

The Ship Log in Outer Wilds

An Exploration of Actor Network Theory and Distributed Cognition

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Disclaimer *First, if you have not played the game Outer Wilds, I implore you to set this paper down and return only after you have completed the game to the fullest. If you choose to proceed, I can only warn you that I believe this media should be experienced first on one's own, and only after that engaging with other's thoughts, ideas, and conclusions about the experience that is Outer Wilds. No prior knowledge of the game is required for this article, but the game will be discussed at length.*

Abstract. Distributed Cognition (DCog) and Actor Network Theory (ANT) are two similar theories that alone provide insight to how players engage with the video game "Outer Wilds." However, when considered in tandem, the theories reveal a deeper meaning behind the player's relationship with complex narratives and the Ship Log in Outer Wilds. This paper examines that relationship by focusing on the role of the computer on board the player's spaceship, and breaks down the relationship between the Player and the Log.

Keywords: Distributed Cognition · Actor Network Theory · Outer Wilds · Complex Narratives

1 Introduction

From cave drawings, to books, to speeches, to film – mankind has always told stories. Within the past few decades, a new form of interactive storytelling has been born: Video Games. While most forms of story involve only a storyteller and a listener, video games afford a new way of telling and engaging with complex narrative structures. One of these games that recently has been published and has drawn critical acclaim is the game "Outer Wilds." Set in a universe with deep mystery and endless exploration, the listener is thrust into the role of the detective, to follow rumors and mysteries to piece together an ancient narrative that sheds light on the player's current predicament. Throughout this journey, the player has the help of the "Ship Log," an on-board computer tasked with maintaining a database of all discovered clues and information. Distributed Cognition (DCog) is a useful theory when examining the relationship between the player and the Ship Log. However, the theory falls short of helping us understand the larger system and ways that cognition is shared and transferred between all actors in the system. This is where we also examine the perspective of Actor Network Theory (ANT) to contextualize the relationships in the larger system.

The purpose of this paper is to explore how the Ship Log plays a key role in Outer Wilds, by examining its relationship to other actors in the large and complex gameplay system in Outer Wilds. First in section 2, we will review Distributed Cognition and Actor Network Theory at a high level, calling attention to key concepts of the theories that this paper will apply to Outer Wilds. Then it will cover a brief introduction of the game Outer Wilds, and introduce the reader to the Ship Log System. After laying out the value of combining DCog and ANT, section 3 will dive into applying our theories to the various actors and how

cognition is distributed among them. Section 4 will evaluate the further value of combining DCog and ANT, as well as discuss it's limitations, and how it can be applied further.

2 Definitions

2.1 Distributed Cognition

Distributed Cognition (DCog) is the fundamental idea that cognition is shared. To understand what is meant by shared, there are two fundamental concepts of DCog that are laid out by Hollan, Hutchens and Kirsh. One, "distributed cognition looks for cognitive processes, wherever they may occur, on the basis of the functional relationships of elements that participate together in the process." And two, "distributed cognition looks for a broader class of cognitive events and does not expect all such events to be encompassed by the skin or skull of an individual." [3]. These concepts lay the foundation of recognizing that cognition is a complex system that is unbounded by the restraints we usually place on it. One of the constraints that's important to disband for this paper is the concept of cognition only happening at a single moment of time. With DCog, cognition can be distributed, such that early events can influence and transform later events. [3]. While time is linear, this paper will explore this concept further as it applies to non-linear time, and this idea of cognition threw time will be key as we evaluate the role the Ship's Log plays in Outer Wilds.

2.2 Actor Network Theory

Actor Network Theory (ANT) is a theory that ultimately levels the playing field between people and technology. While many theories seek to understand the relationship between the two, ANT seeks to remove the distinction, and consider both equally as "actors" in a larger network. Three concepts we will leverage in this paper are Delegation, the act of shifting work from one actor to another, Prescription, how the materiality of nonhuman actors impact how human actors interact and behave, and Translation, the way intent is materialized through the network. to discuss the how the design intent is materialized. [4] Leveraging ANT, this paper will identify the various actors in Outer Wilds when considering the actors and larger network that are surrounding the log, and the complex relationship between said actors

2.3 Outer Wilds and the Ships Log

Outer Wilds is, on it's very surface, an action-adventure video game. However, what sets it apart starts to become apparent when you look at it's development history. The game started out in 2012 as a University of Southern California graduate student's Master's Thesis. Alex Beachum and a team of other graduate

students set out to create a game with the intentionality of inspiring and rewarding textitcuriosity with dynamic forces that affect free form exploration.[1]

The player is given a small spaceship to go explore a handcrafted solar system. However, after a brief 22 minutes, the sun goes supernova. The player gets thrown back in time to the beginning of what will be an endless 22 minute time loop. Each time scrambling to use those minutes to unravel the story that the "Nomai" have left behind in clues throughout the solar system. Over the course of seven years of the game's development, a deeply complex narrative was born out of paper prototypes and tabletop role playing games [2]

The play-thought of the game puts an intense cognitive load on the player to not only learn and understand this narrative, but also the game mechanics and complex systems that change over time (all with the impending stress of the sun exploding). While the complexity of this game is drastically out of scope of this paper, we will focus on one of the key, but often overlooked, actors in the game, the Ship's Log.



