An archaeological emotive study through point & click archaeogaming:

investigating nostalgia, complex and negative emotions and how they are triggered and/or hidden in archaeological research.

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Student Declaration

I am aware of and understand the University's policy on plagiarism and I certify that this assignment is my own work, except where indicated by referencing, and that I have followed the good academic practices in accordance with the University of Glasgow's regulations.

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Abstract

Academic discourse in archaeological computer graphics has tended to focus primarily on a perceived tension between possibilities of digital media for creative practice and theoretical debates around the accuracy and authenticity of physical data gathered in archaeological investigation. This debate has focussed extensively on discussions of precision and accuracy in the reconstruction of buildings, landscapes, and archaeological objects. Despite these factors being important to the investigation of the past, there is a large area of investigation that still offers the possibility of interesting discoveries, and this is the emotive data that complements the physical data. One of the effects of this narrowing of discourse has been that humans have often been invisible from digital archaeological representation and so, as a direct consequence, has been the representation of emotion.

The study of emotion as much as the study of physical reconstruction can enhance the way archaeological computer graphics can aid the study of history. Emotional factors connected to storytelling are an under-researched aspect of archaeology. This research aims to address and explore such factors further. The central argument to this thesis is that exploring emotion as a core component in our understanding of the past is needed in order to achieve a fuller vision of the past. The possibility of being able to better represent archaeological understandings of the past through storytelling and immersion has the potential to move theoretical discourse beyond a focus on issues of accuracy and authenticity towards a fuller, more experiential, more practice-driven conception of the value of archaeological computer graphics.

The use of archaeologically themed videogames is a proposed solution that may allow the storytelling and emotion to accompany and complement the physical reconstructions mentioned above. This would give the potential for a researcher with no experience in digital design and programming to create an archaeogame tackling principles connected to emotive perception and having a narrative and technical game design strong enough to create a sense of immersion that in turn would allow a level of emotive perception and experience to the users with a focus on serious games. As a way of exploring the value of emotions as a component of archaeological representation, this thesis will focus on nostalgia and negative or complex emotions. These emotions are a leitmotif in the representation of the past, both within archaeology and within visual culture more broadly. As well as being potentially problematic and perhaps encouraging uncritical attitudes to these images, nostalgia and negative or complex emotions also have the potential to create empathy, communicate the commonality of human experience through time while also emphasising profound cultural and material differences.

The above application of nostalgic and complex emotions has the potential to tackle the issue of applying modern emotive concepts associated to justice and morality to the past which might subjectively influence the interpretation of the context within such past, by both archaeologists and the intended audience. In terms of archaeology, this research would allow us to explore and interpret the reasons behind the creation and use of material culture beyond the simple utilitarian use, integrate life stories of the people who either created or used such objects and enhance the storytelling allowing the audience to immerse themselves in the archaeology.

As archaeology confronts its role in colonialism, and the extent to which colonial ideas still inform elements of archaeological thinking, it has become necessary to allow voices, sentiments, and ideas from outside of our hegemonic, empirical disciplinary paradigm, to find expression.

One part of this process is to acknowledge the need for emotive factors to feature in our understanding of past events, but also to acknowledge the role of emotion in helping contemporary people to formulate responses to the past within archaeological research, this research will attempt to investigate how far the emotive subjectivity of archaeologists influences such interpretation.

The method used to achieve the above aims, was to investigate the literature available on emotions in digital archaeological applications, combining it with the literature on archaeogaming, game design and serious games and attempting to obtain the missing emotive reasoning not documented in the literature through a series of interviews with relevant authors. The results of the literature analysis and the interviews were then employed in the creation of an archaeogame built with the principle in mind that it should have been simple enough for an archaeologist not an expert in digital design to develop easily still developing a strong enough narrative and designed to provoke and experience emotive triggers aimed specifically at nostalgia and negative or complex emotions.

The key results of this stage of the research were several hypothetical concepts from the interviews in relation to emotive reaction to situations enacted within the storytelling and the narrative, experimenting on the personal or subjective manner and direction of such reactions by testers of an archaeogame designed just for this purpose, fully developed using basic computer skills avoiding programming developed by a single archaeologist.

The results of the interviews of the users after experiencing the game, were a confirmation of the specific emotive reactions to some of the emotive triggers within the archaeogame designed in line with the concepts of game design, storytelling and narrative found within archaeogaming and serious games, together with more hypotheses within the realm of archaeological subjectivity in interpretation, applicability, and feasibility of using archaeogaming to study emotions within archaeology. Furthermore, the results allowed an evaluation of the ability for archaeologists to combine other disciplines and areas of study to better investigate and show emotive connections to material culture which showed a positive inclination towards the feasibility of such a feat.

