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Narratives of Environmental Crisis in *Chrono Cross*: Settler Colonialism, Interspecies Conflicts and Environmental Injustice

Narrativas de Crise Ambiental em Chrono Cross: colonialismo interno, conflito interespécies e injustiça ambiental

Narrativas de Crisis Ambiental en Chrono Cross: colonialismo, conflicto inter especies e injusticia ambiental

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ABSTRACT: This essay examines narratives of environmental injustice through representations of settler colonialism and resource exploitation in the digital game *Chrono Cross*, as a case study to demonstrate how narratives of environmental crisis can be mobilized by developers to raise awareness on how resource exploitation can be impactful in a manifold of ways, from species extinction to violation of Indigenous peoples. Additionally, this study explores how game mechanics – specifically those related to inter-species conflicts and resource gathering – mobilize readings that are inconsistent with the environmental narrative intended by the game. To achieve this, we used transcripts of the original characters' dialogues as well as our own gameplay. We conclude that the game has a narrative dissonance between its environmental discourse and its mechanics.
Keywords: Settler colonialism; Videogames; Game theory, Culture conflict; Social responsibility.

RESUMO: Este ensaio examina narrativas de injustiça ambiental por meio de representações do colonialismo interno e exploração de recursos, tendo o jogo digital *Chrono Cross* como estudo de caso. Procuramos demonstrar como narrativas de crise ambiental podem ser mobilizadas por desenvolvedores para conscientização pública dos impactos desse processo em diversas frentes: da extinção de espécies à violação de povos indígenas. Além disso, investigamos as mecânicas do jogo - especialmente aquelas relacionadas à conflitos interespécies e coleta de recursos – que se apresentam inconsistentes com a narrativa ambientalista proposta pelo jogo. Para tanto, usamos a transcrição das falas do jogo, bem como nossa própria imersão. Finalmente, concluímos que, apesar de ser um jogo que toca em problemáticas ambientais, há uma dissonância entre sua narrativa e algumas mecânicas.
Palavras-chave: Colonialismo; Jogos eletrônicos; Teoria de jogos; Conflito socioambiental; Responsabilidade social.

INTRODUÇÃO

Digital games (and more specifically videogames) are considered to be an immersive medium that allows enunciators to articulate and deliver complex narratives while mobilizing distinct readings by players who experience these stories (GALERA, 2010; MCGONIGAL, 2011). They also act as counter-emplacements of sorts, in which all the possible real emplacements, found within and among cultures, are simultaneously represented, contested and inverted (LUO, 2022). We can even go beyond and assume, as Johan Huizinga (2010) does, that the game (as playing activity) is the very core of human cosmological acts. According to the author, a game is: 1) an act of free will, of mutual agreement and, so, cannot be forced upon; 2) it is made apart from the daily life, a temporary evasion from "reality"; 3) it is, then, as isolated space that demands our commitment from its beginning to its end; 4) the creates an

order and "*is* the order" (HUIZINGA, 2010, p. 13), set into the chaos of the world. "In an attempt to sum up the formal characteristics of the game, we could understand it as an act of free will, consciously taken as "non serious" and external to daily life but, at the same time, capable of fully and intensely absorbing the player in it." (HUIZINGA, 2010, p. 16).

And by this very creed, games, including video ones, can question real-life discourses and disturb the narratives of a given collective. Accordingly, digital games are considered to be one of the many narrative forms through which social and political issues are critiqued and problematized. And because of that, videogames have been considered, since it's birth, as a means to promote education through gamification (C.f. GRIFFITHS, 2002; ARRUDA, 2009). It is important to observe that this essay has no intention of presenting a case study on, or proposing, the application of *Chrono Cross* on an educational context. However, we do find it feasible. The game is classified as "teen" on the ESRB rating[1], which means it could be used from the 7th grade onwards on Brazilian schooling system. Furthermore, our work shows that the game can draw on debates surrounding the demands of the Law 11.645/2008[2], that makes it mandatory for schools, public or private, to incorporate the study of history and prehistory of indigenous peoples in Brazil as well as African Brazilian.

Among global communities, Japan is possibly one of the most prolific groups in exploring the intersections between the 'human' and 'non-human' through new technologies (JENSEN; BLOK, 2013). Artists, designers and scientists from Japan frequently mix advanced technologies and spiritual capacities with unconscious ease, whether through toy figures (ALLISON 2006), animation (Morgan, 2015), or 'spiritual robots' (GERACI, 2006). This 'unconscious' intersection between 'natural' and 'technological' is also frequently explored by Japan-based developers in videogames (FOSTER, 2009; HUTCHINSON, 2017).

One of the major videogame developers in Japan, Square, consistently explored this approach to contest social and cultural narratives in their corresponding times. Certain Square media frequently explored narratives of environmental crisis – more specifically *Final Fantasy VII* (SQUARE Co., 1997) (FOSTER, 2009; HUTCHINSON, 2017; YOUNGBLOOD, 2018), but also other instalments of the franchise, such as *Final Fantasy The Spirits Within*, *Final Fantasy Advent Children* (FOSTER, 2009) and *Final Fantasy VI* (SQUARE Co., 1994) (see HUTCHINSON, 2017) – with their diegetic dimensions frequently evoking feelings of fear and ambivalence toward nuclear power (HUTCHINSON, 2017). However, the company did not extensively explore other dimensions of environmental crisis in other franchises – for example, habitat loss, overexploitation of natural resources and species extinction. Yet, those dimensions were the focus of, at least, one of the instances of the *Chrono* franchise, namely *Chrono Cross* (SQUARE Co., 1999).

[1] This means the game can be played from the age of 13 onwards. Available at: https://www.esrb.org/ratings/38325/chrono-cross-the-radical-dreamers-edition/. Accessed on: 04 nov. 2024.

[2] Available at: https://www.planalto.gov.br/ccivil_03/_ato2007-2010/2008/lei/l11645.htm. Accessed on: 04 nov. 2024

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Among several themes, *Chrono Cross* (henceforth just *Cross*) tells the story of consequences. Throughout the game, the developers explore the possible results of quandaries past and, through the choices of the inhabitants of the El Nido archipelago, the different worlds are fashioned. Of the many sensitive topics that the game explores (e.g., the disintegration of self), the prevailing one is about environmental crises. The developers consistently stress the role of local environmental impacts on regional catastrophic events, from the extinction of local species to the aridification of lush environments. At the same time, they emphasize the intrinsic relationship of Indigenous peoples with the islands, arguing that mainland settlers are responsible for disrupting this relationship through acts of social injustice.

