

**Article:** Transforming the Archaeological Record Into a Digital Playground: a Methodological Analysis of *The Living Hill* Project

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**Subject:** Answer to the reviewers and the recommender

Dear Sebastian Hageneuer, Andrew Reinhard, Erik Champion and anonymous reviewer,

I want to express my gratitude to all of you for appreciating my work and providing constructive criticism. Your thoughts and recommendations have helped me improve this paper significantly. I truly value the time and effort you've put into reviewing my manuscript and providing valuable feedback. I have incorporated most of the suggestions you made, and I will now go through each of your comments and explain how I addressed them.

Thank you once again for your support and guidance.

### **Review by Andrew Reinhard**

**As soon as I read the article, I found myself wanting to play a demo version of the game, and I am hopeful that the author will include a link to it in the article's published version or record.** – Thank you very much! I believe this is a good sign. Unfortunately, the game page on the Archaeological Park website is not yet ready, so I won't be able to include a link in the paper. Additionally, the game is currently only available in Italian, and an English translation is still pending. I hope the translation won't take too long, and as soon as it is ready, I will be happy to send you the link.

**I would recommend adding “archaeogaming” as a keyword to improve the article's discoverability** – A very good advice, I added “archaeogaming” and also “*The Living Hill*” as keywords and deleted “archaeology” and “video games”.

**In the introduction, the author [correctly] states: “The integration of video games with archaeology in Italy has been challenging due to academics viewing commercial products as inferior knowledge, the misconception that video games are childish entertainment, and the lack of understanding of the interactive industry by archaeologists.” While I agree, I do think a citation is needed here.** – I added (Giordano 2020; Modena 2019) in lines 29-30.

**Further in the introduction, the author writes: “As a result, the domain of cultural and archaeological heritage in Italy has recently seen an upsurge of interest in video games. This is largely due to the attention from museums and academics as well as the incentives provided for digital innovation by local administrations and the government.” I am also wondering if this uptick in interest also be driven by recent appearances of Roman and Italic games and characters including Assassin's Creed Origins, The Forgotten City, Imperator: Rome, Asterix & Obelix and others?** – I found your observation quite perceptive and it may be applicable to both gamers and the general public, who would appreciate the use of Roman and Italic cultural heritage in a video game. However, I have reservations about its applicability to museum directors, older academics, and local administrators. In my experience, they generally lack knowledge about the gaming industry. Although they may have shown some interest in gaming in recent years, it is quite obvious that in the majority of the cases it is mainly because it has gained popularity and their colleagues have started experimenting with it. At least, over time, there has been a noticeable shift in their attitude towards supporting such projects, and their curiosity about the results has also increased. They seem to be more open-minded and willing to extend their support to such initiatives, which is a positive development. This change in mind-set is a result of the growing awareness and understanding of the importance and potential impact of these projects.

**In the Methods/Objectives section, “HGR Framework” should be defined (or at least footnoted) immediately after its first mention.** - I added “The HGR framework is an analytic tool for scholars and

designers alike, capable of taking into account all the layers and processes necessary to transform history in the setting of a game. In particular, the framework follows a semiotic approach and focuses on the intersection of the three processes needed for creating a historical discourse (setting, modelling and representing) (Lozano 1987) and on the three translations that the past undergoes to become a game: perspectival, digital and ludic.” in lines 146-150.

**In the Methods/Objectives section, what percentage of various demographics identified as being “digital”, or what was the shared comfort level of using digital things, and of that group, what subset had any familiarity with any kind of digital game, mobile or otherwise? The author does state some numbers later in the article, but a general statement could be made earlier here with a hint at the actual numbers to be presented below.** – Unfortunately, a survey regarding the level of digital expertise of the visitors to the Archaeological Park has not been conducted yet. This was one of the initial goals of the project (a “getting to know the public” phase that should have anticipated the creation of the game), but as explained in the paper, due to the Covid pandemic, we were unable to explore this aspect. However, the visitors to the park are quite diverse, and we have added the aspect of digital skills to their profile, as mentioned in line 126.

**The author may wish to further define the term “video game” by some rubric (perhaps Ian Bogost’s?) to disambiguate it from “immersive narrative experience” or “interactive story” or similar. There is a goal present, to find and return three objects by way of interacting with the environment and non-player characters (NPCs), as opposed to The Living Hill being a walking simulator in which people can tour the site digitally without any goal. The game allows the archaeological team to focus the attention of the audience on things deemed important to the site.** – That is a good suggestion. In order to avoid any confusion that may have arisen from the previous reference to Discovery Tours in Assassin’s Creed, I added lines 159-163 and provide proper references: “However, despite the opportunity offered of exploring the three historical environments, *The Living Hill* differ from a walking simulator or a virtual tour since players’ agency is fundamental to discover information within the system, advance in the game and complete the quest (Mortara *et al.* 2014: 318). As a video game, it engages players and teach them things through procedural rhetoric, which players “read” through direct engagement and criticism (Bogost 2007: 233-261; Copplestone 2017: 86).”

