

Critical Play and Architectural Education: Teaching Environmental Stewardship through Game Design

DEBBIE CHEN

Rhode Island School of Design

Keywords: games, play, climate change, environmental ethics

This paper focuses on the increased application of game design to complex issues of environmental stewardship, infrastructural policy, and resource management in architectural pedagogy. Educators who introduce game design to architectural frameworks experiment with new ways to work on the built environment that model observation, collaboration and process rather than fixate on top-down, prescriptive approaches to solution-making. Borrowing Mary Flanagan’s term of critical play,¹ game design within architectural education nurtures the development of ethical professionals who acknowledge and appreciate the ecology of forces influencing the built environment as relational, fluid, and mutable. Gameplay within architectural pedagogy also supports the development of co-creative partners who expand the agency of architecture beyond the conventions of the discipline to an expanded understanding of environmental agency that interfaces with multiple stakeholders. The application of gameplay to architectural projects on the environment move the discourse away from singular, didactic models of design and towards rhizomatic, systematic, and cooperative frameworks that simultaneously empower and establish the dependency of architects on other agents of change.

PLAYING CRITICALLY WITH THE ENVIRONMENT

Critical Play and Architectural Education pulls together research and teaching completed at the University of Wisconsin-Milwaukee’s School of Architecture and Urban Planning. The paper also projects this work on gaming the environment into new teaching projects at the Rhode Island School of Design. I will start by discussing a game I designed at UWM concerning climate change mitigation and then pivot to demonstrate how knowledge production around environmental stewardship can make a leap from traditional board game mechanics (traditionally educational) into the simulated territory of video games. Both my teaching and research at UWM focused on a concept of Drawdown Architecture. “Drawdown: Play to Enter” is a cooperative game designed to simulate the joys of negotiation and collective action required to work through climate strategy and resource management in the built environment. It was designed through the generous support of the Architectural Activism

Fellowship at the University of Wisconsin-Milwaukee, and also through the help of my team of undergraduate research assistants. I simultaneously taught a studio called Drawdown:2040 which encourage students to speculate on future environments informed by the drawdown technologies we were researching. I see thesis speculative worlds as prototypical game environments embodying a broad range of environmental ethics.

So what do games have to do with environmental ethics? Let’s start with a provocation that questions architecture’s agency within climate activism. Astrophysicist Carl Sagan once said that “We live in a society exquisitely dependent on science and technology, in which hardly anyone *knows* anything about science and technology.”² As the climate emergency exacerbates, one has to ask oneself, what do architects know about fighting climate change? Although statistics on embodied and operation carbon are widely known, architects still struggle with the challenges of implementing environmental ethics in daily practice. So as a retort to Carl Sagan’s provocation, this presentation finds a more productive framework within philosopher Gilbert Ryle’s work. Ryle distinguishes the difference between “knowing that vs. knowing how” as the difference between knowing the right answer and knowing how to do something. Architects might know statistical data on climate change, but do they know how to impact this data through design? As Keller Easterling puts it, “we ought to focus not only on objects with names, shapes, and outlines, but also on the matrix or medium of activities and latent potentials that those objects generate.”³ Hence the affordance of games. Games offer a medium through which mutual alliances, compromises, and tactical design around climate action are modeled. Game design, in analog and digital forms, becomes a convenient channel to animate, or give life, to this knowledge.

THE DRAWDOWN GAME

The Drawdown Game designed at UWM resulted in a multi-player physical table-top game. In addition to cross-disciplinary research, the game espouses that envisioning a sustainable world requires bold, joyful imagination that exceeds the pragmatism of science and policy. By working through games, architects can explore both the object and process aesthetics of designing for climate change. Players are encouraged to embrace a simultaneous sense of urgency and euphoria as they play together to cool

