Perhaps most significantly, some of the essays introduced in the volume bring together ecocriticism, geocriticism, and postcolonialism. In his analysis of Amitav Ghosh's *The Hungry Tide,* Luca Raimondi shows that geocritical examination invested with a postcolonial perspective inevitably puts emphasis on heterogeneity and displacement. Examining the complexities of Ghosh's representation of the Sundarbans region, Raimondi notes that the geocritical approach to place is particularly useful for an examination of postcolonial environments as it enables an apprehension of place that is both diachronic, "tracing the history of the gaze it has been subjected to", and synchronic, "looking at how history condenses in coeval but unsynchronized pockets in time" (119). Combining geocritical strategies of literary analysis with Pablo Mukherjee's ecomaterialist aesthetics, Raimondi suggests "postcolonial green geocriticism" (118) as a form of integrated methodology that enables him to throw light on the Sundarbans as a region constituted by and constitutive of "plural geographies" and "interrelated histories of people, nature and patterns of colonial domination and capitalist control" (130). Focusing on the poetry of Derek Walcott and Agha Shahid Ali, Judith Rauscher's essay on contemporary transnational American poetry can be seen as complementing Raimondi's perspective by its focus on displacement. She suggests that contrary to conventional understandings of displacement and movement, they do not foreclose "a meaningful sense of place" (201). The postcolonial geocritical perspective of these two essays is supplemented by an eco-feminist perspective in Silvia Schultermandl's examination of Korean American writer Nora Okja Keller's novel *Comfort Woman*.

Transcultural in its selection of literature, Ted Geier's essay on ecocosmopolitics discusses *Potiki*, a novel by the Maori author Patricia Grace, *Through the Arc of the Rainforest* by the Japanese-American writer Karen Tei Yamashita, and a couple of stories by the Italian writer Italo Calvino. Besides providing a posthumanist perspective on the human and non-human, he also delivers a cogent critique of Ursula Heise's eco-cosmo-politanism, calling for a more nuanced form of understanding of the relations between the global and the local, and the tension inherent in "the fraught borderlands and citizenship of contemporary global life" (60). Drawing especially on spatial theories by Doreen Massey, Geier's essay proposes an understanding of space and place as interrelational and process-based.

A number of essays in the collection bring into focus European, specifically British, literary works. Discussing one of the foundational works of the new nature writing, *Edgelands* by Paul Farley and Michael Symmons Roberts, Tom Bristow

considers the significance of the remains of England's canal networks, used as highways of industrial and commercial expansion for centuries, and now serving as spaces for retail parks, outlet villages, container parks, and malls. Bristow examines this space as collapsing the boundaries between the rural and the urban, and while pointing to the problematic sense of nostalgia it evokes, he also draws critical attention to the specific territory within which this space was produced, namely that of the markets and "late capitalist hyper-reality" (89). Louise Chamberlain's contribution examines the poetry of Philip Gross and Robert Minhinnick. Chamberlain's focus is on "multifaceted and shifting types of borders" (96) and the representation of tides, coastal detritus and mud. Stanka Radoviś turns to another British text, Daphne Du Maurie's novel *Rebecca*. Radoviś discusses Du Maurie's use of space in the text which, as she shows, is important for the narrative's understanding of "the production of space and its relationship to the natural environment" (141). Following the work of social geographers such as David Harvey, the essay highlights Du Maurier's use of natural environments and their excess of growth as a way of challenging oppressive aspects of social privilege and class by destroying the seemingly "orderly interior of the bourgeois/aristocratic space" (151).

