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What Lasts of Us: implicit archaeology through environmental storytelling

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In the seminal work "Hamlet on the Holodeck" (1997), Janet Murray lists "spatial" as one of four basic characteristics of the new forms of digital storytelling, including (but not limited to) video games (pp. 96–100). Digital environments, Murray explains, are not only capable of representing space (as a literary text or a film), but also of opening that space up to user navigation or exploration (p. 96). Over the years, video game spaces have evolved from interactive digital spaces represented or evoked through words on a screen (e.g., the famous 1980s text adventures by Infocom), to meticulously detailed 3D environments able to house thousands of players simultaneously, or immersive virtual reality environments where players can use their own bodies to physically traverse the game space.

Video game spaces have, in recent years, attracted the attention of archaeologists who use archaeological methods to study these digital environments. Pioneering this approach is Andrew Reinhard, who in 2018 published the book "Archaeogaming: An Introduction to Archaeology in and of Video Games" which outlined how archaeological methods of analysis may be applied to video games. The term 'archaeogaming' itself is older and dates back to Reinhard's blog, launched in 2013 (Rassalle, 2021: p. 4). Archaeogaming, Reinhard explains (2018: p. 3), comprises various fields of study, including:

(1) "the study of physical video games as well as the metadata surrounding the games";

(2) "the study of archaeology within video games"';

(3) "the application of archaeological methods to synthetic space";

(4) "the approach to understanding how game design manifests everything players see and interact with in-world"; and, finally,

(5) the "archaeology of game mechanics and the entanglement of code with players".

Examples of archaeogaming scholarship include, for example, analyses of the representation of history and epigraphy in *Heaven's Vault* (Inkle, 2019) (Hageneuer, 2021); investigations of player-created cities in *Star Wars Galaxies* (Sony Online Entertainment, 2003–2011) (Hansen, 2020); inquiries into the consultation of archaeologists or historians during game development (e.g., Poiron, 2021 on *Assassin's Creed Origins' Discovery Tour*; Ubisoft Montreal, 2018); or the study of virtual recreations of history constructed by scholars entirely (e.g., Holter et al., 2020). Archaeogaming may also refer to the archaeology **of** video games, as exemplified by the 2014 excavation of the Atari burial site in Alamogordo, New Mexico (Reinhard, 2018). The term 'archaeogaming' has rapidly expanded and has become the subject of its own yearly conference ('Ar-

chaeogaming Con', organized online by the Archaeogaming Collective).

This chapter applies methods of archaeogaming for the analysis of how the mechanics and dynamics of *The Last of Us* allows (or requires) the player to adopt an 'archaeological mindset' during the act of play. We argue that the featured in-game exploration and methods of world-building ask that the player performs acts of implicit archaeology, as they reconstruct the game world's history based on the material evidence they encounter. The next sections overview the use of environmental storytelling in gaming, what the archaeological mindset is, the setting and story presented within *The Last of Us*, and how the game invites the player to conduct implicit archaeology.

ENVIRONMENTAL STORYTELLING IN GAMING

Associated with the concept of video game space is the notion of environmental storytelling. Originally coined in the context of theme park storytelling (Carson, 2000), the term was later used and popularized by Henry Jenkins (2004) to describe video game environments as a form of "narrative architecture". In order to tell a story, video game designers are often not only required to devise intricate narrative plots or create compelling characters, but they also need to create a virtual world and carefully disperse the narrative story beats throughout that world. This requires setting a world or stage that is recognizable to the story's needs. Items, backgrounds, architectures, and more are presented to the player to assist in building the narrative.

Video game methods of storytelling have been linked to archaeology in the past. Fernández-Vara (2020) has for example shown how her concept of "indexical storytelling" (Fernández-Vara, 2011) – i.e., storytelling driven by objects that serve as evocative 'indices' (in the Peircean sense) of certain backstories – relates to archaeology, since archaeology also relies on material objects in order to inform and tell a (hi) story. According to Fernández-Vara (2020), this then leads to "exegetic gameplay", or gameplay "where the game goal is to interpret information" and to "fill informational / conceptual gaps". Game designers, she argues, are forced to ponder questions such as "What happened in the environment? How has it left a trace in the space? How can the player read those traces to reconstruct the events?" (ibid.). Subsequently, they implement objects in the game space that both evoke and answer these questions. Our chapter builds on these insights, but instead of looking at the architecture of game design, we explore player discovery and cognition. Our focus lies with the mental process of the player, as it is up to them to reconstruct a history or to form hypotheses about the game world's past through interactive discovery of the game world.

