Forests in Digital Games - An Ecocritical Framework

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ABSTRACT

Forests are, both culturally and ecologically, one of the most important environments on our planet. As such, there are countless representations of them - with Digital Games being no exception. In this paper we adopt the perspective of ecocriticism, which regards the analysis of the textual portrayal of physical environments of the natural world. In particular, we propose here a framework for the analysis of forest representations in digital games, mindful of the many different layers that coexist together: cultural, discursive, representational and ludic. In order to test our framework and to showcase its potential, in the last section we present a brief analysis of the slicing game *Jack Lumber* and of the ideological tensions that emerge from the game.

CCS CONCEPTS

• **Applied computing → Computer games**; **Media arts**; • **Human-centered computing → Empirical studies in HCI**.

KEYWORDS

woodland, ideology, ecocriticism, sustainability, digital gaming

1 INTRODUCTION

Forests are by far the most dominant of all the terrestrial ecosystems on the planet. They are found at most latitudes and in almost all climatic regions and biomes (Bastin et al., 2017). It is unsurprising, therefore, that forests have proved to be a valuable resource to humankind, providing access to vital supplies including food, building

materials, and medicines. The different uses and relations with forest, in turn, are deeply related with the cultural and understandings of forest spaces. Forests have, for example, numerous connections with religion and spirituality (from Amerindian tribes of the Colombian Amazon (Reichel, 2012) to the sacred groves in present day India and Japan (Kumar and Takeuchi, 2009). Forests are also places of magic and mystery, featuring prominently in myths, fairytales and folklore where they appear as dangerous spaces populated by monsters or safe havens. These tropes persist in modern fictional narratives, often reflecting a clash between civilization and the natural world. Recent decades have seen alternative narratives gain currency, predominantly in Western cultures, in which forests are positioned as not simply safe spaces, but ones which are central to our ongoing existence; they have been lionised in the ongoing fight against climate change.

The cultural significance of forests manifests not only in the folklore of societies around the world, but also in modern artefacts. The field of literary scholarship known as ecocriticism analyzes the textual portrayal of physical environments, with a focus on the natural world (Glotfelty & Fromm, 1996, p. xviii). Games, a cultural medium that now reaches almost 40% of the world population, are a particularly interesting flied to apply ecocritical lens to. Unsurprisingly, digital games have been found to reproduce the subordination of the natural world observed in literature (Abraham and Jayemanne, 2017). In this short paper we aim to create a framework for the analysis of forest representations in digital games mindful of the many different layers that coexist in them.

2 FRAMEWORK

Our methodology is grounded on the realisation that, in order to be able to investigate the forms and reasons of cultural representations of forests in digital games, it is necessary to focus our attention on several levels. On the one hand, forests occupy a prominent position in many human cultures, and as such they are characterised by complex mythological and thymic positions, are represented in innumerable myths and stories, are integrated in socio-economic systems and so on. On the other hand, digital games are complex artefacts, susceptible to be approached from a variety of levels ranging from the rule systems they implement to the socio-cultural elements they represent. In this study we have identified four main

levels that need to be taken into consideration in order to proceed with our analysis: the cultural level (what positions do forests hold in the symbolic universe of a culture), the discursive level (how the discourses around forests assign them certain values and meanings), the representational level (what representational forms and aesthetics are used for the mise-en-scène of the forest) and the ludic level (how the forest is integrated in the game dynamics and mechanics). These levels – guided by an ecocritical perspective – will guide our analysis and help us focus on the main features of cultural representations of forests in digital games.

2.1 Cultural Level

This level of analysis is grounded in the idea that opposition between "nature" and "culture" is not an objective one (as argued by Lévi-Strauss [9]) but indeed an ideological one. Different societies define themselves and their symbolic universes through an ideological differentiation between things that are "natural" and others that are "man-made". The cultural level of our analysis will focus in particular on how the forest spaces are represented in this regard.

For the analysis of this level we draw inspiration from Lotman's *semiosphere* [10], a tool that allows us to explore the different possibilities of cultural positioning of forests. We have identified four positions that forests can occupy in the semiosphere:

(1) Outside - The forest is seen as a space of chaos, lands that are "savage" (from the Latin *silvaticus*, meaning "from the forest") and inhabited by the "Other", human (barbarians, savages, pagans) or non-human (animals, spirits, monsters).

(2) Border - The forest is a space of mediation and interface between chaos and cosmos. They can be seen as natural parks or host spaces of mediation with the otherness (cabins, temples or witch houses).

