Archaeogaming

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An Introduction to Archaeology in and of Video Games

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For my dad, who introduced me to
Homer's Odyssey *and Nishikado's* Space Invaders

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—Andrew Reinhard

May 2018

Introduction

Prologue

It's 2014, and a team of archaeologists arrives in the desert of Alamogordo, New Mexico, to watch as a bucket auger drives thirty feet into the earth to retrieve evidence of a 1983 burial. After a few test holes, the auger recovers printed cardboard and a few pages of what appears to be an instruction manual. This is all the proof needed to mark the spot with an "X." The salvage excavation begins the next day, a backhoe puncturing the ceiling of a landfill cell in search of the largest (and possibly only) assemblage of video games ever dumped. On the third day of digging, hundreds of Atari cartridges and boxes surface, and the archaeologists catalogue and photograph these artifacts of Late Capitalism, part of a generation's material culture and digital heritage.

It's 1996, and I am working my way through the monastery of St. Francis in Greece, having solved several puzzles, nearly falling to my death on several occasions, searching for the tomb of a ruler of Atlantis. I've just earned my masters in archaeology, and it feels good to blow off steam playing as Lara Croft for the very first time, although I'm conscious that this is definitely not representative of archaeology or of how archaeologists behave. Still, it's fun to raid these tombs (and to critique the game while I play).

It's 2017, and I have just learned about a climate-induced mass migration of thousands of people. I wonder who they are and what they left behind in their haste to evacuate the planet for another star system. Over the next few days I make my way to their abandoned, icebound homeworld and see the memorials they left as they said goodbye. *No Man's Sky* is the first video game to feature an accidental catastrophic event that forced human players to flee *en masse,* and now archaeologists can conduct archaeological investigations into how a digital Vesuvius compares to the historic one and if people reacted similarly in the natural and synthetic worlds.

These scenarios are examples of "archaeogaming."

What Is Archaeogaming?

Archaeogaming, broadly defined, is the archaeology both in and of digital games.[1] Archaeology is the study of the ancient and recent human past through material remains in pursuit of a broad and comprehensive understanding of human culture.[2] In archaeogaming, archaeology is not used as an analogy or metaphor for a certain kind of analysis. As will be described in the following chapters, digital games are archaeological sites,[3] landscapes, and artifacts, and the game-spaces held within those media can also be understood archaeologically as digital built environments containing their own material culture.[4] The gaming archaeologist (or archaeogamer) understands that all games can be explored on two levels: in-game (synthetic world) and extra-game (natural world), existing at the same time, using hardware as a nexus connecting the two. Archaeogaming does not limit its study to those video games that are set in the past or that are treated as "historical games,"[5] nor does it focus solely on the exploration and analysis of ruins or of other built environments that appear in the world of the game. Any video game—from *Pac-Man* to *Super Meat Boy*—can be studied archaeologically.

All archaeogamers are players, and some are developers.[6] Millions of people interact with games both in-world[7] and out, occupying them as sites and manipulating them as artifacts when they play, study, and live. Video games, created directly by people (or indirectly by machines or routines created by people), contain their own real-world player- and developer-cultures (e.g., the player culture of eSports [competitive gaming] teams/leagues/spectators and the development culture of Atari programmers in the early 1980s) and can contain their own manufactured cultures (e.g., the race of Draenei in *World of Warcraft*), which exist solely within the game-space.[8] Because of this creation and occupation in the natural and synthetic worlds (i.e., "meatspace" and "metaspace"), games merit archaeological study. This study differs from media archaeology and game studies as will be explained below, but suffice it to say that archaeogaming is the literal interpretation of games as sites, built environments, landscapes, and artifacts, no different than any place on Earth that has been manipulated, managed, and transformed by people past and present.[9] "Video games," Colleen Morgan writes in her introduction to the special archaeogaming issue of the Society of American Archaeology's *Archaeological Record,* "provide landscapes and objects that are productive for archaeological investigations of digital materiality" (Morgan 2016: 9).

Figure 0.1 is a map/chart of archaeogaming as I see it, and largely reflects what my colleagues and I are doing in the field right now. There are five main themes, each with room for growth and participation:

1. Archaeogaming is the study of physical video games as well as the metadata surrounding the games themselves. This is the media archaeology approach, which views a game as a physical artifact, looking at the box, the manuals, the disks/cartridges, exploring its history of use on a personal level as well as at its commercial level and everywhere in between.[10] The Atari excavation in 2014 (see chapter 1) took this idea most literally. The video game archaeologist can now study hardware and software and how they combine for gameplay. Archaeogamers can compare gaming on physical media to downloading the same content from places such as Steam, a computer-based video-game-delivery platform, store, and community. We can explore modding communities (creating modifications to games) and how games change through ownership. We can explore how games change within a series and how they influence other games in a long tradition of flattery and theft. We can reverse engineer games to understand the underlying code and structures and the materials that house them.
2. Archaeogaming is the study of archaeology within video games. This is the reception studies approach where we see how games, game developers, and players project and perceive who archaeologists are and what they do. We can explore the phenomenon of looting and the emerging field of archaeological ethics within games. We can see how games actively enable players to conduct archaeological study. We can examine the tropes of popularized archaeology and how they contribute to the gameplay experience.
3. Archaeogaming is the application of archaeological methods to synthetic space. This is where we do our in-game fieldwalking, artifact-collecting, typologies, understanding of context, even aerial/satellite photography. Instead of studying the material culture (and intangible heritage) of cultures and civilizations that exist in "meatspace," we instead study those in the immaterial world.
4. Archaeogaming is the approach to understanding how game design manifests everything players see and interact with in-world.
5. Archaeogaming is the archaeology of game mechanics and the entanglement of code with players. Video games are multisensory collections of interactive math, so what deeper meaning(s) can the video game archaeologist infer from these new kinds of archaeological sites and how players engage with them?