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Chapter 1

Introduction

Since their introduction in the early 1990s academic discourse on the nature and use of archaeological computer graphics has concentrated on issues of accuracy, veracity, and authenticity. The reconstruction of the buildings and landscape been the main focus (Tsiafaki *et al.* 2015, 37-45, Olson *et al.* 2013, 244-262, Berggren *et al.* 2015, 433-448, Rua *et al.* 2011, 3296-3308, Galeazzi 2016, 159-169, Waagen 2019, 11-20, Di Giuseppantonio Di Franco 2018, 1-131).

The interplay between media creators and audiences has not played a central part in this discussion and must, if these technologies and media are to be employed effectively into the future, become part of this discussion.

There is a potential for further research into the emotional factors associated with archaeological storytelling, which could be placed at the same level of importance as the more physical characteristics when creating reconstructions of the past or interpretations, as a basic concept that will be later expanded, emotions are a facet of human nature that influences how things were built, why they were built, how things arrived at the state they are today and the development of human nature.

This theory will be mainly focusing on the following questions: how far are nostalgia and negative or complex emotions present within archaeological interpretation and what do they influence within the emotive discourse? How effectively can the use of game technology better help both the emotions present and investigate how these can be integrated within the archaeological context?

Post-processualism has opened the door to recognising the significance of emotive factors spearheaded by Hodder in Çatalhöyük, but these factors are touched by a wider variety of subjects, giving rise to many interconnected approaches in research that will need to be untangled before delving further into the possibilities with dealing with emotions and archaeological interpretation (Hodder 1997, Hodder 1998, Hodder 2002, Hodder *et al.* 2004, Hodder 2006).

If one was to look at the different facets of human nature, like the presence of personhood, intentionality, subjectivity, or, in broader terms, human consciousness; something that may also be shared with animal counterparts in a sociological, scientific context (Anderson 2018, Chapter 6). In other words, the way in which archaeological storytelling

impacts the reconstruction of the past, be it visual or written, has a subjective and emotional factor embedded within itself that needs to be acknowledged, archaeology has being going towards the direction of humanities with the acceptance of post-processualism, but there is still more that can be done toward the understanding of emotions in the discipline especially in terms of methodology in the analysis of the material culture which tends to be isolated from its emotive factors (Shanks 1991, 148-190).

In isolating the facts and physical descriptions of objects or structures from their emotive use and perception by both the original makers and the users when making a digital reconstruction, the concept of human consciousness disappears, and the reconstruction is void of any human factor, which reduces the human representations inside it to a cardboard cut-out of what is supposed to be a complex and essential part of what archaeology is attempting to study (Johnson 2007, 18-33, 119-161).

There is an important advantage in archaeology considering emotions particularly when producing reconstructions, it can create a humanised stronger sense of accuracy and precision which goes beyond the physical aspects, this is because authentic reconstructions of people and humanities' development such as recent technology, wars, even simple family life, and the use of utensils in the house has a modicum of emotional input. According to some authors like Shanks and Johnson, emotions and their inclusion in archaeological reconstruction is a positive and important factor that enhances interpretation (Shanks 1991, 148-190, Johnson 2007, 18-33, 119-161).

In terms of methodological importance, emotional analysis and its inclusion in storytelling, should be placed at the same level of importance as everything else that is considered when making sure what is reconstructed or retold is accurate, true, meaningful and authentic.

There is a risk factor resulting from the presence of reconstructions void of interpretations within the human consciousness, and therefore void of emotions, this is the risk of interpretation by the user or viewer in the case of digital or any reconstruction using modern principles according to current social norms and cultures. This particular take on interpretation carries the risk of turning historical events into "what ifs…" in historical interpretation, in other words, creating fabricated history based on a limited level of interpretation due to the absence of emotive factors. This is a risk that permeates both reconstruction and storytelling, but the latter has the advantage of a level of guidance

following investigated factors as opposed to a random subjective visual interpretation with no direction.

The above is an interesting factor that may have the potential of enhancing archaeological interpretation, bringing the discipline nearer to the humanities area in which it is based and allowing a stronger grounding in realism of interpretation, as it would mean having reconstructions of objects, people and environments with the realistic and accurate inclusion of emotions as human consciousness and emotive interactions within archaeological digital reconstructions. (Anderson 2018, Chapter 17).

Therefore, this project will demonstrate what is to be gained by incorporating an understanding of emotion into future archaeological representation projects.

Archaeological reconstruction in VR and interactive digital media has developed steadily, with advances over the past decades making it possible for archaeologists to give a reasonably detailed visual representation of their findings, especially by leveraging technologies such as Lidar (Albrecht *et al.* 2019, 5630-5636), Photogrammetry (Kucukkaya 2004, 83-88), and 3D CAD reconstruction (Tsiafaki *et al.* 2015, 37-45).

