Overlapping Expectations: Studying the Genre Relationship of Open-World and Ecocritical Genres

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Abstract. While feature-level and media-specific frameworks are used throughout game scholarship, genre-focused analysis remains underutilized. This absence stems from a misunderstanding of genres as lists of deployed features. Rather genres shape and are shaped by audience expectations and reinforced through interactions within a discourse community. Understood in this way, genre-focused analysis is a socio-cultural-technologically mediated contextual framework that anchors context-driven analysis of interactive digital narratives and other forms of interactive storytelling. This study demonstrates genre-focused analysis by elevating feature-level analyses of *Horizon Zero Dawn*. While existing scholarship identifies a thematic incoherence in *Horizon Zero Dawn*, this study argues that these issues are a result of tension between the ecocritical and open-world genres within a particular moment in time. The work demonstrates genre-focused analysis' necessity, implementation, and value in game studies and IDN scholarship.

Keywords: Genre-focused Analysis · Genre Relationships · Audience Expectations

1 Introduction

Genre shapes audience expectations for an experience and can serve as a unit of analysis. Conceptually, genre is a social tool for classifying and making sense of media experiences [1], such as recognizing an Interactive Digital Narrative (IDN) within the horror genre by its ability to meet specific audience expectations[1]. Humans naturally classify experiences by associating them with similar items they have encountered before [3]. As these experiences are repeated and reproduced within a corpus and surrounding culture, these expectations form genre categories [4]. However, genre classifications are fluid [1, 5]. Genre's ability to adapt and evolve to new technologies, cultural production, and social shifts makes it a challenging but dynamic and reflective framework for analysis.

While scholars have proposed using genre as an analytical framework, few implement genre-focused analysis [6–8]. The work exemplifies how games and IDN studies tend

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[1] Horror manifests in IDN similarly to film, theater, and other visual media: jump scares are achieved through mechanics that play with shadow, light, and darkness [2].

to focus more on the features of individual games than genre [7]. However, genres are more than neat taxonomic categories of features; they formalize audience expectations of aesthetic elements [7, 9]. In games, these genre expectations can classify a singular artifact by multiple categories [9]. *The Elder Scrolls III: Morrowind* [10] is of the fantasy-open-world-role-playing genre and combines multiple expectations from each genre's specific aesthetic, ludic, and narrative elements. Audiences develop these overlapping expectations from their diverse media experiences.

This paper explores these overlapping genre expectations to discuss how genres interact, creating cohesion or tension within an experience's meaning-making process. Genre cohesion occurs when multiple genres merge seamlessly to enhance the gaming and narrative experience, while genre tension arises when conflicting genre elements create noise in the meaning-making process. By examining the cohesion and tension between ecocritical and open-world genres, the paper presents a genre case study that emphasizes the value of genre analysis, demonstrating how temporally situated and culturally reflective audiences' genre expectations affect meaning-making in play processes.

2   Challenges and Innovations in Genre Analysis

Klevjer argues that game studies suffer from *genre-blindness*, an unwillingness to use genre as a framework of analysis [11]. While genres are used broadly within the games industry, scholars have levied several challenges against using the genre framework as the basis of analytical critique. Simultaneously, scholars challenge the existing genre categories as a primarily remediated system operationalizing game media's linkage to prior media forms [9]. This debate echoes the concluded ludonarrative discussion in its interrogation and dismissal of a history of structures and elements games borrow from previous forms to create and develop meaning.

The challenges against genre theory are not novel. The cinema scholar Altman questioned whether literary genre theory could apply to the audio-visual medium of film. He saw cinematic genres as products of the cinema industry and journalism, hypotheses of what activities, without definition of delimitation, might lead to successful meaning-making [12]. Similarly, Apperley criticizes conventional genres as "loose aesthetic clusters based around video games' aesthetic linkages to prior media forms" [9]. Apperley applies Frasca's framework, that games are simulations rather than representations [13], to distinguish game media from traditional media such as literature, film, and television. To recentralize video game genres on the ergodic, Apperley proposes a new genre system that builds video game genres around families of features that create ergodic experiences. In agreement, Piccolo decries the impossibility of categorizing games or IDN by genre, media, technology, or narrative structure because they are player-instantiated experiences [13][2].

