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Research Article

Archaeology as Worldbuilding

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Abstract

Worldbuilding is a concept that has been used to describe the creation of immersive landscapes in fiction and games and is deeply resonant with archaeological knowledge construction. This article argues for worldbuilding in archaeology as a creative intervention that encourages an exploration of archaeological data throughout the process of creation, interpretation and dissemination to generate past worlds, shaped through community storytelling. Through the examples of Çatalhöyük in *Second Life*, *Other Eyes* and the *Avebury Papers* projects, I explore a playful practice that closely interrogates reuse of archaeological data and encourages lateral thinking amongst students and other archaeological storytellers.

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Introduction

Archaeologists are consummate worldbuilders. Primarily a concept explored within fiction and game creation, worldbuilding is the act of integrating history, ecology and geology to bring an imaginary world to life. Worldbuilding deeply resonates with archaeological interpretation; archaeologists bring together environmental data, zooarchaeological assemblages, evidence of trade and foodways, osteobiographies, architectural remains and all other textual and material traces to generate tableaux holistically. Consequently, as archaeologists, we are intimately involved in the construction of past worlds. Though it has been implicit in many types of archaeological interpretation, I argue that adopting worldbuilding as a method would improve archaeological data collection, interpretation and dissemination strategies including storytelling. In this article I advocate for archaeological worldbuilding as a practice that engages with community building, multisensorial interpretation, experimental/experiential archaeology and the concept of the daily round for more creative and comprehensive data collection and integration. This approach resonates with previous integrative approaches including Whittle's (2003) archaeology of people, Lucas's examination of time (2005) and archaeological recording (2019), Thomas's (1998) phenomenological archaeology and Joyce's (2002) intertextuality and multivocality. These authors evoke intimate, complex and inspirational approaches to archaeological interpretation. Yet the framing of worldbuilding as presented here differs in that it intentionally foregrounds creative, playful practice that focuses on producing the appropriate conditions for collective storytelling.

Worldbuilding in archaeology is the aggregation of multiple lines of archaeological evidence through imaginative, discussion-provoking questions that create an interpretive framework conducive for reuse. This new approach stems from a perspective honed by an extensive background of reconstruction and heritage interpretation, working with artists and creative practice-based researchers, and draws inspiration from speculative fiction writers and video-game creators. I have previously called for archaeologists to create our own boundary-defying science fictions (Morgan 2019), and there is ongoing inspiration from the appeals for playful archaeological interactions with the past (Politopoulos *et al.* 2023). Yet methods that draw explicitly from designing fictive worlds are still rare (but see Ripanti & Osti 2020). As Copplestone (2017a) notes, archaeologists do not speak the language of worldbuilding. She argued game developers 'tended to describe the past as systems, interactions, agency, and multilinear narratives' (Copplestone 2017a, 85). This contrasts with archaeologists who describe the past as 'physical things, linear narratives, and the known outcomes of a process' (Copplestone 2017a, 85; see also Pluciennik 1999). Further, worldbuilding addresses problems identified by Perry (2018; see also Perry *et al.* 2025) in the traditional archaeological workflow wherein heritage interpretation is performed after the initial research is completed instead of being a vital element throughout the process. Finally, this approach can be generative, in that it foments connection amongst participants, reveals normative understandings of the past and provokes new research questions during fieldwork, post-excavation and heritage interpretation.

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Importantly, through this exploration of worldbuilding within archaeological interpretation, I query the increasingly common assertion that archaeologists are or should be storytellers. This stance contrasts with archaeologists including Hodder (1989), who, in decrying the dry and dull archaeological site report, implored archaeologists to explore narrative storytelling. Indeed, though I have extensive experience in communicating archaeological ideas through experimenting with various forms of multimedia for over 20 years, animating past lives and the work of archaeologists, I have often felt that I am not a very skilled storyteller, particularly when compared to those in the creative industries. I often find similar uneasiness in fellow archaeologists when asked to elaborate or even speculate on the broader implications of their research. This may be due to a lack of trust in the intent of heritage practitioners, a lack of time and general exhaustion as archaeology continues to be mobilized for empire and capitalism, or even a lack of training or productive framework for such creative work. Additionally, though forms of stories and storytelling vary widely, they are often restricted and linear in comparison to the open worlds of video games (Copplestone 2017a). Worldbuilding disassociates from the creation of particularized narratives in favour of creating tableaux of possibility by sharing our data with others, including those in the creative industries, inviting them to play in these worlds, to be the multiple storytellers of the past. Like others (e.g. Bailey 2017), I am inspired by collaborations with creative practitioners and their unusual and provocative perspectives regarding archaeological remains and have endeavoured to incorporate these perspectives into a worldbuilding approach.