Archaeology has also been making great developments in the area of interactivity within the use of the above technology to allow the public to see and feel the environments excavated and reconstructed by archaeologists, and by including emotive triggers and immersive storytelling based on emotional understanding, it will result in an even further development into the effectiveness of the above technology.

This project focuses on how interactive narrative and emotive triggers can be used in archaeological reconstructions to allow deeper engagement. The primary focus is the perspective of the designers and creators of such reconstructions regardless the level of their technical skills in programming or digital design.

One of the main difficulties faced in integrating game design techniques in archaeological reconstructions, within the scope of emotive reactions, has been the focus on precision by archaeology combined with the limited ability in artistic design and programming of triggers.

The above is something that can be done easily by a practitioner in the game industry but would be very difficult for an archaeologist if not impossible, this means that collaboration would be a possible avenue allowing archaeologists to be specifically targeted to breach this divide in both level of skills and expertise.

This work is motivated by the need mentioned above for integrating emotion into the reconstructive process to enhance the archaeological interpretation with the inclusion of authentic, true emotions felt and experienced by both the archaeologists and the audience.

A perfect example is the depiction of family life in drawings in history books or even museum displays, where the family mechanically performs traditional tasks without showing anger at things not working correctly, suffering through mundane events, or simply being frustrated by objects not working perfectly as they are meant to (Moser 1995,150-177).

There is also an argument regarding diorama reconstructions that inevitably result in a God-like, top-down view of the environment, in terms of feelings of superiority and all-knowingness (as opposed to the game version of physical top-down camera view which is a different concept), and legitimise a great many forms of discrimination, including sexism and racism. Some good examples are drawn from research on Aboriginal Australians, highlighting the politics within such representations and the damage that this has created in the long run (Moser 1995,150-177).

The introduction of a more rigorous use of emotive triggers and interactions within these static, politicised reconstructions may be a solution for this form of unchallenged, silent possibly unaware push that projects the developer's or creator's point of view, be it negative or positive, into the viewer's mind without the opportunity for challenge.

The functionalist (Davis 1959, 757-772, Pope 1975, 361-375) visions of the past could be removed from modern practice by skilfully including the awareness of emotions within new technological means of reconstruction, such as digital ones (Rothenbuhler *et al.* 2005, 59-69).

It is a curious fact that media, books, games, and television have been integrating emotions and developing their expression and depiction in an increasingly technically precise way, frequently interacting with archaeology and history to incorporate a level of precision, by employing historians and archaeologists to give a reliable level of precision through research in their productions, although concentrating primarily on the emotional aspects and dramatising the stories for entertainment purposes (Scott 2000, Heyns *et al.* 2014, Spotnitz *et al.* 2016).

When looking at archaeology within the recent past, emotion and human factors are shown to be rare and occasional exceptions when integrated into digital reconstructions beyond the physical descriptions. There are some good visual examples by Hodgson showing the

stereotypical depictions of unemotional people objects and places and how a small integration of emotive characters made the rare depictions more effective, even influencing the film industry (Hodgson 2000, 1-17) and this is also something discussed within the approach of archaeology towards emotion (Tarlow 2000, 701-892) and the application of empathy in reconstruction within the area of narration (Lydon 2019, 2-14). At the same time, the media, such as films, games and documentaries, inspired by archaeological and historical data, has attempted in many successful ways to be precise when it comes to costumes, environments, and objects.

The importance of emotion and its study has not been considered nearly as extensively in archaeology as it has in arguably more creative areas (Morgan 2019, Perry 2019, Katifori 2019, Bozdog *et al.* 2020). Creativity and emotions are intrinsic factors in humans, so their omission is problematic, as archaeology studies humans.

Archaeological reconstruction has been focusing on the precision and technical position of material culture, showing limited focus on the emotive factor intrinsically intertwined in the creation of such material culture, this may be due to the difficulty or impossibility of knowing what humans felt in the past without written evidence, especially when presented with fragmentary objects.

There is although, a possibility to combine the present with the past by allowing the audience, the community, and the general public to experience their own emotions, guided by the narrative given by the archaeologists, so that material culture could potentially show a stronger connection to the emotions involved in the creation and use of objects.

The issue is mainly directing the emotions so that they may not spiral in unwanted or misinterpreted areas and the technical difficulty due to the lack of skills especially when dealing with technical issues such as programming and digital design beyond the use of photogrammetry.

This research aims to design new methods integrated into a simple archaeogame combining a technical attempt in terms of specific emotive triggers and an artistic attempt in terms of the use of cartoonish and stylised graphics to enable archaeologists to convey and trigger emotive responses lowering the skill-set barrier by using the related point and click genre of games design.