THE ARCHAEOLOGICAL MINDSET

Archaeology, in a most basic definition, seeks to understand the past by analyzing artifacts and ecofacts, termed material culture, left behind by cultural groups. Architecture, items, tools, cultural landscapes – these are all **things** that have been constructed, molded, or used by humans. Archaeologists examine materials and landscapes to reconstruct the lived experiences of the past. However, popular culture has significantly warped the public's perceptions of what the modern archaeological research process looks like. Many interpretations in popular culture reflect an antiquarian notion of plundering the past, as may be observed in the exploits of Indiana Jones or Lara Croft. To break down the archaeological mindset constructed by *The Last of Us*, we must first present a brief overview of the discipline itself.

Archaeology as we know it was only codified in the first half of the 20th century. Before that, the discipline consisted of an assortment of art history enthusiasts, literature scholars, historians, and most commonly adventurers and treasure hunters

(often from European countries) traveling to sites that were rich in archaeological remains to obtain precious artifacts. The goal of these first expeditions was not to record and try to understand the past, but the discovery and acquisition, often through destructive means, of objects of value that could then be sold to collections and antiquarians (Trigger, 2006). Between the middle of the 19th and the first half of the 20th century, the focus of the research shifted from finding precious things to recording and understanding sites and material culture (Renfrew & Bahn, 2020; Trigger, 2006).

Much of the public is familiar with the fieldwork of archaeology, the digging and excavation and procurement of artifacts. In reality, there are many steps prior to excavation and after. Prior to an excavation, archaeologists research regional histories, cultures, and material cultures. In academic archaeology, often the researchers specialize in the context of their excavations. In commercial archaeology, archaeologists are given time to conduct background research of a project area prior to fieldwork. During excavations, archaeologists in essence treat the project like a crime scene. Each step of the process comes with careful notation, mapping, photographing, and more. As archaeologists cannot redo an excavation, it is imperative they record as much of their actions and findings as possible. Following excavations, researchers must curate the materials collected for posterity. All of their notes, photographs, maps, and artifacts are analyzed and preserved so that anyone in the future can return to these collections for further study. This summary is severely over-generalized, but much of the public is only aware of a small percentage of the specialized research and labor required.

In an ideal world, the goal of any archaeological mission would be to excavate and document sites in their entirety (Renfrew & Bahn, 2020). This means analyzing all the finds in their context, cataloging them, and giving them to the appropriate institutions for display or further research. The final step would be the publication of a complete report explaining the history of the site and of the people who occupied it as inferred from the objects and features discovered during the excavation process. If there are buildings, they would also need to be preserved or restored. In the real world, archaeologists attempt to do all of the above while working against deadlines, natural or man-made destruction (and sometimes looting) of sites, and the generally fragmentary nature of the archaeological record. Regretfully, these factors affect the scholars' ability to reach definitive conclusions on many open questions. On the other hand, the fact that new discoveries can quite literally rewrite history is one of the most thrilling features of archaeology as a discipline: the field never stops moving forward, the more we look backward.

In video games featuring one or more characters defined as 'archaeologists' (for instance the *Tomb Raider* and *Indiana Jones* series, to name the most popular titles), their behavior very often resembles more closely that of treasure hunters than that of modern-day professional archeologists. Although the main motive for undertaking an expedition may be a genuine desire to understand the past, or at least a particular past event, the methods employed (including sometimes using explosives to access ancient sites) are usually reduced to a very linear sequence of actions:

Character	Motivation(s)	Method	Outcome
Archaeologist	Understanding the past / past event	Reach site	Take thing(s)
	Prevent looting	Access building / container	OR
		Find thing(s)	Leave things in situ
Treasure hunter	Finding precious objects to loot	Reach site	Take thing(s)
		Access building / container	
		Find thing(s)	

What is most often absent from this hyper-simplified representation of archaeology is the recording. Sites can be a backdrop for the material culture, rather than the proper context in which the objects and the people who used them need to be investigated. Characters may comment on the architecture, but it is rare to see anyone recording the sites and the position of the artifacts before removing them. Chronology can be just as absent, as buildings are often regarded as 'frozen in time' (as in, built on a specific date and never modified) rather than as having had various phases of life and abandonment in which parts could be added, removed, or used for different purposes than the original ones.

