



Power Games

Towards the Rhetoric of Energy in Speculative Video Games¹

Abstract: The article maps the intersections of energy and videogames, one of the newest among speculative media, and approaches the question concerning the extent to which such games can be vehicles in raising awareness of the role of extractivism and energy sources in the Anthropocene. It first identifies the gaming medium's engagement with the broader questions of climate crisis, of which energy issues constitute an important aspect. It then outlines several analytical approaches which help disentangle the games' procedural rhetoric concerning energy. Finally, it proposes a preliminary grouping of game genres and their potential to engage the centrality of fuels and energy in speculative games. As a whole, it constitutes a preliminary mapping of the status of energy in speculative video games, an intersection that remains largely unexplored, and uses several case studies to illustrate certain regularities emerging in the discussions of the nexus of environment, economy, and energy in speculative video games.

Keywords: energy humanities, Anthropocene, video games, science fiction

“The current environmental crisis is a tear in the gap of reality that cannot be sutured by Keynesian accommodations or resolved (as capital hopes it will be) by technological innovations designed to clean up capitalism's act,” writes Imre Szeman.² However dramatic this diagnosis may sound, its tone is largely shared by the International Panel on Climate Change, which, in early August 2021, published the first part of its sixth report. In the starkest terms possible, the report states that human activity was “unequivocally” the cause of accelerated changes of Earth's climate, including the rise of sea level, melting polar caps and glaciers, heatwaves, floods, and droughts. The report also identifies greenhouse gas emissions and the unchecked consumption of fossil fuels as a major factor behind these changes. Significant portions of the report are hardly new since they are based on some 14,000 earlier articles and reports. They are certainly not entirely novel

1. The research involved in the preparation of this article was supported by the grant No. 2019/35/B/HS2/02024 from the National Science Center in Poland.

2. Imre Szeman, “On the Politics of Extraction,” *Cultural Studies*, 31, 2–3 (2017), 441, <https://doi.org/10.1080/09502386.2017.1303436>.

for some corners of the humanities, either, which have long listened to scientific reporting. In fact, in energy humanities, an emergent discipline now close to a decade old, if one considers the publication of Patricia Yaeger's "Literature in the Ages of Wood, Tallow, Coal, Whale Oil, Gasoline, Atomic Power, and Other Energy Sources"³ in 2011 as one of its starting points, it has long been a given that "we will need to grapple not only with the form of our physical infrastructure or our public policy decisions, but also with the ways in which dirty energy saturates our social and culture imaginaries, shapes bodily affect and figures our deepest unconscious presumptions and desires."⁴ Elsewhere, Dominic Boyer and Imre Szeman propose that "our energy and environmental dilemmas are fundamentally problems of ethics, habits, values, institutions, beliefs and power – all areas of expertise of the humanities and humanistic social sciences."⁵

This means that to talk about neoliberal capitalism and the condition in which it has cornered the planet is to talk about petromodernity and contemporary petrocultures or, more broadly, extractive modernity. In that, Szeman perceives extractivism as "the dominant paradigm of contemporary capitalism and neoliberalism at large" and "a generalizable principle or practice of twenty-first-century neoliberalism that is essential for us to grasp if we are to understand capital in this new century."⁶ And yet, as Wilson, Szeman and Carlson note in their preface to *Petrocultures: Oil, Politics, Culture*, "The importance of fossil fuels in defining modernity has stood in inverse relationship to their presence in our cultural and social imaginaries."⁷ This has certainly been true of realist narratives which, even when they engage ecological and environmental themes, have rarely paid attention to the questions of energy. Energy and fuels have also featured in speculative texts across a range of media, but their presence in them has been more complicated.

In this article, I would like to map the intersections of energy and videogames, one of the newest among speculative media, and approach the question concerning the extent to which such games can be vehicles in raising awareness of the role of extractivism and energy sources in our current global condition. I will begin

3. Patricia Yaeger, "Literature in the Ages of Wood, Tallow, Coal, Whale Oil, Gasoline, Atomic Power, and Other Energy Sources," *PMLA*, 126, 2 (2011), 305–10, <https://doi.org/10.1632/pmla.2011.126.2.305>.

4. Szeman, "On the Politics of Extraction," 441–442.

5. Dominic Boyer and Imre Szeman, "The Rise of Energy Humanities," *University Affairs* (blog), February 2, 2014, <http://www.universityaffairs.ca/opinion/in-my-opinion/the-rise-of-energy-humanities/>.

6. Szeman, "On the Politics of Extraction," 444.

7. Sheena Wilson, Adam Carlson, and Imre Szeman, eds., "Introduction: On Petrocultures," in *Petrocultures: Oil, Energy, and Culture* (Montreal: McGill-Queen's University Press, 2017), 5.

with a brief overview of the presence of energy in speculative literature at large. Second, I will sketch out the gaming medium's engagement with the broader questions of climate crisis and the Anthropocene, of which energy issues constitute an important aspect. I will then outline several analytical angles of approach which can help disentangle the games' procedural rhetoric concerning energy within specific game texts. Finally, I will propose a preliminary grouping of game genres and their potential to engage the centrality of fuels and energy in speculative games. As a whole, the article constitutes a preliminary mapping of the status of energy in speculative video games, an intersection that remains largely unexplored, and uses several case studies to illustrate certain regularities that I see emerging in the discussions of the nexus of environment, economy, and energy in speculative video games.