Considering the exposed above, we present this essay, following a set of propositions: (i) to explore the origin of the El Nido Archipelago game environment, (ii) to understand how developers represent interactions between Indigenous[3] peoples and the game environment, (iii) to argue how the representations of settler colonialism in game is a tentative effort to promote reflection about social and environmental injustices beyond the game and (iv) to analyse ambiguity and dissonance between game mechanics and the purported 'pro-environment' narrative of the game.

METHODS

Addressing representations of human-environment in *Cross* can be quite challenging, since the developers invoke several distinct and sometimes opposing, cosmologies to build its diegetic systems, which, in turn, are used to elaborate the narratives of environmental injustice in the game. Although some representations can be connected to Shinto philosophy (e.g., deities as manifestations of some fundamental natural element), certain motivations and references can also be connected to contemporary cosmologies throughout the *Chrono* series [i.e., *Chrono Trigger* (SQUARE Co., 1995), *Radical Dreamers* (SQUARE Co., 1996) and *Chrono Cross* (SQUARE Co., 1999, 2002), which incorporate in its narrative several concepts that are pervasive in 'scientific' stories (e.g., time travel and dimensional splitting). To navigate the plethora of references and to address the proposed questions, we used an intersectional approach to 'game environment', representation and narrative. We connect each one of these dimensions by a double front approach, from South American decolonial theories and anglophone settler colonial theories; as we will argue further below, the attempt to link both these approaches to particular geographical contexts allows us to discuss environment-social entanglement under historical practices of colonialism in a situation that is familiar to the evaluators (i.e., we, the authors). It also allows us to see these processes from multiple agents (especially, the invaders and the native).

[3] In the essay we use the term "indigenous" as it is commonly perceived among scientific community and social movements. It refers to, in the game, the many peoples that resided on the El Nido archipelago when the invaders from Porre Continent arrived. We understand that it encompasses many different societies, both in and out of the game, and in no way means to homogenize their differences and cultures.

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We drew from both backgrounds to (i) circumscribe the concept of "settler colonialism", (ii) explore the shared histories of the peoples and species in *Cross* and (iii) argue that representations of environmental injustice inside the game reverberate through time, space and dimensions of the game.

Throughout the text, we discuss the implications of 'settler colonial practices' in the process of environmental injustice towards peoples and environments inside the game. Accordingly, we approach the topic and conceptualization of 'settler colonialism' through the lens of Lelia Gonzalez's Amefricanidade (GONZALEZ, 1988), which conceptualizes shared histories of resistance against colonial forms of power, denouncing racist and dehumanizing violence that targets Black and Indigenous peoples as a legacy of the conquest of Americas (MOLLETT, 2021). The epistemic basis of Amefricanidade entangles feminism with an interconnected approach to racism, colonialism, imperialism and its effects (CARDOSO, 2014).

On a similar path, Roxane Dunbar-Ortiz (2018, 2021; ESTES; DUNBAR-ORTIZ, 2020), Mahmood Mamdani (2015), Kyle Whyte (2022), Lorenzo Veracini (2011) and Patrick Wolfe (1999, 2006) focus on the figure of the settler as the foreigner who makes himself native by the expropriation of territory, identity and resources of autochthony societies and, at the same time, cutting ties from the land whence they came and becoming a competitor, instead of a supplier, in the global market.

In this sense, then, 'settler colonialism' here is understood as racial geographies (SALDAÑA-PORTILLO, 2016) in the form of a 'coloniality of power' which considers the entanglement of several sociospatial histories in the practice of colonization (see historiography of the term further in the text). In other words, we see it as a continuous process of expropriation, instead of a single occupational event (WOLFE, 2006), with lasting consequences in the constitution of territory, distribution of resources and right of existence.

To substantiate our discussions and conclusions, we used parts of the game's script transcribed directly from in game dialogues and narration based on *Chrono Cross: The Radical Dreamers Edition Ver. 1.0.1* (SQUARE Co., 2022), with additional support from Zeality's updated transcription of the original version of the game (ZEALITY, 2009). Relevant transcriptions are added as footnotes, containing the name of the character responsible for the statement, followed by the spatial locality (e.g., *Arni Village*) and dimension (i.e., *Home World* or *Another World*) where the dialogue took place. The transcribed dialogue is expressed in quotation marks; sections of the dialogues considered to be offensive were modified or removed from the footnotes and are indicated by brackets.

As a final note on methodological terms, we point out the framework by which we approach said narratives and dialogue documentation. Even though we are concerned about the game as a representation of reality (CHARTIER, 1991, 2002), and so, a mix of documents (sound, image and text) that carry complex messages (HALL, 2006), we accept the invitation of the developers and immerse ourselves in it. In doing so, we are faced with an identity issue: are we, as players, third parties that look the game as the mirror of our societies' angsts and dreams; or are we, as characters, part of that virtual

world, carrying the responsibilities of our choices? At the end, we could no longer deny that we are both. The very nature of the game, as we've seen above (HUIZINGA, 2010), demands a respect for the order established by its rules, otherwise the world created falls apart, along with its meaning – a game is always the "fight for something" or the "representation of something" (HUIZINGA, 2010, p. 16, authors' translation). And so, we get involved in the representation of Earth own social, cultural and ecological problems, as we fight colonists and natives, caught in the complex web of the historical events of the El Nido Archipelago.

This crossroads was met before, along with work colleagues (SAMPAIO, 2023) who tried to apply the classic ethnographic methods (GEERTZ, 2000; MAUSS, 2007; MALINOWSKI, 2005 [1922]), but got stuck with the dialogue limitations and environment pre-framed exploration. In the end, we managed to apply a "lighter version", closer to oral history methods (RITCHIE, 2003; MEIHY; RIBEIRO, 2011). In other words, we approached the game world as observers who were interested in the historical narrative contained in the speech and life history of its people, considering their different biases, weaving the network of conflicts from within. As the readers will see ahead, we managed to build this essay on the stories of different characters, their ecological and social backgrounds (as much as the gameplay allowed), as much as news and thoughts from our own world.

BRIEF HISTORICAL BACKGROUND DURING THE GAME'S DEVELOPMENT

Cross started being developed in mid-1998, with Masato Kato being the director and scriptwriter for the project. Mr. Kato had already worked as a scriptwriter on previous Square projects, most notably *Chrono Trigger*, *Final Fantasy VII* and *Xenogears*.