Scholars like Bogost and Murray would challenge this separation of video games and IDNs from traditional media genres. They argue that developers use various tools to create ludic and aesthetic meaning [14, 15]. Game elements exist within historical traditions and contemporary relationships [16]. As part of these relationships, Hales

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[2] Piccolo still uses genre as part of the proposed design process of IDNs in his book and explicitly asks IDN authors to consider what constraints the genre puts on authors.

[17], Rettberg [18], and Knoller et al. [19] suggest that new technologies and media production practices result in the development of new genres. This flux of technologies, analog forms, and other elements is why the conventional genre regime is imprecise but intuitive: the regime is reactive to the media environment in which it exists [6, 11, 16] while being messy because games are a chaotic and evolving medium [6].

Neale frames genre theory as a clarification process. While Neale agrees with Altman that genre categories alone could not be the foundation of meaningful analysis, he suggests that the broader media ecosystem that shaped those categories can inform analysis [4]. Instead, genres exist beyond a corpus of works and are comprised of audience expectations influenced by the social and historical period. Genre-focused analysis should frame genres as emblematic of temporally situated audience expectations [16]. For example, Arsenault analyzes the shooter genre historically [6]. Similarly, Clearwater discusses how game genres need to reflect the changing nature of the media ecosystem [16]. Koenitz and Chen conducted a content analysis of platform-specific IDNs and identified four IDN genres at a particular moment in time [8]. Hughes and Cairns conducted a thematic analysis that derived genre expectations [7]. Critically, while these scholars apply Neale's framework of genre-defined-as-audience-expectations, they do not realize Neale's vision of using this lens for analysis.

2.1 The Dynamic Nature of Genres: Temporal Shifts and Evolving Player Expectations

Neale proposes that socially constructed genre regimes at any particular time help audiences and producers discern and identify where discrete artifacts belong [4]. These genre regimes are ever-evolving as the corpus of works they describe expands category boundaries or creates new categories altogether. To demonstrate this point, Neale describes the development of the Western genre at the beginning of the 20th century. At its release, *The Great Train Robbery* (1903) [20] was categorized as a crime film. However, as other studios replicated the aesthetic qualities of The *Great Train Robbery*, this collection of movies and the expectations they established crystallized into the Western genre[3]. Murray similarly discusses that for IDN genres to cohere, they need to move beyond "unisequential genres" through an expansion of "our understanding of the world and our cognitive capacity" [21]. Since Murray's publication, this expectation has been formalized in the IDN genre through INDCOR whitepapers [22, 23]. Genre-focused analysis must acknowledge the development of genres over a time period to understand audience expectations.

Cook operationalizes how studios, developers, and players seek to reduce market risk within a genre regime and, in so doing, hermeneutically reinforce or alter genre regimes [24, 25]. Developers and studios accomplish this by creating games within established genres with established markets [26]. However, producers must experiment with game elements to be competitive. Their experimentation challenges established genre expectations, expanding existing categories or creating new ones. This process involves genres forming and dissolving in response to market forces [18]. However, studios and developers take this risk to develop the most desirable player experiences [18]. Similarly,

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[3] The Western genre was then recognized within the genre regime nine years later [4].

players reduce risk by seeking games that continue to meet their entertainment needs [24, 27].

Genres then serve as guideposts of exploration by creating expectations of element recreation [25]. Players learn to identify these linkages and to engage in self-categorization, which Popov refers to as a *genre memory*: an expectation that a genre will contain similar features and elements for meaning-making [28]. Bellini notes that for games and IDN, players identify and then expect patterns of meaningful interaction-reaction processes that can be associated with a particular genre across the media ecosystem [29]. As Ryan discusses, "genres […] are made of rules, conventions and restrictions. These rules are man-made, and they are deliberately selected because they allow efficient communication."[30].

These communicated conventions and boundaries can be transgressed through experimentation. Discussing Jaus, Neale describes the *horizon of expectation* and how new artifacts within a corpus expand the elements within a genre [4]. These novel elements create new audience expectations [16]. Developers must then navigate between novelty and adherence to established expectations. Due to games and IDN's multi-semiotic nature, their genres are complex, overlaying expanding and shrinking categories to describe the various components that inform an artifact's place in the regime. This complexity can enhance experiences. Koenitz discusses how the narrative elements of *The Last of Us* [31] heightened the action-adventure elements within the game [32].