Science fiction (SF) literature, film, and television seem to be natural habitats for reflections on the energies oiling – literally and metaphorically – the machineries of technological cultures, but their deployment of this preoccupation has been anything but simple. On the one hand, speculative texts in general and science fiction in particular have long been attuned to science and technology, narrativizing theories, predictions, and facts. In many cases, fictional depictions of technological apparatuses have been somewhat generalized and non-specific, occasionally even outlandish, but literary genres are not, after all, technical manuals and can, understandably, take liberties with the state of science. On the other hand, since its emergence as a recognizable form of literature, science fiction has been centrally complicit in the ideological presentation of technological progress as an end in itself. In the last 150 years, very few western conceptions of that progress can be divorced from aggressive resource extraction and massive use of fossil fuels, thus making SF a privileged genre not only of technomodernity at large but also of petromodernity. Among other forms, that complicity has relied on the transparency of fictional energy: assumption that cheap and plentiful energy is readily available for technological development and that its acquisition is only limited by political and economic arrangements. This energy myopia has also registered in SF criticism. To wit, Brian Stableford's otherwise excellent *Science Fact and Science Fiction: An Encyclopedia* (2006) does not have an entry on energy, fuel, oil, or gas (it does have entries on atom, electricity, and pollution, though). This absence is not in itself a charge against Stableford; instead, it illustrates a larger cultural myopia Wilson, Szeman, and Carlson were writing about.

The invisibility of energy in SF has been changing in the last two decades and many speculative narratives have been at least somewhat more conscious of its vicissitudes than so-called mainstream literature. Nevertheless, science fiction has been sensitive to the underlying energy consumption at least since Frank Herbert's *Dune* (1964). In terms of its politics, Herbert's classic can be seen

as problematic, particularly in the context of its sequels, but its ecological vision is singularly clear. Spice may not be a fuel *per se*, but given its centrality to the very existence of the empire, it may well be considered a complete equivalent of oil and gas that have, for the last four decades, fueled the post-Cold War globalization and the expansion of energy-intensive neoliberal capitalism to all corners of the world. Over half a century after its publication *Dune* remains incredibly insightful as the multiple dimensions of the novel's universe – ecology, politics, religion, exploration – literally and metaphorically hinge on spice and the slightest changes in its flows reverberate through political and social structures but also impact the planet Arrakis' ecology.

Dune is merely one of a number of science-fiction texts that circle and ruminate on the questions of energy sources and expenditure. Graeme Macdonald claims that “the fact that future fuel or hypothetical power sources are or may be entirely ‘made up’ can in fact provide a useful vision, a starting jolt to think of alternatives to the inherent flaws (and impressive prowess) of our carbon-driven system and the hegemonic energy ontologies it reproduces. Any cynical response that recognizes the fuel of science fiction as purely fictive denies the place of impossibilist visions as potential solutions to present and projected ecological crisis.”⁸ This is not to say that all or even most recent science fiction demonstrates at least some energy consciousness. Some of the most energy-reliant models of futurity seem to be completely oblivious to these questions, including cyberpunk, whose visions of digital economies require ungodly amounts of “juice” whose generation and arrangements are completely absent from these texts. The same concerns the genre's media forms, particularly Hollywood cinema, in itself very much a petro-industry, which have not translated energy's awareness into critical visions. *Blade Runner* (1982), whose iconicity for cyberpunk cannot be overstated, is a case in point. Even more notably, its sequel *Blade Runner 2049* (2017) seems to be centrally wrapped around an unspoken energetic contradiction. Sarah Hamblin and Hugh O'Connell demonstrate its internal impossibility between, on the one hand, the omnipresent Anthropocenic collapse of civilization, including massive blackouts in the film's past, and, on the other, the excess of its neon-laden aesthetic inherited from Scott's original and enormous energy demands of a culture in which holographic companions are commercially available.⁹

Literature, film, and television are not the only major media of contemporary science fiction, though. Video games have now gained both commercial and critical prominence and, within science fiction, have engaged the same issues as older

8. Graeme Macdonald, “Improbability Drives: The Energy of SF,” *Paradoxa*, 26 (2014), 121.

9. Sarah Hamblin and Hugh C. O'Connell, “*Blade Runner 2049*'s Incongruous Couplings: Living and Dying in the Anthropocene,” *Science Fiction Film and Television*, 13, 1 (2020), 37–58.

media of the genre, including dystopian politics, ecological degradation, political strife, threats and promises of technology, colonial and imperial legacies, social exclusion, and economic injustice. Among these preoccupations, the question of energy sources and consumption stands out as somewhat problematic.

Writing about video games' engagement of the Anthropocene, Abraham and Jayemanne note "the relative paucity of videogame examples of climate change engagements"¹⁰ but propose that the situation could be perceived as less hopeless if the definition of what such an engagement could be were to be expanded. In that, they follow Deborah Jordan, who, writing about climate change in Australian literature, suggests that its definition could also include "the causes of climate changes (industrialisation, colonisation, etc.) and some specific aspects of climate change (such as changes in land use, use of fossil fuels) as well as issues of society regulation and knowledge production, we find a very rich tradition indeed."¹¹ Aware that games communicate their messages not only through their narratives and visuals, but also their construction as software objects, Abraham and Jayemanne look for traces of climate-oriented thinking in game design and note four models of constructing game environments: environment as backdrop; environment as resource (which they see in strategy games like *StarCraft*); environment as antagonist; and environment as text (cf. environmental storytelling).¹²

Jordan specifically includes fossil fuel extraction and energy management in her expanded definition. However, while there is already a sizable body of work on various aspects of gameworld ecologies, the question of energy has remained largely unexplored, especially regarding the extraction and processing of fuels as well as the repercussions these activities have on in-game ecosystems. It needs to be noted that the issues related to climate crisis in general and energy use in particular can be investigated in two principal categories of games. The first grouping are so-called serious games, a category of usually small titles generally developed outside the entertainment industry to raise awareness of political and social issues. These include, among others, climate crisis and its causes. One example of such a game is *Oiligarchy* (2011), which "offers focused critiques on an explicitly political level, presenting and developing arguments against specific ideological issues instead of simply making fun of public figures."¹³ El-

10. Benjamin Abraham and Darshana Jayemanne, "Where Are All the Climate Change Games? Locating Digital Games' Response to Climate Change," *Transformations*, 30 (2017), 77.