Several important climatic and environmental-oriented political events took place in that same year: Japan's signature of the Kyoto Protocol (UN, 1997), warmest anomalies in the Northern Hemisphere (NOAA, 1999), high suppression of net CO_2 uptake from 1997 to 1998 in association to one of the worst *El Niño* events in the 20th century (JAPAN METEOROLOGICAL AGENCY, 2022). At the same time, climatic and environmental changes were already being perceived and indicated by Indigenous peoples around the world, arguing how poor natural resources management (e.g., overexploitation) of industrialized nations (e.g., Japan) could have exponential environmental impacts in the long run and a global scale. According to Krenak (2020, p. 19–20), the "desolated land" (*terra desolada*) was already perceived by Indigenous people as a result of the overexploitation of natural resources by industrialized nations. Similarly, Davi Kopenawa (KOPENAWA; ALBERT, 2015, p. 458–459) narrated how gold extraction and intensive land modification by miners in Brazil directly affected the environment (i.e., abiotic and biotic dimensions) and neighbouring Indigenous populations through lead-poisoning and species loss.

Although the topic of environmental crisis and nature conservation was not inherently intended by Mr. Kato in *Cross* (GAMEPRO STAFF, 2000), the director mentioned that he hoped that the game would be a trigger for players to think about "(…) the connections between people and the world, among

different peoples and between people and other living things." In addition to that, it is important to highlight that, as a digital game, *Cross* is a narrative of broad reach under Hall's theory of communication (HALL, 2006), meaning that it mobilizes its reading through different possible frames, including those not intended by the enunciator – in this case, the developers. As two Brazilian researchers living through the challenges of economic development and socioenvironmental responsibility in the 21st century, this game meant something more than what was intended by the original scope (and that's part of the fun!).

As mentioned above, despite not being intended as a 'pro-environmental' game, *Cross* was received by some players as a game that carried 'pro-environmental' messages (EWERT-KROCKER, 2017). At the same time, other players were faced with a sense of futility caused by *Cross*' "melancholic" environmental narrative (HUGHES, 2022), which could be interpreted as a contradictory position in terms of an environmentally progressive story. This sense of futility towards *Cross*' main narrative arc is particularly important, as we discuss further in this study.

Regardless, previous games of the same company, that had Mr. Kato as a member, tackled questions regarding the environmental crisis and the role of overexploitation of natural resources in global environmental catastrophes (FOSTER, 2009, HUTCHINSON, 2018). Also, other companies had already explored environmental and nature conservation discourse in videogames since 1990 [most notably *Sonic the Hedgehog 2* (SEGA, 1992a) and *Ecco The Dolphin* (SEGA, 1992b)], possibly triggered by climatic changes and political events that were taking place at the time (such as the 1992's Rio de Janeiro Earth Summit).

In the next sections, we will discuss how the developers represent each one of these connections with examples from specific events in game, arguing that these representations contribute to the alleged narrative of environmental crisis in the game.

ESTABLISHING A POSITION: FRAMING "SETTLER COLONIALISM" UNDER DECOLONIAL THEORIES AND IMPLICATIONS FOR ENVIRONMENTAL INJUSTICE

To talk about settler colonialism and its impacts on environmental justice, one must position it in historical circumstances. Accordingly, as Mollett (2021) so importantly said, the understanding of the history of settler colonialism can only be fully explored when framed in a hemispheric, relational and intersectional way.

Settler colonialism – fundamentally defined as the "sustained institutional tendency to eliminate Indigenous populations" (WOLFE, 1999, p. 163) by physical removal and/or through policies of assimilation – is considered an important phenomenon that was responsible for shaping Americas through time (MOLLET, 2021; DUNBAR-ORTIZ, 2018, 2021; ESTES; DUNBAR-ORTIZ, 2020). In this sense, insights from Indigenous geographies have been especially important to understand how a particular racial geography – that is, settler colonialism – enacted policies of violence through oppressive economic,

social and environmental subjectification and practices. Accordingly, settler colonialism, being understood as a technology of power under Saldaña-Portillo's (2016) definition of racial geographies, is responsible for indexing the series of techniques used to produce space in racial terms. As such, we can pinpoint the first base concept of this framework: territory (WOLFE, 2006; DUNBAR-ORTIZ, 2021). "Land is life—or, at least, land is necessary for life. Thus, contests for land can be— indeed, often are—contests for life." (WOLFE, 2006, p. 387). In fact, one important difference between colonial and settler colonial studies, as Lorenzo Veranici has pointed out (2010, 2011), is that colonizers (e.g., British, Portuguese, Spanish, Dutch), at some point, have left. Settlers come to stay. And in the process of staying, they need to eliminate native use of the land as a way to expand their own (Cf. WOLFE, 2006).

Thus, the second aspect would be invasion. With this definition we want to stress that "Settlers are founders of political orders and carry their sovereignty with them (on the contrary, migrants can be seen as appellants facing a political order that is already constituted)" (VERACINI, 2010, p. 3). As such, settlers are not just people who have been driven away from their homeland by poor life conditions and are looking for better opportunities elsewhere. Their movement is one of overpowering differences and establishing their own (and sole) way of life. "The founders were not an oppressed, colonized people. They were British citizens being restrained by the monarch from expanding the thirteen colonies to enrich themselves." (DUNBAR-ORTIZ, 2021, p. 44).

This takes us to a third aspect of settler colonialism: expropriation. In the making of their new homeland, settlers use a variety of strategies to dominate space, resources and knowledge from native populations. Within controlled measures of extermination and assimilation, they create narratives of racial superiority to justify policies of territory expansion, environmental commodification and precarization of human labour.

Finally, settler colonialism cannot be conceived outside the framework of the creation and expansion of capitalism worldwide (DUNBAR-ORTIZ, 2018, 2021; ESTES; DUNBAR-ORTIZ, 2020) and a core element in the constitution of modern society (WOLFE, 2006). As Lorenzo Veracini (2010, p. 1) argues, "A theoretical analysis of what is here defined as the settler colonial situation could perhaps start with Karl Marx and Friedrich Engels' remark that the 'need of a constantly expanding market for its product chases the bourgeoisie over the whole surface of the globe' and that it 'must nestle everywhere, settle everywhere, establish connections everywhere'".