Most importantly, and in stark contrast with both real-life archaeology and the gameplay of *The Last of Us*, knowledge of the past is very often too clear and immediately understandable from a cursory run through a single site. On the other hand, the discipline of archaeology is a constant dialectical opposition between wanting to understand the lived experiences of the past and being presented with data that are unclear, fragmentary, and in extreme cases outright absent. The confusion and frustration of the characters (and, by extension, players) in the world of the *The Last of Us* in trying to make sense of past events that, albeit recent, are poorly documented and must be painstakingly reconstructed through fragmentary material culture, are a surprisingly accurate analogy for how archaeological research is conducted in the real world.

THE LAST OF US

The Last of Us and its 2020 sequel represent a dystopian, post-apocalyptic setting of the United States. In 2013, a contagious fungus-based plague, known in the lore as the 'Cordyceps brain infection', breaks out and dramatically changes the world: humans affected turn into zombie-like 'Infected', and the surviving humans group themselves in ideological factions that are at war with each other, such as the Fireflies or the Washington Liberation Front ('Wolves'). The first game, set in 2033, tells the story of Joel and Ellie. Rumored to be immune to the disease, Ellie is smuggled across the country to a Firefly facility by Joel in an attempt to manufacture a cure. The game follows the growth of the relationship between Joel and Ellie as they travel across various locations and encounter extreme dangers. Over this time, Joel grows fond of Ellie, and their connection effectively becomes a father-daughter relationship. At the end of the game, Joel finds out that Ellie would not survive the procedure, and has to choose between humanity's salvation from the Cordyceps contagion or Ellie. Joel storms the hospital where the procedure occurs, murdering Firefly soldiers, nurses, and surgeons. While he rescues Ellie from certain death, he also dooms society to the pandemic. The sequel, set five years later, revolves around a more mature Ellie and her quest for revenge when Joel is brutally killed in front of her by Abby, the daughter of one of the doctors that Joel killed at the end of *Part 1*. Players control both Ellie and Abby and learn the justifications of both characters. At the end of *Part 2*, Ellie lets Abby go as she realizes her desire for revenge would only consume her more and will not change what happened.

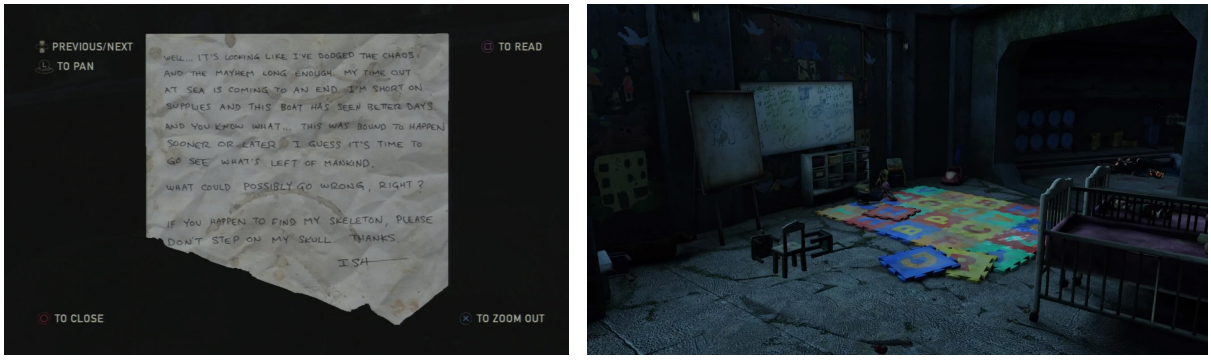
It is assumed that the 21st century events prior to the Cordyceps plague in *The Last of Us* follow real world events up to 2013, with the brain infecting disease as the catalyst for the post-apocalyptic environment seen in the series. As such, the world should be very familiar to players who have visited or lived in locations presented in the games. The two games take place across a variety of American cities, including Boston, Pittsburgh, Jackson, Salt Lake City, Seattle, Santa Barbara and others. In the games, all of the cities are presented as modern-day ruins: players journey through abandoned homes, hospitals, hotels, schools, coffee shops, and more. The game very frequently includes locations where people used to come together, or places that emphasized the very act of living. In the current situation, however, these places have become tombs for the ways of the past and are all marked by

the absence of life and the people that visited them. Yet these locations do contain evidence of life: many spaces are frozen in time, as it were, and remain relatively untouched after they were abandoned during the outbreak. There are letters and notes that contain and tell the stories of the people who inhabited the world. As we will now go on to show, it is primarily these (collectible) sources of life and history that allow us to engage in a form of 'implicit' archaeology while playing the game.