11. Deborah Jordan, *Climate Change Narratives in Australian Fiction* (LAP Lambert Academic Publishing, 2014), 77.

12. Abraham and Jayemanne, "Where Are All the Climate Change Games? Locating Digital Games' Response to Climate Change," 79.

13. Gabriele Ferri, "Rhetorics, Simulations and Games: The Ludic and Satirical Discourse of Molleindustria," *International Journal of Gaming and Computer-Mediated Simulations*, 5, 1

sewhere, Mochizuki et al. discuss in detail the design of simulation games using the water-food-energy nexus.¹⁴ The other grouping are commercial games, a very broad category spanning texts from big-budget equivalents of Hollywood blockbusters to so-called prestige independent titles to small independent games, not infrequently developed by a single person. Although vastly different in many respects, serious and commercial video games share certain affinities related to their medium specificity.

Like other media, but perhaps more so because of their globalized digital distribution and the practical lack of limitations such as regional licensing, import fees, and diversified release schedules (that, for instance, film has had to contend with), games can effectively communicate “imaginaries [...] between groups and generations.”¹⁵ Special place among the latter occupy “sociotechnical imaginaries”: “collectively imagined forms of social life and social order reflected in the design and fulfillment of nation-specific scientific and/or technological projects.”¹⁶ Indeed, forms of interactive games¹⁷ and simulations¹⁸ have long been used to address environmental issues. In their detailed discussion of energy-focused serious games, Wagner and Gałuszka offer a systematic diagram of various imaginaries, distinguishing between hegemonic and alternative ones.¹⁹ The former rely on such mechanisms as growth; control of labor, resources, and nature; centralization; effectiveness; and securitization; the latter are grounded in the concepts of commons, sociality, indigenous knowledge, and non-patriarchy.²⁰ Each of these clusters produces certain models of visions: the former of worlds in which iniquities, while acknowledged, are considered a necessary aspect of capitalist worlds and the latter worlds “whose social system and cultures are no longer shaped

(January 1, 2013), 33, <https://doi.org/10.4018/jgcms.2013010103>.

14. Junko Mochizuki et al., “Simulation Games as a Catalyst for Social Learning: The Case of the Water-Food-Energy Nexus Game,” *Global Environmental Change*, 66 (2021), 102204, <https://doi.org/10.1016/j.gloenvcha.2020.102204>.

15. Aleksandra Wagner and Damian Gałuszka, “Let’s Play the Future: Sociotechnical Imaginaries, and Energy Transitions in Serious Digital Games,” *Energy Research & Social Science*, 70 (2020), 2, <https://doi.org/10.1016/j.erss.2020.101674>.

16. Sheila Jasanoff and Sang-Hyun Kim, “Containing the Atom: Sociotechnical Imaginaries and Nuclear Power in the United States and South Korea,” *Minerva*, 47, 2 (2009), 120, <https://doi.org/10.1007/s11024-009-9124-4>.

17. Giulia Salvini et al., “A Role-Playing Game as a Tool to Facilitate Social Learning and Collective Action towards Climate Smart Agriculture: Lessons Learned from Apuí, Brazil,” *Environmental Science & Policy*, 63 (September 1, 2016), 113–21, <https://doi.org/10.1016/j.envsci.2016.05.016>.

18. Robert Costanza et al., “Simulation Games That Integrate Research, Entertainment, and Learning around Ecosystem Services,” *Ecosystem Services*, 10 (2014), 195–201, <https://doi.org/10.1016/j.ecoser.2014.10.001>.

19. Wagner and Gałuszka, “Let’s Play the Future,” 4.

20. Wagner and Gałuszka, “Let’s Play the Future,” 4.

by the relations of petro-capitalism, but by alternative configurations of energy and political economy.”²¹

Wagner and Gałuszka’s conclusions remain far from optimistic. Their analysis of 51 serious games reveals that “the energy imaginaries observed in the analysed serious games support the patriarchal, hegemonic discourses securing the status quo” and “energy imaginaries promote some technology innovation but secure the status quo by reproducing the old rules.”²² Consequently, “energy imaginaries noticed in serious digital games secure the socio-technical regimes and its gradual evolution, rather than supporting a radical change in the energy socio-technical system.”²³ Their conclusions resonate with other findings. In a 2011 survey of multiple forms of digital, board and card games that address climate change, Reckien and Eisenack found 52 games that in some way involved climate or climate change elements, but “a substantial number of [them] are quite simple [...] and focus on the one-dimensional mediation of information and the reproduction of knowledge.”²⁴ They further state that “energy- and resource-related issues [...] play an important role in about one quarter of the selected games,”²⁵ a number that is not particularly impressive. Wu and Lee have performed a similar study of climate change games in 2015, finding that “a significant number of online climate change games exist as mini-games or simple simulations” and that “these are generally found on websites geared towards younger audiences.”²⁶ Wagner and Gałuszka do note that “alternative visions (which we suppose to be marginal in serious games) are presented as rooted in unreal worlds. They serve to make players more conscious and motivated to make some changes in individual behaviours.”²⁷ “Unreal worlds” is an operational word here that connects to science fiction, a genre which constitutes “a repository of sociotechnical imaginaries, visions that integrate futures of growing knowledge and technological mastery with normative assessments of what such futures could and should mean for present-day societies.”²⁸ This, by extension, includes science fiction video games.