Departing from these premises, it is possible to directly connect theoretical discussions of settler colonialism to decolonial programs[4]. As mentioned by Mollett (2021), Quijano's (2007) "coloniality of

[4] It is, then, important to note that, although we agree with the identification of settler colonialism as a "frame beside [sic]" (VERACINI, 2010, p.13) others, such as colonialism, we diverge from the assertion that they stand in dialectical opposition. We understand that it is important to focus "on the settlers, on what they do and how they think about what they do" (VERACINI, 2010, p. 15) as a means to denounce the "universal subject" (white, male, cisheterosexual). The issue is that the source of the settler's predatory identity is the universal subject. The fact that the Brazilian agrarian elite has invested in its own image apart from Portugal doesn't mean that they are any less distant from the same expansionist politics than their once metropolis. We

power" can be a fruitful approach to explain how the production of racialized power is responsible for shaping regimes of exploitation and how different struggles arise over capitalist forms of accumulation (ESCOBAR, 2008; MOLLET, 2016; WERNER, 2011 *apud* MOLLET, 2021). This coloniality of power, as argued by Quijano (2007), was responsible for materializing Indigenous and Afro-descendant dehumanization throughout the Americas (most profusely in the so-called Latin America) through co-constitutive processes of capitalist land accumulation, Christian conversion and Indigenous and Black labour exploitation. Historically, it is argued that those processes were responsible for defining and consolidating contemporary racialized colonial policies in the region, grounding them to the invasion of the Americas (ESCOBAR, 2008; QUIJANO, 2007). This approach is particularly important to our analyses, because, contrary to other approaches in "settler colonial studies", Quijano's (2007) explicitly highlights the entanglement of Indigenous and Black histories of injustice.

The idea, then, is to explore a framework that allows for an analysis of settler colonialism evoked in representations and stories in *Cross* relationally, i.e., without disentangling the oppressed actors' shared history of environmental injustice, which tries to be represented and narrated in *Cross*.

'THE SEEDS OF LIFE': BRIEF HISTORY OF THE ORIGIN OF EL NIDO ARCHIPELAGO'S GAME ENVIRONMENT

The process of origin of El Nido Archipelago's game environment is complex and it's directly related to events that took place after the end of Chrono Trigger and before *Cross*' story. From the second third to the endgame of *Cross*, the player starts comprehending the origin of humankind and how it evolved since Lavos' first contact. At the same time, the game tries to explain how the entity FATE terraformed the archipelago and how the fundamental natural elements, in the form of colours and Dragon Gods, came to be.

The El Nido Archipelago (henceforth, just *El Nido*) is, as the name suggests, a set of islands situated at a sea encircled by a reef, which, possibly, corresponds to an atoll, although there is no evidence in game that suggests that the structures surrounding the sea are coralline in nature. The region is located far from the Zenan mainland and, according to the game's story, remained disconnected from there for several years[5].

The origin of El Nido has the research centre called Chronopolis as a starting point (located in the Sea of Eden). The centre was envisioned by the character Belthasar (also known as Guru of Reason in *Chrono Trigger* and Prophet of Time in *Cross*) as an expansion of the Time Research Lab[6]. It was powered by the artifact known as Frozen Flame, a splinter that was separated from Lavos when it crashed on the

find it more interesting, in order to break down the universal colonial man, to point, yes, the many operations set in course by settler agents, but approach it through an integrative perspective (class, race and gender).

[5] Steena, Guldove Dragon Shrine, Another World: 'But several hundred years have passed since settlers from the mainland came to El Nido'.

[6] Chronopolis Chief, Chronopolis Docks, Another World: 'The Time Research Lab, which served as the foundation of this research centre, appeared out of nowhere in the year 2300 and was headed up by the scientific genius, Belthasar.'

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planet[7]. To officiate and regulate the facility, a partly sentient supercomputer named FATE was constructed[8] by Belthasar.

Along with several other events that take place in game, FATE was responsible for the origin of El Nido, from the terraforming of the main and adjacent islands to the split of the Dinopolis' construct power source called Dragon God[9]. In the case of the splitting of the Dragon God, FATE divided it into six separate entities and spread them throughout El Nido: The Sky Dragon at Sky Dragon Isle, the Black Dragon in Marbule, the Earth Dragon at Earth Dragon Isle, the Fire Dragon at Mount Pyre, the Green Dragon at Gaea's Navel and the Water Dragon at the Water Dragon Isle. At the same time, FATE created all the islands and environments in the archipelago and dispatched the workers of Chronopolis to these new islands, erasing their memories in the process. Concurrently, Dragonians—a survivor species of Dinopolis, a city brought from another dimension by the planet to counterbalance the existence of Chronopolis in the past, which had been exposed by an event called Time Crash—also began settling in different islands and started forging Elements, which are manufactured devices obtained directly from natural 'power sources' spread throughout the archipelago. In the game's timeframe, the dragonians are all extinct, but there are no clear evidences as when and why that happened[10].

Considering this brief exposition of the game environment, it is possible to circumscribe some general concepts that will be used throughout this work. We will consider all people who are knowingly from El Nido as Indigenous peoples (i.e., demi-humans, dwarves, fairies and humans from Chronopolis) while considering settlers, all of those who came from Zenan or those that are explicitly connected to them through heritage. Most of the time, however, it is difficult to directly ascribe a character to one of those two categories solely by in game representations.

REPRESENTATIONS OF SETTLER COLONIALISM AND ENVIRONMENTAL INJUSTICE: MARBULE AND HYDRA MARSHES

Several events that take place during the game highlight the role of settler colonialism in environmental injustice. Settler colonialism can be understood under the premise (i) that environmental impacts have a role in displacing Indigenous peoples and (ii) settler colonialism has a serious impact on

[7] Belthasar, Terra Tower, Another World: 'The Frozen Flame is a splinter from the extra-terrestrial Lavos.'

[8] Ghost, Chronopolis Level 4 West Lab, Another World: 'FATE is a large-scale prototype, completed in the year 2300. It integrated the old Mother Brain computer circuitry into a more powerful super-computer.'

[9] Ghost, Chronopolis Level 2 Lab, Another World: 'Originally, El Nido was nothing but ocean. The El Nido Archipelago is purely artificial, created by FATE. It was a remodelling plan that took place 10,000 years ago. A plan to include islands, blessed with nature, in the sea of El Nido. The main Island of El Nido, Earth Dragon Isle, Water Dragon Isle, Black Dragon Isle... The development of Elements, using the energy of the natural world…'.

[10] Explorer, Sky Dragon Isle, Another World: 'About a hundred years before humans from the continent came here, the Dragonians and demi-humans still existed in great numbers'.

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the sociocultural dynamics of Indigenous peoples, directly affecting the preservation and restoration of native environments.

In a certain part of the game, the player must obtain dragon relics to enter the region known as Sea of Eden and, within it, find Chronopolis. For this, the player must find the six dragon gods and obtain their corresponding relics. Specifically in the case of the Black Dragon, contrastively to its counterparts, the entity remained for a long time in a deep sleep on the island of Marbule (Figure 1) in Another World, their dreams manifesting as a form of 'enemies' (specifically, Lagoonates) in Home World. The dream from the Black Dragon manifested itself in the other dimension possibly due to the demi-humans leaving the village after hunters started storming it in search of powerful Elements[11]. After that, the demi-humans were forced to seek other ways to live, moving to the cruise ship S.S. Zelbess, owned by former pirate Fargo. Considered to be a close friend to the demi-humans in Marbule[12,13], he overexploited them in a working system analogous to a slave regime[14,15].