IMPLICIT ARCHAEOLOGY IN *THE LAST OF US*

Game developers meticulously build maps, settings, and items to establish a landscape for the players. In this sense, every item serves a purpose in setting the stage. As such, playing through an implicit archaeological lens means you are attempting to discern the (history of the) crafted world and characters' intent as created by the developers. Within *The Last of Us*, this comes two-fold. As mentioned previously, developers mimicked a real-world backdrop, which meant recreating regional architecture, environment, and potentially culturally accurate items. In a second form, the players (as Joel) can pick up items, which the game even terms as 'artifacts' that provide context and background for the events that have unfolded since 2013. Artifacts include notes, signage, keys, maps, diaries, and more. In some cases, these items clue the player in to where to go next, but the artifacts can also simply provide small vignettes into the lived experiences of people during the last twenty years.

We argue that players often inherently adopt the previously described archaeological mindset or practices within the setting of *The Last of Us* to progress through the story, or during their explorations of the game world. In this section we provide a case study to examine how artifacts within the game provide players with a historical and archaeological 'excavation' and interpretation based on the environmental storytelling and artifacts presented in the chapter. At one point in *Part 1*, the group travels through a Pittsburgh suburb and to a sewer encampment. As they proceed through the sewers, Joel encounters notes, maps, and letters that allow him to learn about the people who previously lived in the sewer safehouse. Most of these notes are signed by an individual named Ish. Through these artifacts and examining the sewers, Joel (and the player) learns that after the outbreak Ish took up residence with a small group of other survivors. The sewers became a somewhat thriving community that even included a school for several children. The children often painted on the walls and doors of the sewers, which is still evident as players walk through the level. Unfortunately, one day a door was left open and a horde of infected stormed the sewers. Ish's fate is left unknown, his existence only known to Joel and the player through the artifacts left behind. The game developers set the environment up in such a way that players learn the story of Ish in a somewhat chronological manner, rather than through haphazard scattered fragments. As players progress through the levels, they uncover the next



One of Ish's notes and the makeshift school (*The Last of Us Part 1*, screen capture from the game).

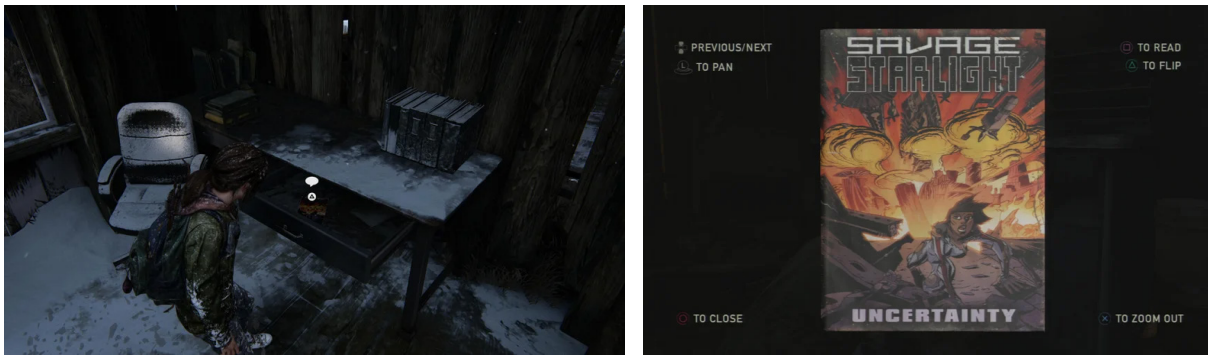
artifact to learn what happens next. If only real archaeology could provide such thorough evidence of events! Through learning of Ish's existence solely through fragments of items and environmental remnants, we argue that the player has exhibited a semblance of archaeological investigation.

It is also noteworthy that the game allows you to 'hold' these artifacts and investigate them in your hand. Having found a Firefly pendant, for example, players are then able to zoom in on the object, to read the text that is inscribed on it, and to turn it over to see its backside. This effectively allows players to 'study' the objects they find, which is similar to archaeological practice. During archaeological analysis, researchers examine objects for any potential clue as to their origin. This could be the manufacturer, the location, or the date range. Objects are changed or updated over time, providing archaeologists with sometimes clear date ranges for items. The PlayStation consoles, to use an appropriate example, have distinctive elements that allow us to recognize which edition we are holding. In archaeology this goes even further: glass bottles or jars, for example, often have embossing on the bottom that provides information on the manufacturer, location of manufacturing, and the date in which it was made. Still older, stone tools and ceramics can also often be analyzed and ascribed to a certain cultural group or date range. Video game settings and artifacts such as in *The Last of Us* can be treated in the same way to uncover more about the history of the events, locations, and people. Similar mechanics are also present in other games, including the *Uncharted* series (Naughty Dog, 2007–), *The Elder Scrolls V: Skyrim* (Bethesda, 2011), *Gone Home* (The Fullbright Company, 2013) or *The Forgotten City* (Modern Storyteller, 2021).