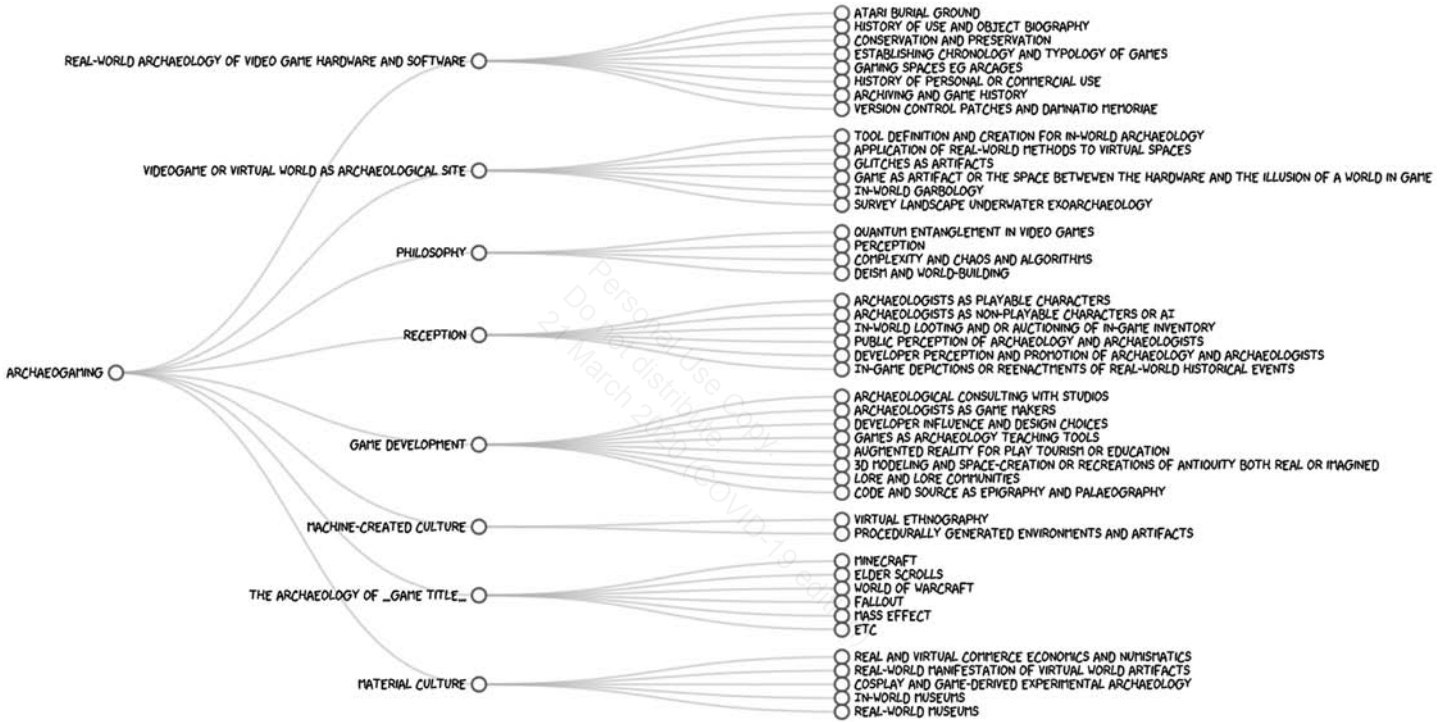

Figure 0.1. Archaeogaming map created by the author (text) and Shawn Graham (design).

How Is Archaeogaming Archaeology?

Archaeology is perhaps uniquely qualified as a discipline to document (on a rolling basis) the human experience through its materiality. Although archaeology is historically understood as dealing with the deep past, in recent decades archaeologists such as Bill Caraher, Cassie Newland, and Michael Shanks have plied their trade on the near-immediate. There is a logic to this: in the pre-Industrial past, technological innovation and the understanding of material science occurred at a rate much slower than what is observable today. Upon understanding and exploiting electricity for the purposes of labor, the pace of science, technology, and innovation (not only in things like manufacturing but also in the creative arts) increased exponentially, thereby creating more "stuff" than the world had ever seen before. Archaeologists of the recent past and of Late Capitalism must race to keep up with planned obsolescence, with annual typologies and seriation, on a volume and scale requiring an understanding of Big Data and a globalized, shared market of billions of living people, all of whom continue to make, accumulate, and discard things. Archaeologists of the present (and future) have their work cut out for them.

The past sixty years have seen the creation of an invisible shroud of computer-created data and connectivity, which has largely buried earlier invisible communication networks between people and the environment. New communication technologies and computing power merged with human creativity to make new worlds to inhabit intellectually. What used to be the sole province of printed fiction, which offered a univocal entry point to imagined spaces, we now have fully realized, interactive, digital built environments to help us create our own stories within the context of these new, virtual worlds.[11]

As will be discussed in more detail below, these digital built environments are the new constructions of the late twentieth and early twenty-first centuries. For thousands of years we have occupied houses we have made of mud, brick, wood, stone, and steel, organized together to form temporary settlements and permanent cities. In the space of the past forty years we have created entire hitherto-unseen universes of very real human occupation replete with their own material culture. This digital material culture precipitates a new kind of archaeology, one that seeks to understand human-computer interaction (and human-human and human-nonhuman interactions) in incorporeal spaces (see Mol 2014).