Figure 1. A. General overview of El Nido Archipelago, with Marbule marked with a white star; **B.** Marbule landscape, showing the settlement which comprises most of the island. **Source:** Modified screenshot from *Chrono Cross*© Square Enix Co., Ltd. All rights reserved.

To restore Marbule to its previous condition, the player, along with other playable and non-playable characters in game, must eliminate the dream of the dragon in a cleansing ritual. The ritual involves the performance of a theatrical play, which tells the story of how demi-humans and humans can unite and change the world. The play is used as a surrogate; the main aspect of the cleansing ritual is to perform a demi-human song that will be responsible for 'materializing' the dragon's dream, so the player can slay it and awake the Black Dragon in another dimension (i.e., Another World). After cleansing the

[11] The Great Explorer Toma, Marbule, Home World: 'Marbule, with its rich Element resources, became the target of Element hunters. With nowhere else to go, most of the demi-humans left the village to work on the Cruise Ship - S.S. Zelbess. They work as laborers and are treated [poorly]. I feel really bad for them. Anyway, that's why you have this ghost town here.'

[12] Sage, S.S. Zelbess, Home World: 'Ahhh, so you are his son... I guess history does repeat itself. I had high hopes for that man. High hopes that he would one day tear down the wall between demi-humans and humans.'

[13] Demi-human Woman, S.S. Zelbess Hold, Home World: '...I'm sure you'll find it hard to believe, but it was Fargo... He used to be such a nice man...What made him change...?'

[14] Demi-human Man: 'Please...don't make me work overtime today…'

[15] Demi-human, S.S. Zelbess Hold, Home World: 'Hey, at least we get fed, you know... I don't think it's all that bad.'

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island and retrieving the black relic from the Black Dragon, the island of Marbule starts being reconstructed by demi-humans and non-settler humans alike in Home World.

Despite having a satisfying conclusion to its issue, the case of Marbule can easily be understood under the scope of settler colonialism. Foreigners from a distant land start occupying a "new" (from their perspective) territory responding to an expanding demand on resources. As the mining activities progress, the clash between native and settler occupation and cosmologies becomes inevitable[16]. The following step is the elimination of the native which, in Marbule, takes the form of slave labour[17,18]. It is worth noting the argument of Patrick Wolfe (2006) on the meaning of "elimination". "I contend that, though the two have converged—which is to say, the settler-colonial logic of elimination has manifested as genocidal—they should be distinguished. Settler colonialism is inherently eliminatory but not invariably genocidal." (WOLFE, 2006, p. 387). It refers to the process of destruction of native way of life and the forcible implementation of the settler's cosmogony and occupational practices. Native ideologies are subsumed as "uncivilized", "naïve" and even "barbaric", but can be "corrected" and "saved" by labouring under the supervision of the civilized man[19,20]. In the game world, the "monstrification" (as a form of racialization) of the demi-humans is more palpable when the main character takes the form of one[21,22,23]. Such is a strategy of inversion (VERACINI, 2010, 2011), through which the settler invalidates the capability of native peoples, reducing them to cheap labour and structures the reasoning of settling as the redemption of the territory and the righteous reward of the productive entrepreneur.

This is not the only representation of injustice towards Indigenous people and, certainly, not the only one that relates to environmental injustice. The case of the Hydra Marshes' dwarves is possibly the most striking one.

In the first third of the game, the player is exposed to a turntable event, forcing them to choose whether or not to help Kid, another playable character who has an important role in the plot, who fell ill in events that took place in Another World. If the player chooses to help her, they must travel to Home

[16] Demi-human Man, Marbule, Another World: 'Yo! Are you guys outsiders? You better watch out for humans hunting down demi-humans. They'll rob you of your Elements if you're not careful.'

[17] Cat, SS Zelbess, Home World: '(...) But I'm concerned about the well-being of these demi-humans, meow. The humans have stripped them of their freedom and they have lost all their pride, meow. But there is one guy that won't give up, meow. It's the old man who's always moppin' the floors, meow. Just the way he holds his mop tells of his confidence, meow. He truly knows what it means to "be alive", meow.'

[18] Porre Soldier, Termina, Another World: 'These demi-humans are good workers. They really impressed me.'

[19] Overseer, Termina, Another World: 'Can't you see me? I'm the overseer of these demi-humans working here. These guys always slack on the job if you don't watch 'em carefully. I need to keep my eyes peeled.'

[20] Man, Forbidden Island, Home World: 'Have you guys been to an island called Marbule? It used to be a beautiful island where mermaids lived. But now, it's infested by nasty-lookin' monsters. That's where all the demi-human workers on this ship are from. Hey, come on! Don't look at me like that! The demi-humans say they're happy to just have jobs and receive food for wages.'

[21] Old man, Arni Village, Home World: 'Huh!? Demi-humans...!? What do you monsters want from us!?'

[22] Una, Arni Village, Home World: 'Sergey ain't no monster like you guys, OK!? Everybody in this village knows who Sergey is! You can't fool us!'

[23] Old man, Fossil Valley, Home World: 'I have nothing to say to you demi-humans! Now git the hell outta our village! Accursed monsters!'

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World and seek a very rare ingredient to prepare a healing elixir. The ingredient, in turn, can only be extracted from individuals of Hydra, a rare species living in Hydra Marshes (Figure 2). The Hydra Marshes is located in the southeast region of the main island (Figure 2.A) and consists of a system of swamps and unique vegetation components (Figure 2.B). Since Hydras are extremely important for maintaining a good environmental balance of the marshes, the Indigenous people that live there protect Hydras[24] from hunters that would frequently enter the marshes in search of rare ingredients[25].