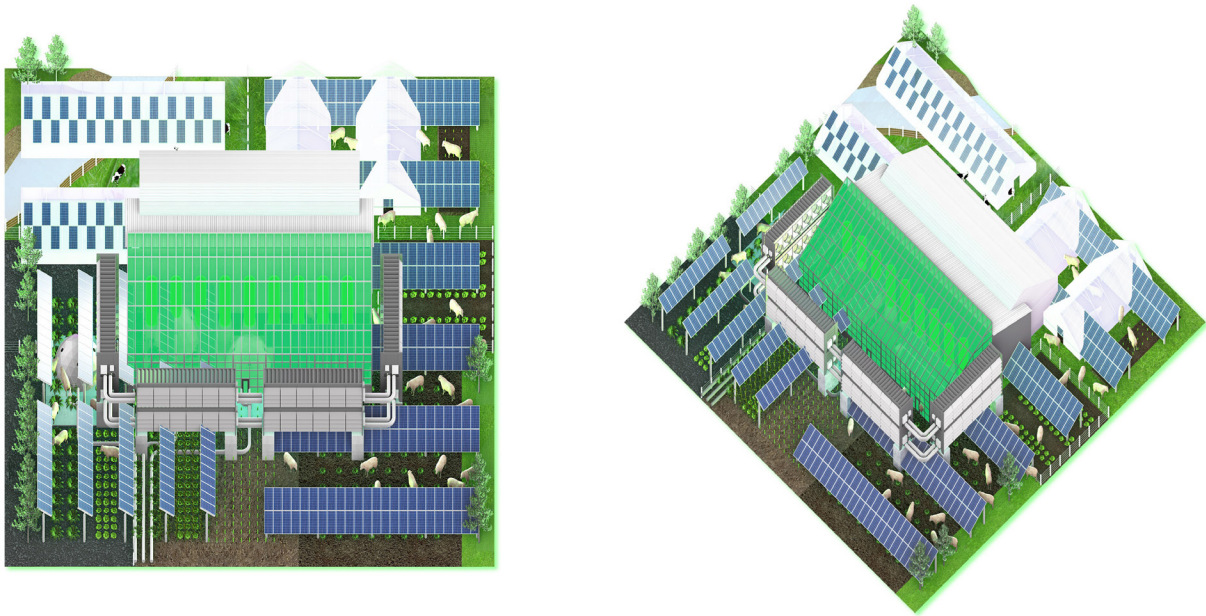


Figure 1. Digital prototypes of the game: "Drawdown: Play to Enter." Image credit: the author.

the planet. The central theme of DRAWDOWN is understanding carbon as a shared neutral resource which requires delicate balance and maintenance.

From a game mechanics perspective, *Drawdown* makes nods to popular game culture. Taking cues from role-playing games such as *Magic the Gathering*, we activated our drawdown research into character-oriented cards. The game table also alludes to resource management games such as *Settlers of Catan*. This intersection of game design and architectural education has expanded in relevance given the history of games as both a social technology and medium of representation. As witnessed in *Drawdown*, games become a unique medium that both inscribes cultural positions and disseminates agency through player engagement. Leaning heavily on the work of C. Thi Nguyen on theorizing games as an artform of agency, the project demonstrates how games act as a social technology that "are a method for inscribing forms of agency into artifactual vessels: for recording them, preserving them, and passing them around."¹⁴ This transference or modeling of agency resonates with architectural theories on active forms and the concepts of fluidity within a designer's sense of agency. Keller Easterling describes this modality of active form as "forms that do not fix position, but rather release agency or get things moving...The form is a change and the means to make a change. It is a theater of operations and actions – an explicit set of interdependencies that set up new potentials within the organization."¹⁵ As designers confront complex, multi-scalar issues of climate change and environmental ethics, games and their active forms allow both designer and player to strategize through interplay and resist fixed states of being, focusing more importantly on levers of change and temporary / incremental shifts.

SIMULATION OVER ABSTRACTION

The first version of the *Drawdown* game existed strictly as an analog "table-top" game, but there is awareness of greater affordances of introducing digital modalities. In speculating on digital forms of *Drawdown*, we start to move away from abstraction and the blank slate, limitations built into our earlier references of tabletop games such as *Settlers of Catan*. Video games allow designers to work through environmental simulation beyond a top-down approach.

After all, climate change is not something that passively happens to us, nor is it something we can mitigate at a distance. We are actively entangled in its negotiation on a day-to-day level. Disciplinary approaches to representing climate activism often focus on a fixed condition of intervention (before vs. after), whereas game design embodies the active qualities of negotiation, compromise, balance, and incremental progress that occur in the in-between. Video games are then a highly focused application of this modality. The digital version of the *Drawdown* project is also invested in a process of accumulating practicality that overwhelms to the point of the euphoria (see *Figure 1*). Operating speculatively, the *drawdown* video game embraces a futuristic, scenario-based thinking embodied in Holly Jean Buck's *After Geoengineering*⁶ which asks players to earnestly take on the ethos of climate maintenance in our near-future world.



