

## 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 juego 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.<sup>1</sup> 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<sup>2</sup> 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.<sup>3</sup>

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,<sup>4</sup> 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

<sup>1</sup> 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.

<sup>2</sup> While petroculture is not the same thing as climate change, carbon economies are a driving factor in climate change; the two are interlinked.

<sup>3</sup> In *The Great Derangement*, Amitav Ghosh discusses India and Southeast Asia in particular.

<sup>4</sup> 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,<sup>5</sup> 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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<sup>5</sup> 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<sup>6</sup> 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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<sup>6</sup> 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,<sup>7</sup> 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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<sup>7</sup> *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.<sup>8</sup> 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.<sup>9</sup>

<sup>8</sup> McKenzie Wark corroborates this view in *Gamer Theory* (2007), reading all life as a series of games.

<sup>9</sup> 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.<sup>10</sup> 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.<sup>11</sup>

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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<sup>10</sup> 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.

<sup>11</sup> 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.”<sup>12</sup> 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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<sup>12</sup> 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),<sup>13</sup> 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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<sup>13</sup> Three social justice games useful to play in class because they are short, free to play online, and ripe for discussion are *September 12<sup>th</sup>* (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,<sup>14</sup> 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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<sup>14</sup> 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.

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