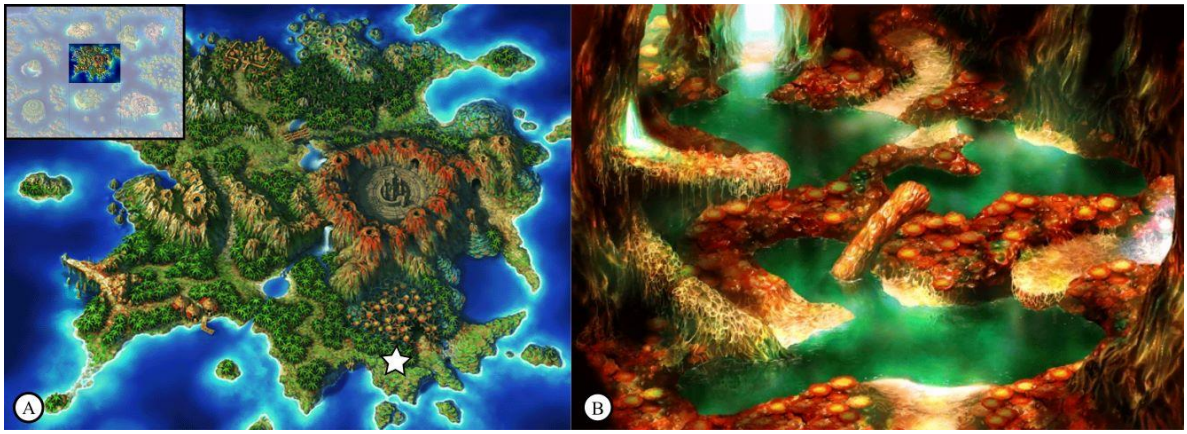

Figure 2: A. General overview of El Nido's Main Island, with Hydra Marshes marked with a white star; the small square of the top-left corner highlights the central position of the Main Island in the Archipelago. B. Hydra Marshes, showing one of the main landscape components of the locality. **Source:** Modified screenshot from *Chrono Cross*© Square Enix Co., Ltd. All rights reserved.

The dimensional travel, in this case, is motivated by the extinction of a species, which is considered, in game, as a source of highly rare goods. In that dimension, the species was hunted to its demise, motivated by the high value in settlers' health market of several parts of its body. The players are presented, then, with some consequences of human-environment interactions through species' extinctions. Nonetheless, despite the choice of the player, they have no responsibility over the act of extinction itself. However, if the player chooses to help their friend, not only they are accountable for a species extinction in the near future, but they are also responsible for destabilizing a habitat and forcing a whole people to move to another island or face extinction themselves.

The displacement of the demi-humans from Marbule and the dwarves from Hydra Marshes was originally driven by human influence, at least in one of the dimensions (i.e., Home World). Before that, however, demi-humans were already displaced from El Nido's main island and from some neighbouring smaller isles when settlers from the mainland Zenan arrived at the archipelago[26]. As we've seen before, the displacement of demi-humans from their homelands by human settlers is a representation of the impacts of settler colonial domination on the relationships between Indigenous peoples and the

[24] Daggy Dwarf, Hydra Marshes, Home World: 'We must protect this forest... by finishing off anyone who has seen the Hydra!'
[25] Doc, Doc's House in Guldove, Another World: 'The blood, bones, meat... Every part is valuable. It's considered to be a panacea for various illnesses. That is the reason Hydras were hunted to extinction in El Nido'.
[26] Great Explorer Toma, Marbule, Home World: 'Demi-humans were originally located up in the northern region, but after Porre's colonization, they were forced out of the mainland and ended up here.'

environment. According to Whyte (2022), one way settler colonialism commits environmental injustice is by strategically undermining Indigenous collective continuance (i.e., social resilience and self-determination) by ways of vicious sedimentation and insidious loops. In the first case, the injustice relates to how the environmental changes compound over time to reinforce and strengthen settler ignorance against Indigenous peoples and, in the second case, the injustice relates to how historic settler industries violated Indigenous peoples when they began and how they reverberate many years later in further environmental violence (WHYTE, 2022).

In the cases of demi-humans of Marbule and dwarves from Hydra Marshes, the representation of displacement of the Indigenous people due to Element and Hydra hunting reinforces the idea that colonization in *Cross* is mainly related to the exploitation of resources through settlers' industrial practices. Despite those events occurring specifically in one dimension – Home World Marbule and Another World Hydra Marshes –, violation of Indigenous peoples appears to reverberate not just in time, but through different dimensions.

Specifically, in the case of Marbule, the overexploitation of natural resources and violence against Indigenous peoples finds a real-life parallel to gold exploitation in Yanomami-Ye'kuana territories occurring since the 1980s. According to Davi Kopenawa (KOPENAWA; ALBERT, 2015), gold mining has been consistently used to violate the Yanomami people, destroying the forest and bringing famine and diseases to these people. It directly affects their self-determination dimension—since the Forest was a gift from Omama to the Yanomami—and their health and overall well-being since gold mining exploration involves contamination of soil and hydric resources, local deforestation, food contamination, disease transmission, lead poisoning and assassination of people in digging areas. Accordingly, as mentioned by Herculano (2008), these mechanisms and acts of violation naturalize social hierarchies that diminish races, perceiving the environmental spaces - in which these peoples are inherently connected - as empty[27].

Similarly, settlers exploiting resources in Marbule are represented as framing the landscape centred on the resource being exploited, stripping the environment from all of its other dimensions and connections that allowed for the demi-humans to determine themselves as part of that "environmental whole".

In the case of the Hydra Marshes' dwarves - despite being possibly decimated in Another World due to the Hydra humour's overexploitation industry -, the same cycle of violence against them is repeated in Home World[28]. Unironically, when they leave Hydra Marshes and "invade" the Water Dragon Isle, committing violence against the fairies that inhabit that place, they are reproducing the same acts of

[27] For a brief summary of the current crisis, see https://www.bbc.com/news/world-latin-america-63313990. Accessed Feb 12th 2024.

[28] Explorer Captain, Hydra Marshes, Home World: 'Huh? Dwarves? Oh, you mean the [...] inhabitants of this forest? Heh... We took care of them, too. They were even kind enough [...] to lead us to the Hydra.'

violence committed against them. As pointed out by at least two characters[29,30], this aggression among two different people is another manifestation of the settlers' initial violation towards the dwarves. The advancement of colonist's frontiers puts pressure on native territories and ethnic rivalries are fuelled by the invasion process.

This repetitive movement can be understood as a representation of vicious sedimentation (*sensu* WHYTE, 2022) of Zenan settlers' ecologies towards El Nido Indigenous peoples' ecologies. The dwarves' environmental ontologies are aggressively subjugated by the settlers', defined by object-orientation and utilitarianism. The dwarves' understanding of space and 'resources', then, is weakened by the settler's environmentality and the environment – once an interdependent component of their existence – is reified, free of consciousness and "made by God for human benefit".

Although these representations of cyclic violence are directed mostly to the different dimensions of interdependence between *Cross*' Indigenous peoples and the game environment, they are also manifested in the game as acts of physical aggression that are perpetuated by violated peoples.