In this article I interrogate the concept of worldbuilding as it is known within speculative fiction, how it compares with our understanding of archaeological interpretation, and the conception and refinement of worldbuilding through three projects I have been involved in: Çatalhöyük in *Second Life*, the *Other Eyes* and the *Avebury Papers* projects. I have chosen to discuss these projects as they are fulsome explorations of the creative affordances and complexities of archaeological data. Çatalhöyük in *Second Life* and the *Other Eyes* project demonstrate the potential for digital media to reconstruct multisensorial immersive environments. Though my practice has been oriented toward digital archaeology, and indeed the early principles of new media identified by Manovich (2001) such as modularity and transcoding have allowed the proliferation of such work, worldbuilding is not tied to a specific medium, but is a structured way of querying the past that can be applied for non-digital interpretive work. Further, while there have been many articles and journals discussing how digital media interpretations of archaeological remains are created and received, this article puts forward worldbuilding as a methodology to prefigure archaeological data for creative reuse in general, one that encourages more rigorous and detailed gathering of these data, and expands the data from narrow lines of archaeological research questions. To balance the examples of Çatalhöyük in *Second Life* and the *Other Eyes* as immersive digital worlds, I describe the reconfiguration of archival archaeological data through the lens of the *Avebury Papers* project. *Avebury Papers* is a digitization project of the physical archives at Avebury, and we have been working to create new pathways into the archive, particularly for creative worldbuilding. Using worldbuilding within the classroom to engage with the Avebury Papers, we were able to broaden our range of interpretive methods and engage in the creation of communities through participation in creative practice.

Worldbuilding and archaeology

Worldbuilding, to create a detailed setting for storytelling, is a term that has emerged from the analysis of fictional literary works and has further resonance within the critical examination of movies and video games. While still relatively new within academic analyses, the concept of worldbuilding feels familiar to anyone who has played pretend, led a Dungeons & Dragons campaign, or watched a blockbuster superhero franchise. Though the act of creating mythical worlds is noted by Wolf (2014) as being deeply human with a long cultural tradition, J.R.R. Tolkien is often credited with the first self-conscious discussion of worldbuilding, which he termed 'sub-creation'. Tolkien (1964) states that humans cannot truly create life as that is the power of God, but through creating stories, they sub-create. Notable in his discussion of sub-creation is his description of the story of Christ's birth and resurrection as having the 'inner consistency of reality'. This feeling of internal consistency describes Tolkien's creation of Middle Earth, a place with history and several languages, a fictional world so fully described that subsequent authors, filmmakers and fanfiction enthusiasts have extensively embroidered and remixed these works. Tolkien's work also highlights problematic aspects in worldbuilding, particularly the capacity to perpetuate colonial and racist tropes through mythmaking (e.g. Fimi 2009), something that should be of central and critical concern for archaeologists. There are further issues with worldbuilding and the arguably parallel Heideggerian concept of worlding, as an act of quantification and colonization (Spivak 1985); I welcome these critiques and ask that we build worlds together and recognize them as queer fabulations (*sensu* Haraway 2008) and explorations of 'unproof' (Frieman 2024). As such, research on fictional worldbuilding is transmedial and multi-disciplinary, encompassing philosophy, film studies, psychology, video-game studies, economics, media studies and religion (Wolf 2014, 3). The study of worldbuilding thus represents a fascinating and informative plurality, but one that hitherto has excluded archaeology and anthropology. Many of the analyses to date have centred around already existing imaginary worlds, such as Star Wars, Earthsea, or any number of video games. These critiques are powerful and useful, and archaeologists have also extensively engaged in similar analyses of depictions of the past in popular culture (e.g. Clack & Brittain 2007; Holtorf 2007). Worldbuilding as an active process underlying the creation of more fully realized narratives or video games is more recent, but has a deep resonance for archaeological knowledge creation.