In some ways energy is almost everywhere in video games, but considering its presence and function requires several perspectives which intersect with each other,

21. Wagner and Gałuszka, “Let’s Play the Future,” 4.

22. Wagner and Gałuszka, “Let’s Play the Future,” 5.

23. Wagner and Gałuszka, “Let’s Play the Future,” 10.

24. Diana Reckien and Klaus Eisenack, “Climate Change Gaming on Board and Screen: A Review,” *Simulation & Gaming*, 44, no. 2–3 (April 1, 2013), 257, <https://doi.org/10.1177/1046878113480867>.

25. Reckien and Eisenack, “Climate Change Gaming on Board and Screen,” 263.

26. Jason S. Wu and Joey J. Lee, “Climate Change Games as Tools for Education and Engagement,” *Nature Climate Change*, 5, no. 5 (May 2015), 414, <https://doi.org/10.1038/nclimate2566>.

27. Wagner and Gałuszka, “Let’s Play the Future,” 5.

28. Sheila Jasanoff, “Imagined and Invented Worlds,” in *Dreamscapes of Modernity: Sociotechnical Imaginaries and the Fabrication of Power*, ed. Sheila Jasanoff and Sang-Hyun Kim (Chicago: University of Chicago Press, 2015), 337.

albeit obliquely. These perspectives are not universal and would not necessarily be useful in the discussions of other issues in speculative games. At the same time, they seem to be crucial in disentangling the invisible rhetoric of energy in these games as well as in determining a degree to which such games can increase their players' awareness of the issues raised by energy humanities.

The first of these is the layer of the game in which energy manifests itself, of which there are two principal ones. Energy can thus be present within the diegetic narrative. Here, games are not very different from films or television series whose narratives are structured and developed using dialogue and backstory as well as visual representation of the world and characters. Games may offer a few more tools to do so, particularly when it comes to backstory, whose elements can be coded in explorable gameworld, something that older audiovisual media can only do in a limited way.

Considerations of energy can also be coded within the broadly understood game mechanics. In addition to the narrative plotting, "meaning in videogames is constructed not through a re-creation of the world, but through selectively modeling appropriate elements of that world."²⁹ This means that the very availability of options and choices – or its lack – in itself speaks of the underlying ideological assumptions. Such selectiveness gives rise to what Bogost has named procedural rhetoric, which – next to verbal and visual rhetoric – is a very powerful means of communication, also because it escapes many players' conscious attention.³⁰ The procedural rhetoric can also be expressed through the chains of consequences triggered by the player's choices which can encode valuation of certain decisions. In a given title energy can be found at one or both layers. It is not uncommon for the two to be uncoupled, too, effecting what has been known as ludonarrative dissonance.³¹

The second perspective crucial in understanding the rhetoric of energy in speculative video games is the character of its use within a game. Again, two distinct modes can be distinguished. One is the energy use by in-game characters. It is fairly common in one form or another since many speculative titles compel the players to manage various forms of energy from basic health status (which can

29. Ian Bogost, *Persuasive Games: The Expressive Power of Videogames* (Cambridge, MA: MIT Press, 2010), 46.

30. While video games can also engage verbal and visual rhetoric, Bogost argues that the invisible elements of games possess powerful rhetorical potential. The interdependencies of players' choices and their consequences, either positive or negative from the perspective of the in-game progress and completion, can thus condition them to normalize or even internalize certain behaviors, mindsets, and perspectives.

31. Clint Hocking, "Ludonarrative Dissonance in *Bioshock*," *Click Nothing*, October 7, 2007, https://www.clicknothing.com/click_nothing/2007/10/ludonarrative-d.html.

be thought as a species of energy, especially in those games in which it influences movement) to various energy cells. In most cases, personal use is disconnected from larger systems of circulation of energy. Even in the titles that require strategic use of energy, including space simulations such as *Elite: Dangerous* and *EVE Online*, which rely on factoring distances and fuel consumption, fuel is generally not contextualized within larger ecologies, for instance those of planetary bodies from which it is sourced. The other mode of use is that in which energy is imbricated with the consequentiality of world systems and their interconnectedness with other dimensions of gameworlds: cultural, technological, social, and ecological. This, in theory, characterizes certain game genres such as strategy games and, among speculative games, loose groupings such as planetary colonization games, which can (although this does not mean that every single one does) factor the cost and effort of obtaining energy and its consumption.