Fig. 1: The Ship Log Interface in Map and Rumor Mode

The log is an interactive user interface on-board the player's ship that consists of two screens that the player can toggle between; Map Mode and Rumor Mode. Map Mode is a screen that consists of the various planet's you can visit in the solar system (i.e. map), and Rumor Mode is an information map of various "Points of Interest" (POIs) throughout the solar system and the key pieces of information you learn there. Rumor Mode points toward new rumors, encouraging and guiding the players to new POIs throughout the solar system by showing the relationship of information. Players can select anything in Map or Rumor Mode to place a waypoint on the Heads up Display (HUD) to help the player navigate to that location in game.

2.4 DCog and ANT

One criticism of DCog is that it's ill equipped to apply to design problems out of the box [CITE ROGERS]. ANT will provide us with the entry point of identifying the network of the complex system, and the actors within it, to help evaluate both *where* cognition is distributed, and *how* it is distributed. DCog and ANT share many similarities, such as their treatment of humans and non human actors without distinction. DCog

gives us the concepts of a shared cognition to complete tasks, while ANT gives us a language to articulate the different types of relationships that actors have between each other. ANT also helps expand this perspective to a larger paradigm of actors in a complex system, beyond just shared cognition and how the actors influence each other, but also how they influence the larger network. It helps us recognize the complexity of Outer Wilds and gives a greater picture of the dynamic relationships between actors.

3 Cognition in a Complex Narrative

From the moment a player starts the game, they can reach the ending in approximately 14 minutes. The only thing that's standing in the players way is knowledge; an understanding of the *why* they need to take certain actions (the narrative), and the *how* to take those actions (the gameplay systems). As the player explores the solar system, they discover information that would allow them to solve the mystery that is at the center of the narrative. To understand the shared cognition of that information and processing in Outer Wilds, we need to first lay out the actors in this space:

- The Player: Not the player character in game, but the human being engaging with Outer Wilds while holding a controller; that is influenced by previous video games she has played, knowledge of solving puzzles, understanding of physics in space, and various other leanings throughout her life.
- The Player *Character*. The new astronaut that is finally setting out on their first spaceship voyage, only to be met with the sun exploding and endless time loops.
- The Ship Log: the computer aboard the spaceship that automatically logs the player's discoveries
- The time loop: a 22 minute loop that starts with the player character walking up on their home world, and ending with the sun going supernova.

If the player were to play though Outer Wilds with a perfect memory, extreme attention to detail, and a superb ability for contextualizing information to the bigger picture, the ships log would be useless. There is no information represented in the log that the player does not learn throughout their exploration of the universe. However, we can assume as a human actor, the player is not infallible. Therefore while the log may be a 1-1 representation of the Player Character's knowledge, it is not a complete mapping of the Player's knowledge. The extent that the Player relies on delegating cognition to the Ship Log is variable, and dependent on player choice. With these distinctions in mind, there are three core ways the Player can delegate cognition to the Ship Log.

The first act is the delegation of remembering information. When completed, the Ship Log contains several planets, 60 locations and approximately 170 unique entries. This is a large amount of information

to try to maintain without, in some form, making a note of it. Especially considering the nature of video games, and how players may return to the game after a small (or large) absence.

The second act of delegation is very similar to this, but has one key distinction. Let's look at the scenario where a player reads a conversation between two Nomai researchers. In the first act, the Player fully understands the conversation, and knows that it's automatically noted in the ships log if they want to remind themselves of it later. Another possibility is that the player does not fully understand the conversation. Whether it is a lack of context, spamming the "next line" button, the stress of the sun on the verge of exploding, etc - there is no shortage of reasons a player may need a concise summary of the clues they stumble upon. This is arguably one of the most accessible features of the game for players that have Sensory Processing Disorders (SPD) or who may otherwise not be neurologically typical. This delegation allows the player to explore freely, without the concern that they may miss something.

This brings us to the final way the Player distributes cognition to the Ship Log; the delegation of the mapping of information to other information. One can only imagine the Rumor Mode was conceived from humorous visions of conspiracy theorists and red yarn connected between clues - for at a surface level that is exactly what the rumor map is; an information map connecting all learned knowledge of a particular mystery together. While the player may connect the dots themselves cognitively, the Rumor Mode in the ships log will draw lines to visually represent the information in a readable way.



Fig. 2: A Rumor in Rumor Mode

These three acts of delegation show how powerful the Ship Log is as a tool in a complex game like Outer Wilds. The log is the only Actor other than the player that persists through time and is not reset by the loop. The Log becomes the reflection of the player's journey, both as an archive as well as a tool.

4 Conclusion

Distributed Cognition and Actor Network Theory act as powerful tools when evaluating the role of the Ship Log in Outer Wilds. While both theories on their own are useful, the combination is quite powerful, and allows the framework for analyzing how cognition is distributed through a network of both human and nonhuman actors. This perspective could be valuable when designing tools or technology that built for taking cognitive load from users, especially in the realm of Gaming Accessibility and how we can focus on taking overwhelming cognition on the player, and how it can be distributed to a network throughout the game.

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