Many of the digital spaces created over the past forty years fall under the category of digital entertainment, namely video games. Of

those games that use the Earth as a setting for play, many appropriate cultural iconography/tropes in order to communicate with the player by visual shorthand that they are in ancient Egypt (e.g., *Tomb Raider*), Paris (e.g., *Assassin's Creed: Unity*), the old American West (e.g., *Red Dead Redemption*), or the entire history of the World (e.g., *Civilization VI*) (Mol et al. 2017). These games contain a visual archaeological/heritage component, an interpretation of past places and civilizations by one or more creators who revise the world to impose new rules for the purpose of engaging an audience. It's a kind of cultural appropriation, remixing a physical reality and creating new narratives from it. This is not unlike archaeological storytelling published by archaeologists as they interpret past worlds as they have found them based on the data retrieved and interpreted from the archaeological record.

Over the past few years, a new trend in digital built environments has emerged. Creators of born-digital worlds (mostly video game developers) are abdicating their role of hands-on creation to mathematical algorithms. These algorithms take coded instructions from human makers (for now), and then interpret them to create variations of things on their own. Dubbed "procedural content generation" (PCG or ProcGen), these algorithms populate environments with nearly countless variations of objects, which can include, but are not limited to, structures and artifacts. Current (2018) games now go so far as to use PCG for the spontaneous creation of landscapes as well as soundscapes (e.g., *No Man's Sky*), populating worlds with complex, fully realized cultures that have never been seen before yet have their own readymade history and ways of interacting with players and with each other (e.g., *Ultima Ratio Regum*).

While conducting archaeological investigation into traditional digital games where the designer's hand is always present in every detail, PCG games have the potential to display emergent, culturally significant behavior independent of exact design choices, mimicking how evolution works, or at least how mutations can create interesting artifacts that enable us to comment on them as well as the environment that created those mutations. As archaeologists, how can we document, preserve, and understand these new cultures, and do we need to reconsider our definitions of culture and of material culture?

In a digital built environment, it may be easy for some of us to fall into the trap of doing "dirt archaeology" because we carry our assumptions and real-world experience with us into the spaces in games. Archaeologists who study synthetic worlds must suspend their belief that things in games should work as they do in nature. In games, everything is manufactured, even gravity. The normal rules do not apply.

There is no difference between earth and sky; the horizon line is artificial. It is all pixels and code. When video game archaeologists bring themselves to this understanding, patterns emerge within the structure and execution of the game itself. Culture is a construct. Taking this one step further, what twenty-first-century humans are encountering—especially those who regularly use digital/communication technology—is a blended reality. Digital devices exist in the real world and connect us to others in the real world by way of mediation. The digital artifact is the catalyst for this kind of "out-of-body" travel where people project themselves through devices. It's a new kind of telepresence. In the past, one could operate a joystick on a video game console in order to direct a ball's movement on a screen. Now it is commonplace for a game-space to host numerous live players whose interactions and emotions remain quite real, even if mediated through the digital environment. Archaeologists are beginning to encounter blended reality, which contains not only the physical artifacts of mobile phones and computers but also born-digital artifacts that reside within spaces we cannot see without the aid of hardware, artifacts within artifacts.

The obvious question about archaeogaming is whether or not it really is archaeology as opposed to playing at archaeology. Starting with Colin Renfrew and Paul Bahn's glossary definition, "archaeology involves the study of the human past through its material remains" (Renfrew and Bahn 1991). Archaeogaming fits within that rubric, as games are part of the material culture of the recent past, that which has existed within the past fifty years. Compare that with Foucault (1972: 138–39), who sets out the underpinnings of archaeology: (1) archaeology tries to define discourses that follow certain rules; (2) archaeology defines discourses in their specificity to show the way the set of rules they put into operation is irreducible; (3) archaeology is a rewriting, a regulated transformation of what has already been written, a systematic description of a discourse-object. Archaeologists work on the things that have already been said (materially) and offer their most practical interpretations of these things. What Foucault wrote is as valid in archaeogaming as it is in dirt archaeology. The archaeology of synthetic worlds is much more dependent on detecting, understanding, and operating within the rules created by the makers of these digital built environments, so Foucault might be even more important to archaeology within synthetic worlds.

Thinking about the archaeology of the new generally, and of digital built environments specifically, one recalls Cornelius Holtorf in his 2011 dialogue with fellow archaeologist Angela Piccini (Piccini and Holtorf 2011: 9) about the nature of contemporary archaeology: "There

is no reason why archaeologists, studying material remains, should not be studying objects from the recent pasts of the 20th and 21st centuries. Our surroundings are literally made of artifacts, sites and monuments from this period."

For archaeologists (including archaeogamers), archaeology must also attempt to interpret things as they were (reconstructing patterns of cultural descent) while proposing and testing explanations for the forces that have shaped such patterns (Shennan 2012: 23). How did we get here from there? Why do certain shapes of drinking vessels evolve over time to specialize for the liquids they contain? Archaeologists must ask what caused divergences and attempt to reverse engineer the thought processes behind these design decisions. In this respect, archaeogaming is a kind of cognitive archaeology as most fully described by Colin Renfrew (Renfrew 1994). We are attempting to understand the minds behind the creation of the things they built and left behind. This becomes increasingly more difficult when considering machine-created culture.