**Also in the Methods/Objectives section, would it be possible to describe a little more the technological landscape for the average community school: Internet access and reliability of a connection, access to hardware, home computer use, etc.? In 2023 in Italy, is there technological equity for students of history in lower and upper grades?** – Additional information regarding these aspects has been included in lines 116-121: “Another aspect that can be noted in the last two years is that, despite its dramatic effects, the Covid-19 pandemic had a positive impact on many schools’ digital assets by forcing them to upgrade their technological equipment (Giovannella *et al.* 2022). Although interactive whiteboards (IWBs) were already quite common (Piano Nazionale Scuola Digitale 2015), various schools received funding to purchase tablets and computers to facilitate remote learning. However, the digital gap is still a persistent issue in Italy, particularly in peripheral areas (Di Pietro 2021).”

**Mariotti is absolutely correct when she writes: “Further research is necessary to investigate in greater detail the actual effectiveness of the various types of video games, to define a methodology based on metrics and evaluation tools, even more so those with cultural/archaeological content. Games applied to cultural heritage have proven to potentially be an independent instrument, capable of bringing information, lasting engagement, knowledge, and curiosity to a very diversified public. So, how do we assess these further aspects?” In light of the absence of many case studies about elearning effectiveness merging history with games, preliminary queries could go directly to online discussions on reddit and elsewhere regarding the historicity and accuracy of ancient cultures and monuments in games, at least to get a ground-level idea of the public perception of antiquity through games.** – I completely agree that exploring this aspect would be very interesting, as the shortage of case studies in this area has a significant impact on the field of archaeogaming. I am planning to conduct some research in this direction for my PhD, so I will certainly consider your suggestion for a future investigation. Moreover, given the complexity and scope of this subject, it will require more space than I have in this paper to be thoroughly explored.

**I was curious to learn what the average time of engagement was for various testing groups who played an early version of the game. Some people wanted to continue playing, but was there an average play-time before users wanted to do something else (or had to be someplace else)? Will the finished game be available to play within the archaeological park through a dedicated computer station?** – I added some information about this aspect in lines 289-293: “During the testing phase of the game, the average duration of a single game session ranged between 10 and 20 minutes. However, there were three players, all over 40 years old, who gave up almost immediately (they were not included in the survey). On the other hand, there were also four players who returned to play the game later, when the public pressure was less intense. This was mainly due to the fact that only two computers were available for testing the game.”

**In the Conclusions, I was wondering what the plan is for sustainability and preservation or for updating the code/assets of The Living Hill. Would it be possible to release the assets and game code as open source once the finished game has launched to allow the community to create their own stories within the landscape and architecture created by the team? This might be beneficial for continued public outreach and for community engagement especially by the people who live in the area of the archaeological park. Those modded stories could then be shared online through the park’s website, or pushed as free downloadable content (DLC) to people who downloaded and installed the game.** – That’s a very good suggestion. I have recently discussed the possibility with my colleagues and we have started exploring it with our programmer. I added a few lines about it in the paper. As you mentioned, this would be an effective approach for ongoing public outreach and community engagement.

**Mariotti writes at the very end: “A thorough analysis of these factors may lead to alternative choices for game type, narrative, and visuals or even lead to entirely different kinds of tools for communicating our research, even if creating a video game for cultural heritage is currently popular.” I would recommend adding a citation regarding the popularity of creating games for cultural heritage engagement and education. Who else is doing this now, and where can we interact with examples?** – As suggested by other reviewers, I have added “(some recent examples are presented in Table 1 and discussed in Bonacini and Giaccone 2022; Mariotti 2021)” in lines 370-371 of the paper. Specifically, I have included a reference to Table 1 where some projects are analysed in greater detail.

## **Review by anonymous reviewer**

**English Usage – Overall the paper is clear and comprehensible; however, there are several small errors that could be addressed (e.g., “last decades” in line 17, “viewing commercial products as inferior knowledge” in lines 27-28). These aren’t grammatically wrong, but they sound a little awkward in English (I think I’d go with something like “In recent decades...” or “viewing commercial products as providing unreliable information...”). Again, this doesn’t hinder overall understanding, but it is worth getting a native English speaker to check the article for instances like this.** – The English usage of the article was revised.