Outside of its use for fiction, what does archaeological worldbuilding entail? As described by Wolf (2014),

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worldbuilding draws together multiple cultural and environmental elements to create coherent, consistent new vistas, and strives for completion. This is directly applicable to archaeological thinking. While archaeological data will perhaps never be as finely wrought as a detailed fantasy world, the components that we weave together are nonetheless compelling, beautiful, and occasionally perplexing, pushing back on our preconceptions of past lives. Indeed, there are many details that we gather from the past that may not occur to even the most detailed and imaginative of fictive worldbuilders. For example, John Evans (2003) wondered about the perceived 'snailiness' of past landscapes, describing fantastic colour, texture, and that we can imagine the crunch under sandalled feet. Anita Radini and colleagues (2019) identified medieval female scribes by a tiny particle of lapis lazuli in the dental calculus of one, evoking a paintbrush thoughtfully stuck into a mouth, an unintentional blue smile. As I have previously argued, 'archaeological interpretation . . . has the immense potential to be *true,* to resonate with all the passion and fire of science fiction novels, movies, or comic books' (Morgan 2019, 324). We can incorporate large datasets at multiple scales and across long expanses of time. We can approach worldbuilding from the top down (world-systems theory) or from the bottom up (household archaeology). We draw together specific expertise to explore elements of the past: zooarchaeologists, archaeobotanists, buildings archaeologists, ancient DNA specialists, osteoarchaeologists, environmental archaeologists, and material culture specialists.

Generally, in a British or American archaeological field project, each line of evidence is investigated by specialists, perhaps published as chapters in a monograph. The site director or post-excavation specialist then brings the disparate threads together to write an integrated narrative to discuss each of the lines of evidence and how they contributed to a more holistic understanding of the past as investigated at the site. Archaeological visualizers and media makers then supplement the narrative, noted as a critical, yet generally undervalued and disregarded skill (Perry 2015). As an archaeologist and a creative practitioner, I find that this process does not produce a useful past. Yet bridging the gap between the archaeological evidence as normally presented and data that can be broadly reused is incredibly difficult, and is the subject of very worthy, ongoing research (e.g. Perry *et al.* 2025). Indeed, even describing creative archaeological interpretation in a way that is discernible and replicable is challenging (but see Beale & Reilly 2017); my practice over many years has been highly diverse and mutable regarding the different conditions and data available at archaeological sites. Yet there are some through-lines from my experience of mistakes and successes that have led to understanding how to elicit and situate archaeological data that can contribute toward more robust multi-media interpretation of archaeological sites, and these have underpinned my support for a worldbuilding approach.

Archaeological interpretation must always begin with data, and the robusticity of this data is paramount. This robusticity can only be communicated through careful and detailed recording. It is acknowledged that these data are always partial, and relative, and interpretive (e.g. Frieman 2024; Joyce 2015), but archaeological excavations that are conducted stratigraphically, recorded in expert detail, with extensive sampling and specialist examination of artefacts and fully published, are sadly extremely rare, and excavations conducted with holistic interpretive potential in mind are almost non-existent. Often as a heritage interpreter I must conduct my own 'archaeological excavation' of the data and media produced to inform this work, as little is suited for worldbuilding as it is currently stored in archives and reports. For example, few sites have high-resolution, phased plans of entire rooms or buildings. Though thousands of photos of a site may exist, a close-up detail of the floor surface to provide textures is hard to come by. Birds and plants are not seasonally differentiated, and assemblages are only occasionally grouped by context rather than material type. These are not unsurmountable obstacles, and indeed there have been many projects that have productively drawn from archival data, including the projects presented here. Even so, I argue that consciously adopting a worldbuilding approach at the outset would be incredibly beneficial.

After many frustrating experiences of not having the correct viewshed, or excavation methodologies that do not reveal building footprints or construction techniques, I have concluded that the ideal place to begin thinking about multimedia explorations of the past is in the trench, working and dreaming with archaeologists. The intimate scale of excavation and conversations fostered by working in proximity with colleagues and friends, and modes of recording that involve close examination of archaeological remains, are immediately inspirational for holistic interpretive strategies. Archaeologists are generally comfortable with creative conversations, if the interlocutors are trusted, the questions are generative and open, and there is no threat of punishment or derision for 'incorrect' answers. This kind of trust is built through collaborative participation in interpretation—being present and in community with archaeologists and site participants, digging alongside, processing artefacts, eating and socializing. It is also fostered by egalitarian recording strategies and flat hierarchies, wherein an understanding of the archaeological site is created collectively and discussed openly, idealized as craft-based single-context excavation strategies by Eddisford and Morgan (2018). This is where the creative act and archaeological work intersect, in that they are both practice-based understandings of the past.