In New Archaeology, archaeologists emphasize cultural evolution and look for generalities and emphasize systems thinking (Johnson 2010: 23). The turn from the culture historical approach came about in the 1960s with Lewis Binford as its champion; the approach was refined in 1972 by James Deetz, who sought to apply a scientific method to archaeology while also focusing on the cultural process(es) behind the creation of an artifact. All of a sudden the "why" of an artifact finds precedence over the "when." Archaeogaming mixes both the why and the when. Finding each provides valuable contextual information that cannot be disentangled. We can ask the "why" questions to determine reasons behind design decisions, sales, popularity, playability, even complexity, but the "when" allows us to reconstruct a chronology of events that help generate these "why" questions. In archaeogaming there is no "why" without "when." Video game development (and the creation of virtual worlds) is iterative. Archaeogaming breaks with Ian Hodder's postprocessual archaeology (where archaeological interpretations are subjective) by maintaining a positivistic distinction between material and data, but it also takes postprocessualism further by acknowledging at least three actors (the developer, the player, and the player's avatar) as well as three separate contexts that are intertwined (the game media, the player's environment, and the game-space itself). Archaeogaming also accepts the core tenet of behavioral archaeology, which "redefines archaeology as a discipline that studies relationships between people and things in all times and all places. . . . The relationships between people and artifacts are discussed in terms of regulari-

ties discerned in processes of manufacture, use, and disposal that make up the life histories of material things, as in flow models and behavioral chains" (Johnson 2010: 65).

Archaeogaming as a subdiscipline of archaeology still has far to go in justifying its existence not only to the academy and to more traditional archaeologist colleagues but also to the general public. As Holtorf (2005: 6) describes, "Archaeology remains significant, not because it manages to import actual past realities into the present but because it allows us to recruit past people and what they left behind for a range of contemporary human interests, needs, and desires." In *Archaeology Is a Brand,* Holtorf posits several theses about contemporary archaeology:

- Archaeology is mainly about our own culture in the present.
- The archaeologist is being remade in every present and is thus a renewable resource.
- The process of doing archaeology is more important than its results.

Archaeogaming fits the above definitions neatly. Archaeology, although largely focused on the past, is really about the present, and archaeologists must keep the current audience in mind when conducting and publishing their work. With archaeogaming, archaeologists are perhaps better positioned to connect with a curious public (many of whom play games) about what archaeologists are and what we do, transferring lessons learned in-game to real-world sites and projects, starting from a common vocabulary of play, ultimately leading to diverse interests in what is happening *outside* of the box.

This connection with the public benefits both the audience and the archaeologist. As Kathryn Fewster writes, "The researcher alone cannot interpret the action of the people in the present with regard to their material culture without listening to the people themselves. . . . It gives the researcher more clues about the significance of modern material culture to wider processes of social life and social change and facilitates an archaeology of practice" (Fewster 2013: 32). Martin Heidegger agrees, stating in 1973 that "humans are situated in and inseparable from the world that is around them and into which they are thrown and dwell." Video games are a very large part of our contemporary culture and as such are deserving of archaeological study. Shawn Graham (2016: 18) reminds us that

> archaeogaming requires treating a game world, a world bounded and defined by the limitations of its hardware, software, and coding choices, as both a closed universe and as an extension of the external

> culture that created it. Everything that goes into the immaterial space comes from its external cultural source in one way or another. Because of this, we see the same problems in studying culture in games as in studying culture in the material world.

Strangeness created from the blurred boundaries of the natural and the synthetic mediated by digital technology lends itself to new research questions, and archaeology is pulled further into the future. As in some games where players can create and destroy, such is the case with any kind of archaeology: we create new ways of looking at material culture while destroying old theories that no longer hold when considering these new classes of artifacts. One main difference between "real-world" archaeology and archaeogaming is that in the former the site is methodically destroyed: archaeologists have exactly one chance at recording as much information as possible as excavation proceeds. In video games, however, archaeologists often have access to multiple copies of the same game or can restore their progress from save points in the event of a misstep or missed opportunity.

Archaeology is a combination of the academic and the social. Archaeology is almost guild-like in how it mixes applied knowledge with learned behavior. Michael Shanks championed this definition of archaeology in 1995, stating that "archaeology is largely a set of experiences." Holtorf takes this one step further in the cases of simulated environments (think roadside attractions like Carhenge near Alliance, Nebraska, that mimic original buildings or spaces but in far-flung locations using different materials). Even these facsimiles "can provide us with fabricated, but nonetheless real, experiences of both the 'authentic' past and archaeology. Their realism is not that of a lost, real past but of real sensual impressions and emotions in the present, which engage visitors and engender meaningful feelings" (Holtorf 2005: 135). For both Holtorf and Shanks, the experience of a perceived past is just as important as an academic analysis of "proper" sites and artifacts. As will be seen in chapter 4, designers of historical video games aspire to recreate representations of real-world built environments as they might have been, including these buildings to enhance the player's experience. The design is both practical and emotional, shared among many communities of developers and players responsible for both creating and inhabiting the game-space.[12]

Artifacts, however, are just things. They cannot explain themselves (although they occasionally get help from mentions in primary text, which in the case of video games are instruction manuals, design notes,

and code), and require the archaeologist to serve as a kind of temporal interpreter between the past and the present. As Matthew Johnson wrote, "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" (Johnson 2010: 12). An archaeologist is needed as an interpreter between past and present mediated by artifacts.