New genres can also manifest when the experimentation of features breaks boundaries. Within game studies, the Soulsborne genre, pioneered by *Demon's Souls* [33] and popularized by *Dark Souls* [34] and *Bloodborne* [35], iterated on the existing action-adventure genre by creating a challenging but rewarding aesthetic experience. By deploying elements such as punishing encounters, challenging boss fights, and death runs, FromSoftware created a unique gameplay experience that was brutal and bleak, but equally cathartic [36]. The Soulsborne genre crystallized as FromSoftware iterated and improved its design in sequels and new titles. The process of genre maturtion continued as other studios replicated this ludic experience in games like *Nioh* [37] and *Star Wars Jedi: Fallen Order* [38]. Further, this new genre created new mechanical elements and aesthetic expectations to inform game development. Examples include the Metroidvania *Hollow Knight* [39] and the platformer *Cuphead* [40], which replicated difficult gameplay experiences in their respective genres. *Hollow Knight* replicated the gameplay elements and atmosphere of Soulsborne games, especially brutal but rewarding boss fights and the dark atmosphere. *Cuphead* did not replicate gameplay elements but captured a similar brutal but cathartic gameplay experience through its use of unique elements [41].

Unlike organic genre regimes that centralize player experiences, artificial genre regimes impose a superficial organization on an ever-evolving corpus, such as Apperley's ergodic genres. They do not reflect the genre expectations of players [9]. In an artificial regime, new genres are created only when the system's creator renegotiates categories and criteria. Meanwhile, genre development in an organic system is a naturalistic process driven by expansion and experimentation, leading to a singular artifact that can be described by several categories and novel features [30]. As genre responds to player expectations, their thoughts on a genre are both a mirror and molder of gaming culture,

reflecting current expectations while pushing the boundaries of what these experiences can mean. At this scale of constant change, a more player-centered approach at a higher level of abstraction, a genre-focused analysis, is productive.

2.2 Advancing Game and IDN Studies: From Feature-Level to Genre-Focused Analysis

Much of what the paper has attempted so far is to define the concept of genre so that it can be used as a unit of analysis. Commonly, however, the application of genre theory concerns defining genres instead of implementing them in analysis. For example, Arsenault uses platform studies analysis to create the foundations of the shooter genre of games that create the boundaries of the genre, such as *Duck Hunt*, *Quake*, and *Wolfenstein* [6]. Hughes and Cairns's thematic analysis developed five themes of open-world gaming experiences [7]. Koenitz and Chen developed four specific genres of IDN from their content analysis [8]. These studies align with Janet Murray's discussion, prioritizing analysis of "modular driven genre-actions" rather than a series of plot events to differentiate manifestations of IDN [21]. While this work is necessary to establish the foundations of analysis, to fully realize the player-centered potential of genre-focused analysis, new scholarship must apply these expectations and consider how genre affects the play experience. As discussed by Sicart, players come to these experiences with their politics and expectations, including those related to genres [45]. Thus, while defining genres is an essential first step, the potential of genre-level analysis lies in its application for understanding how these genre criteria influence players' meaning-making during periods of time.

Hughes and Cairns frame genre-focused and feature-level analysis as contextually specific approaches [7]. Due to its intuitive nature, feature-level analysis has dominated game studies and IDN scholarship [11]. Although it is commonly used, feature-level analysis has limitations. When context outside a game does not inform analysis, feature-level analysis is practical for considering how players make meaning through mechanics used in a singular play experience. Alternatively, the media-specific framework creates summative statements about the overall player experience. Media-specific studies are totalistic and assume games and gamers as monoliths. While these studies are useful for understanding the medium's affordances, they cannot bring insights into how to deploy these affordances effectively in design [7]. Both feature-level and media-specific frameworks have their strengths. The media-specific and feature-level frameworks are both intuitive and symbiotic, reinforcing the gap between grand statements of the medium to granular analyses of isolated artifacts.