From this mode of shared experience, worldbuilding can begin with a series of semi-structured discussions. While my practice emerges from excavation, other modes of archaeological investigation, such as survey or lab work, would be intriguing to explore. Excavation is intimate and granular, and conversations can begin at this scale, wherein discussions of activity areas, time scales, routines and embodied experience are emplaced as they are revealed. From embodied experience, multi-sensorial discussions take on added relevance. Presaging worldbuilding as a method, Tringham (2012a, 180) evocatively demonstrates the multitude of questions provoked when, for example, a sense of touch is forefronted in constructing the past:

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> Did Çatalhöyük's inhabitants' skin and hair become caked with dust and sweat for months on end in the summer, creating in fact a protective layer against insects, sun, dust, and wind? Or did they protect themselves with layers of clothing, as we do when we excavate outside the shelters? Did they wash themselves and their clothes in the river, or was this not regarded as a priority? What did they wear on their feet?

These questions are vivid, playful, and demonstrate a creative engagement with archaeological interpretation. The difference for affective worldbuilding is that these questions become more than rhetorical devices; they directly feed into multi-media interpretation. The effective reconstruction of a multi-sensorial past necessitates exploring potential sights, sounds and smells and a fulsome understanding of which of these would have been present at any given moment, and what that might imply about our archaeological interpretation. Whittle (2003) suggests an examination of 'the daily round', the routine actions that create our bodies, our places and eventually the archaeological evidence of these. Experimental/experiential archaeology can also provoke more creative and multi-sensorial interpretations. Taking inspiration from these past explorations, I have found that reorienting archaeological data collection around questions and concepts inspired by worldbuilding for speculative fiction and game creation positions archaeological data to be more generative for creative interpretation. To demonstrate, I will work through examples of my work including the *Çatalhöyük in Second Life*, *Other Eyes* and the *Avebury Papers* projects.

Crafting digital, multi-sensorial, immersive pasts

The Open Knowledge and the Public Interest research group (OKAPI Island) reconstruction of Çatalhöyük in *Second Life*, a multi-user online open world video game (Morgan 2009; Tringham 2012b), was active from 2007 to 2011. *Second Life* is an online world where users inhabit avatars and create objects, buildings and landscapes, and OKAPI used these affordances to replicate the east mound, focusing on the work of the Berkeley Archaeologists at Çatalhöyük (BACH) research team led by Ruth Tringham. This work contrasted with most virtual archaeological reconstructions conducted at the time, as it was a persistent online world that was open to any *Second Life* users and could be modified by many different team members. Reconstruction of different elements of the site drew from archaeological evidence of plants, animals, weather, building types and materials, and decorative elements from stamp seals and figurines. These data enabled virtual reconstructions, soundscapes, experiments with structural elements of buildings, burning of houses and machinima, which are films created in virtual worlds. Çatalhöyük in *Second Life* was thus a reconstructed world wherein different narratives by different authors could be created. Within this environment, I created several machinima that drew productively from this milieu, which at the same time caused me to question elements of archaeological interpretation that did not make sense when mobilized for interpretive media. To demonstrate the potential of worldbuilding in archaeology, it is useful to discuss further one of these machinima I created in 2009 of a Neolithic person weaving a basket in a house at Çatalhöyük (Fig. 1).