Most of archaeology could be described as the history of technology. Claus Pias defines technology as "a relay between technical artifact, aesthetic standards, cultural practices, and knowledge. Technology does something, not is something" (Pias 2011: 180–81). As Olli Sotamaa wrote, "The known history of games is a history of artifacts" (Sotamaa 2014: 3–4). Technology is an artifact-creation tool, itself a creation of people. Wolfgang Ernst said, "[Archaeologists] are dealing with the past as delayed presence, preserved in technological memory. We are not communicating with the dead" (Ernst 2011: 250). Moshenska notes that "the archaeology of digital technologies is a foundational and ever-growing element of the archaeology of the modern world" (Moshenska 2014: 255). Video games, as with other software, are therefore not only artifacts (and sites) but also sources of preservation. When we play the games, the games are as in-the-moment and active as they ever were, ignorant that any time has passed, performing just as they were programmed to perform. Games—at least in 2016—remain unaware of themselves, just dumb output from smart people, like any other artifact, or as Hodder calls them, "things" (Hodder 2012).

Video games are things. They are often created out of a suite of needs that include a desire to be entertained, challenged, and to make money. In Goldberg and Larrson's introduction to *State of Play,* they note that games have traditionally been engaged with and discussed as products of technology rather than products of culture (Goldberg and Larrson 2015: 8). The road to the serious study of video games as well as their scrutiny as forms of entertainment have most often come from outside gaming culture (both those of developers and players) (Goldberg and Larrson 2015: 12). Goldberg and Larrson see contemporary games as transcending their perceived definition of artifacts of technology into something more (Goldberg and Larrson 2015: 13). This assessment supports archaeogaming's premise that games cannot be disentangled from the context and culture in which they were made, and that games as both sites and artifacts contain far more than whatever manifests onscreen. "Like films and books, video games are cultural texts. They say something about the society in which they were made" (Knoblauch 2015: 187).

State of Play becomes a transitional text in understanding video games outside of positivism. "A video game is a creative application of computer technology" (Golding 2015: 130). "Games are a pursuit of order" (Ellison and Keogh 2015: 144). Cara Ellison and Brendan Keogh later summarize the career of one of gaming's greatest auteurs, John Romero (cofounder of id Software, maker of the classics *Wolfenstein 3D, Doom,* and *Quake*) who famously stated his Tidiness Theory, saying that all games are about cleaning up. As players, we collect, we construct, we destroy all enemies, we complete quests, we reach the level cap, we unlock all points on the map. Gaming then is parallel to archaeology, which is also about tidying, about looking at messy information and making something out of it, bringing order to chaos.

Archaeogaming, Media Studies, and Media Archaeology

Archaeogaming, in its interdisciplinary approach to the archaeology of the recent past, incorporates the object-oriented aspects of media studies, especially when it comes to AAA (i.e., blockbuster) games, mass media purchased by (for some games such as *Tomb Raider*) millions of players. What studios made the games, and how many units were produced, sold, returned? Who played the games and why, and what happened to the games after they were consumed, when the endgame was reached, when the novelty wore off, or when frustration set in? These questions differ little from those that deal with ancient manufacturing and can compare with the study of Roman *sigillata* (fancy pottery) production throughout the empire, which includes branding and large-scale distribution. A lot of archaeogaming is "new wine in old bottles," although, as later chapters will demonstrate, there is more to be said, especially when it comes to archaeology done within the games themselves.

Archaeogaming differs from media studies—and more specifically media archaeology[13]—in two major areas: in its focus on artifacts and on the built environment. Archaeogaming concentrates on individual artifacts, as well as the content held within video games, their creation and use, how that content changes over time, and the mechanisms that drive that change. Jacques Perriault in 1981 was the first person to coin the term "media archaeology" when dealing specifically with media artifacts (anything from typewriters to reel-to-reel tapes), exploring "use function" and "social representation" while comparing past and contemporary use of that media (Huhtamo and Parrika 2011: 3).

The two biggest voices of media archaeology, Erkki Huhtamo and Jussi Parikka agree with him: "Media archaeology should not be confused with archaeology as a discipline. Media archaeology rummages textual, visual, and auditory archives as well as collections of artifacts, emphasizing both the discursive and the material manifestations of culture" (Huhtamo and Parrika 2011: 3).

Archaeogaming also considers video games to be "built environments." To traditional archaeology, a built environment is something created by people that has the elements of both space and culture in which people regularly live, work, and play. This definition lends itself not only to physical structures but also to synthetic worlds, which do, by any definition, incorporate space and culture for both work and recreation for many people to engage with for hours every day.

Ernst adds an interesting wrinkle, however, stating that "media archaeology discovers a kind of stratum—or matrix—in cultural sedimentation that is neither purely human or purely technological, but literally in between" (Ernst 2011: 251). It is this in-between, crossover space that concerns the archaeogamer, the crossover from natural to synthetic and back again, with the artifact of the game enabling this movement. For the purposes of archaeology, people cannot be separated from their things. The story of humanity is the story of adaptive technology.[14] Following Ernst's analogy, if humanity is the matrix (soil), then examples of our technology are the inclusions (pebbles, artifacts, etc.) in it.[15]

Archaeogaming and Game Studies

Archaeogaming could be considered a part of video game studies just as it is a part of archaeology. Game studies examines games, who plays them, how they are played, and how they are made, in addition to gaming culture (typically evolving from specific game platforms, game series, and individual games). The main difference between archaeogaming and media studies is the attention paid to the material culture of video games themselves, the use of hardware and software, and the material culture of virtual spaces created when the software is run. While game players and gaming culture certainly inform archaeogaming to some extent, they are not the end goal for archaeological research but rather a means to an end, especially when describing an object's biography, its history of use. Understanding how a culture comes to create a video game (and why), or how a community chooses to spend discretionary time and income on some games and not others, is important

to put a game into a sociocultural context but ignores the artifact of the game itself, and of the creation of the virtual world and culture(s) held within as created by code.