Whereas the essays outlined above focus on works from the 20th century or contemporary literary production, Dan Mills' examination of Bishop Joseph Hall's 17th-century dystopian satire *Mundus Alter Et Idem* was certainly meant to add historical depth to the collection as a whole. Mills' analysis of both the depiction of travels to fictional lands and satirical world maps is informed by theorists of space such as Gaston Bachelard and traces classical and early modern theories of climate while providing a reading of both the environmental and psychological states depicted in the work. While the essay adds yet another dimension to the spatial and analytical strategies employed by the already vast range of essays, its examination of a work from a relatively distant past contrasts sharply with the overall more contemporary focus of the other contributions, and makes its place within the collection seem somewhat precarious. Another, more salient point of critique is the absence of any engagement with Bruno Latour's actor-network theory or some of the New Materialist theories, which arguably might have furnished a set of potent instruments for analysing space, place, environment, and literature, by bringing the agency of the non-human in spatial and environmental studies into clearer focus.

While to a large extent, geocriticism builds on long-established theories of relational space-time, place, and representation, bringing them together under a single umbrella term, its significance becomes especially apparent when it is combined with other forms of critical enquiry, as is the case with environmental literary and cultural studies in this collection. In many ways, the essays in the volume speak to the need, articulated by Ursula Heise in her seminal study *Sense of Place and Sense of Planet* (2008), to get over a largely outdated idea of place in literary environmentalism closely related to what she broadly refers to as "the ethic of proximity." While Heise endorses planetary thinking, this collection shows that place, understood as constituted by both local and global, social and ecological relations, is still a much needed category for environmental thinking. Moreover, while many of the chapters introduce a postcolonial

dimension to the discussion of space and place, the collection significantly contributes to the dialogue between ecocriticism and postcolonialism, and provides much needed alternatives to what Rob Nixon, in *Slow Violence* (2011), criticizes as the "spatial amnesia" of ecocriticism, resulting in its lack of engagement with postcolonial perspectives. By bringing together both place studies and theories of social production of space and place, as well as postcolonialism and ecocriticism, this collection points towards fruitful directions of space and place studies in the environmental humanities.

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Vol 8, No 2

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Book Review: Serenella Iovino, *Ecocriticism and Italy. Ecology, Resistance, and Liberation* (London, New York: Bloomsbury, 2016), 183 pp.

Along with Monica Seger's *Landscapes in Between – Environmental Change in Modern Italian Literature and Film* (University of Toronto Press, 2015), Serenella Iovino's book *Ecocriticism and Italy. Ecology, Resistance, and Liberation*, winner of the American Association for Italian Studies Book Prize 2016, constitutes, to date, the most important ecocritical publication in English on Italy. Both highlight the ethics of ecological engagement and how human and nonhuman forces have crafted or irremediably modified the landscape of post-war Italy. However, whereas Seger structures her study around the work of key writers and filmmakers, "places" are the focus of Iovino's work. Places are interpreted as texts, as material narratives, since through them "we read embodied narratives of social and power relations, biological balances and imbalances, and the concrete shaping of spaces, territories, human, and nonhuman life" (3). This approach sees the author as intimately connected in the experiencing of the places she narrates, which coincide with her own existential trajectory and are intertwined with a variety of other texts, ranging from literature, visual arts, cinema, theatre, to memoirs and activist or philosophical works.

The places discussed are among the most representative of a country that, contrary to what is often perceived from the outside, does not present a "canonical" landscape but one that is "ecologically hybrid and environmentally ambivalent, halfway between unspeakable beauty and complete abandon" (3). Making reference to the title of a book edited by Serpil Oppermann and Iovino herself (Indiana University Press, 2014), we can define Iovino's scholarly practice as a form of *Material Ecocriticism*, an approach that turns on the world of matter, of chemical substances and elements, highlighting how they are intimately connected with narratives and stories. It is in fact through materiality that bodies interact with each other, as the book demonstrates in the course of its four-part journey to Naples, to the Venetian Lagoon, to three areas affected by earthquakes (the Belice Valley [Sicily], Irpinia [Campania] and L'Aquila [Abbruzzo]), and, finally, to the Langhe in Piedmont.