This minute-long machinima was one of several created as part of the OKAPI Island reconstruction of Çatalhöyük in *Second Life* (Morgan 2009; Tringham 2022). These machinima fragments were intended to show a brief insight into Neolithic life and were the culmination of thousands of hours of archaeological research, 3D modelling and intensive discussion about the past at Çatalhöyük. This machinima was created to explore the evidence we had of a room that had been catastrophically burned (Harrison 2013) and therefore preserved archaeological remains that would have been tidied up from a systematically destroyed building. We do not know precisely how the people of Çatalhöyük perceived gender (Agarwal *et al.* 2017, published after the machinima was created; Hodder 2004; Gifford-Gonzalez 2007), but there are figurines that informed the shape and clothing of this person that we would perceive as a woman (Nakamura & Meskell 2009), and I will use she/her to discuss this person. She is kneeling by an indoor oven, using the light from the fire to weave a basket. The mural behind her is from a different building, shrine VII.8 (Mellaart 1967, 169) and was adapted from a photograph of a reproduction in the experimental house on site, but the configuration of the room is from Building 77. While this is presented as a screenshot, she is weaving a basket (Wendrich & Ryan 2012), albeit clumsily through the limits of the medium, and there is a nighttime soundscape in the machinima, with sounds drawn from evidence of insect and animal remains (e.g. Russell & Meece 2006). I worked as an excavator and media creator at Çatalhöyük from 2006 to 2011 and previously documented collaborative conversations regarding digital reconstructions (Morgan 2012). Similarly, this machinima is one aspect of the collective understanding of the lived experience of excavating a house at Çatalhöyük in collaboration with skilled archaeologists, drawing from a broad yet detailed range of expert analyses, thinking about multi-sensorial experience of place, cooking chicken and hanging out in the experimental house on site and implementing a sense of seasonality and the daily round.

As with most reconstructions, the creation of the machinima prompted many questions for me about the assumptions being made about Neolithic life at Çatalhöyük. Why is she weaving baskets at night when it is hard to see? Also, why is she inside with a lit fire? Her clothes and the sound of the cicadas outside seem to imply summertime, when it is assumed that people slept on the roof. Why did I assume that the basket-makers were gendered female? This obviously derives from the lived experience I had at Çatalhöyük and counts as paradata, the decisions that I made in interpreting the available data (e.g. Huvila *et al.* 2024), mining the records of archaeologists and specialists, and the impact of the skilled visualizers employed at the site.

The machinima created in *Second Life* were, for the most part, similar fragments of time, rather than fully realized narratives. They were situated within the larger open world of Çatalhöyük in *Second Life*; houses, artefacts, soundscapes and other elements provided a backdrop in which to create stories. Creating this larger world and the machinima set

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Figure 1. Screenshot of the machinima created in Çatalhöyük in *Second Life*.

within this world evoked further questions about the archaeological remains at Çatalhöyük (Morgan 2012). Ideally, these observations would then have fed back into research questions that could be investigated further, either supported or refuted by examining archaeological data, as part of Hodder's (1997) imagined reflexive methodology. As an openly editable virtual world, *Second Life* was uniquely suited for archaeological worldbuilding, in that environmental data could be mobilized to create a virtual environment. Though it was changed throughout the virtual project lifespan to accommodate different events, interpretations and purposes, media derived from it reproduced the chronological fixity that can characterize reconstructions and visualizations. The machinima was not updated to incorporate later findings about gender or social structure, and the virtual world no longer exists. Finally, within the machinima as presented, though the person was the centre of the scene, she was an agglomeration of impressions about Neolithic people at Çatalhöyük rather than being based on evidence regarding a past individual. The affordances of the medium and the limitations of building within *Second Life* contributed to this dissonance.

The machinima brought together many different lines of evidence regarding life at Çatalhöyük, was situated within an open world, and contributed provoking questions regarding our interpretations of the past. Yet I would stop short of calling the machinima a 'story'. It is a fragment of reconstructed time, the disjointed, questionable elements revealing mismatched traces, unsmoothed by narrative flow, but still useful. In this I would like to demonstrate to archaeologists that storytelling is not a necessary or perhaps even desirable outcome of holistic interpretation, but to instead consider worldbuilding, to host stories and interpretations created by yourself and others.

Making moments: the *Other Eyes* Project

'The *Other Eyes* Project: Understanding the past through bioarchaeology and digital media' (2021–2022) was a UKRI AHRC-funded project that investigated the creation of virtual-reality avatars based on archaeological data centred on Romano-British Eboracum, present-day York, UK. The details regarding the construction of the virtual environment and avatars and ethical dimensions of the project are more fully described in other publications (Morgan & Crowe 2025); in this article I focus on elements that directly demonstrate the worldbuilding aspects of *Other Eyes*.