The International Communication Association's Game Studies division defines game studies this way.[16]

> The study of games offers the opportunity to investigate human communication involving multidisciplinary approaches. The scope is not bound to studies of games but includes simulations and virtual environments (VEs) in general. Disciplines of communication and media studies merge with cultural studies, social sciences, computer sciences, design, cognitive sciences, engineering, education, health studies, and information technology studies.
>
> - the social and psychological uses and effects of video games, simulations, and VEs in general
> - the cultural affordances, uses, and meanings of games, simulations, and VEs
> - games, simulations, and VEs as training or instructional media
> - comparative media analyses involving games, simulations, or other VEs
> - human-computer interaction in games, simulations, and VEs
> - design research in the context of games, simulations, and VEs
> - users' motivations and emotional, cognitive, and psychophysiological experiences in games, simulations, and VEs

Three of the above points qualify as archaeogaming, namely using games as trainers for archaeologists, human-computer interaction in games, and design research. Archaeogaming concerns itself with how gaming technology is received by people, as well as the genesis of those games, their cultural and historical impact, how they portray actual history, and their eventual disposition.

Archaeologists as Game-Makers

Archaeologists can interpret video games as both sites and artifacts. They can explore how the archaeological profession is understood and adopted by game-makers and players for the purposes of entertainment and narrative. But archaeologists can also be proactive in creating their own narratives and in having a seat at the game-development table, either by invitation to established studios or by forging ahead to create their own games from the ground up. There is a space in between where archaeologists can contribute to game creation, not just as ethical or

professional advisers but also as active participants in lore communities and in the creation of virtual reconstructions of actual monuments and sites, and by bringing archaeological voices to augmented reality, participating in the storytelling while encouraging both developer and player engagement with the subject matter and the environment.

The creative, professional output for archaeologists often rests with the published synthesis of excavated material done in the form of a preliminary report, peer-reviewed journal article, and/or monograph. The creativity not only comes in the form of writing but is perhaps more present in the critical thinking that makes connections between bits of data and observations in an attempt to draw a conclusion about the history of a site, the manufacture and purpose of an artifact. These conclusions are often preliminary, or are almost always presented with some doubt. Archaeologists know that there is likely additional evidence unknown at the time of publication that might change a theory, or that future thinking might reinterpret existing data.

During the excavation season, and later when considering the recovered archaeological material, the archaeologist will play with ideas and consult with others on issues of interpretation. Until recently, game-making was left to developers and coders, professionals and hobbyists. But now some archaeologists are making games. One purpose of building a game or a reconstruction in a virtual world is to explore a question in an archaeologist's research (see Morgan 2009). Morgan reflects on her Çatalhöyük reconstruction project, stating that it "made me truly engage with some of the questions that as an excavator I had pondered only in passing while filling out my data sheets" (Morgan 2009: 471). Other archaeologists make games in an attempt to control an archaeological narrative told from the archaeologist's perspective.[17] This includes games on how to excavate and how to ethically deal with artifacts. This also includes games on what it means to be an archaeologist. The act of creation often helps clarify thinking about one or more questions, including a narrative aspect or the reflexive exploration of a mechanic in a serious game. Ian Bogost calls this exercise "carpentry" (Bogost 2012: 92).

Andrew Gardner agrees with the prospect, writing that "the possibility . . . of archaeologists being involved in design, such as a (historical) game, where the player could at least for a while live as a farmer in central Italy (rather than Tatooine) is enticing" (Gardner 2007: 272). Games can allow archaeologists to reconstruct/reimagine the past. Because games by their nature are intended to be engaged with by a wider audience (as opposed to a journal article, which might be read by a

handful of people), Gardner also believes that "archaeologists might yet find a valuable tool to aid them in the task of creating challenging pasts for wide audiences" (Gardner 2007: 272). Ethan Watrall seconds the idea in one of the first (if not *the* first) articles on video game archaeology, "Interactive Entertainment as Public Archaeology," in the March 2002 issue of the *SAA Archaeological Record* (Watrall 2002: 579.) However great the desire and potential public audience, there remains the significant issue of translating ideas and art into code. Brittain and Clack agree. "The expertise needed to design and function digital technology, and dominant programming systems required for their function is addition to their cost, could prove to marginalise rather than empower multiple communities around the globe" (Brittain and Clack 2007: 65). Archaeologists need a high level of digital literacy not only to realize the games they want to make but to even ask basic questions or understand the basic steps in actually planning the development of a game, however small.