The third important perspective, which, in some ways, yokes the previous two is the interaction between the player and the game world. Naturally, energy sources are very much a part of the world itself. The interaction with the world is centrally defined by the game genre. In some genres, the player character can effect a consequential change (as opposed to inconsequential changes such as breaking things or shooting out windows) in the game world itself. These include strategy games and some types of simulation games. In them, decisions made during the gameplay influence the succeeding game states which the engine confronts the player with. It is important to note that this category does not encompass temporary or trivial changes in the gameworld that benefit only the playable character or are short-lasting: spatial manipulation of structures in *Quantum Break* (2016) or freezing water to provide passage in *Genshin Impact* (2020) may affect elements of the gameworld but do not leave any lasting transformations. The second group of genres comprises those games in which the player moves in frequently finely crafted worlds but all actions and decisions affect only the narrative momentum and not the fabric of the gameworld itself. First-person shooters or action role-playing games which assume the personal point of view are good examples here. In his analysis of game spaces, Daniel Golding suggests that in the analysis “from below,” which these genres offer because of the player’s POV, “it is impossible to separate analysis of space from the analysis of its use,”³² but the use of gamespace in these genres seems to be largely decorative. Among the four uses of environment identified by Abraham and Jayemanne, these games primarily use it as backdrop, text, and, occasionally, as antagonist. Thus, the interaction with it largely depends on the immediate push and pull, rather

32. Daniel Golding, “Putting the Player Back in Their Place: Spatial Analysis from Below,” *Journal of Gaming & Virtual Worlds*, 5, no. 2 (2013), 124, https://doi.org/10.1386/jgvw.5.2.117_1.

than complex negotiations of consequences. The decisions made by the player do not really change the world through which the player moves.

The three lenses described above allow for a consideration of the consequentiality of the presence of energy in games, especially if one considers their potential to raise awareness of energy's impact on the environment. As always, investigating individual titles tends to be more precise but does hinder more general conclusions. Given the centrality of the game genre to most aspects of its experience, it is not surprising that two large groupings emerge with dramatically different potentials to engage the perspectives inherent in energy humanities.

The first grouping of game genres comprises role-playing games, first- and third-person shooters, adventure games, and some massively multiplayer online games. All of them are markedly characterized by the absence or token presence of questions of energy. Energy may appear in them diegetically, but its meaningful presence in game mechanics is rare. It sometimes provides narrative justification for the protagonist's decisions but almost always appears in the context of individual use and is hardly ever connected to larger ecological and socio-economic systems. This is natural since most of these protagonists seem to follow the mythical and savior scenarios which promote heroic individualism. Games belonging to these genres are capable of significant affective impact, but reflections on energy are largely excluded from it. Whatever little awareness of energy there is in them often becomes reduced to economic management modeled after the processes of individualistic capitalism.

Additionally, in-game economic systems, which inevitably require energy use, are also often sketched in very general outlines. In his discussion of depictions of megastructures in SF games, Mark R. Johnson notes that they can be seen as a result of oppression and slavery, technoscientific excess, or post-scarcity economies.³³ Interestingly, most examples Johnson provides come from games belonging to one of the genres in this group. In them, many such megastructures – for instance, in *Mass Effect* (2007, 2010, 2012), *Destiny* (2014), and *Halo* games (2001–2021) – are conveniently products of post-scarcity economies in which materials and energy are plentiful and cheap or almost free. At the same time, the rise and functioning of such economies is hardly ever explained in any detail. Material extraction and energy production are treated in them particularly superficially, compared for instance to machinery and weaponry manufacture.

33. Mark R. Johnson, "Megastructures, Superweapons and Global Architectures in Science Fiction Computer Games," in *Economic Science Fictions*, ed. William Davies (London: Goldsmiths Press, 2018), 249, <https://www.amazon.com/Economic-Science-Fictions-PERC-Papers/dp/1906897689>.

Johnson describes such technologies as “unseen but implied.”³⁴ Consequently, extraction and production are taken for granted and obscured, often presented as already in place and not requiring any insight. This stands in sharp contrast with the economic character of virtually all other products and services. In *Mass Effect* games the player has to pay for drinks, weapons, equipment, and ships, including “Normandy,” which is consistently referred to as the most advanced but also the most expensive craft of Earth’s Alliance block. Almost everything needs to be purchased or traded – including rare-earth minerals – but energy production and consumption as well as their consequences are largely invisible.

There are naturally some exceptions. One of them is *Final Fantasy*, a series of Japanese role-playing games, and especially *Final Fantasy VII* (1997), which features a form of energy known as Mako. Mako is non-renewable and the extraction process causes plants and animals around the reactor sites to die. In her chapter on the series, Rachel Hutchinson notes that Japanese culture, including video games, has been since 1945 permeated by the nuclear discourse. It has tended to focus more on “cultural representations of atomic bombing” and less on “nuclear reactors in the postwar imagination, or transnational issues of mining and the disposal of radioactive material,”³⁵ but the *Final Fantasy* use of Mako is definitely marked by an increased awareness of the ecological toll of potent energies. By and large, though, the games in this grouping are deeply informed by the energy unconscious, which is nowhere else better evidenced than in the *Mass Effect* trilogy.

Mass Effect is one of the most critically acclaimed SF role-playing games. Writing in 2012, Kyle Munkittrick called the trilogy “Most Important Science Fiction Universe of Our Generation”³⁶ and, most recently, Cian Maher dubbed it “One of the Best Video Game Universes Ever Made.”³⁷ And, indeed, in many ways, it is unique among other titles in its genre. It is one of the very few big-budget games expressly designed to be a trilogy, which translates into the dramatic arc and cohesion that, almost 15 years after the release of the first installment, remains a paragon for games in the genre. The cult status of the trilogy is also evidenced by the sales of the remastered *Legendary Edition* (2021), which, within a week of its release, became BioWare’s bestselling game on the Steam game

34. Johnson, “Megastructures, Superweapons and Global Architectures in Science Fiction Computer Games,” 251.

35. Rachael Hutchinson, *Japanese Culture Through Videogames* (New York: Routledge, 2019), 132.

36. Kyle Munkittrick, “Why Mass Effect Is the Most Important Science Fiction Universe of Our Generation,” *Gizmodo*, February 27, 2012, <https://gizmodo.com/why-mass-effect-is-the-most-important-science-fiction-u-5886178>.