The differences between Çatalhöyük in *Second Life* and *Other Eyes* add depth to this discussion of archaeological worldbuilding. I played no part in the primary research conducted on Roman York; all the evidence was drawn from published and archival materials from disparate sources. Receiving funding allowed more investment in subject and method expertise, with a team of creators. While Çatalhöyük in *Second Life* was a largely unscripted free-for-all, the creation of the mixed reality experience for *Other Eyes* was

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Figure 2. *Other Eyes Experience* participant in the Yorkshire Museum.

much more tightly bounded and scripted. I created most of the digital media associated with the Çatalhöyük machinima, but the complexity in creating a mixed reality experience required working with Ryan Lay and his team at Beta Jester, a Yorkshire-based small gaming studio. Working with Beta Jester required further translation of archaeological data into references and forms that the game developers understood. The object was not to create an in-game movie, but to explore digital embodiment and empathetic responses to past places and people. The experience was mixed reality, blending IRL and digital objects, with participants wearing jewellery, tunics and sandals while walking on a preserved mosaic in the Yorkshire Museum (Fig. 2), and there were scent cubes that provided multi-sensorial elements. Users of the experience were embodying avatars based on bioarchaeological research on past individuals.

The 'world' of *Other Eyes* was confined to a single room, the limits defined by a 4.12×4.12 m mosaic and the tether of the Vive 2 Pro VR headset we used. Each detail of the room was extensively discussed by Prof. Maureen Carroll, an advisor for *Other Eyes*, and Adam Parker, our project liaison with the Yorkshire Museum (Morgan & Crowe 2025). At the museum there is a wall with a fresco placed next to the mosaic. While the mosaic came from a site within York, the fresco was uncovered in Catterick, approximately 60 km northwest of the Yorkshire Museum. That museums construct composite pasts is well known; indeed, many digital reconstructions employ similar methods when detailed data is not available from a particular site. More allowances had to be made to enhance immersion for the person in the 10-minute-long experience from the decayed assemblage of the museum to the restored, albeit uncanny reconstructed room. Ideally a reconstruction would be a way to bring disassociated things back into congruence and interactivity, but this requires compromise, as very few archaeological sites will have a complete picture through preservation.

Within the room are elements of a Roman dining-room, with a couch, chairs, a table, a lamp and a few artefacts. To increase interactivity and immersion, the chairs and dining couch were simulated by soft foam furniture so the person

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Figure 3. VR layout of the *Other Eyes Experience*.

can sit down in the experience. These furnishings were also not found associated with the mosaic and were informed by finds in regions with better preservation, even as far away as Pompeii. Adding these details made the reconstruction more relatable and interactive, but made the reconstruction less accurate to the archaeological remains recovered in York. While each element of the reconstruction had some evidentiary basis, the assemblage itself was a fiction (Fig. 3).

Beyond the setting created to mark the boundaries within the reconstruction, interactive elements were suggested by the game developers. This is key to the discussion regarding storytelling and archaeological data. As an archaeologist, I wanted to recreate the snapshot suggested by the fictive assemblage and then let people experience it as embodied avatars. Yet the game developers were right; a more ontologically correct world pushes back, the elements are never silent or inactive, and the game developers knew that an inactive world would feel dead, false to the users. I resisted explicit voice-overs or in-world guidance such as pop-up windows as I perceived them as too close to gamification, but introduced items that could be interacted with. For example, in addition to a Roman guest who would knock on the door and enter, there was a carafe with wine on the table, and the person in the experience could attempt to pour the wine. This interactivity varied by avatar; the gladiator had an injury indicated by a scar on his arm that inhibited pouring the wine. The users did not always connect the two, and it was the cause of frustrated laughing and much spilled wine that was augmented by the smell of the wine. The inability to pour wine effectively was ultimately disempowering and caused an inadvertent break in presence (*sensu* Eve 2012), as the user felt less able to experience the in-world aspects of the game fully. Finally, there was also a bird that would fly through one of the windows, perching on the table and flying away when encountered.