(3) Periphery - The forest is part of the cosmos, but a marginal one. Similarly, its inhabitants will be part of the (possibly marginalised) community: lumberjacks, hunters, foragers, hippies.

(4) Centre - The forest is at the very core of the culture, both practically and symbolically. This is true, for example, for some tribal societies living in woodland.

2.2 Discursive Level

Discourses around forests are numerous and wildly diverse. For this level of analysis, we have chosen to focus in particular on valorisations, that is, on the criteria that are used to discursively promote the value of forests according to different ideological perspectives. To this end, a useful tool are the four key types of valorisation outlined by Jean-Marie Floch [6].

- Practical valorisation - Based on utilitarian values such as "comfort" reliability"
- Critical valorisation - Based on non-existential values such as, e.g., quality/price ratio
- Utopian valorisation - Based on existential values such as "life", "adventure", "identity"
- Ludic valorisation - Based on non-practical values such as "luxury", "gratuity", "fun"

According to this systematisation, we can identify four main strategies to valorise forestry spaces:

(1) Practical valorisation of forests. Forests can be conceived as an economic resource (e.g. in silviculture), as a military resource (e.g by the Vietcong), as an educational resource (e.g boy/girl scouts or in the "natural method of physical education" by Georges Hébert)

(2) Critical valorisation of forests. An ecological resource (oxygen creator, preserving biodiversity, regulating climate)

(3) Utopian valorisation of forests. A place of escape and freedom (e.g. in the writings of Thoreau), the forest as part of national or ethnic identity (e.g. in Finland)

(4) Ludic valorisation of forests. As a playground or recreational space (e.g. in tree parks, trekking, orienteering), the forest as luxury (e.g. for tourism and well-being)

2.3 Representational Level

An ecocritical analysis of games requires separating verbal semiotics from representation through sound and image, especially given the possibility that words and audiovisual manifestations dissonate in their explicit or implied meanings [1, 3]. Expanding on pre-existing definitions of game environments [2], we define the representation of forest environments as the visual, sonic, and haptic manifestations of every object contained within, from their soil to their flora and fauna, as well as other phenomena (for example water bodies, wind, fog, and the overall treatment of light).

Initially, the analysis can proceed like that of any other digital game. Various categories have been proposed to examine the audiovisual makeup of games [7, 11], including the following: 1) Dimension – Chiefly 2D and 3D, unless the game is text-based. 2) Point of perception – Perspective adopted by the player. 3) Visual outlook – Includes colors, shapes, textures. 4) Audiovisual motifs – Effects and gimmicks used in the game, 5) Audiovisual style – Whether realistic or not. 6) Soundscape – Both diegetic and nondiegetic sound. 7) Senso-motorism – The means of interaction with the game

However, ecocritical concepts can inform in more detail representational aspects of the digital forest. For example, are forest depictions specific and informed [1], that is, showing accurate ecosystems that feature all of their core components? Does the game feature distinctive region-specific species [4]? What are the scales [4, 5] represented, both in temporal and spatial terms? We can schematise these dimensions as follows:

1) Completeness and accuracy - The forest is complete, featuring all core components; the model of how the forest works is accurate. 2) Distinctiveness - The forest includes distinctive region-specific species. 3) Temporal features - The time, or times, represented. 4) Spatial features - The physical scale, or scales, represented.

2.4 Ludic Level

Considering game mechanics in ecocritical analysis methods for games is a crucial step that departs from conceptual frames used in literature and film [1]. Even considering that game environments typically remain static, Chang [4] points at a lack of interaction that is only relevant in the medium of games. Without a framework that includes player agency and action, central simulational issues remain invisible.

As with the representational aspect, general frameworks exist to analyze game systems. According to Järvinen [8], game elements

can be categorized as: 1) Components - The game's resources. 2) Environment - The play space 3) Ruleset - The goals and constraints. 4) Game mechanics - The player's actions to attain goals. 5) Theme - The game's subject. 6) Information - The system data communicated to players. 7) Interface - The tool allowing players to access game elements. 8) Players - Those who play. 9) Contexts - Where, when, and why the game occurs.