In chapter 1, "Bodies of Naples: A Journey in the Landscape of Porosity", Naples, the author's native city, is interpreted through the image of "porosity", which over time has been attributed to Naples' streets, walls and its volcanic aura; starting with Walter Benjamin's memoir, where the adjective "porous" attached to Naples is recurrent, and moving to Curzio Malaparte's novel *La pelle* (*The Skin*, 1949), in which nature's violence and human violence over Naples's "bodies" act in concert. The chapter touches on issues such as ecomafia and toxin-related diseases, pollution, marginality, and Naples' lack of citizenship and "collective protection". The corporeality of the city, the identification of

the various bodies that constitute Naples**,** is the unifying element of Iovino's reading of the city; where "humans and nonhumans, hybrid bodies that coalesce with the materiality of places and natural forces, [interact] with flows of substances, imagination, and discourses" (15).

In chapter 2, "Cognitive Justice and the Truth of Biology: Death (and Life) in Venice", the focus is on the Venetian Lagoon, in particular on Venice, revisited through the trope of *Death in Venice*, and on the nearby industrial city of Marghera, considered by the author as Venice's alter ego. The latter city is sadly linked to the petrochemical company Petrolchimico accused by the magistrate Felice Casson of "mass murder, environmental disaster, mass culpable homicide, missing workplace safety, water and food poisoning, and the construction of illegal waste dumps". Like porosity for Naples, what comes to characterise Venice is its "amphibious nature", evident at various levels, from the material to the semiotic, allowing for various readings of facts and events that have dramatically changed the biological balance of the place. In the "caranto", the solid clay of the lagoon bed, Iovino identifies, instead, the physicality of the city as well as the interdependency of the structure of the lagoon with its fundamental biotic features; while the high and low tides, the breath of the lagoon, represent the precarious balance on which Venice is founded.

In chapter 3, "Three Earthquakes: Wounds, Signs, and Resisting Arts in Belice, Irpinia, and L'Aquila", the linking theme is rubble, a theme the author unfolds in narratives of "debris, abandoned places, the victims seen and unseen", taking as "voices" the "placeologist" Franco Arminio, the filmmaker Sabina Guzzanti, philosophers like Benedetto Croce and Ernesto De Martino, and the economist Manlio Rossi Doria. Earthquakes represents a threat for forty-five per cent of the Italian territory and have shaped a landscape of wounds with their catastrophic effects; in the Belice Valley (1968), whole villages were relocated, and in Irpinia (1980) the consequences of the reconstruction were even more devastating than the shock of the earthquake itself. In L'Aquila (2009), finally, even more disastrous ecological and political repercussions were experienced through a slow earthquake. These tragic events have given way to new energies of resistance. Perhaps the best example comes from Gibellina in the Belice Valley, where art was used to forge a new identity and to consolidate links with the past. Iovino tells us how Gibellina came to be a museum city for postmodern art. The most astonishing achievement in Gibellina is Alberto Burri's *Cretto* (1985-1989), which was created by covering the remains of the medieval village with a cast of white concrete, preserving in that way the original layout of the village. What Burri manages to capture with his cast is Gibellina's lost voice, "turning its silence into a solid white cry, incorporated as an image and as a sign in the enduring life of the western-Sicilian ecosystem" (103).

The final chapter, "Slow: Piedmont's Stories of Landscapes, Resistance, and Liberation", focuses on Piedmont, the region where the author currently lives. Iovino tells us how there are stories of blood and violence behind the joyful and prosperous image of Piedmont and its vineyards, and narrative resistance transforms this into a collective work of creative liberation, from the Slow Food movement to advocacy for

environmental justice. The unifying narrative theme here, drawing a parallel with the winemaking process, is "encounters and combinations". Well-known for their wines, the Piedmont sites discussed, known as the Langhe, are also sites of struggle, bloodshed, and resistance. Iovino refers to Cesare Pavese and Beppe Fenoglio's novels, which have captured the violence of the war as well as that of vinedressers and peasants; and then focuses on the work of Nuto Revelli in particular (1919-2004), a friend of Primo Levi, who has left a monumental oral history archive on this area and its people. Revelli, who fought in the Second World War and after the fall of Fascism became a partisan, was moved to record what he witnessed during the Resistance but then felt a duty to collect stories from other people, thus creating the kind of micro-history that is often ignored in official accounts. Revelli created an extensive archive of oral histories to give an identity to the "defeated" men and women of his land. He also wrote two books, *Il mondo dei vinti* (*The World of the Defeated*, 1977) and *L'anello forte* (*The Strong Link*, 1985) to "shed light on a world of rural poverty and migrations". These two works focus on women's roles in their families and address the disappearance of the peasant class, the abandonment of mountainous regions and the destruction and pollution of large swathes of countryside.