The interactivity of the space was circumscribed by the extent of the mosaic and room, the limited responsive elements and time available for user testing. As previously mentioned, *Other Eyes* contrasts with the relatively open world of Çatalhöyük in *Second Life*; the detail introduced and available through virtual reality results in a much less open world and fewer options for users to create their own narratives of interaction. While visitors to Çatalhöyük in *Second Life* could inhabit avatars they were comfortable within, and create their own artefacts and stories, *Other Eyes* did not have these affordances. The limited capabilities of virtual reality are not likely to last and would benefit from more open world approaches. Even so, some lessons for archaeologists and heritage interpreters regarding the potential of immersive worldbuilding can be gleaned from *Other Eyes*: intensive attention to detail, the creation of fictive assemblages, materials available, smells, sounds, are important, but so too is enabling interactivity; not removing the agency of things, but re-investing this agency as best as we can reconstruct from an ultimately human perspective. Digital objects are both fixity and flux, both concretized and easily manipulated, as untouchable as museum artefacts, but infinitely reproducible. As previously mentioned, while a cluttered room may enhance immersion through a perceived verisimilitude, this will generally be at the cost of archaeological accuracy and potentially playability. This is not necessarily a deficit, but creating thoughtful fictions must attend an ethics of possibility and not disempowerment through restrictions enforced by technology. The contrasts

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between the two projects reveal the challenges of worldbuilding with different datasets, but also the possibilities of playing within an interactive, holistically elaborated digital world based on archaeological data. To broaden the applicability of worldbuilding beyond immersive digital reconstructions, I now focus on a third project, the digitization of a large archaeological archive.

The *Avebury Papers* Project

'The *Avebury Papers* Project (2022–2026)' is a UKRI AHRC-funded project led by Mark Gillings that explores and digitizes the archaeological archive associated with the megalithic henge site of Avebury, part of the UNESCO Stonehenge and Avebury World Heritage Site. This ongoing project includes working with artists, community groups and volunteers to understand the different interests of these publics in the archive, with the aim to situate archaeological data about Avebury in a vibrant, useful, and accessible archive. Many archaeologists and archives have been contending with complexities surrounding the creation and reuse of archaeological data (Huggett 2022; Nicholson *et al.* 2023; Perry *et al.* 2025; Richards *et al.* 2021; Seaton *et al.* 2023; Tringham 2012b), and this has been a concern of *Avebury Papers* as well. Grappling with these issues while creating the *Avebury Papers* digital archive provided new insights into how worldbuilding can position archaeological data to be more conducive for creative reuse.

Çatalhöyük in *Second Life* and the *Other Eyes* project allowed me to experiment with reconfiguring archaeological data into creative multimedia projects; I decided to test a worldbuilding approach more generally within Digital Creativity, a postgraduate class formed around the creation of digital multimedia projects based on archaeological data. While I have taught similar themes many times in the past, I found that methods-based classes often treat the basis of projects—archaeological data—somewhat superficially; it is difficult to fit in the intensive focus on an archaeological dataset with methods instruction during coursework. Instead of requiring students to become experts in all aspects of Avebury, I asked them to focus on specific elements of the archive, requiring specialist group presentations with a table of references to the archives. These specific elements were Geology and Geography, Nonhumans, Plants, Neolithic People, Structures and Dwellings, and Working at Avebury. Within each of these elements I asked them to investigate specific worldbuilding questions such as:

> What is considered good weather at the site? Bad weather? Were there natural disasters?
>
> What things are used the most each day?
>
> What were practices of care for the vulnerable?
>
> What insects would have been around? Did anything bite?
>
> What colours were the wildflowers in springtime?
>
> What tastes would the person encounter? What is the sweetest thing they'd eat? What flavours were valued?

Investigating these questions animated the projects in a way that I had not seen before in previous iterations of teaching creative digital methods classes. Student projects included an impressionistic immersive experience based on archaeobotanical remains, 3D-printed tactile maps paired with an embedded soundscape, and glimpses of the medieval configuration of the stones at Avebury through the stained glass of St James church, as a past glazier may have seen them. Reconfiguring archival archaeological data to augment creative reuse around the concept of worldbuilding within the context of the Avebury Papers provided an expansive milieu to host multiple interpretations of Avebury, broadening what had been a relatively singular endeavour—creative interpretation of archaeological data—into an approach that allowed in-depth understanding of an archaeological site and invited curious, creative interventions amongst students who were new to both Avebury and multimedia creation.