Figure 2. Video game environmental ethics analyzed through an alignment chart. Image credit: the author.



Figure 3. Drawdown:2040 design studio student work embodying the ethics of observation. Image credit: Alejandro Ricart's *Silvopasture Farm* (left) and Jack Glavin's *Peat Restoration Center* (right).

ALIGNING ENVIRONMENTAL ETHICS

The paper will now transition into analyzing how existing video games on environmental stewardship, using six case studies as map an exciting territory of aesthetics and approaches. Staying true to popular game references, the research uses the alignment chart, made popular by *Dungeons and Dragons*, to articulate how designing video games can produce a spectrum of ethical approaches to environmental concern and care. These six case studies all acknowledge the contingencies of an found condition, an existing world. However, these games demonstrate how environmental ethics occupy various degrees of optimism and action – revealing lessons in teleology and responsibility that are beneficial to architects (see Figure 2). These video game references are coupled with samples of student work from the Drawdown:2040 design studio. In this framework, the student design work become proto-environments for the extended pursuit of these ethical dilemmas within a video game construct.

ETHICS OF OBSERVATION

Starting with games that encourage environmental observation, the research focuses on *Wait*, by Lindsay Grace from 2005. As described by Mélanie van der Hoorn in her book *Serious Fun*, “the intention in *Wait* is to return the game experience to a central theme in some artistic practices: the reward of stopping to smell the flowers. The game begins with a fade from white and

a fairly empty virtual field with blowing grass and the sounds of nature. If the player does not move, elements of the world are heard and faded into view.”⁷ *Wait* ultimately puts into question the need for human interference within the world’s process of healing itself. In the spirit of realistic observation, the game reminds architects of the impact our actions, regardless of how small, on the environment in which we co-exist. Another observational game, titled *Another Day of Depression in Kowloon*, takes on a more sinister attitude. Modeled after the virtual world of Kowloon Walled City in the popular first-shooter fighting game *Call of Duty: Black Ops*, filmmaker Ip Yuk-Yiu turns the backdrop into the protagonist of the story, relying on methodologies of observation and assemblage to call to question representations (or even celebrations) of complex urban conditions in popular media.⁸

Wait and *Another Day* both rely on observation as a point of departure for environmental contemplation and restrained action. Similarly, two projects from my advanced studio at UWM (see Figure 3) use existing drawdown practices as launching points for speculating on a future of climate restoration, engaging in uncomfortable issues of scale, responsibility, and degrees of impact. On one hand, Alejandro Ricart’s *Silvopasture Farm* project balances the symbiotic outputs of agriculture and forestry with the need for habitat conservation. On the other