The above is also attempting to avoid falling into the precision argument, allowing archaeologists to have better control of the narrative, focusing on triggering specific emotions and avoiding random emotive reactions due to a wide variety of factors. At the

same time the focus of this research is on the emotive connection to material culture and less on the technical use of objects and environments.

This would allow archaeologists to examine and convey the role of emotion in the past through the eyes of the present regardless of the level of technological know-how and unhindered by the precision debate. It would focus on character stories, contextual and cultural interactions, and creating an emotional reaction and attachment to the figures that would talk to us through architecture and objects. This project will focus on the communicated emotions in archaeological games and the use of media to express emotion, studying the user's response.

It will be a practical proof of concept, providing a space within which to think critically and creatively about how emotion is represented and how users respond to such representations in archaeological work. This experiment could have been undertaken in other media, such as watercolours, but game technology, which is an increasingly used technology, is poorly understood in the sense that aesthetic and narrative norms and rarely used by archaeologists due to the technical difficulty of programming and design, have yet to be established, may allow opening up the possibility of emotive storytelling to be an integral feature within archaeological game design.

There are lessons to be learnt in the way media and all connected means of storytelling show emotion, and there are opportunities to integrate these lessons into the archaeological process of reconstruction, especially when dealing with 3D reconstruction and the integration of game technology, which has a potential to enable the audience to have an interactive experience enhancing emotive perception.

For the purposes of this project, emotion will be defined as any feeling that archaeologists attempt to convey when reconstructing an archaeological scene and any feeling that the users of the proposed digital archaeogame environment may have that is triggered by the story being told. Following this definition, archaeogame as well will be defined as a study of digital videogames involving the use of material culture associated to archaeological studies and the use of videogames for archaeological purposes, creating a multidisciplinary tool used to investigate the emotions within archaeology, mentioned above.

The move from one mode, that is accuracy, veracity, and precision, from classical archaeology (Tarlow 2000, 701-892), towards a new, emotive representation of archaeology can be compared to the transition from Renaissance model art up to the 19th century, to new contemporary art that depends on an interactive back and forth relation

between the creator and the viewer or user. The latter depends on a relationship strongly connected to emotive interactions and may be specific to particular sectors of society, individuals, or age groups, making emotion both subjective and contextual (Benderlow *et al*. 1997, 173-190). In essence, archaeological representation is still in a figurative, didactic mode and has largely failed to respond to developments in popular and fine art towards emotional expressiveness and recognition of the importance of the audience as participants in the creative act.

There is a potential for further inclusion of emotional triggers within some areas of archaeological study, a strong example of such potential can be seen when looking at conflict archaeology, there is a sense of living memory which is more humanised and involves the relationship between the material world and the emotive aspects connected to it (Harrison *et al*. 2009, 1-25), making it interesting in the sense that negative emotions, mentioned in several occasions above, may also be easier to identify and investigate within this area.

There are several opportunities for innovation within emotive applications in the digital world within archaeological study beyond the ones mentioned above, such as the emphatic potential of gaming, the techniques used in films, books, and the media in general, which have been used and developed for years, apparently as a parallel concept to archaeology.

Archaeological reconstruction has had a limited relationship with emotions, as explained above, but the fact remains that there has been a constant need for archaeological practices in the field, museums, and education to represent human factors such as emotion or provoke it in some cases. This is not an isolated concept which can be explained by tackling a single area of study, and therefore the focus for this research needed to be widened. The most prominent factors present in the literature were in terms of emotive studies within archaeology and looked at specific areas of emotions while also opening the floor for further understanding through byproducts of the same research which this project intends to explore further (Moser 2010, Perry *et al.* 2017, Morgan 2019, McKinney *et al.* 2019, Katifori *et al.* 2020, Tost *et al.* 2009).

The focus of the further investigation is the interconnection with storytelling and narrative and the possible presence of specific areas of emotion such as nostalgia (Routledge et al. 2011, 638–652, Batcho 1995, 131-143 De'Diego et al. 2014, 404-411 Zhou et al. 2008, 1023–1029) nostalgia being a complex emotion to pinpoint, but being present in a consistent way, and the absence of research within the area of negative emotions (Tarlow

2012, 169-185) due to several factors which will be tackled further in the following chapters.

The research will analyse how archaeologists have attempted to visually show narrative to the audience, how emotions have been integrated into the narrative, how nostalgia, and specifically negative emotions, have a positive effect on the level of emotional depiction and natural representation within storytelling and narrative, and finally, how new and old technologies create emotional interactions.