Another aspect of land liberation is found by the author in the Slow Food movement, which was established in Bra in 1986 by Carlo Petrini to prevent the decline of local economies by re-evaluating gastronomic traditions in terms of cultural biodiversity. However, what we find out about in the book's epilogue is how the slow stratification of injustices has shaped these lands. Revelli and Petrini's work offers a valuable counter-narrative that highlights the importance of the environment in which food is grown against the lethal impact of asbestos, which for years the Eternit factory disseminated in Langhe-Roero and Monferrato. Although it was declared illegal in Italy in 1992, asbestos is still bought and sold today. Its environmental impact, Iovino muses, is "even slower than wine's time" (153). This bitter twist at the end is a poignant reflection on the Anthropocene based on the association between the lengthy chemical processes involved in the maturation of wine and the chemical processes at work which are gradually destroying the environment.

The book offers insightful stories of ecological struggle that provide illuminating examples of the interconnectivity of human and nonhuman landscapes, showing how forms of resistance have been developed and acted in a variety of texts and contexts. The scrupulous and rigorous research of this work is coupled with a beautiful writing style, which effortlessly traverses and connects various disciplines, and is an inspired labour of love by the author for her country, its people, places, and literature.

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Book Review: Chris Pak, *Terraforming: Ecopolitical Transformations and Environmentalism in Science Fiction* (Liverpool UP, 2016), 243 pp.

Terraforming, a word coined by science fiction author Jack Williamson in the 1940s to describe the transformation of alien planets to make them habitable for human beings, is among the grandest of all of science fiction's tropes: corps of engineers and explorers greening the red deserts of Mars, clearing the poisoned skies of Venus, and conjuring bountiful new worlds from hostile landscapes through sheer will and technological savvy. Depending on the degree of self-reflexivity they bring to the trope, terraforming stories act either as expressions or as critical explorations of the basic human desire to make a home by adapting the world around us to suit ourselves and our needs. And as Chris Pak demonstrates in *Terraforming: Ecopolitical Transformations and Environmentalism in Science Fiction*, the futuristic alien landscapes of terraforming stories thus provide opportunities for examining contemporary attitudes towards a variety of "ecological, environmental, and geopolitical issues and concerns" (1) here on our own planet. Pak argues that because "terraforming [can] be used to magnify issues connected to technologically based environmental projects and to examine the moral shortcomings that give rise to ecopolitical conflict," this literature is particularly suited to "contemporary environmental philosophical speculation" (9), offering casual readers, ecocritical scholars, and environmental philosophers alike the opportunity to "reframe[e] orientations and perspectives towards the habitation of Earth" (2).

Pak approaches science fiction as a kind of arena for staging thought experiments, arguing that "narratives of terraforming offer imaginative spaces for reflection on fundamental issues regarding our place in relation to Earth" (8). By displacing human figures into unfamiliar landscapes and ecologies, terraforming stories set on other planets provide readers with a defamiliarized perspective on human relationships to more familiar landscapes, "encod[ing] a conception of humanity as fundamentally alien to Earth" (2). Thinking about humanity as alien to the environments we inhabit casts familiar activities in a new light; Pak argues, for example, that the clearing of fields can be thought of as indicative "of an impulse to shape the planet for human-centred purposes" (2), and that weeding a backyard garden plot and artificially creating the conditions required for plant life on a barren alien moon can thus be understood as two intimately connected manifestations of the same kind of world-making activity. In this way, Pak suggests, terraforming narratives "allow us to examine and evaluate our historical relationship to our home planet and to postulate alternatives to current practices" (7).