Additionally, it is important to point out that the archaeological mindset is not only operative within the players of *The Last of Us*. The game's characters, too, reconstruct the history of what they call 'the old times' throughout their journeys. At one point in *Part 2*, Ellie and her friend Jesse find the Seattle Conference Center, which still displays banners for the '2013 Comic Expo'. Both of them being born after the outbreak, and therefore unfamiliar with Comic Con-like events, Ellie and Jesse are not sure what to make of this. Jesse asks: "What's up with all these posters?" Ellie, a big comic book fan herself (*Part 1* had her find and collect comic books) replies: "It's a bunch of comics", and inquires further: "What was happening here?" Jesse estimates that this may have been a "gathering for people who were really into this stuff, like you [Ellie] basically." Ellie replies: "We were born in the wrong time, man." What is especially interesting here is the evoked feeling of dramatic irony, as the characters work to figure out something that we, the players, already know.

CONCLUSION

Throughout this chapter, we have demonstrated how Naughty Dog's post-apocalyptic vision of *The Last of Us*, *Part 1* and 2, utilizes and also promotes an



Ellie finds a comic book in *The Last of Us Part 1* (screen capture from the game).

implicit archaeological lens during play. The created setting depicts real world locations and events up to 2013, which are then aged 20 years and explored. Game developers create vignettes of lived experiences within the chapters that allow players to understand what living through the pandemic and post-apocalyptic setting would have been like for more than just the main characters. The players share Joel and Ellie's experiences of finding and interpreting artifacts and settings to learn more about this history. To be sure, this paper does not argue that *The Last of Us* represents 'actual' archaeology. Rather, we hope to have shown that the way in which the player engages the game world is somehow similar to archaeological practice.

We are, however, aware that this paper assumes a particular "implied player" (Aarseth, 2007; Zhu, 2015), or a specific mode of playing *The Last of Us*. The previous discussion relates primarily to the player who actively searches through the game world and takes note of the found letters or materials. Players may however also journey through the game without paying attention to these side collectibles. Much like the real world, the game offers players the option to learn more about the lived experiences of the Cordyceps pandemic, or to continue your journey without taking note of them. This is similar to actual historical sites (on the relationship between historical video games and heritage sites, see Mochocki, 2021), where visitors can engage with the site in large depth (e.g., reading informational plaques, taking notes, asking questions to guides), or more superficially (e.g., taking in the atmosphere of the site and not engaging with its historical aspects further). While the game's inclusion of these mechanics nevertheless legitimizes our reading of the game as a (possible) form of implicit archaeology, future scholarship could be interested in performing in-depth audience research into how larger groups of players play these games and adopt archaeological mindsets.

We would also argue that such gameplay mechanics, which we have considered as forms of implicit archaeology, could be usefully operationalized in the context of archaeology education. Much has been written in recent years on teaching history via historical video games (e.g., McCall, 2011) and while *The Last of Us* does not straightforwardly present any period of the historical past, the way in which it presents archaeology-like methods of analysis through world exploration and environmental or indexical storytelling may be used to inform students of archaeological methods of inquiry. While players do not become fully-fledged archaeologists upon completion of the game(s), they may have subconsciously picked up some knowledge about how history is reconstructed, considered and/or debated during their gameplay. Students could, for example, play a given level of the game and be asked to search for artifacts, write down their location and time of finding, note their external characteristics using the gameplay function that allows them to turn artifacts around in their in-game hands, in order to, finally, formulate hypotheses about the past of the in-game world.

Finally, we must point out that *The Last of Us* is not the only game with this sort of gameplay and mechanic for implicit archaeology, although it is more explicit than others. Many may point out game series such as *Tomb Raider*, *Uncharted*, *Assassin's Creed*, *World of Warcraft*, *Sid Meier's Civilization*, and more as archaeology-centered games. While they all deal with archaeology and replication of historical events, a 'true archaeological mindset' is not present. *The Last of Us* is, to our knowledge, one of the more appropriate video games that presents players with a vivid story containing hidden experiences that is left up to the player to examine, to relive, to interpret, and to experience (for other examples, such as the *Dark Souls* series, see Caracciolo, 2022). Some could go through the entire game without stopping to examine past lived experiences, but as far as *the Last of Us* is concerned, we are glad to have learned the story of Ish.

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