37. Cian Maher, “How *Mass Effect* Became One of the Best Video Game Universes Ever Made,” *The Gamer*, February 5, 2021, <https://www.thegamer.com/mass-effect-lore-codex-universe/>.

distribution platform ever. *Mass Effect* games have been praised for the expanse of its universe, richness of its worldbuilding and the complexity of its politics, and generally (albeit not entirely unproblematic) positive portrayal of women. Against the generally conservative background of other AAA video games, it gradually opened to queer perspectives, allowing for first lesbian and then gay romances, in 2007 not a common decision in the industry. Finally, it also allowed a degree of choice regarding the customization of the playable avatar with respect to gender and skin color.

The trilogy is set in the late 22nd century in a fictional version of the Milky Way. The humanity has come into contact with a number of space-faring alien races, the most important of which form the Council, a governing body residing on the Citadel, a city-size space station and one of a network of mass relays allowing the faster-than-light travel. The player role-plays Commander Shepard, a human military commander who has risen through the ranks to become the first human Spectre, an elite agent of the Council, as they first discover a galactic threat in the form of Reapers, fully machinic entities who have controlled 50,000-year cycles of organic life in the galaxy; then, in *ME2*, attempt to make the council races take the threat seriously; and finally, in the third instalment, lead a war effort against them culminating into a battle between the Reapers and the allied races. As with many RPG titles, the gameplay consists of developing the character, performing action-oriented quests and side-missions, and collecting artifacts.

Upon closer inspection, this generally positive assessment of the trilogy's politics becomes somewhat more problematic. There are several angles of critique, but one that has not been mentioned by any critics is related to the questions of energy. As noted earlier, energy sources and energy consumption are not very important for role-playing games. Their use is primarily personal and non-consequential in broader terms. In the first game, flying "Normandy" around the galaxy does not consume any fuel. In the other two instalments, the player has to purchase it from fuel depots or obtain it through salvage, but the process is not very expensive or demanding. Additionally, docking at the Citadel, which can be reached through mass relays that do not require any energy, provides free refueling. The matter-of-factness of energy powering "Normandy" is obvious, but the dubious energy politics run much deeper in the series.

In the first two games, Shepard can also survey minerals: in the former by driving across planetary surfaces in a Mako, an all-terrain military carrier, and surveying large chunks of ores (typically 3–5 per moon or planet), for which they receive money and experience points. The actual surveying is always presented as a geometry mini-game confronts the player with a set of rotating concentric rings. The player must move an arrow through openings in the rings and reach the center in the allotted time. Most mini-games for minerals are relatively easy

and there is really no consequence of this activity. Notionally, Shepard is tasked with surveying minerals by the Earth Alliance to meet their material demands, but the task is not really actionable and perhaps only once mentioned in passing by Shepard's superiors. Consistent surveying may earn the player a trophy, but these typically hold value for completist players³⁸ and do not condition a successful completion of the game. This remains consistent with Wu and Lee's findings about climate-related serious games, many of which exist as mini-games.

In *Mass Effect 2*, these minerals, of which there are fewer types, are more critically integrated in the gameplay and can be used to secure both individual and ship upgrades, which influence the outcomes of the game, including the survival of the crew companions in the final mission. What is crucially different is the method of securing these resources. Instead of descending to planetary surfaces, the player can scan and mine planets remotely by sending probes from orbit, each of which covers a certain portion of the surface. The probes themselves are relatively cheap, especially once the player has started to acquire funds through various tasks and side missions. Different planets have different concentrations of resources: when "Normandy" first approaches, the scanner results return as rich, good, moderate, or poor, each status determining the amount of the four elements that can be extracted. The player can then launch probes to acquire minerals from a quadrant of the surface covered by a single probe; given time and probes it is not difficult to turn the status to "depleted," even if the planet initially scanned as "rich." The four elements cannot be extracted from some planets where missions and side-quests take place, but this does not mean that the remaining bodies are empty. When approaching each of them, the player is first presented with a small box-vignette describing the physical characteristics, history of settlement, and demographics of existing colonies since quite a few are inhabited by various races including humans. Parallel to this, both *Mass Effect* and *Mass Effect 2* make it clear that, apart from occasional backwater moons suitable as smuggling or pirate havens, most remote locations survive thanks to mining and processing of extracted ores and gases.

Within the narrative logic of the game this means that, while collecting valuable minerals to the point of depletion (which most players will do if they strike it rich with a planet since it saves fuel, probes, and time) in the name of a higher cause, Shepard's extraction of resources destroys both ecologies and li-

38. For the discussion of this type of players, see: Mikael Jakobsson, "The Achievement Machine: Understanding Xbox 360 Achievements in Gaming Practices," *Game Studies*, 11, no. 1 (2011), <http://gamestudies.org/1101/articles/jakobsson>.

velikood of entire communities.³⁹ And yet, this act is taken entirely for granted with not a single mention of consequences of planetary mining in the entire game. In fact, extraction is also completely transparent from the point of view of game mechanics. The game does not, for instance, punish the player for mining inhabited planets, nor does it encourage them to deplete those without settlements. Last but not least, it does not affect the Renegade/Paragon status of the character, a sort of karmic meter of the player-character's behavior. Equally non-consequential are the presumed ecological consequences of completely depleting a planet originally rich in resources.