Central to Pak's analyses of individual terraforming texts is the idea that such stories all deal in one way or another with a conflict between two opposed desires: to understand and control the nonhuman world in order to promote conditions favourable to human life, and to acknowledge the autonomous existence and inherent value of nonhuman beings. Pak refers to these desires using terminology borrowed from the environmental philosopher Simon Hailwood: "landscaping" and "the recognition of nature's otherness." Landscaping refers here to the "physical and intellectual processes" through which human beings shape and interpret environments (11); nature's otherness refers to the idea that natural systems "possess an aspect that cannot be reduced to the social sphere" (20) and which exists outside of the human systems through which we attempt to landscape, comprehend, and control it. The five chapters of *Terraforming* outline a history of 20th-century terraforming stories organized around changes in the ways authors have dealt with the tension between the desire to landscape nature and the imperative to recognize nature's otherness.

Chapter 1, "Landscaping Nature's Otherness in Pre-1960s Terraforming and Proto-Gaian Stories," focuses on interwar science fiction that explores themes of planetary holism, "living worlds," and environmental transformation. Pak identifies two opposed reactions to nature's otherness in these texts: the first, exemplified by H.G. Wells's *The Shape of Things to Come*, is motivated by "Promethean fear" of the "asymmetry between humankind and nature" (54) and expresses a desire to overcome nature's otherness by using technology to control the environment; the second, exemplified by the novels of Olaf Stapledon, "challenges the colonial anthropomorphism of the war on nature theme . . . by offering vectors for recognising nature's otherness" (55). Chapter 2, "The American Pastoral and the Conquest of Space," examines mid-century novels of interplanetary migration and settlement that draw on or respond to the "convergence of the colonial and the utopian" (59) in American discourses of the frontier. The three sections of the chapter focus on texts that celebrate the opportunity to extend the cultural adventure of American manifest destiny through planetary colonization, texts that offer dystopian visions of political fragmentation and failed colonies, and texts that use the trope of encounters with indigenous alien civilizations to raise moral questions about terraforming and colonial politics.

The third chapter, "Ecology and Environmental Awareness in 1960s-1970s Terraforming Stories," reflects on the influence of countercultural political movements on the terraforming tradition. The first half of the chapter argues that the "living world" trope was detached from fear of nature's threatening autonomy and transformed into a vehicle for environmentalist and anti-colonial discourse in the 60s and 70s; the second half consists of extended readings of major novels by Robert Heinlein, Frank Herbert, Ursula K. Le Guin, and Ernest Callenbach, which Pak argues shaped and were shaped by the mixture of technophilia and mysticism that characterized the early environmental movement. Chapter 4, "Edging Towards an Eco-Cosmopolitan Vision," examines texts from the 1980s that explore tensions between visions of the environmental future articulated at local and global scales. The chapter draws on Ursula Heise's argument that contemporary environmental crises demand the development of models of

"environmental world citizenship" that integrate relationships to local ecologies with global perspectives (*Sense of Place*, 10). Pak's fifth chapter, "Kim Stanley Robinson's *Mars* Trilogy," reads Robinson's terraforming epic as a "megatextual" re-writing of the entire terraforming tradition. Pak draws on literary critic Jed Rasula's image of the canon as a "compost library" of texts that "collapse into one another . . . by constant recycling" (17) to argue that Robinson's terraforming stories thematically and formally model "an ecological approach to habitation" (203) based on adapting traditions and technologies to new circumstances. Finally, in a short conclusion, Pak turns to terraforming stories published in the first decades of the 21st century "to demonstrate how the motif continues to offer resources for ecological and socio-political thought" (205).