There is a handful of archaeologists who have created games all the way to completion and distribution, but that number will grow thanks to the phenomena of "game jams," coding marathons that facilitate the rapid creation of games, which are rewarded not only for design but also for story and characterization. Since 2014, the University of York's Department of Archaeology has hosted an annual Heritage Jam featuring the work of international archaeologists interested in using digital visualization (including games) as entertainment and communication tools for exploring archaeology (see Figure 0.2).[18] The 2014 event featured seventeen entries ranging from mapping projects to augmented reality to 3D model-ing. Winning projects included augmented reality,[19] interactive fiction,[20] role-playing,[21] and exploration within a museum setting.[22]

Figure 0.2. Image from the ergodic literature game *Buried* (Tara Copplestone and Luke Botham), a winner of the 2014 Heritage Jam. Used with permission.

The process of creation has allowed each of the participants to grow as designers in order to more broadly communicate what they are working on, but in a way that is arguably more accessible than standard print publication. Archaeology

is about engagement and interaction, and all of these visualization projects meet those criteria.

The only commercial game studio created and managed by an archaeologist (who also designs the games) is Dig-It! Games, headquartered in Bethesda, Maryland (also home to game giant Bethesda Softworks, makers of the *Elder Scrolls* and *Fallout* series of games, among others), founded by Suzi Wilczynski. Taking a game-based learning approach to pedagogy, Wilczynski designed *Roman Town,* an archaeological excavation simulator for children to help teach them about the art, history, and archaeology of a town destroyed in the eruption of Mt. Vesuvius in CE 79, while integrating puzzles to help teach critical thinking. Later games incorporate ancient and archaeological themes as a backdrop for learning math, science, and language arts. Wilczynski, an archaeologist with nearly ten years' experience in the field in Greece and Israel, is also a social studies teacher who taught herself how to write games as a way to help her students learn and engage with the material.[23] Now into its twelfth year, Dig-It! Games continues to thrive. Most of the games do not have archaeology as their core mechanic, however, which makes one wonder if there ever will be titles, either indie or AAA, that will be strictly archaeological or will apply an accurate archaeology mechanic within the gameplay of something designed as entertainment.

Games have a long tradition of being used for education, or have been specifically developed for the purpose of education. When considering games as archaeological teaching tools, it is a bit like teaching how to make a film by watching movies. We can critique the good and bad, what works and what does not, what is realistic and what is fantastic. Is it enough to play through a *Tomb Raider* title and talk about the lack of real archaeology that actually happens in the game or about the ethical disposition of the artifacts that Lara Croft collects? Are there games on the market or in the wild (or already in the archive) that can actually instruct players on practical archaeology in the field and in the lab? If not, archaeologists need to reach out to game studios to lobby for the inclusion of various archaeological mechanics without sacrificing the intended entertainment value of any game.

Chapter Summaries

This book is organized into four chapters following this introduction that explore the major branches of archaeogaming, followed by a con-

clusion offering a glimpse into the future of archaeology both in and of video games. Each chapter features one or more in-depth examples of conducting archaeological investigation within contemporary video games and concludes with a brief bibliography for further reading.

Chapter 1 covers the real-world archaeology of video game hardware and software, including a summary of the 2014 excavation of the Atari Burial Ground in Alamogordo, New Mexico. Video games are artifacts, which have a history of use, an object biography. As with more traditional artifacts, video game conservation/preservation/archiving must also be considered, heading toward the creation of formal video game chronologies and typologies. Gaming spaces (e.g., arcades, game development studios, and retrogaming stores) are also discussed as contemporary ritual and secular sites, as well as abandoned places.

The gaming public and video game developers appear to have set ideas on how to portray archaeology and archaeologists (gender, clothing, and accoutrements). Chapter 2 focuses on archaeologists as both playable and non-player characters (NPCs). Game mechanics such as excavation and looting lend themselves to a discussion of in- and extra-game ethics.

Definitions of archaeological sites, landscapes, and built environments are applied to video games in chapter 3. Game-generated glitches are the new artifacts. Tools for conducting archaeology in-game are defined, applying real-world methods to synthetic spaces. Also introduced: augmented reality, in-world garbology, and survey, underwater, and exo-/xenoarchaeology, all conducted within a game, including a proof-of-concept archaeological investigation of an open-world video game, the *No Man's Sky* Archaeological Survey.

Chapter 4 examines the crossover of natural and synthetic worlds, real-world manifestations of game-world artifacts, video game cosplay, and game-derived experimental archaeology. Players interpret video game recipes to make real-world food and design and sell game-derived clothing, armor, and weapons, creating a parallel archaeological record. Museums mark the final crossover between video games and the real world, including the Vigamus museum in Rome and virtual museums within games such as *Skyrim*.

This book concludes by pondering the future of video game archaeology. Archaeogaming is wide open, with virtual ethnography as one of the main avenues of research. Archaeogaming makes an early effort to prepare future archaeologists for purpose-built, digital-only environments and how to study them. A handful of international scholars are making headway in describing what it means to study video games archaeologically as the discipline continues to grow and change.

The ethics guidelines for the *No Man's Sky* Archaeological Survey, written by Catherine Flick (De Montfort University) with contributions from L. Meghan Dennis (University of York) and myself, occupies the appendix and is reproduced here by permission. These guidelines can (and should) be adapted by other archaeologists as they research video games, the cultures within them, and the people who play them.

A short glossary of archaeological and video game terms used in this book and a "ludography" of games cited in the text round out the volume.