According to Whyte (2022), the concept of interdependence includes a sense of identity associated with the environment and a sense of responsibility to care for it. Similarly, Davi Kopenawa (KOPENAWA; ALBERT, 2015, p. 663) positions interdependence as a fundamental property for self-determination and self-preservation of the collective (and of the self *sensu strictu*) which are intrinsically connected to environmental responsibility as well. This notion of interdependence is reinforced to some extent through narratives in game, both by demi-humans and dwarves, when characters consistently mention the absence of some sense of belonging when they are forced away from their homeland or the necessity to protect the environment so they can individually and collectively protect themselves and the whole. In these particular cases, forced relocations are represented literally by complete removal of demi-human and dwarf communities from their places of belonging and, through that, settlers are also represented as imposing reservations towards those peoples, preventing them from keeping fundamental qualities that create interdependence between social institutions and ecosystems.

At the same time, the idea of interdependence holds that agency, spirituality, knowledge, intelligence etc. are not unique to humans since non-humans have their own agency and ways of knowing as well (KOPENAWA; ALBERT, 2015; WHYTE, 2022). Hence, human identity and caretaking responsibility also includes those same properties found in non-humans. In *Cross*, a dwarf dialogue[31] hints to the idea of in game representation of non-human agency and knowledge and how human activity violates interdependence in yet another dimension. Similarly, demi-humans are represented as recognizing that

[29] Dwarf Chieftain, Water Dragon Isle, Home World: 'You humans taught us that the world is built on the dead bodies of other species…'

[30] Fairy, Water Dragon Isle, Home World: 'They said that they were chased out of the forest by the humans. And they drifted down to our island… so the humans are to blame!!!'

[31] Dwarf Chieftain, Hydra Marshes, Home World: 'What do you humans intend to do with our mother planet? (…) Do you think that you are the only ones who live on this planet!? Do you even know the works of life-forms other than yourselves?'

the environment has agency and spirituality on its own[32,33] and that denying it those dispositions is considered a violence against the environment's own identity[34].

The dispossession from their places of belonging – and also from their ways of being – and by which means they are formulated are reflections of an in game coloniality of power, as defined by Quijano (2007) and Veracini (2010, 2011), in which settlers' prescribed values of environmentality are used to disenfranchise demi-humans and dwarves' environmental subjectivities.

Finally, the game environment is understood by settlers as something 'other than human' and essentialized as a market-based subject; a space of exploitation disentangled from and subordinated to 'humanity'. The myth here is understood in one of its dimensions, mainly as a severance of the interdependent dynamics held by the game environment and all its component parts, as posited by the approach of collective continuance.

The examples of environmental injustice described here could also be understood as acts of 'slow violence' that exponentially contribute to a large-scale crisis (similar to *Final Fantasy VII*, to some extent; MILBURN, 2016). Focusing on those examples, the developers may have tried to expose what they believe were local dynamics of injustice, at least to some degree, challenging the ideas of large-scale environmental crises that were predominant at the time.

Interestingly enough – and paradoxical, to some extent – is that *Cross*' developers also perpetuate some of these perceptions of environments as exploitable subjects through game mechanics and, in some cases, through narrative acts. Although levelling and material acquisition in *Cross* are comparatively less 'aggressive' when analysed relative to other Japanese role roleplaying games (JRPGs) from that time (including *Trigger*, which employs a cumulative next-value mechanics for levelling characters and the need for incremental battles to levelling), the gameplay feels mostly ambiguous, since players are encouraged to engage in the game environment exploitation (i.e. 'farming' mechanics, especially for acquiring forging materials) and also in committing injustices towards peoples and other non-human species residing in El Nido (i.e. levelling system, to some extent and overall story progression).

LUDONARRATIVE DISSONANCE AND NARRATIVE AMBIGUITY

The main theme in *Cross* centralizes its story in the fundamental idea of 'humanity' destroying the world, with narratives of environmental injustice against Indigenous peoples through settler colonialism being one of the manifestations of this overall process of destruction. Mostly, the story is consistent with the proposed idea of conservation, although reinforcing misconceptions through simplified

[32] Demi-human, Marbule, Another World: 'The sea is having a dream. A deep, blue dream. We're all part of this dream the sea is having…'
[33] Irenes, Captain's Quarters – SS Zelbess, Home World: 'Only when the song is sung by one with special power can the effects be brought into full play. (…) Marbule no longer has its true power without that song.'
[34] Irenes, Captain's Quarters – SS Zelbess, Home World: 'The Marbule you once knew is no longer there...! You will only find a nightmare.'

representations of environments and non-human species agency[35]. Additionally, story progression requires that players engage in battles with individuals from other species (collectively referred to as 'monsters') that are not necessarily aggressive towards players and are merely belonging to the game environment. In terms of game mechanics, those individuals are embedded in that digital landscape to address gameplay demands of resource and stats acquisition. This ambiguous approach is problematic, especially considering how *Cross* 'pro-environmental' narrative can be radicalized in certain moments[36]; the game requires that players engage in conflicts, subduing other peoples and species to address gameplay demands while elaborating on a narrative of conservation and environmental responsibility and admonishing players about acts of environmental and social injustice. In a similar fashion to *Horizon: Zero Dawn* (CONDIS, 2020), the emphasis on combat in *Cross* diverts the attention of players from the game narratives of environmental injustice towards escapist power fantasies, reinforcing its ambivalence.

Despite managing to balance level progression and material acquisition in a less exploitative way when compared to other JRPG games, *Cross* still makes use of farming and violent engagement as core mechanics required for progression. Additionally, the developers frequently 'monstrify' all the non-human Others, reducing other species' existence as mere resources for stats acquisition, contradicting the idea of interdependence hinted at in several parts of the game. This 'monstrification' also perpetuates the notion that some acts of brutality in game are excusable as long as they are directed to the 'abnormal' Other. In one of the many possible Endings in *Cross*, the player can interact and engage in conversation with several characters spread throughout Viper Manor, each one representing one of the major developers of the game. One of these characters (the one representing Ryosuke Aiba, the developer responsible for Monsters Design and Textures; GAME FAQS, 2023), mentions that every single monster created for the game would, necessarily, be defeated because of their very nature of monsters[37], whether they did or did not do anything 'wrong'. It presupposes, then, that the non-human Other is merely a subject that belongs to the game to solve internal demands, being conveniently positioned in parts of the narrative to address possible gaps in the environmentalist subjectification of the game. The same example of Marbule's Black Dragon, mentioned in the previous section, can be used to exemplify this argument: players have to indiscriminately slay individuals from other species (i.e., Lagoonates) to awaken the Black Dragon. Similarly, at another point of the game, players have to slay all individuals from other species, in Gaea's Navel, so they can attract and fight an individual from another species (i.e., Tyrano), before proceeding to the area with the Green Dragon. There are no real consequences to players, in terms of narrative or game mechanics, when they perform these actions. As a matter of fact,

[35] SnibGoblin, Hydra Marshes, Another World: "*It don't matter! They be our enemy, just like that other one! Let's get 'em! This be our forest!*"

[36] Dragon God, Terra Tower, Another World: '*I shall cleanse this blue planet of you [...] humans once and for all!! (...) Now prepare to receive your retribution from the planet!*'

[37] Ryosuke Aiba, Second Lobby – Viper Manor, Ending 1 – Programmer's Ending: 'I made a lot of monsters. Over 100, actually! But because they're monsters, every one of them will be defeated. That's kinda sad, really... They didn't do anything wrong'.