Though these frameworks appear oppositional, they support one another within game studies. Klevjer states that "[scholars] are eager to connect the local principle to the big system, or the fleeting moment to the grand historical formation" [11]. Hocking carefully constructed his arguments to only discuss *BioShock,* but despite this, games journalism and academia connected Hocking's criticisms to the entirety of the medium. The media-specific and feature-level frameworks are both intuitive and symbiotic, reinforcing the gap between grand statements of the medium to granular analyses of isolated artifacts.

From a feature-level perspective, Hocking isolated *Bioshock* and interrogated it within its own context using a subjective critique of the game to derive grander arguments about the nature of games themselves. In short, Hocking's findings are limited to *BioShock'*s context. In a media-specific framework, ludonarrative dissonance has been exported throughout the discipline and reignited the ludonarrative debate within games scholarship about the fundamental nature of games and gamers' experience. In a feature-level framework, Hocking focused on game elements in singular contexts, limiting intertextual considerations [7]. Exporting Hocking's conclusions about *BioShock* to *Cyberpunk 2077* [43, 44] as experienced by a different player will be ineffective. These experiences have different semiotic contexts through which individual players make novel meanings, rhetorical or otherwise [45].

Genre-focused analysis, on the other hand, considers experiences and features within their socio-cultural and technological context. Features and structures are not isolated within a single artifact but are replicated and iterated through the games industry and considered in this broader context. For example, Hocking's criticisms of *BioShock* stem from its choice-based narrative system, pervasive throughout Western role-playing games of the early 2000s. Game series like *Fable* [46] and *Mass Effect* [47] use similar diametric morality systems, and both were scrutinized for forcing player choices into narrow narrative ends. *Mass Effect 3* [48] was infamously criticized for distilling the complex choices across three games into three simple choices [49]. This reading does not dismiss the value of Hocking's discussion of ludonarrative dissonance but considers the broader socio-cultural context that BioShock exists within.

When taking that context into account, choice-based narrative games released between 2004 to 2010, during the platform shift from sixth to seventh generation of consoles—*Fable*, *Mass Effect*, *InFamous*, *Dragon Age*, and *BioShock*—share ludonarrative dissonance as a genre-defining trait. Such a claim can only be made because of the propensity of scholarship around the issue that cites these games and the time that has passed since their release. "Artefacts actually belong in the present and tell us nothing about the past in themselves,..the past exists only in the things we say about it" [50]. Genre-focused analysis works the same way.

As the Soulsborne genre demonstrates, genre regimes react to audience expectations and market forces over time. Time is required for new elements or mechanics to be developed, reproduced, and entered into the genre repertoires. Feature-level analysis tends to ignore this diachronic nature of the regimes, focusing on a mechanic outside of its temporal context. The approach limits understanding to a singular context and use case. These limits of feature-level analysis diminish the utility of academic insights [7]. On the other hand, genre-focused analysis recognizes that features can lead to new genres and consider genres within a social-cultural context. The value of genre-focused analysis on context allows for meaningful generalizations across a regime over time.

2.3 Exploring Genre Cohesion and Tension

The ability to classify a singular game by multiple genre categories [9] complicates gamers' expectations of an experience. Various genre tropes and expectations overlap asymmetrically. This bricolage of genre categories and the rules that define them may result in a cohesive experience, but it can also lead to one in which there is tension in

how meaning is made. For example, the Multiplayer Online Battle Arena (MOBA) genre is dominated by *DotA 2* [51] and *League of Legends* [52]. Because the MOBA genre originated from the real-time strategy genre, *DotA 2* and *League of Legends* recreated strategy games' aesthetic and ludic qualities, such as the top-down camera or environment through the in-game map. These elements reinforced MOBA gamers' expectations of a strategic experience. However, attempting to create its niche, *Smite* [53] introduced third-person shooting mechanics to MOBAs. While this added new dynamism to the genre, it complicated players' map awareness [54]. *Smite,* through its addition of the third-person camera, complicated core mechanics and conventions of the MOBA genre creating noise in the communication between the artifact and the player. The industry largely rejected *Smite*'s attempt to expand the genre expectations of the MOBA genre. *Smite* remains a niche game product [55].