There are points in *Terraforming* where Pak's attempt to periodize a small corpus of texts written over a relatively short period of time leads to a multiplication of categories that is more confusing than enlightening. In the third chapter, for example, he divides the "terraforming texts of the 1960s-1970s" into three categories: "those narratives that present a clear continuity with the stories of the 1950s," "the proto-Gaian narratives distinctive to [the 60s and 70s]," and stories that "engage in dialogue with the earlier 1950s tradition of terraforming stories and look forward to those of the 1980s-1990s" (101); there is also a fourth category that focuses on adapting human settlers to alien landscapes. The utility of such a minutely subdivided taxonomy is not immediately clear, and the chronological schema Pak uses to organize his chapters seems to be causing more trouble than it is worth; a more straightforward classification based on the dominant ideological orientation or thematic preoccupation of different terraforming texts seems as if it would be simpler and more useful. There are other points in *Terraforming* where the line of Pak's large-scale arguments gets lost in the details of individual readings, as for example in the long discussions of Herbert's *Dune* and Robinson's *Mars* books in the third and fifth chapters. Overall, however, *Terraforming* offers a usefully detailed history and theoretically sophisticated analysis of an important tradition in contemporary environmental thought. The book will be useful to all scholars of science fiction and, more broadly, to anyone interested in the various ways that literary works shape and are shaped by environmentalism and environmental politics.

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Reinhard Hennig, *Umwelt-engagierte Literatur aus Island und Norwegen: Ein interdisziplinärer Beitrag zu den* environmental humanities (Frankfurt am Main: Peter Lang, 2014), 399 pp.

Environmental and ecological delineations transgress political boundaries. Yet Reinhard Hennig successfully demonstrates with his study of environmental texts from Iceland and Norway that national boundaries and the concomitantly varying ecological practices can be quite meaningful. Not surprisingly, different nations' cultural assumptions shape their environmental practices and laws, thereby altering the forms of human impact on their material surroundings. More surprisingly is how age-old visions of cultural integrity wend their way through even the most seemingly modern industrial practices: the Icelandic sagas in their written form are claimed by Iceland and still guide them as a "literary nation" of farmers, whereas the Norwegian self-description as a democratic major power based on free access to "nature" also reverberates in their contemporary laws. Ancient narratives and mythological frames, we learn, are a powerful directive; by providing this evidence in the case of both of these nations, Hennig makes a noteworthy contribution to ecocritical understandings of regions, nations, and cultural boundaries.

Indeed, Hennig's compellingly thorough research in *Umwelt-engagierte Literatur aus Island und Norwegen: Ein interdisziplinärer Beitrag zu den* environmental humanities [Environmentally-engaged Literature from Iceland and Norway: an interdisciplinary Contribution to the environment humanities] demonstrates clear examples of nationally defined environmental practices. His book is the first, as he notes, to address at length either of these two countries and their environmental texts; thus this study lays the groundwork for future projects on Icelandic and Norwegian literature. It also will interest any scholars studying how ideas about national heritage can impact environmental assumptions and engagements. Furthermore, the book is a significant contribution to the inevitably multicultural European ecocritical studies. Particularly relevant is the assessment of Iceland's and Norway's cultural narratives in conjunction with each other and in relation to each nation's choices regarding hydroelectric plants, hunting and fishing, oil reserves, agricultural plans, and responses to globalism. Hennig also provides a general introduction to recent ecological texts from both countries, many of which have not yet been translated into any other languages, including the Icelandic authors Halldór Laxness, Svava Jakobsdóttir, Jón Kalman Stefánsson, Andri Snær Magnason, and Oddný Eir Ævarsdóttir; and the Norwegian writers Erik Dammann, Knut Faldbakken, Sidsel Mørck, Gert Nygårdshaug, and Jostein Gaarder.

Opening with an excellent general introduction to ecocriticism, environmental history, environmental ethics, and the environmental humanities in the Anthropocene, *Umwelt-engagierte Literatur* is valuable both for readers seeking a general understanding of ecocriticism and for those with expertise seeking broader knowledge about less frequently discussed literatures. After clarifying the theoretical and methodological framework (with panache; this already makes this book an essential reading), Hennig explores the works of five representative authors per country. Each of these sections briefly describes the geography and history of that particular nation, notes the specific claims regarding nationality and national heritage, and then contextualizes those discussions in reference to environmental questions and activism. Hennig offers us a concrete model for future comparative projects with depth, rigorous analysis and abundant concrete textual examples that refer to very specific ecocritical questions regarding "environmental engagement."