The importance of negative emotions is another area that deserves further investigation, it is present in historical research and provoked by material culture too in the sense that people may respond to material culture with negative emotions, as its analysis and reconstruction may deal with wars, destruction of artefacts, reasons behind specific events, and representation of how oppressed members of society might have felt; therefore the need for negative emotions is also driven by the necessity to be inclusive.

This particular type of emotion has been avoided and ignored in representations due to the difficulty of balancing it in a way that does not harm or distress the viewer, as it is easy to offend or misrepresent particularly delicate and problematic events based on nowadays standards of interpretation which need to take into account the more currently recognised issues such as social justice, racism, colonialism and classism (Bruckner 2010), some results of interpretations may emotionally hurt the reader or viewer and cause negative emotions, combined with the possibility that the interpretation may be wrong, makes it dangerous in the sense of ethical protection to directly address issues that decisively cause negative emotions in either case (Scarre *et al.* 2006, 131-270). However, the main point is that something should not be ignored because it is difficult and in terms of inclusivity, leaving negative emotions would not satisfy this requirement.

The issues mentioned above such as social justice, racism, colonialism, and classism, should be studied due to the connection with the real impacts of emotions on people when interacting with heritage, and how archaeological and heritage media use or experience these triggers. It should be analysed in depth, and any attempt to understand it should be carried out despite, or even due to, the difficulties involved.

The reason for choosing nostalgia as a primary emotive investigation was due to the complexity of the emotion, being composed of and defined by other emotions and the difficulty to define it or understanding it, that is visible in most literature available (Khol et al. 1995, 39-56, Khol 1998, 223-246, Díaz-Andreu 2007, 209-278, Zhou *et al.* 2008, 1023–1029, Díaz-Andreu *et al.* 2014, 1-21, Bissell 2005, 215-248), by integrating it in a

digital environment based on immersive storytelling, would allow a different view and approach towards better understanding an emotion that is intrinsically connected to archaeology and this methodological approach would test the possibility of better understand complex emotions exploring a combination of multiple disciplines not done before.

As for the focus on negative emotions, it originates from the results of exploring nostalgia, as in many cases it is the trigger for negative emotions or a way to protect oneself from such emotions (Zhou *et al.* 2008, 1023–1029, Vess et al. 2012, 273–284, Bruckner 2010). The wide variety of negative emotions which are included in the complexity of emotional reactions would allow a realistic immersion within a digital environment, considering that an environment that provokes emotions allowing full immersion, would include both negative and positive emotions, while the trend in reconstruction and academic research is to either avoid emotions within reconstruction to avoid subjectivity and to shelter the user from negative emotions as it is not normally the focus of the study and may be considered risky in terms of representing difficult subjects such as social justice, racism, colonialism, and classism.

The research in the following chapters, as explained above, focused on two areas of emotion strongly related to the issues listed above: nostalgia and negative emotions, through the archaeological game produced as an integral part of the study. It focused mostly on nostalgia because of its impact on the perception of the past, which creates a large discrepancy between individuals, although the how and why of this effect is still to be fully understood and investigated within archaeology and the field of digital reconstruction combined with immersive storytelling.

The secondary focus was on negative emotions (stress, fear, anger, etc.) because, as uncomfortable as these emotions may be, they inevitably occur, and the archaeological scientific community needs to explore and understand them so that they may be managed conscientiously and responsibly.

On the other hand, there has also been a lack of focus on joy, a polar opposite to negative emotions, but, in a sense, a direct presence constant with negative emotions such as love/hate (Tarlow 2012, 169-185). However, in terms of representation, negative emotion takes a more central position in this research due to its complete avoidance and difficulty of representation due to the interconnected issues related to colonialism (Bruckner 2010) and the risk in causing conflict due to emotive reactions by the audience (Scarre *et al.* 2006, 131-270). Furthermore, the representations of situations that might be considered to

be moments of terror, such as raids and wars, have been historically represented with the above-mentioned top-down God view, which removed to a substantial extent the emotive impact that such moments may have had on people at the time and made them emotionless despite their emotive potential presence (Moser 1995,150-177).

There is a constructive advantage in looking additionally beyond purely academic material to better investigate illustration practitioners, as they tend to produce less academic material and more practical results, for example, Kevin Wilson gives a clear explanation of how emotion and, as a result, subjectivity is present and inevitably shown in archaeological representation, following the criticisms that archaeology has against reconstructions and illustrations. He says that the development of reconstruction is inevitably intertwined with impactful images, emotional attachments, and preference in specific styles; all things that persist, despite the insistence of archaeology on isolating or ignoring these factors (Wilson 2006, 1-11).