Making liveable past places

Through creative envisioning of three very different archaeological datasets covering diverse geographic regions and cultures, I have established worldbuilding as a method that productively queries archaeological data to provoke more holistic and vibrant interpretation. Worldbuilding provokes new questions about the past and aggregates data in a way that resonates with archaeological specialisms and is more broadly accessible to students. Building an active, agentive, open digital past, one subject to revision, that allows individual expression within storytelling and reenactment is the ideal outcome of worldbuilding within archaeology. It decentres the necessity for narrative, or for single authorship, to create space for multiply-authored stories. By organizing data according to tropes and queries set forth by fictive worldbuilding authors (Holladay 2020), we can enliven our archaeological data and position it for reuse. The handbook I have developed from these tropes is still in production and will be discussed further below, but currently includes: geography, geology, time, resources, people, nonhumans, plants, adornment, economy, government, senses, and 'awkwards'. There are, of course, several difficulties to overcome before this vision of sharing living, inhabitable archaeological data could come to pass.

As previously mentioned, the current methods of data collection, publication and archival of archaeological data require retroactive reconfiguration of these data into useful formats and categories. This is not necessarily a negative element, as reuse of all data within archaeology would be beneficial. Worldbuilding is also a heavily acquisitive method, one that requires as much data as possible, from specialist reports to correctly phased multicontext plans, to documentation of world weather systems. In this way it contrasts with the streamlined, if not elegant minimalistic reportage of archaeological recording. It is a lifetime's work, and the assistance of the full team of archaeologists who worked on the site or with the data is ideal. It is certainly possible, as I have done in the above projects, to aggregate and speculate regarding

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incomplete data, and true that more data often just provokes more questions and the opening of further lacunae. Yet others who wish to tell stories involving archaeological data do not always have the benefit of understanding where to access data, and the limits of these data. For example, as Copplestone (2017b) notes, while larger video-gaming studios may afford an archaeological or historical consultant, they generally rely on Wikipedia. Unfortunately, Wikipedia holds only the most superficial archaeological data and is not always updated to incorporate new evidence. This problem has been partially addressed through the wide adoption of archaeological databases and the publication of data that can be manipulated by other researchers. Even so, these data are difficult to navigate and do not always capture the most useful information for reconstructions. Additionally, the holistic deposition of data is costly and time-consuming. Still, as previously mentioned there are several exciting projects examining the reuse of archaeological data, and this problem is of a scale that merits this wide interest.

Another difficulty of affective archaeological worldbuilding is the shifting of platforms and technologies; while many archaeologists adopted *Second Life* as an exciting digital playground, changes in the pricing structure disallowed further participation by many. Private, corporation-led virtual platforms are incredibly fragile; an archaeologist who has invested time and resources into such a platform can find themselves at a loss when the platform becomes obsolete. There is an exciting move toward the federation of digital platforms, but with VR headsets and other hardware and software remaining proprietary it is difficult to determine how useful or robust a distributed digital past would be. While experimentation with different platforms is exciting for archaeologists, creating a sustainable solution would complement our desire for permanence. Thus making a move toward interoperable, readable archaeological data is welcome, perhaps in preparation for a more robust solution.

Though there are obvious difficulties with holistic worldbuilding with archaeological data, the benefits are substantial. As an archaeologist, a creative practitioner, a teacher, and an organizer, I find coming together to imagine and create past worlds together is incredibly gratifying. As I noted while building in Çatalhöyük in *Second Life*, 'modelling features that I have methodically deconstructed over the years' (Morgan 2009, 474) is a fascinating exercise, and building and sharing that creation with other archaeologists, artists, students and non-specialists adds exciting new perspectives. There is certainly room within archaeological thinking for more and better storytelling, but worldbuilding is a prerequisite. Indeed, there is more work (and play!) forthcoming to explore worldbuilding, as a manual, as a game, as a method for creating communities around archaeology, and it is necessary to involve others in this great and complicated task. As interpretive archaeologies regarding multiplicity, so-called 'unproof' and storytelling (e.g. Frieman 2024) vie with those that focus on bounded, singular, and so-called scientific methods (e.g. Bentley & O'Brien 2024), I invite everyone to play within the capaciousness of worldbuilding where we can collectively contribute to the joyful assembly of things that animated the past.

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