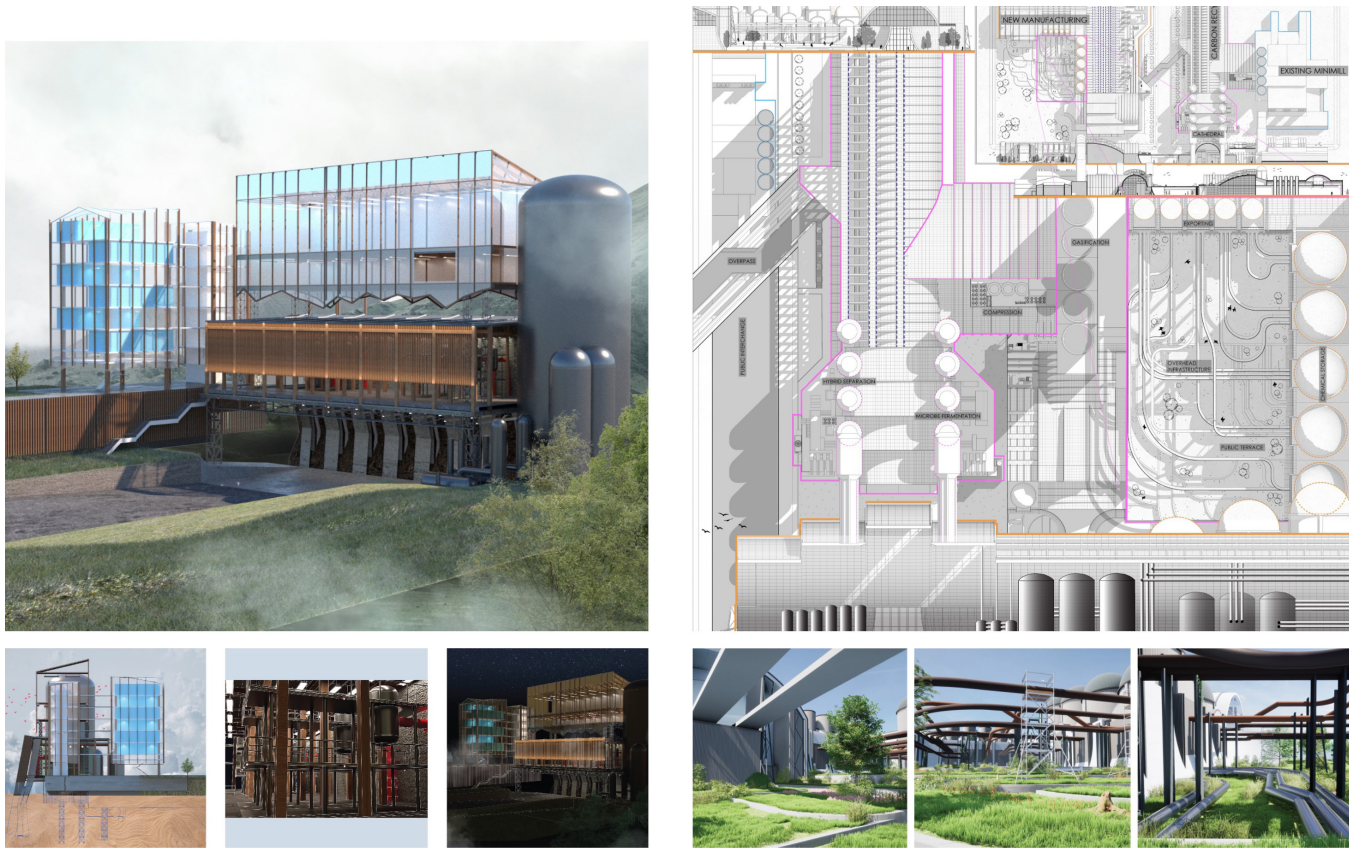


Figure 4. Student work embodying the ethics of repair. Image credit: Walter Moran's *Pyrolysis Plant* (left) in comparison to Alex Trego's *Carbon Capture Project* (right).

hand, Jack Glavin's *Peat Restoration Center* calls for the slow work of restoring peat habitats to farmlands, speculating on carbon sink as another form of productive land management beyond agriculture.

ETHICS OF REPAIR

Moving beyond observation to repair, the games *Lichenia* and *Katamari Damacy* take polarizing approaches to healing the cosmos. *Lichenia*, designed by Paolo Pedercini in 2019, is an alternative to city building games such as *SimCity*. Pedercini describes the game, named after an Italo Calvino *Invisible City*, as one that complicates the element of *tabula rasa*, or blank slate. "In all kinds of city and civilization building games...you typically start from scratch, settling on an immaculate wilderness that's just there for grabs. [However,] cities are usually built on top of existing settlements, both human and non-human, which the colonists simply don't see or value. So in *Lichenia* you start from a polluted and messy map that you have to remediate."⁹ Perhaps pessimistic in view, *Lichenia* nonetheless argues for an ethics of resilience and cautionary rebuilding amidst anthropogenic ruin. Messiness is something *Lichenia* and *Katamari Damacy* have in common. Designed in 2004 by Keita Takahashi for *Playstation 2*, *Katamari Damacy*, or "clump spirit," prefers the absurdist and irrational joys of playing to rebuild the cosmos. You play the young prince, whose father the King of the Cosmos, has destroyed the

universe. In rolling up balls of detritus (including humans, mountains, sushi), you participate in the uncanny and thrilling quest to restore the world. Although not explicitly about environmental ethics, *Katamari Damacy* provides a welcome reminder of the sometimes-outlandish hubris of rebuilding our environment and the joy that nonetheless comes with worldbuilding.