The lack of attention to these aspects is, most immediately, a consequence of the game genre: strategy games are far more likely to calculate some kind of consequences into the developmental equation while RPG and FPS titles necessarily focus more on individuals rather than environments. More generally, however, such treatment of energy and resources in a title which is otherwise fairly sophisticated speaks volumes of larger biases and imaginaries evident in many speculative games. First of all, parallels with historical models of extractivism are inevitable. The original *Mass Effect* with the land-based surveying of minerals resonates with the period of colonial empires when physical contact of those benefitting from extraction was needed. Although most planets and moons where minerals are found are empty, occasional skirmishes with pirates or several races nominally outside the Citadel space can be compared to colonial wars for resources, especially since it is the human Alliance that commissions these surveys. In *Mass Effect 2*, extractivism has become remote and happens by proxy. The orbital distance renders surface life and tragedy invisible to those extracting, thus erasing any vestigial guilt and responsibility. It needs adding that in the second game Shepard does not technically even work for the Citadel Council but is an agent allied with a private and highly controversial corporation Cerberus. Although it takes the Reaper threat seriously, it is presented as human-supremacist and, in the first game, conducted experiments on humans. This can be taken as reflecting a change in who drives and benefits from extraction in the early 21st century: multinational corporate entities, rather than national empires.

Secondly, the lack of any consideration of the processes – technological, ecological, and social – and their entanglements in larger systems of circulation

39. It is true that the games' diegesis does not actually feature the devastation of planetary societies as a result of Shepard's mining. This absence could be read – somewhat good-naturedly, to my mind – as a reassurance that depleting resources on a mining-reliant planet does not actually lead to societal collapse. At the same time, the opposite reading seems to more convincingly supplement of reading the trilogy as colonial texts. Within it, the absence of narrative indicators of such collapses unwittingly mirrors the Western repression of any knowledge of the consequences the economic models of the Global North have for the economies and societies of the Global South.

appropriately reflects the premeditated energy amnesia evident in the game industry. Its main vectors of development – increasingly short life-spans of hardware; energy-intensive gaming rigs, consoles, and peripherals; and the shift from unmediated physical copy to always-on service model in game production – become ever more demanding in terms of energy requirements.

Finally, while *Mass Effects* games as well as other titles belonging to this grouping continue to become increasingly affective, delivering modes of identity politics previously unavailable in the medium, and take increasingly political stands, their silence on the issue of energy and its processes is not only willfully amnesiac but also possibly harmful in the Anthropocene, in which the complicity of the energy industry in the catastrophic events unfolding around us is well recognized.

The second grouping of game genres that are, in principle, more open to realistic representations of energy comprises strategy games, survival games, and some simulation games. Each of these encompasses a number of sub-types which can differ significantly from each other, but they also share certain characteristics that at least open opportunities to include energy management as a crucial game system. All video games are highly complex systems of interdependencies in which elements interact depending on the players' choices, but in the genres belonging to this group decoding these interactions constitutes the essential elements of gameplay. In practice, this translates into a kind of engagement in which intellectual faculty and numerical reasoning obscures other faculties. Many of these games can, of course, be analyzed in terms of biopolitical tensions, but the emphasis on beating the intricate mechanisms of the game's code can have a tendency to suppress political thinking. This does not mean that there is no aesthetic wonder at play in such games, but, by and large, the main attraction of such games is a species of impersonal involvement largely divorced from identity.

This does not mean that games belonging to this grouping are automatically more receptive to the portrayals of energy realities. In fact, part of the realistic portrayal may work against translating gameplay into meaningful mindsets. One example of this is *Fate of the World: Tipping Point* (2011), a turn-based strategy game in which the players shape the responses to the global warming using so-called policy cards reflecting various political, social, economic, and technological decisions. Inevitably, given the theme of the game, questions of energy figure centrally in the gameplay. In his discussion of the game, Piotr Sterczewski notes, not all policy decisions using “policy cards” have clear outcomes.⁴⁰ To wit, using the “Switch Transport to Electricity” card reduces CO₂ emissions but can lead

40. Piotr Sterczewski, “Czytanie gry. O proceduralnej retoryce jako metodzie analizy ideologicznej gier komputerowych,” *Teksty Drugie*, 138 (2012), 219.

to energy deficit. It can also, in total, increase emissions if electricity is produced using fossil fuels. Sterczewski notes that such obfuscation of consequences can be read as an allegory of real-world economic processes which are notoriously opaque and volatile. Like many strategy simulations, *Fate of the World* also possesses increasing degree of difficulty, often resulting in the player's defeat, which brings into relief the enormity of the challenge. On the other hand, Sterczewski notes that the game has conflicting challenges which may be read as ironic or symmetrist. The "Oil Fix It" card, while very demanding in terms of attendant efforts and planning, makes it possible to provide global well-being using oil. The technology card "Coldfusions" seems to promise abundance of clean energy, but, as it turns out later, it has no effect whatsoever, thus punishing the players for belief in easy solutions. The "Star Ark" card, which entails launching an AI-piloted spacecraft with frozen human embryos (it does require significant technological advancement), guarantees winning the game regardless of the state of things on Earth. Sterczewski notes that it is unclear whether this is a case of what he calls "procedural irony" or whether the game really balances this as a plausible solution for the survival of the human race.⁴¹