There is a risk which may fuel the elusiveness of stronger studies on emotion within archaeology, this is the danger of encountering the presence of subjectivity interconnected with emotion and as researchers, there is a need to select against things that feel uncomfortable and distasteful, and which need to be researched further or the reasoning behind this lack of emotive inclusion may be just because it was not thought about before, but this seems to be an unlikely oversight.

There is evidence of this tendency, but no data directly addressing it, as archaeologists enter the discourse of technical accuracy, but dismiss or avoid discussions regarding emotional accuracy for fear of subjectivity and fear that this is not precisely the area of expertise of the researchers involved, based on political pressure created by neoliberalism (Foucault 1984, 281–301).

They fear not having suitable rigorous methods of study to deal with it, a fear reinforced by the structure of academia based on the concept of neoliberalism extensively analysed by Foucault (Foucault 1982, 326–348), and observed further in academic studies on subjectivity and neoliberalist political studies on university practices in the UK (Hamann 2009, 37-59, Allen 2011, 367-383, Bansel 2014, 5-20, Raaper 2015, 175-290).

This is the point where one makes the transition from empirical archaeological research into archaeological expressions or uses of creative practice, it is only wrong to deal in the subjectivities of emotion if one claims to be objective. If one is to embrace subjectivity, as they do in creative practice, then there is nothing wrong with being subjective.

The fact is that subjectivity is still present, regardless, because everyone feels emotions which direct humans towards specific interpretations based on subjective experiences.

1.1 Questions and Aims of this Project

The overarching questions present within this thesis are:

- How are nostalgia and negative emotions present within archaeological interpretation and how do they influence the interpretative outcomes by the archaeologists and by the audience?
- How is the subjective nature of archaeologists' previous or current experiences in terms of emotional attachment logically assessed and moderated by the archaeologists, as opposed to presenting a bias and subjective interpretation transmitted to the audience through their narrative?
    - To what extent do archaeologists change interpretations due to their emotional background and experience, and how far can this be controlled to focus the direction of the narrative?
    - What other factors may cause archaeologists to feel different emotions from the ones expected or predicted by the creator of the emotive triggers?
    - How do different factors such as cultural emotive expressiveness, cultural proximity, negative emotions or complex emotions and nostalgia change the way archaeologists react in identical or very similar situations?
    - Is there a difference in reaction to all of the above in the case of an audience not trained in archaeological study and practice?
- How effectively can the use of archaeogame design enable the expression and investigation of emotions and how can these emotions be integrated within the archaeological context within such game design?
    - How far can this technology be adopted by creators and users with little to no experience in game design and how crucial would the need to be both a programmer and a digital designer be to create effective emotive experiences depicting archaeological material culture?

Going back to the basic ideas behind this dissertation, the study of emotion is not completely new in archaeology, there have been several studies focusing on different aspects of emotive presence and the application of emotive projection and analysis (Moser 2010, Perry *et al.* 2017, Morgan 2019, McKinney *et al.* 2019, Katifori *et al.* 2020, Tost *et al.* 2009), but it is still a relatively new concept to use generally in archaeology due to the

focus on material culture and telling the stories through the use of technical analysis of objects, even when trying to reconstruct stories focusing on humans.

Suppose one is considering the digital recreation of such stories for archaeological purposes. In this case, the level of technicality and the question of how accurate such reconstructions are, tend to take centre stage in the discussion in published discourses and even in everyday discussions during conferences and academic colloquiums, somewhat diminishing the fact that these reconstructions may have been made to tell a human story and that the technical ability of the creators may be limited in scope but their interpretative potential and ability to create experiences regardless outweigh the importance of perfect accuracy (Tsiafaki et al. 2015, 37-45, Olson et al. 2013, 244-262, Berggren et al. 2015, 433-448, Rua et al. 2011, 3296-3308, Galeazzi 2016, 159-169, Waagen 2019, 11-20).

The following work will first focus on identifying areas in the literature where there may have been an attempt to move away from the traditional "accuracy" approach and focus more on the emotions intrinsically intertwined with the story the archaeologists wanted to tell.

The areas of focus will be the emotions least approached in archaeological studies, possibly due to the uncomfortable and often difficult-to-mediate nature of the emotions: nostalgia and negative emotions such as stress, fear, anger, and unease, which are themselves connected to complex but very genuine issues in people's histories, such as slavery, violence, racism, and classism.

The fact remains that emotions towards the above problems cannot be recorded in an archaeological context and are limited, if not absent, in historical records, as many people affected by such issues in history have not been able to read and write. Therefore, the limiting factors will be part of a larger pool of other milder emotive factors artistically represented throughout history up to the present in an emotive reconstruction, to make sure an authentic feeling development and depiction will still be present though logical and historical development.