Both *Lichenia* and *Katamari Damacy* provide cautionary tales regarding repair in environmental ethics. This motivation is demonstrated in two projects from the Drawdown:2040 studio (see *Figure 4*). In Walter Moran's *Pyrolysis Plant*, new infrastructural forms dominate the built environment as new energy regimes take hold in the climate future. In a similar manner, Alex Trego speculates on the effects of carbon capture operations as they augment existing industrial landscapes. Both projects embrace a techno-optimistic lens while imbuing a forlorn or even sinister tone in a nuanced attempt to hold critique and productivism in the same world.

ETHICS OF REBUILDING

Cloud Gardens and *Block'hood* occupy the third tier of the alignment chart, which engages in the ethics of building. Designed by Thomas van den Berg in 2020, *Cloud Gardens* is a sandbox game that takes up the mantle of rebuilding in the age of ruin. Like *Katamari Damacy*, players delight in the specificity of the found

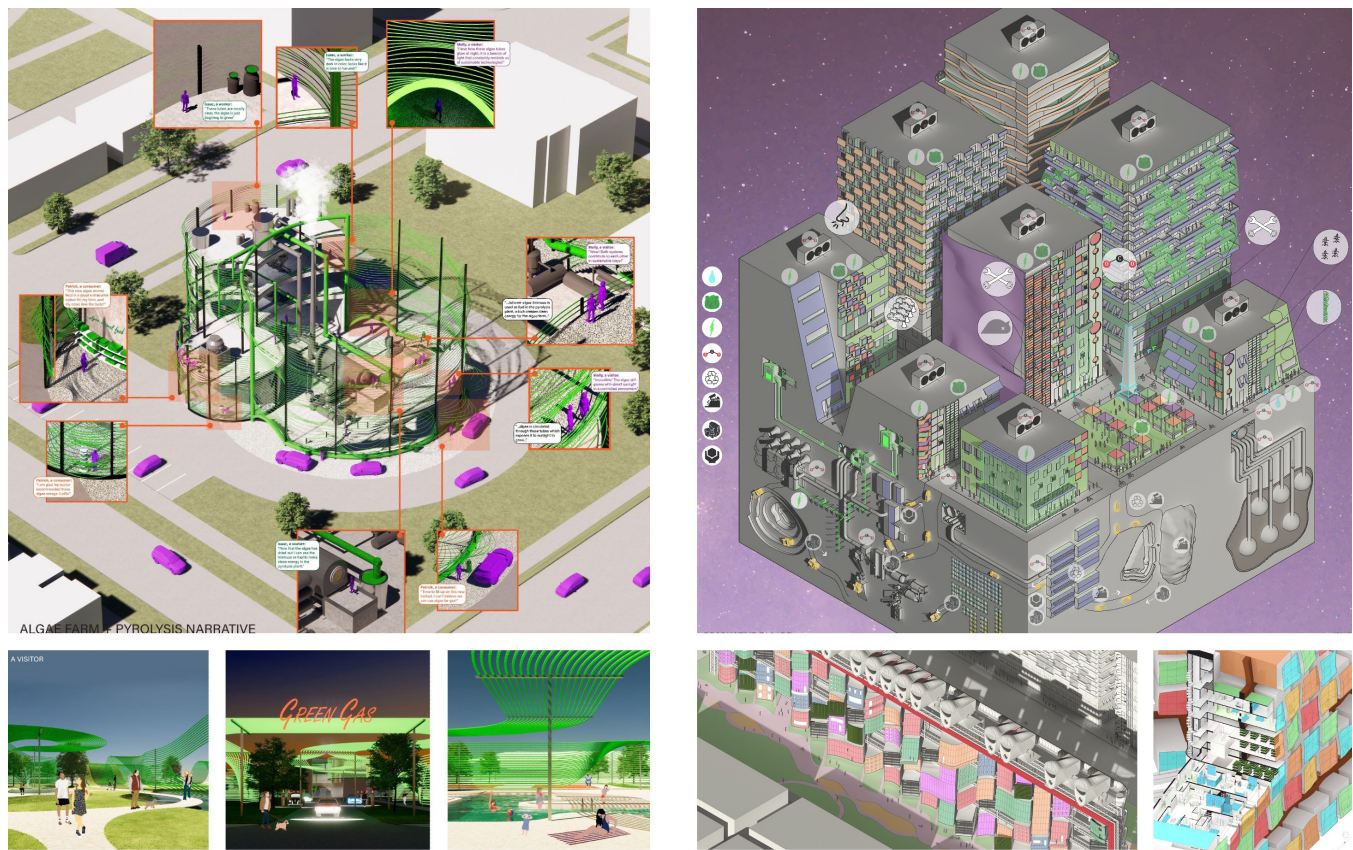


Figure 3. Examples of students taking an optimistic approach to (re)building in the Drawdown:2040 design studio. Image credits: Natalie Kuehl's *Algae Fuel Station* (left) and John Hess's *Productive Facade City* (right).

condition as they assemble pieces of broken concrete, brickwork or rusty metal with artifacts of human life: broken refrigerators, dented suitcases, dumped computers and lost toys. Players build environments, grow plants, and share worlds with others.¹⁰ As a way to imply that repurposing and reuse is a form of joy beyond survival, the game encourages players to sow seeds within the piles of collected detritus, which in turn encourages the plants to grow. *Block'hood*, designed by Jose Sanchez in 2015, wholeheartedly takes on the challenge of building abundance into circular, interconnected neighborhoods. Within the mechanics of a tile-replacement game, players “become aware of the mutual interdependence of various elements and the ecological impact of their actions.”¹¹ Circularity becomes critical in the game as inputs, outputs, productivity and decay all mediate through a range of interdependent relationships. In Sanchez’s words, “every action in the game has a consequence, and that blocks will eventually die if they do not meet their required ecological dependencies.”¹²