Once again, ecocritical lenses provide guidance beyond general categories. An important question is what perspective is privileged through game mechanics [1]. Is it anthropocentric, or do players incarnate non-human entities? Is the forest approached through unconventional and varied interface configurations and interaction schemes [5]? In addition, simulated forests are poised to include three markers of environmental sensitivity in games, besides the aforementioned ecological localization: cross-species interaction, or the ecological acknowledgment of each other in the web of life; environmental variability, or a system that mutates overtime; and dark ludology, or acknowledgment of degradation and waste [4]. These can include the player's involvement, but they can also occur autonomously. To sum up:

(1) Perspective - Who the player is
(2) Player-forest interaction - What is done with the forest
(3) Markers of environmental sensitivity
  (a) Cross-species interaction - Ecological acknowledgment of each other
  (b) Environmental variability - The system mutates overtime
  (c) Dark ludology - Degradation and waste

Overall, we also consider possible consistencies and frictions between the four dimensions of analysis, given that "dissonances between gameplay and semiotics as well as tension between game goals and player morals provoke critical engagement with the game and its topics" [1, p. 46].

3 FOREST REPRESENTATIONS IN JACK LUMBER

In order to put to the test the different dimensions and articulations we have individuated, we will conduct here a brief analysis of a simple digital game. We chose the game *Jack Lumber*, a 2012 slicing game by Owlchemy Labs for mobile phone and PC, the version we analysed. As the name suggests, the main character of the game is a lumberjack, but the game plot, still built around the core mechanic of chopping wood, is an unusual one, as it revolves around a vendetta. Jack's grandma was killed by a (apparently sentient – and smiling) pine tree, which causes him to hate trees and to chop down entire forests. The unusual representation of woodland, and the relative simplicity of the game, were the main criteria why we chose this game to test our framework.

Let us start from the *Cultural Level*. In the game, the forest is portrayed as a space of border: it connects different worlds, the human and civilised one and the wild woodlands inhabited by the Other. On the one hand, the game uses several strategies to present a specific "lumberjack culture," with some Canadian influences (country music, maple syrup, plaid patterns, wooden cabins etc.). This space is inhabited by few humans: the eponymous character, Jill Lumber (his female equivalent and eventual love interest) and Ranger Bob (which at firsts sends letter to Jack asking him to desist from his

forest destruction but by the end of the game joins his side). On the other hand, the forest hosts other creatures. Many animals live in the forest and are put at risk by Jack's destruction. The players needs to ensure that the animals will not be harmed, and, after each level of the game, a new animal will move to live in Jack's cabin. The first of these animals, a beaver, becomes an ally of Jack and periodically tells jokes about the other animals or expresses its dislike of trees. The forest is also inhabited by a monstrous tree, the "Smiling Pine" (which features indeed a toothy smile and a shining blue pine cone as a decoration) which murders several humans, starting with Jack's grandma. This border space is presented as a space of conflict (the granny's murder, the lumberjack's revenge) and of translation/acculturation (animals leaving the forest to go live with the lumberjack, trees being processed and becoming timber).

At a *Discursive Level*, there are two main valorisations that appear. The first one is a Utopian Valorisation: the forest is a space of revenge, where the main character looks for solace and justice. The main reason to interact with it – and destroy it – is related to strong emotions of rage and hate. The second one is a Practical Valorisation: trees are represented as a resource to be processed and collected. Wood logs are an in-game resource that can be used to acquire different items (decorations, power-ups, etc.). We could maybe identify a tenuous presence of a Critical Valorisation in the activity of saving the animals, which, together with the tongue-in-cheek Utopian Valorisation has probably the aim to tone down the negative connotations of the Practical one. In other words, as the depiction of woodlands as resources to be exploited would be controversial for many potential players, the satyric vendetta plot and the attention to saving animals act as a discursive counterweight.

At a *Representational Level* the game does not stand out particularly. The visuals are cartoonish and 2D, presented in a typical mobile arcade game first-person, where the player sees only their virtual tool and objects of interaction. The visual aesthetics are colorful and strongly thematised, following both a stereotypical lumberjack style (plaid, wooden and earth colours) and different tree colours according to the game worlds (sets of levels). Graphics are animated mostly as sprites that displace as a whole. Sound effects have both ambience purposes, especially in Jack's cabin (chirping birds, fireplace sounds, cartoon sound effects when clicking on the animals) or work as feedback guiding the gameplay in the slicing levels (sounds and musics highlighting success and failure). In terms of senso-motorism, the game has two main interactions: press Shift or the left mouse button to activate "lumbertime" (during which time slows down allowing the player to cut the logs) and moving cursor to cut. The aesthetics of the game, hence, seem to be oriented around three key goals: supporting gameplay, conveying a cartoon/satirical impression, and relating to the theme of the game.