What This Book Is Not

This book is intended to be an introduction to the field of archaeogaming, and as such it does not dive as deeply as an academic monograph might. Instead, it introduces the major themes that comprise the archaeology in (and of) video games that merit future discussion and research at a very fine grain. I have chosen to focus exclusively on digital games, leaving out tabletop (board/dice/pen-and-paper) games as well as non-game virtual platforms/communities such as *Second Life,* and the now-defunct *Multiverse, Habbo Hotel,* and others for which there is already a massive amount of published scholarship. Also, each chapter and section contains some examples taken from video games both old and contemporary to illustrate various points often with humorous or unanticipated results. This book is not encyclopedic in its cataloguing of games, and while I did my best to use the games that I felt were most relevant to the topics at hand, there are many, many other examples that could have been used (including a wealth of indie games). It is my hope that the readers of this book will take the theories and methods described in each chapter and apply them to digital games big and small wherever possible, creating a corpus of knowledge that will be shared with everyone. All digital games are archaeological sites. Archaeogaming allows archaeologists to work in the open on these sites, engaging with the public as they do.

Notes

1. I primarily use the term "video games" throughout this book because of its dominance in the vernacular when discussing interactive entertainment accessed by screens. Scholars of game and media studies prefer "digital games," which casts a wider net to include interactive entertainments that do not necessarily have a visual component and get away from the immedi-

ate connection between "video games" and nostalgia when using the term. "Egames" has also found favor in scholarship and is on public view at the Strong National Museum of Play in Rochester, New York, the second floor galleries of which are largely dedicated to egame history.

2. Society for American Archaeology, "What Is Archaeology?," http://www.saa.org/ForthePublic/Resources/EducationalResources/ForEducators/ArchaeologyforEducators/WhatisArchaeology/tabid/1346/Default.aspx (retrieved December 6, 2016).
3. Adam Chapman lists one of the functions of games as being "heritage sites by functioning as a form of 'living history'" (Chapman 2016: 176).
4. Colleen Morgan hinted at this potential (especially within the context of MUDs [multi-user dungeons], MOOs [MUDs, object-oriented], and MMOs [massively multiplayer online games]) in 2009, stating that "most of these gaming formats remain largely unexplored within academic archaeology" (Morgan 2009: 471). Ethan Watrall published the first article on video games and archaeology in 2002, "Interactive Entertainment as Public Archaeology" (Watrall 2002), laying the foundation for what would eventually become archaeogaming.
5. For an extensive treatment on how video games treat actual historical events, see Adam Chapman, *Digital Games as History: How Videogames Represent the Past and Offer Access to Historical Practice* (2016).
6. See Tara Copplestone, "Designing and Developing a Playful Past in Video Games" (2016). The focus of Copplestone's research is in archaeologists creating video games in order to work through archaeological problems.
7. In this book, "in-world" and "in-game" are synonymous meaning that a person is actively engaged in gameplay, immersed in a game's environment.
8. I use "player" instead of "gamer" following on Therrien's distinction: "Gamer: plays to complete objectives and win. Player: Defines own objective, with no clear valorization of outcomes" (Therrien 2012: 23). Ever since Gamergate began in 2014, "gamer" has taken on political and emotional baggage (see https://en.wikipedia.org/wiki/Gamergate_controversy). "Player" is more neutral while still defining a person who interacts with games.
9. "Meatspace" was introduced to the vernacular by William Gibson in his 1984 novel *Neuromancer* (p. 6 in the Ace paperback edition) and was later adopted by Usenet groups and other denizens of the young internet to differentiate between the real and the virtual (aka cyberspace). I use "metaspace" in this text as a pun/anagram of "meatspace" to designate the virtual world. Nardi in her 2015 article "Virtuality" notes that "'real world' is a folk term in gamer (and other) discourse, and its consistent use in an established lexicon recommends it in the absence of a better academic term" (Nardi 2015). I will also use the differentiation of "natural" and "synthetic" worlds as proposed by video game economist Edward Castronova (Castronova 2005).
10. The actual archaeology of digital media finds precedent in Gabriel Moshenska's excavation, conservation, and examination of a USB stick (Mo-

shenska 2014). See also Perry and Morgan's systematic archaeological excavation and mapping of a recovered hard drive (Perry and Morgan 2015).
11. Archaeologists continue to update tools and methods to conduct archaeological investigations into these digital spaces. See Huggett 2017 and Edgeworth 2014.
12. See King and Borland 2004 for a thorough treatment of these gaming communities.
13. For good introductions to what media archaeology is, see Brittain and Clack 2007; Huhtamo and Parikka 2011; Parikka 2012.
14. Summarizing William Sewell (1997): the design of tools shapes their use, and the use of them leads to new changes to them.
15. The play on the word "matrix" is intentional. The cultural resonance of the eponymous film trilogy blends the technical real/virtual dualism with the archaeological use of the same term, which is shorthand to describe the type of earth being dug within a particular unit.
16. https://www.icahdq.org/group/gamestds (retrieved February 15, 2018).
17. See Tara Copplestone's *Buried* for an example: http://www.taracopplestone.co.uk/buriedindex.html (retrieved December 10, 2016).
18. http://www.heritagejam.org (retrieved December 10, 2016).
19. http://www.heritagejam.org/jam-day-entries/2014/7/12/voices-recognition-stuart-eve-kerrie-hoffman-colleen-morgan-alexis-pantos-and-sam-kinchin-smith (retrieved December 10, 2016).
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22. http://www.heritagejam.org/2015exhibitionentries/2015/9/25/cryptoporticus-anthony-masinton (retrieved on December 10, 2016).
23. Read an interview with Dig-It! Games' founder here: http://dig-itgames.com/digital-learning-day-qa-with-suzi-founder-of-dig-it-games-from-fablevision-studios/ (retrieved December 10, 2016).

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