As there isn't a substantial amount of literature on the above uncomfortable topics, the research will move towards interviewing authors who may have come across some of these issues in their studies or work but may not have written down or published such data due to it being beyond the scope of their work at the time.

The second part of this research will then take the information gathered through the literature and combine it with the interviews and attempt to create a methodology to

provoke and test such emotive factors in a linear, predictable way through the application of storytelling to digital technology, focusing on game technology in the form of a point-and-click adventure game.

The final aim of this work will be to test an archaeogame resulting from all of the above research combined with a moderately low level of skill in game design and ascertain its practical functionality by employing surveys performed on selected testers.

The game will be produced using the most basic of design skills and no programming knowledge to test the possibility for archaeologists with no related skills to produce an archaeogame capable of provoking emotions through emotive triggers and containing a narrative that allows the researchers to explore different hypothesis raised during their studies.

The above was planned to be possible despite low level of skill and still able to provoke and convey emotive aspects connected to material culture and the investigation of such culture by archaeologists, focusing primarily on academic and public discussions related to complex emotions, nostalgia, and subjectivity in emotive memory association with individual experiences.

Furthermore, the archaeogame was developed to allow the application of emotive theory and development of engaging and educational programs through gaming without the need for either the skills, a large team, or a large budget to achieve, removing several barriers present for storytelling and narrative in archaeology using digital technology.

The successful development of such a game by me and positive results from the interviews after testing the game signified a positive result in terms of answering one of the main aims of this research.

The archaeogame intended for this project has been partially built around the environment of the town of Palmyra; this was a preferred choice due to my background work on the reconstruction and display of buildings recently destroyed in the ancient town. Back in 2016, I was responsible for the development of several digital reconstructions of buildings destroyed in Palmyra by ISIS.

The Hermitage Museum in St. Petersburg Russia allowed me to lead a project in which I intended to create several holographic images to display, during an international event dedicated to Palmyra.

I re-designed each one of the destroyed buildings in the ancient town using specific data recovered from both the site of the attack, pictures and plans drawn by colonial explorers

and antiquarians and paintings by Louis-François Cassas, Francesco Battista Borra, these had been left in the care of the Oriental Library in the Hermitage Museum

I was also able to use some detailed excavation drawings and data collected by a German expedition and the most recent excavations before the killing of the two directors Al'As'ad father and son by ISIS in Palmyra (Wood 1753, 78-178, Wright 1895, Seller 1696, Terpak 2017, Stoneman 1995, Gawlikowski 2011, Al'As'ad *et al.* 2010).

The original 3D designs of the Statue of Al 'Lat and the temple of Baalshamin amongst many others such as the Arch of Triumph and the temple of Bel produced for this event were the perfect example of material culture with a strong emotive connection that represented the type of complex or negative emotions that this dissertation intended to tackle.

Therefore, as the 3D designs were my original creation based on personal pictures taken on site before the attack and further developed using archaeological drawings from colonial explorers, antiquarians, painters, and archaeologists (Wood 1753, 78-178, Wright 1895, Seller 1696, Terpak 2017, Stoneman 1995, Gawlikowski 2011, Al'As'ad et al. 2010).

I re-worked the designs to fit the cartoonish style implemented in the game and placed them in crucial emotive storytelling points to evoke emotions associated with sadness, anger and melancholy as well as nostalgia, aiding in the development of my hypothesis on emotive triggers.

The more specific hoped-for results of the game and the surveys will be to gain a more precise direction and methodology for understanding and expanding knowledge in the area of negative or complex emotions and nostalgia while receiving concrete data on the issues created by the avoidance of uncomfortable subjects, the focus on precision as opposed to emotive reactions, and the tendency of archaeological research to concentrate on the hard science as opposed to a humanities focus relating to human emotions, psychology, storytelling and experiences driven by subjective thought and cultural bias.

1.2 Objectives

The research will focus on four main objectives:

- Identify relevant literature that focuses on emotive implementations in archaeological digital designs:

This objective is the base step for all the other goals; having a list of authors and written research that have tackled some of the aspects of emotive work in digital applications in archaeology is possible, but the applications are different from each other, and the experiments done on the subject are limited and very tightly focused. This is why more research needs to be done on the subject matter.

There are various emotive experiments, individual pieces of research, and ongoing research projects on the general concept of emotion in archaeology, many of which have talked the study of emotions within digital reconstruction (Moser 2010, Perry *et al.* 2017, Morgan 2019, McKinney *et al.* 2019, Katifori *et al.* 2020, Tost *et al.* 2009); however, they are all very distinct from each other and focus on small areas of interest, which results in there being virtually no research available for such wide-reaching topics as the one which is the subject of this dissertation. The literature will start with a wide-angle lens and focus down as narrowly as possible until it reaches the next objective, the need for which is a direct result of the issue explained above.