When expectations are cohesive, genre experimentation creates meaningful communication between the game and the player. *Hollow Knight* [39] added Soulsborne elements to the Metroidvania genre. While the *Metroid* and *Castlevania* series challenged players through brutal boss fights, the series focused more on player empowerment than challenge. However, *Hollow Knight's* inclusion of Soulsborne elements highlighted themes within the Metroidvania genre, which centers on map-based exploration [56]. The increase in difficulty raises the stakes whenever players venture out into Hallownest. The developers also created more complex bosses grounded in *Soulsborne*'s design philosophy of unique encounters based on pattern recognition and reaction [57]. Also, both genres do not usually use explicit storytelling, relying on minimal dialogue, environmental storytelling, and fragmented item descriptions. *Hollow Knight* demonstrates how cohesive genre expectations heighten player experiences.

The relationship between genre categories and the rules that define them affect the efficient communication between artifact and player. When these relationships are cohesive, genre cohesion, these similar expectations allow for efficient communication; when these relationships are tensive, genre tension, these dissimilar expectations obstruct efficient communication.

3   Demonstrating Genre-Focused Analysis

This study expands the feature-level analyses of *Horizon Zero Dawn* [58] by Condis [59] and Nae [60] by recontextualizing their conclusions through genre-level analyses. *Horizon Zero Dawn* is an action open-world RPG set in the post-apocalyptic United States. Players explore the ruins of the American Southwest as Aloy, a futuristic huntress, as she searches for her identity and realizes her destiny to protect the world from the new apocalypse. The game's narrative is unashamedly ecocritical, lobbying criticisms against imperialism, militarism, and neoliberal capitalism and their role in the ongoing ecological crisis. However, its ludic systems force players to re-enact and reinforce the ideologies its narrative criticizes.

While Condis and Nae identify the limitations of certain gameplay systems to create eco-critical or anti-capitalist rhetoric, their focus on *Horizon Zero Dawn*'s context limits their conclusions. By reframing their studies to consider how these systems relate to the open-world genre, the authors of this study endeavor to expand the context of their

conclusions and demonstrate the value of analysis at the genre level. This study examines how these genres fulfill or clash with player expectations by exploring the intersection of open-world and ecocritical genres in games. Such analysis elevates the nuances of genre interaction and its impact on narrative coherence and player engagement. This case study will first establish genre expectations through existing literature, demonstrate the cohesion and tension between these genre categories, and then apply this framework to other open-world ecocritical games.

3.1   Framing the Open-World Genre

In the current genre regime, open-world structures lack structural clarity, leading to disagreements between producers and consumers regarding the genre. The game director of *God of War (2018)* [61] expressly stated that the game was not intended to be an open-world experience; however, fans argue that the game's structures met their expectations of the open-world genre [7]. Despite this lack of clarity, player expectations for open-world elements are recreated throughout the industry. In AAA studios, experiences like *Elden Ring* [62] and *The Legend of Zelda: Tears of the Kingdom* [63] were highly celebrated open-world experiences. As the open-world genre matures, fans eagerly await the release of *Grand Theft Auto VI* and *The Elder Scrolls VI*. Sony's first-party developments heavily focus on developing open-world experiences, such as the *Horizon* series, *Ghost of Tsushima* [64], and the aforementioned *God of War (2018)* and its sequel. Open-world elements speak to players' desire for freedom, agency, and autonomy in a contemporary world where those principles are questioned [65].

Open-world games are broadly defined by their open structure, which promotes player autonomy in narrative and ludic structures [7]. Their design creates "opportunities for multiple progression pathways" [66], allowing players to exercise their sense of dramatic agency and ludic freedom. Piccolo frames the open-world genre through the feature of story worlds. As inherently composed of multiple potential narratives, story worlds offer significant opportunities for agency and immersion. Players immerse themselves in detailed worlds featuring a main storyline and seamlessly integrated side quests [13]. This open structure is fundamental to open-world experiences, allowing players to engage in activities at their discretion [7]. Hughes and Cairns substantiate these conceptions through interviews with eleven participants' open-world experiences, identifying the following genre expectations:

> (1) players are situated to scale within the world, (2) the world is large, connected and accessible, (3) the main goal does not restrict players from engaging with other activities, (4) content density is more important than world size, and (5) players can self-pace gameplay through engaging/players with tasks at will [7].