Traces of *Cloud Gardens* and *Block'hood*'s optimism can be found in a final set of student projects (see Figure 5), where the excitement of future worldbuilding collides with serious research regarding material ecologies. In her design of an *Algae Fuel Station*, Natalie Kuehl embraces the lifestyle tropes of existing automobile culture yet grafts them onto a near future

condition where carbon-absorbing algae becomes the fuel source. Perhaps within the same near future world, John Hess designs a *Productive Facade City* where mid-rise and high-rise structures integrate solar panels and vertical farming into their enclosure system.

VIDEO GAMES AS PROTO-ENVIRONMENTS

The physical Drawdown game, the video game research, and designing game environments through pedagogy work together to create one’s own ecology of teaching environmental design. All the components inform one another around the affordances of game strategy and environmental ethics channeled through critical simulation. Prioritizing haptic experience over abstract conceptual associations, games (especially video games) explore frameworks for environmental activism that rely on immersing oneself in the existing conditions of a given world while holding space for considering the consequences of our actions. With the ability to vividly model concerns of both real and fictitious worlds, video games invite us to question architecture’s default responses of solution-based thinking, encouraging us to prioritize observation, joy, and appreciation before the impulse to act.

ENDNOTES

1. Mary Flanagan, *Critical Play: Radical Game Design* (Cambridge: MIT Press, 2009).
2. Alastair Philip Wiper, Marcelo Gleiser, and Ian Chillag, *Unintended Beauty* (Berlin: Hatje Cantz, 2020).
3. Keller Easterling, *Medium Design: Knowing How to Work on the World* (London: Verso, 2021), x.
4. C. Thi Nguyen, *Games: Agency as Art* (New York: Oxford University Press, 2020), 1.
5. Keller Easterling, *Medium Design*, 39.
6. Holly Jean Buck, *After Geoengineering: Climate Tragedy, Repair, and Restoration* (London: Verso, 2020).
7. Mélanie van der Hoorn, *Serious Fun: Architecture & Games* (Rotterdam: nai010 publishers, 2022), 26.
8. Yip, Yuk-Yiu. "Another Day of Depression in Kowloon," Accessed July 24, 2023. <https://www.ipyukyiu.com/kowloon>.
9. Paolo Pedercini, "Lichenia Release Notes," Accessed July 24, 2023. <https://www.molleindustria.org/blog/page/2/>.
10. Mélanie van der Hoorn, *Serious Fun*, 96.
11. Mélanie van der Hoorn, *Serious Fun*, 144.
12. Jose Sanchez, "Massive Re-Patterning of the Urban Landscape." In *Architectural Design* 86, no. 5 (September 8, 2016): 48–51. <https://doi.org/10.1002/ad.2088>.