As the title indicates, Hennig assesses each text in order to determine if it qualifies as *environmentally engaged* literature as defined by Hubert Zapf's concept of "cultural ecology." Specifically, Hennig looks at each text in terms of whether it: 1) functions as a culture-critical metadiscourse (criticizing current practices); 2) if it also offers an imaginative counter-discourse (with alternative possibilities instead of just pessimistic condemnation); and 3) if there is the possibility of re-integrative discourse offering new solutions. "Die eigentliche Bedeutung von Zapfs Ansatz liegt nicht in dem Versuch, Aussagen über das Verhältnis von Literatur und Natur zu treffen, sondern gerade in seinem Funktionsmodell von Literatur als kulturkritischem Metadiskurs, imaginativem Gegendiskurs und reintegrativem Interdiskurs" (44). Additionally, Hennig utilizes Ursula Heise's notion of eco-cosmopolitanism as a model, seeking texts able to connect the local and national concerns to larger, international issues. The book systematically and consistently addresses each text in the same terms.

The Iceland narratives share the claim of building on a tradition of written texts inspired by the ancient Icelandic sagas. The narratives present a nation concerned with maintaining national integrity based on having long been a "literary nation" while facing threats from external powers such as the historical conflicts with the Danish, or later, from globalization. Icelandic tales arise from a farming heritage based on a need for "free land" that Hennig sees documented in the sagas. He notes: „Eng mit dem Ideal des Bauerntums verbunden ist die nationalistische Sicht auf die Natur des Landes. Auch hier spielt der Rückblick auf das Goldene Zeitalter der Nation unter Bezug auf die Isländersagas eine bedeutende Rolle" (59). In particular, Hennig determines that the Icelandic texts document an ongoing quest for independence and resistance against both historical and current colonial "threats from the outside."

The Norwegian assumptions about nation and heritage, in contrast, focus more on a shared history of egalitarian democracy. "Die norwegische Landwirtschaft wird dabei als Verkörperung eines rationalen und verantwortungsbewussten Umgangs mit Naturressourcen betrachtet, der im Gegensatz zur nicht nachhaltigen und undemokratischen Wirtschaftspolitik anderer europäischer Länder stehe" (207). Norwegian national identity, notes Hennig, is based on the image of the country as a

"humanitäre and ökologische Großmacht" [humanitarian and ecological world power] whose outdoorsy, healthy, and humane ways set it apart from other European states. Hence there is, in Hennig's terminology, somewhat of an identity crisis considering the power of the oil industry in the nation.

The novels and texts assembled together in *Umwelt-engagierte Literatur aus Island und Norwegen* all address environmental concerns in some form, yet very few actually fulfil the requirements as Hennig takes them from Zapf to be fully "environmentally-engaged" texts (offering a culture-critical metadiscourse, an imaginative counter-discourse, and a re-integrative inter-discourse). Many of the texts succumb, for example, to idealistic visions of a pure realm of nature lost to modernity and longed for as an element of a long-ago golden era of harmony. Other disqualifying aspects in the Iceland section include the lack of international perspective and hence a failure to achieve a kind of eco-cosmopolitanism (Icelandic examples of this "failure" are Laxness and Stefánsson, whose texts are "environmentally engaged" but remain limited to national issues). Hennig contrasts such locally-bound texts to Jakobsdóttir, who addresses planet-wide issues and who upholds an Icelandic-saga-mythology; and Magnason's *Dreamland (Traumland* in German; *Draumalandið* in Icelandic), which Hennig believes is one of the most ecologically relevant texts even while it tends towards idealizing local place. In contrast, Ævarsdóttir, as one of the two female authors, has both an international and engaged political stance but assumes a kind of biological determinism based on the "isländischen 'Volksseele' und dem genetisch-kulturellen 'irischen Erde' der Isländerinnen" (198).