However, this freedom can be illusory. As Denham and Spokes identify, there is a tension between player agency and narrative consistency in *Grand Theft Auto V* [66]. Although the game is based on violent interactions, some players reject this premise and attempt pro-social behaviors, like following the law or resolving quests peacefully. Despite their efforts, the game responds aggressively, forcing players to resort to violence, as seen when players couldn't threaten an NPC and had to kill them instead. Denham and Spokes conclude that while games enforce hegemonic norms through scripts,

players can resist these ethics [45, 66]. This struggle for meaningful agency highlights the illusion of freedom in open-world games.

3.2   Framing the Ecocritical Genre

Ecocritical media is motivated by the "age of environmental limits" and society's response to the ongoing environmental crisis [67]. Fundamental to ecocritical scholarship is shifting the conception from the natural environment to the *terrestrial*, conceiving nature as a dynamic actor embodied through many various agents [68, 69]. This shifts the conversation about the ecological crisis away from purely scientific or technological discourse and broadens the discussion to socio-cultural issues such as media depictions of nature [70].

Games are especially vital for ecocritical media as the storyworld and environment dynamically react to player choices [70]. As Chang identifies, digital experiences are dynamic systems that can simulate the interconnected ecosphere and how human actions affect the natural environment [68]. In simulation games like *Cities: Skylines* [71], players affect the environment through their choices, allowing their city to pollute the local water supply or capping carbon emissions to change the local environment. Ecocritical elements also see sporadic use within historical and political simulator games. *Sid Meir's Civilization VI: Gathering Storm* [72] scaled the impact of climate and carbon emissions mechanics to the popular strategy title.

However, games' ecocritical potential is only sometimes realized. Chang argues, "[m]ost mainstream games […] offer game environments as simplistic vehicles for graphical spectacle or extractive resource management" [68]. These challenges have been faced through other indie studio structures outside of AAA experiences, but the reach of these titles is more limited [70]. The ecocritical genre has found a home in indie titles like *Abzû* [73], *Subnautica* [74], and *Alba: A Wild Life Adventure* [75]. These games challenge hegemonic institutions and philosophies and restructure player relationships with nature. Rather than treat nature as an exploitable resource, these games realizes Latour's concept of the terrestrial and allows players to reflect on their own relationships with the environment.

4   Case Study

Condis and Nae identify that *Horizon Zero Dawn*'s gameplay systems deviate from its ecocritical themes. Both authors agree that the game's narrative is critical of the hegemonic principles of militarism, capitalism, and imperialism, but the gameplay systems betray this narrative and incentivize the player to recreate these institutions through gameplay. While both studies conclude that the features of *Horizon Zero Dawn* limit ecocritical criticisms, the feature-level analysis limits these findings to *Horizon Zero Dawn*'s context. Rather, the conclusions are more broadly applicable by elevating these studies to a genre-focused framework. The gameplay systems that Condis and Nae identify are not relegated only to *Horizon Zero Dawn*, but a result of recreated genre expectations. In ecocritical open-world games, genre tension occurs when open-world elements are prioritized, stymieing effective ecocritical mechanics and structures.

4.1 Challenges: Situated Versus Abstract

Condis argues that *Horizon Zero Dawn*'s adherence to violent gameplay fails to capture the *slow violence* of the climate crisis. Nixon defined slow violence as "occurring gradually and out of sight, the violence of delayed destruction disbursed across time and space" [76]. Applied to the ecological crisis, the violence of climate change is imperceptible but persistent. But *Horizon Zero Dawn* embodies the post-apocalyptic threat as enemies that the player can defeat in battle [59]. Condis advocates for non-combat-oriented gameplay systems, such as investigation or mystery instead. This aligns with other ecocritical game systems that replace combat with systems management. For example, *Frostpunk* depicts the ecological crisis through irony, as the world suffers a significant cooling [77]. Players lead a settlement of survivors and must manage personnel, food, heat, and shelter. The game challenges the player by straining these resources, such as frost spikes requiring more heat or laborers going on strike. The ecological threat is foundational and ever-present, thus operationalizing slow violence through the mechanics of system-level threats.