From an ecocritical perspective, we can see that there is little to no effort to make the forest representations accurate or complete. A model of the forest is mostly absent as there are not realistic ecological relations whatsoever between its elements. These are represented in fantastic ways, including a sentient and murderous tree and talking animals. Finally, despite the existence of different ambiances in the game, nothing fundamental changes between them, apart from some game mechanics. The model therefore is neither complete nor accurate - and it does not aim to be. As for distinctiveness, the game often presents "trees" and animals that

don't quite live in the same environments. While the first animals encountered are all present in North American forests, soon giraffes and gorillas also appear in a nearby mountain. By the end of the game, even a cryptoanimal, a yeti, appears. The game is rather extemporaneous, as there is no change in the forest based on the passing of time. Even the areas that have been already destroyed and logged can be visited again and will appear as intact, with the animals back at their original locations. The space is organised in three discrete environments: a forest, a bog, and a mountain. These spaces have (semi-arbitrary) differences in visual aesthetics and are regulated by different game mechanics. All in all, there is no attempt to represent the forest in an accurate way. On the contrary, some of the most extreme choices (a giraffe living on a snowy mountain) are probably used to underline the fictionality of the game and distancing the game from actual timber exploitation.

Finally, for the *Ludic Level*, the *ruleset* is rather simple: players have to cut longitudinally through logs to earn points. Some logs have special rules (that make them harder to cut or facilitate cutting others) and some actions result in point multipliers (a perfect cut, combos, straight shots). Cutting animals (one appears at the end of each level) means an instantaneous failure. A minimum threshold of points needs to be achieved to progress with the game. There are two primary *game mechanics*: players can slow-down the game during "lumbertime" and have to use their cursors to cut through logs. It is also possible to buy items for decoration or to change some of the game conditions and counting of points. The theme of the slicing game is that of cutting pieces of wood, and it is connected to a plot focusing on a lumberjack seeking vengeance against the tree that killed his grandma. The game *components* and *environments* mostly reinforce the theme from a figurative strandpoint (logs, syrups, exploding barrels, animal outfits, decorations, the cabin) or are functional to the gameplay (level points, rankings, logs as a currency, different forest environments of increasing difficulty). The *information* given by the game provides feedback to the players (combo, trajectory, time, points, cut logs etc.) or provides additional narratives (letters received by Jack). The *interface* is the computer screen, mouse and shift key (touch screen on phone). The *players* play alone, but can compete with others through a leader-board. The *contexts* is one of entertainment casual private play.

The ludic level suggests a simple and straightforward game, with an unusual thematisation. From and ecocritical standpoint we can also see that the game is clearly anthropocentric and that the player-forest interaction is scarce (two relevant types of element: trees and animals) and superficial (destroy and rescue/collect). Similarly, the markers of environmental sensitivity are rather absent. *Cross-species interaction* is unrealistic (wild animals statically inhabiting a cabin, pine trees murdering humans, etc.), the *environmental variability* is little more than an aesthetic choice and the representation of degradation and waste completely absent (maple syrup bottles or exploding barrels leave no trace when used). These aspects, in fact, remain at the representational level, given the lack of dynamic implications and player involvement with them.

This brief analysis highlights one key tension in the representation of forests in *Jack Lumber*. On the one hand, the slicing game offers a shallow and utilitarian portrayal of forests as mostly a set of wood that has to be cut down and chopped in order to create resources that will facilitate ulterior tree-cutting and increased production. On the other hand, the game goes out of its way to defuse the ecocritically problematic aspects of these representations. It does so not by attempting to depict more realistic forests or consequences of forest exploitation, but by going in the opposite direction and adding numerous elements of satire, fantasy, and tongue-in-cheek humour together with cartoon aesthetics. The in-game forest, in this way, is represented as something that has only feeble connections with reality, and that, therefore, can be playfully destroyed with no consequences whatsoever.

4 CONCLUSIONS

In this paper we have argued for the cultural importance of forestry spaces and of their representations in digital games, additionally we have illustrated how these representations can impact the gameplay experience. In particular, we have decided to engage the representation of forests in digital games with the creation of a framework that articulates such depictions on different levels (cultural, discursive, representational, ludic) and is grounded on ecocriticism. Our framework has still several limitations, related, for example, to how different cultures and languages can conceptualise forests, and it does not aim to be exhaustive. Nevertheless, we believe that these dimensions, and the perspectives that we have adopted to investigate them, can successfully uncover some of the tensions, ideologies and design choices that are involved in the representations of forests in digital games. Our brief analysis of *Jack Lumber* has been a first step to showcase the potential of the analytic framework, and to put it to the test. In future research the framework will be confronted to more complex and multi-layered games.

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