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players cannot decide if they will engage in these acts of violence or not; they are stripped of their power to choose and to act, much like most of the non-human Others inhabiting El Nido.

Likewise, level progression contributes to ambiguity in *Cross*. In terms of mechanics, stats are obtained after conflicts that are, most of the time, key points to a certain narrative arc (whether the main or a side story). Additional bonus stats are acquired after players engage in additional conflicts, which can be mandatory (mostly defined by environmental constraints related to level design, i.e., environmental puzzles) or non-mandatory. After some engaging in these additional conflicts (from four to five, most of the time), bonus stats are capped and even if players choose to engage in additional conflicts, they are not rewarded with increased stats. However, players can exhaust foes in a given environment, since there is a limited number of them and there are no random encounters in the game. However, most foes can respawn if the player leaves and re-enters a certain area. Nonetheless, some foes will not respawn even if the player leaves and promptly re-enters the area. This may be interpreted as a self-reflexive hint to the consequences of player overexploitation to the game environment, although these consequences are not explicitly raised or mentioned during its progression. At the same time, there are no consequences in terms of game mechanics and environment to overexploitation induced deliberately by players.

In a review of *Cross*, years before the remaster's release, Ewert-Krocker (2017) made a very interesting observation in his article, raising the following question: "Is saving humanity the same thing as saving the world, or are these two concepts opposed?". Yet another issue in *Cross*' narrative is that, in certain moments of the storyline, it shifts responsibility for El Nido's environmental issues from specific actors (i.e., mainland settlers) to humans as a whole[38]. This displacement of responsibility takes advantage of the fuzzy boundaries between settler and non-settler humans and coalesces the motivations and histories of those groups in one single reductive outcry: 'humanity is destroying the planet'. The insistence on the narrative of 'humanity as nature's enemy' reinforces the 'human-non human' simplistic dichotomy instead of calling attention to the entrenched systemic practices of environmental injustice directed, consistently, on a local scale. This approach led by *Cross*' developers sometimes perpetuates the idea of environmental crises as catastrophic, large-scale events, compelled by a homogenized 'human' collective with an innate and inexplicable need for destruction. By doing so, it shadows colonial history and capitalist society as the main actors of the environmental and social crisis for the past five centuries.

At the same time, however, this homogenised 'human' collective could be understood as an in game representation of the Western concepts and frameworks related to conservation and environmental responsibility. When players mention that the game is "...about how very little of what we do actually matters" (HUGHES, 2022), it highlights how certain environmental subjectivities and

[38] Ghost, Level 3 East Lab – Chronopolis, Another World: '*From the planet's viewpoint, humans are just destroyers and a cursed, yet perhaps pathetic, blight on the world*'.

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conservation solutions - which are frequently mobilised through discourses of 'ecological' salvation through individual actions of 'environmental heroism' - are embedded in peoples' imaginaries. These 'own environmental ideas' are normally derived from the contemporary notions of environmental justice as practices of 'redemption' towards 'marginalised and fragilized' Others (i.e., the environment or otherwise). As Mignolo (2011, p. xxiv) so aptly put, "the rhetoric of modernity is a rhetoric of salvation" and colonial perceptions of 'hope' and environmentality are inevitably crystalized through neoliberal solutions (e.g., decentralization of environmental responsibility from governmental to non-governmental actors) even in the so-called progressive frameworks to conservation and environmental justice (TRISOS; AUERBACH; KATTI, 2011; MACHAQUEIRO, 2020, 2022). This is yet another instance of Ailton Krenak's sustainability myth (KRENAK, 2019, p. 9).

CONCLUSION

Despite not having the intention to elaborate narratives of environmental crisis based on Indigenous epistemologies and decolonial practices, *Cross*' developers explore some interesting aspects of environmental injustice towards Indigenous groups caused by settler colonialism, through representations of interdependent relations between characters and the game environment and by which means those interactions are violated. The cases studied here are just two of several arcs in the game's story and, while not delving too deeply into the ramifications of the in game conflicts, developers narrate different types of tensions to briefly explore the many dimensions of environmental crises.

Although providing interesting representations of environmental injustices through conflicts between these different actors, *Cross*' developers also perpetuate environmental injustices through paradoxical narrative and, to some extent, exploitative mechanics.

Despite being filled with ambiguous messages throughout, *Cross* hints at different ways of perceiving and understanding environmental crises beyond the recursive climate change/global warming narrative. The game highlights the importance of understanding that peoples and environments are inherently entangled and that environmental responsibility is also social responsibility. Finally, *Cross*' game environment is a rich and complex system and several different dimensions of representation can be studied, not only to explore narratives of environmental crisis but also environmental resilience. From landscape aesthetics to game mechanics, El Nido is filled with elements that invite the players, in one way or another, to reflect on the outcomes of the humanity-nature dichotomy that is so pervasive in contemporary environmental discourses.

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RESUMEN: Este artículo examina narrativas de injusticia ambiental a través de representaciones de colonialismo interno y explotación de recursos, con el juego digital *Chrono Cross* como estudio de caso. Buscamos demostrar cómo los desarrolladores pueden movilizar narrativas de crisis ambientales para crear conciencia pública sobre los impactos de ese proceso en varios frentes: desde la extinción de especies hasta la violación de los pueblos indígenas. Además, investigamos las mecánicas del juego, especialmente aquellas relacionadas con los conflictos entre especies y la recolección de recursos, que son inconsistentes con la narrativa ambientalista propuesta por el juego. Para lograrlo, usamos la transcripción de los diálogos de los personajes y nuestra propia experiencia como jugadores. Al fin, concluimos qui el juego presenta una disonancia narrativa entre el ambientalismo y algunas de sus mecánicas.
Palabras clave: Colonialismo; Juegos electrónicos; Teoría de juegos; Conflicto socioambiental; Responsabilidad social.