**Highlight Your Question – The Introduction offers a compelling overview of the site and the digital project, but it’s not quite clear what question the author is going to answer in the remainder of the article. Is this about how to build video games based on archaeological excavations? Is it about understanding feedback from users of the video game? Is it a preliminary analysis that uses data from the open-air museum to provide guidelines for a video game? There are lots of interesting directions it could go, but by the end of the intro, it would be useful to have the main question presented clearly to the reader.** - To provide better clarity on this aspect, the questions posed by Champion in his 2017 article (“My solution is to suggest that rather than concentrate on the technology, archaeologists should focus on the expected audience. What do we want to show with digital technology, for what purpose, for which audience, and how will we know when we have succeeded?” (Champion 2017)) are “used as research questions and guidelines in this paper to illustrate *The Living Hill* project and its preliminary outcomes” as added in lines 81-83.

**Literature Review (Contextualize within Similar Games) – The author notes that “several video games dedicated to archaeological and cultural content have been developed in Italy recently” in lines 205-206. It would be great to hear a little bit about these and know how this game builds off those**

**predecessors and how (and why) it moves in new directions as well.** – A new section (lines 39-50) was added to the Introduction to better contextualise *The Living Hill* project within other recent Italian projects (Table 1).

**Discussion – How do the results from your survey compare to feedback that other games have received? Did the preliminary results of the survey for this game provide similar trends to other similar games? Or did it diverge from feedback gathered from other similar games?** – I completely agree with the reviewer's suggestion that providing more details on this point would be beneficial. However, it is challenging to compare our survey findings with feedback from other games since there are not many similar studies available. Even the approach I used was adapted from the UX evaluation developed for two gamified VR immersive experiences by the National Research Council of Italy (Pagano et al. 2015; Pagano et al. 2020). Although I included some other works (Birchall et al. 2012, Catalano et al. 2014, Merchán et al. 2023, Poullis et al. 2019, Rice 2014, Shih et al. 2015), it's difficult to make a comprehensive comparison due to the varying UX evaluation methods or questions used. However, I used some hints from those papers (as I did with Konstantakis and Caridakis 2020, Dawson et al. 2020, Pagano et al. 2015; Pagano et al. 2020) to analyse the results regarding specific aspects. Unfortunately, this issue is prevalent in our field, and unless we define more specific methodologies, comparing data will remain challenging.

**Future Directions – In the conclusion, it would be useful to add a couple sentences about the next steps for The Living Hill project. Now that you have round 1 of feedback, where do you go from here?** – At the end of the prototype chapter, I integrated my previous statements with additional information (lines 231-237).

## **Review by Erik Champion**

**The questionnaire, is the Likert Scale insightful ? 1-5, " From 1 to 5, how much did you like The Living Hill?" What is a 5? How would nongamers consider a 5?** – This is a general question to evaluate the overall experience. I appreciate your suggestion and will consider changing the question in future surveys to avoid confusion.

**The sentence starting 194 is a little hard to understand, I suggest, rewriting for clarity.** - I have rephrased it: "At present, the game can only be accessed through the PC platform. The mobile version of the game still has some technical issues and bugs related to the mechanics. Moreover, we are also working on finding a solution to make it available in the app stores, as the file size of the game is quite large for a standard mobile application (around 1.5 GB)."

**The information on Italian-related games was interesting and I would have appreciated reading more on that.** - A new section (lines 39-50) was added in the Introduction to better contextualise *The Living Hill* project within other recent Italian projects (Table 1).

**More on how archaeologists/heritage experts and the general public may diverge on expectations and judgments and general understanding derived from the game could be useful.** – This will be part of my PhD research. One of the goals regarding *The Living Hill* is to assess different kind of users, their perception and understanding (I better specified this aspect in the section starting from line 251).

**I am not sure that an emphasis on gender and age is so useful when derived from a small sample size.** - I agree with the reviewer. However, I would like to clarify that the UX evaluation is still in its initial stages, and the questionnaires that have been distributed in this first occasion are just a small part of a larger research project. Therefore, I felt it was important to evaluate these aspects from a methodological perspective as they may hold significance in the continuation of the research.

Once again, I would like to sincerely thank you Sebastian, Andrew, Erik and the anonymous reviewer for your time and effort in reviewing my paper. Your feedback has been significant, and I'm very grateful for the opportunity to improve my work with your guidance. I hope that I have reached your expectations

through these changes. Please let me know if you have any further questions or require any additional information.

Samanta Mariotti