However, in open-world games, players enact their dramatic agency through an avatar integrated into a game's environment [7], as such open-world challenges are embodied within the environment. Primarily, enemies and traversal challenges are encountered by players as they navigate the game environment and storyworld. *God of War (2018)* [61], exemplifies both forms of situated challenges. In an exploration of Norse mythology, Kratos and Atreus seek the tallest peak in the Nine Realms to honor their wife and mother Faye. Along their journey, they must fight mythical creatures and gods and surmount the harrowing climb. While their challenges are symbolic of their grief and broken relationship, the elements of the open-world genre substantiate these internal conflicts through external threats. Open-world challenges are embodied and situated within the world to challenge an embodied player avatar.

4.2 Resources: Finite Versus Infinite

Nae identifies that *Horizon Zero Dawn* incentivizes players to view the environment as a resource [60]. In order to upgrade equipment and replenish resources, the player must actively and aggressively collect from the environment. The ludic systems recreate entrepreneurial capitalism and the player is rewarded for accumulating and hoarding wealth [60]. Chang describes the complexities of resource systems in a discussion of *World of Warcraft* [68]. Resources are neither plentiful nor exhaustible but momentarily scarce. To not infringe on player freedom, these systems of scarcity are merely illusions, and open-world games simulate infinite and resource-abundant environments. Bethesda's development of the Radiant Quest System in *Fallout 4* [78] and *Skyrim* [79] demonstrates this infinite illusion. In most role-playing games, quests are unique adventures that are instantiated once in any single playthrough. Iterating on this design the Radiant System creates infinite quests that prompt never-ending generic pursuits. These quests have little narrative value, tasking the player with defeating a monster or obtaining a specific item, but prompt the player to continue to re-explore the world space. Dungeons, previously emptied of both enemies and loot, are repopulated. The Radiant

Quest System provides infinite experience, resources, and encounters by subjugating the play environment to the player's designs for power.

Meanwhile, ecocritical media is motivated by the "age of environmental limits" [67] and must depict the finite nature of the ecosphere. *Frostpunk* demonstrates this through its survival mechanics [77]. Players must manage finite resources, especially time, as they maximize survival. *Sid Meir's Civilization VI* also demonstrates the finite nature of the ecosphere [80]. Any given map in *Civilization VI* has limited tiles and resources. While the productivity of these resources can be improved through technological advancement and infrastructure improvements, continued exploitation can lead to ecological catastrophe. Continued use of coal and oil increases carbon emissions, which, after reaching certain thresholds, negatively affects the planet. Sea levels rise, reducing accessible territory, the global temperature increases, melting ice biomes, and natural disasters become more frequent. The climate mechanic and its consequences demonstrate the importance of stewarding the use of finite resources without exploiting the planet.

4.3 Interconnected

The open-world and ecocritical genres are both motivated by interconnected environments. In an open-world context, players expect an accessible play environment with freedom of movement. This openness allows players to exercise their agency and self-pace their experiences. Bethesda *The Elder Scrolls* games elevate the introduction of the accessible environment by introducing the player in captivity. In *Morrowind* [10], the player is chained to a ship; in *Oblivion* [81], the player is imprisoned in the imperial dungeon; and in *Skyrim* [79], the player is a prisoner of war. After these introductory sequences, players are freed and given full access to the entire play space. While the motivated player is encouraged by quest progression toward specific goals, they can go anywhere within the environment.

In an ecocritical context, players expect to operationalize the interconnected ecosphere by connecting the societal with the natural. This open and connected world is in contrast to games where social spaces and natural spaces are divided and viewed as discrete, such as in the classic role-playing games *Final Fantasy* [79] and *Dragon Quest* [80], which separate towns and cities from the wilderness. On the other hand, *Biomutant* [82] allows players to move seamlessly between settlements and the environment. *Alba* also illustrates an interconnected ecosphere through its experience [75]. In the game, players save a nature reserve by restoring the park and gathering signatures from residents. This involves documenting and celebrating nature while mobilizing the community. *Alba*'s narrative connects the well-being of the island, the reserve, and the town into an interconnected ecosphere.