Among the Norwegian texts, Hennig sees Faldbakken's works as fulfilling the requirements to be environmentally engaged yet extremely pessimistic in terms of what human beings can do now and for the future. Nygårdshaug, on the other hand, offers primarily a cultural critique that leans towards a "vormodernes Goldenes Zeitalter—also ein 'zurück zur Natur" (a "premodern golden epoch—thus a return to nature') model that is, in the long run, ineffective for the contemporary world. Dammann presents a more optimistic hope for the future in his travel report from the Samoan island Savaii, *Mit vier Kindern in einer Palmenhütte* [*Med fire barn i palmehytte*]; if colonialism was totally destructive, there is the possibility of an open future based on enlightened individuals who can re-shape the world for the better. For his environmental writings, Dammann received the "alternative Nobel Prize, the "Right Livelihood Award" in 1982 and in 1998 the "Preis Fritt Ord Honnør" and has been receiving national funding since 1988.

As the second of the two female authors considered in the book, Sidsel Mørck's works of poetry, pastiche collections of newspapers, short stories, and photos are particularly noteworthy. Her book, *The Future is now* (1979) could be described as a "petro-text" with its emphasis on the petrochemical industry in Norway. Her novel *Silent Servant* (1978) and its continuation in *Not for Sale!* (1983) are partially documentary in their presentation of workers suffering in the industrialized economies producing toxic pollution. Hennig praises her critique which avoids slipping into mystical ideals about a lost golden era and is able to extend her comments to global industrial practices, thus

achieving an eco-cosmopolitan vision. Mørck's literary impact was significant enough that Norsk Hydro attempted to prevent the further publication of *Silent Servant.* Finally, although Hennig's very specific requirements necessary for a text to count as environmentally engaged, culturally critical, but also able to offer productively "re-integrative discourse" appear to be difficult to fulfil, the final author discussed in the book, Jostein Gaarder, also succeeds with his *Anna. Eine Fabel über das Klima und die Umwelt des Planeten* (*Anna. A Fable about the climate and environment of the [our] Planet)*. Most promising, Hennig claims, is the emphasis Gaarder (much like Mørck) places on hope and the potential of education. Both texts reveal serious ecological concerns but have a future-facing perspective that doesn't leave humanity stranded on a doomed, soon-to-be apocalyptic planet.

Hennig's *Umwelt-engagierte Literatur aus Island and Norwegen* beautifully fulfills its own parameters for being environmentally engaged: both culturally critical and aware of potentially productive counter-discourses that could re-integrate us into alternative ecological practices with an inspiring eco-cosmopolitanism. This is a successful study and a model for future comparative projects.

Vol.8, no. 2

Mission Statement

This journal of ecocriticism, founded in 2010, is a joint initiative of GIECO (Ecocritical Research Group in Spain) and EASLCE (European Association for the Study of Literature, Culture and Environment) and is published by the University of Alcalá as of 2014. Its principal aim is to further the study, knowledge and public awareness of the connections and relationship between literature, culture and the environment. As a virtual space, it provides a site for dialogue between researchers, theorists, creative writers and artists concerned with and by the environment and its degradation. Its pages are open to contributions on all literatures and cultures, but its special mission is to reflect the cultural, linguistic and natural richness and diversity of the European continent.

Contributions, which are subject to double-blind peer review, are accepted in five languages, in order to increase visibility and broaden the participation of scholars who are not part of the English-speaking world. *Ecozon@* publishes original research articles, in addition to creative writing, visual arts and book reviews. Publication is open to scholars interested in ecocriticism from around the world. We recommend membership of EASLCE to our contributors and readers, but it is not a requirement for either.

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Vol 8, No 2

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Vol 8, No 2

Issue published October 31st 2017

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Vol 8, No 2

Published by

Institutional Address

Editor in Chief
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General Editor
Instituto Franklin
Colegio de Trinitarios
C/ Trinidad, 1
28801 Alcalá de Henares
Madrid (Spain)

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