Other games in the group showcase much clearer stakes of energy production and consumption. *Factorio* (2020) is a construction and management simulation whose rather sparse narrative puts the player in the position of an engineer who crash-lands on an alien planet and whose ultimate goal is to escape it by launching a rocket. Doing so requires significant resources and processing power, whose development constitutes the core of the gameplay. The game balances real-time strategy elements with survival, but the core of the gameplay requires locating and harvesting resources to craft various tools and machines, which allow for the creation of more advanced materials and further progression of technologies, including sophisticated automation and oil refining. This basic gameplay pattern resembles strategy games and their technology trees, but its level of complexity exceeds many of its contemporaries, to the point where one of the early reviews name *Factorio* "A Machine-Fetishist's Best Friend."⁴² This cerebral aspect of the gameplay is, however, set in a broader ecological context. Apart from developing their factory, the player needs to defend themselves from the planet's fauna, known as "Biters," "Spitters," and "Worms," who become increasingly hostile as pollutant emissions created by the player's factory increase, necessitating consideration of the balance between the player's production and the enemy's aggressiveness.

41. Sterczewski, "Czytanie gry. O proceduralnej retoryce jako metodzie analizy ideologicznej gier komputerowych," 224.

42. Chris Priestman, "Factorio Is A Machine-Fetishist's Best Friend," *Indie Statik*, April 15, 2013, <https://web.archive.org/web/20130425062337/http://indiestatik.com/2013/04/15/factorio/>.

Interestingly, the more advanced factory and the technologies, the more enemies evolve and become harder to defeat. *Factorio* is thus an example of a game that, albeit metaphorically, directly ties the traditional measures of Western progress to the degradation of the environment and the world's hostility to the desired progression.

Another game in which fuel and production of energy providing heat and power are at the absolute center of the narrative is *Frostpunk* (2018), a city-building survival game set in an alternate timeline in which the 1886 eruptions of Krakatoa and Mount Tambora have led to a global volcanic winter. Apart from balancing all needs of a surviving town (food, production, learning, hospitals, but also social morale), the management also involves a variety of social measures directly related to the necessity of providing adequate energy to ensure the survival of the community. These include directing the community towards an authoritarian dictatorship or a theocracy,⁴³ extending energy management to the social and political sphere. Consequently, games *Factorio* and *Frostpunk* have a strong potential in communicating the urgency as well as complexity of energy use.

The nominal or weak presence of energy in most commercial games can be viewed as a consequence of a number of factors. One of them is the problematic relationship with the concept of realism. Benjamin Abraham notes that “game discourse has begun to borrow ideas from ecology and systems theory, as well as associated natural and environmental concepts, to describe the systemic and procedural aspects of certain genres.”⁴⁴ A closer inspection of the genre of survival-crafting games such as *Minecraft* – and one can suspect that it is not much different in other genres relying on ecological verisimilitude – reveals that they “do not reliably represent an ecological ethos, [...] that the structural features common to most survival-crafting games [...] bear far more resemblance to the structures and organizing logics of technological capitalism.”⁴⁵ In that, Abraham claims, “these games [...] reflect the hegemonic orthodoxy of contemporary economics, which underpins and undergirds contemporary ecological crises from climate change to deforestation and biodiversity loss.”⁴⁶

43. For the discussion of *Frostpunk*'s biopolitics, see Michał Kłosiński, “*Frostpunk* – tęsknota za biopolityką stanu wyjątkowego,” *Teksty Drugie*, 1 (2020), 284–98.

44. Benjamin Abraham, “What Is an Ecological Game? Examining Gaming's Ecological Dynamics and Metaphors through the Survival-Crafting Genre,” *Trace: A Journal of Writing, Media, and Ecology*, 2 (October 2018).

45. Abraham, “What Is an Ecological Game? Examining Gaming's Ecological Dynamics and Metaphors through the Survival-Crafting Genre.”

46. Abraham, “What Is an Ecological Game? Examining Gaming's Ecological Dynamics and Metaphors through the Survival-Crafting Genre.”

The interdependencies of extraction, energy production, and consumption remain at the very core of ecological modeling, but are, at the same time, very difficult to recreate. Another reason for many games' silence on energy can be the game industry's complicity in the environmental degradation. Charges that the digital games culture centrally contributes to the global carbon footprint⁴⁷ (Greenemeier) are not new, but Szeman also notes that "extraction makes explicit the connection between the operations of capitalism and the state of the environment."⁴⁸ From enormous energy demand, much of which is still satisfied through fossil fuel use, to the necessity of rare-earth materials, the game industry, along with other digital technology sectors, is one of the wreckers of the planet. From this perspective, the energy rhetoric in commercial video games, especially those that can speculatively imagine other worlds, becomes the question of complicity in this wreckage. Game developers as the agents that shape the policies and patterns of these behaviors, particularly in speculative games which are not burdened with the expectations of mundane verisimilitude, can be thus compared not so much to corporate CEOs hellbent on profit (although this dimension is very much at play in the case of the largest industry players such as Activision Blizzard, Electronic Arts, and Ubisoft) as to publicists, PR specialists, and spin doctors who intentionally and knowingly construct their rhetorical messages in the ways which ignore, obscure, downplay, or downright manipulate the most urgent issue of our time.

47. Larry Greenemeier, "Black Friday Warning: Video Games Waste Energy and Contribute to Global Warming," *Scientific American Blog Network*, November 28, 2008, <https://blogs.scientificamerican.com/news-blog/black-friday-warning-video-games-wa-2008-11-28/>.

48. Szeman, "On the Politics of Extraction," 444.

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