However, the ecocritical genre's interconnected ecosphere and the open-world genre's freedom of agency can create genre tension. Space and place can be used in games to demarcate a limitation of player agency by restricting mechanics to maintain narrative integrity. Further, such demarcations might be used to maintain performativity in new play areas as one space is unloaded from memory and another is rendered [83]. However, this temporally situated platform and technical obstacle need not interrupt ludic or aesthetic elements. In *Horizon Zero Dawn*, players lose access to Aloy's combat abilities when interacting with plot-important NPCs. This limitation does not exist in

Morrowind, which allows the player to kill any NPC, regardless of its importance. If players kill certain characters, the game simply states they cannot complete the narrative. Narrative cohesion for ecocritical messaging can be in tension with expectations of agency expectations in open-world experiences [66].

4.4   The Tension in Open-World and Ecocritical Genres

These analyses demonstrate that the underlying cause of *Horizon Zero Dawn*'s stunted ecocritical potential is due to a tension between the open-world and ecocritical genres. The researchers elevate Condis and Nae's feature-level insights to a genre-focused scale. The challenges facing the combination of the ecocritical and open-world genres have a pattern of features that create tension in many games, not just *Horizon Zero Dawn*.

Death Stranding [84] and *Biomutant* [82] also overlap the open-world and ecocritical genres. Both games also suffer from the genre tension exemplified by *Horizon Zero Dawn*. In *Death Stranding*, the player is tasked with reconnecting the fractionalized United States by the remnants of the central government and the Bridges Corporation. To do so the player must establish the chiral network, fueled by chiralium—an analog for fossil fuels. While necessary for human society, the use of chiralium damages humans and wildlife, causes the timefall (an acid rain-like phenomenon), and leads to continued ecological catastrophe. *Biomutant*'s world is similarly destroyed by the Toxonal corporation, which ravaged the world for its natural resources. The world is held together by the World Tree, a manifestation of nature. However, the World Tree is under threat by large monsters, seeking to devour it. The player must traverse the environment by hunting monsters or rallying allies.

Biomutant embodies ecological crisis through the four World Tree devouring monsters. *Death Stranding* represents an ecological crisis through the bioterrorist Higgs Monaghan. Since the open-world genre requires players to be embodied within an avatar, game challenges are also situated and embodied within discrete actors. This portrayal of complex ecological issues through singular, interactive entities simplifies the underlying systemic problems, flattening their complexity and thereby diminishing the potential to explore the deeper, systemic tensions that drive these crises.

Similarly, these games criticize private and governmental enterprises engaged in an exploitative relationship with the planet and its finite resources. However, they encourage players to engage in these same practices, reinforcing hegemonic values associated with the Anthropocene. *Death Stranding* uses chiralium to comment on society's reliance on fossil fuels, but players must use it to build and craft equipment [85]. *Biomutant* makes similar commentaries on private industry, yet players can exploit the environment for crafting. Despite recognizing the finite environment, *Biomutant* infinitely respawns basic resources within the environment.

These examples demonstrate that the open-world elements reinforce rather than challenge the hegemonic norms contributing to the climate crisis. The relationship between the open-world and ecocritical genres is tension-filled, obstructing meaningful communication between artifact and player. If the goal is to help players make sense of the environmental crisis occurring in the 2000s, the combination of ecocritical and open-world genres is ineffective. However, many of the AAA games are commercial successes. Genre tension only sometimes leads to commercial failure.

5 Conclusion

Genre is hermeneutically reproduced between the producers and consumers of media. Through their interactions, they create and concretize genre expectations into categories that inform new experiences over a particular period and are shaped by social, cultural, technological, and market forces. Genres are not isolated but considered within their contemporary context and media ecosystem—these are genre regimes. Genre as a contextual framework provides insights by aligning genre with audience expectations within a temporally situated socio-cultural context. Rather than trying to create genre regimes, new genre scholarship should refocus on the clarifying act, investigating how these expectations structure features and inform play experiences.

Feature-level analysis, while common, constrains conclusions within a singular context. Meanwhile, genre-focused analysis allows scholars to acknowledge the historical, technological, and socio-cultural context of features as enshrined in genres and recreated in systems of production and consumption to meet audience expectations. Since audiences are the enactors of game systems and participants in the social construction of genres, genre-level analysis appreciates the historicity and dynamism inherent in game development and consumption. By situating game analysis within this broader socio-cultural framework, genre-focused analysis can enhance our understanding of how genres are formed and interact. It highlights how genres serve as a bridge between developers' intentions and the expectations of players, fostering an appreciation of how genres are experienced and understood across different contexts.

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