From Pixels to Planet: How Game Makers Strive for Planetary Impact Beyond the Magic Circle

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ABSTRACT

Game developers are leveraging their medium as a tool for planetary change, challenging traditional paradigms that separate play from real-world impact. Based on ethnographic research with European developers, this study examines how bottom-up initiatives are reshaping game design and production through sustainable practices. We explore games' dual nature as both environmentally impactful products and tools for ecological engagement. The research reveals developers' intrinsic motivations to address climate challenges through creative practice while confronting the industry's material footprint. By investigating these paradoxes, the study advances understanding of game development as a culturally significant force capable of driving social and environmental change in our climate crisis era.

Keywords

Ethnography, game design, game production, ecogames, impact games

EXTENDED ABSTRACT

With depleting planetary resources, environmental collapse, and climate anxiety, game developers are increasingly using their medium to effect real-world change. While game studies early focus used to be on in-game representation and the dynamics within the magic circle of play (Huizinga 1955; von Humboldt 2024 [1845-1862], qtd. in Werber 2014), contemporary research and development practice is increasingly concerned with games' potential to impact the world beyond play, from player behavior to production processes (Abraham & Jayemanne 2017; Chang & Parham 2017; York et al. 2022). Also the perception of games as immaterial digital products has undergone a transformation. Today games are studied not only as

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enablers of change but also as material and earthly processes that contribute to environmental destruction across their entire value chain (Abraham 2020; Abraham 2022; Gordon 2019; Gordon 2020).

The research on the planetary impact of games presented in this paper, situates game making within this almost contradicting binarism. Our study was conducted within the framework of the Europe Horizon project STRATEGIES, Sustainable Transitions for Europe's Game Industry (2024-2028). Across the span of one year (2025), we carried out extensive ethnographic research, with fieldwork, studio visits, and interviews with more than sixty game studios and industry professionals across nine European countries (Eggel and Fizek 2026). From triple-A to indie studios, from publishers to hardware producers, we explored how planetary concerns are currently addressed in everyday work practices. The empiric research reveals that change is often introduced through bottom-up initiatives by passionate developers, who take matters into their own hands. This talk examines specific strategies through which game studios and developers address "real-world" problems through both game design and production practice.

Climate change ranks among the world's most pressing challenges (Open Society Foundation 2023), and is perceived as a great risk by many developers we interviewed, who decided to address these issues in the video games they produce. Beyond strictly educational titles that explicitly aim to raise awareness, our study focuses on entertainment games in which eco themes have become more popular. The use of ecologically informed narratives, mechanics, and design tactics has been discussed in both research and developer communities (Abraham & Jayemanne 2017; Chang & Parham 2017; Op de Beke 2024; York et al. 2022). Our empiric findings show how studios are places where many new local sustainability initiatives originate, emphasizing how game culture is not only shaped by players, but also by game studios (Sotamaa 2021). Current concerns of game makers interviewed include the potential of reaching large numbers of people through play, to use games to imagine sustainable futures, and the possibilities and evidence for changing players' behavior. Some studios focus on one specific issue, around climate change, biodiversity, nature conservation and anti-extractives mechanisms, often developing games in close collaborations with NGOs that provide the needed expertise on the subject, while getting funds for the cause. Other initiatives are currently improving the impact on player attitude and behavior through adaptable game design, and first evaluations of long-term behavior changes through games have been attempted.

Complementing theories of games as escapist activity, this draws attention to games as platforms and small-scale systems (Hamayon 2016) for negotiating real-world challenges. Interviews with developers exemplify how addressing climate change through game design provides intellectual stimulation, emotional meaning, and creative satisfaction, not as a moral obligation but as a source of professional fulfillment (Fizek 2024). Game makers engage with ecological issues often not because but despite market requirements, to use creative game design to change social and planetary realities for the better.

Alongside game design another dimension has gained increasing attention in recent years: Games themselves contribute to environmental harm, as they rely on extended global value chains, precarious labor practices, resource-intensive hardware production, and planetary resources (Abraham 2020; Abraham 2022; Gordon 2019; Gordon 2020). The material and mental "blackboxing" (Latour 1999;

Simon 2007) of digital technologies often goes hand in hand with "decoupling" processes (Parrique et al. 2019) that veil the effects of extractivist production processes elsewhere (Cubitt 2016). The planetary costs of gaming are diffuse, distributed across locations, timelines, and actors, and are disproportionately outsourced to regions in the Global South (Gordon, 2019). A persistent challenge in sustainability research remains a "knowing-doing gap" (Pfeffer and Sutton 2000) or "intention-action gap" (Goossens et al. 2017), where awareness of the environmental crisis does not necessarily translate to concrete actions, particularly in corporate settings. The ethnographic findings show that a major challenge is the difficulty of addressing globally distributed effects with local practices. Our findings suggest that the lack of industry standardisation, policies and regulations can delay the required systemic change throughout the industry (Eggel and Fizel 2025). At the same time an increasing number of game makers established bottom-up attempts to translate planetary problems into actionable, locally embedded solutions, that help mitigate the globally distributed impacts of games and their production. This starts with early-adopter studios, which started to measure and mitigate their carbon emissions by producing local numbers (Pasek et al. 2023), building net-zero headquarters, and inventing strategies to lower player usage emissions. But these bottom-up efforts are not satisfied with effects on paper, but turn into ongoing attempts to make the whole game production process more sustainable: From finding local suppliers, to hardware recycling; from waste reduction to local forestry projects, instead of industry offsets; from renewable resources to energy-efficient game builds. The solutions for a more sustainable production are often introduced by individual developers, and later turned into company-wide solutions.

Our findings demonstrate that many game developers deliberately and joyfully engage with pressing ecological problems such as climate change, species extinction, and ecosystem destruction through their creative practice. In doing so, they actively bridge the gap between play and social reality. By foregrounding the pleasures of negotiating serious topics playfully, this research contributes new theoretical insights at the intersection of game production studies and sustainability research. It highlights the potential of game development as a cultural practice capable of making a profound social and ecological impact in an era of planetary crisis.

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