- Explore the unclear or incomplete analysis of the application of emotive research through a series of targeted interviews with researchers and practitioners who may have encountered nostalgia and negative emotions through their work.

Due to the relatively recent development of emotive studies in archaeology, obtaining data from the available literature that completely satisfies this research's requirements is challenging. As a solution to this problem, it was evident from the literature available that the authors had discovered many interesting facts about the presence of emotions such as nostalgia, negative emotive reactions, and unexpected emotive manifestations throughout their research.

However, the relevant authors identified and later interviewed and evidenced in chapter 3, concentrated on different emotive or technological aspects in their research. They had, in one way or another, encountered and observed some elements of negative emotions and feelings of nostalgia intertwined with their work.

On top of the above, some authors were selected for the literature review. The interviewees possess several years of experience in creating compelling storytelling and game design, and include Watterson, Schofield, Dennis, and many others (Watterson *et al.* 2013, Schofield *et al.* 2018, Dennis 2019). This experience will be a crucial part of developing the emotive archaeogame at the heart of the practice-based part of this research. It was important to include such authors due to the borderline position they took in their research, and the practical application experience they had of how to produce

emotive pieces of work while staying within the academic environment and facing the barriers created by archaeology and its practitioners.

- Explore how the representation and use of emotion in other media might improve and inspire new forms of archaeological storytelling, especially involving negative emotion representation and nostalgia.

The research will follow the literature review and interviews with a deeper investigation of the methods used by different media, such as films in the 1980's adventure genre including, but not limited to. 'Jurassic Park' and 'Indiana Jones', that depicted several nostalgic and negative emotive aspects of society very well; books focusing on storytelling or horror, which is a good source of negative emotive interactions with the audience, including, but not limited to, horror novel 'The Shining', or 'The Lord of the Rings'; and gaming such as 80's and 90's classics including, but not limited to, 'Monkey Island', 'Gabriel Knight', 'Discworld' and 'Indiana Jones' (Campbell 2004, King 1978, Spielberg, 1981, Lucas, 1977, Verbinski, 2003, Pratchett, 1983, Core Design, Aspyr, 1996, Factor 5, Lucasarts, HotGen, 1999, Naughty Dog 2007, Ubisoft Montreal 2007).

The writing and cinematographic techniques of the authors mentioned above are good sources that can be used to create compelling storytelling narratives which may have been used to create particular emotive effects on the users and readers. These techniques may create various possibilities in archaeology if integrated into a digital archaeogame focused on storytelling as an emotive driver.

The above will then be followed by a comprehensive analysis of the effects of nostalgia on the way people perceive the past and compare the positive and negative effects of this particular emotive combination, showing how negative emotions interact with the more extensive concept of nostalgia.

- Create a simple, easy to design and program archaeogame aimed at predicting and understanding emotive reactions through storytelling combined with theory from cinema, literature, and videogame technology, all areas focused on emotional responses. Also, ascertain its effectiveness and usefulness for future nostalgia and negative (complex) emotion studies research.

In this last part, all the theories developed throughout the research will be combined and tested in a practice-based approach. The game will focus on storytelling, as mentioned above. It will have a combination of emotive triggers that will guide the user towards

feeling emotions connected with nostalgia and negative (complex) feelings, including, but not limited to, anger, frustration, sadness, and fear.

The storytelling will attempt to encapsulate several of the issues in archaeology, historical studies, and museum studies, which are presently creating a connection to the feelings mentioned above and, therefore, will be a stylised game with vague links to the real world but not focusing on realism in order to avoid switching the focus from emotions to precise reconstruction.

1.3 Methods

The methodology further explained in the named chapter, was based on a mix of qualitative analysis of literature, interviews, data concerning nostalgia and negative (complex) emotions, and a combined pool of interconnected methods and topics that enable and enhance storytelling. All of the above has been combined in a simple archaeogame which tested the efficiency and effectiveness of triggering specific emotional patterns through a combination of game technology and emotive studies.

The first step was to explore theories and methods to use as a base for the development of a game based not only on practical effects and technological advancements, but also on an in-depth analysis of the available research, as it is understood that this is not the first study on emotive experiences in games in the area of archaeology, but it is the first to combine negative (complex) emotive effects and nostalgia in a fully functional easy to develop game.

The second step was to gather the unwritten information available by interviewing various related authors and experts in areas closely related to the one at hand. This involved a selection of specific individuals who came under one or more of three criteria that included:

- Researchers who dealt specifically with emotive interactions and game design, who came across interesting results or alluded to interesting results in terms of emotive reaction and unexpected emotive results from the audience or users of their experimental digital experiences, but who did not include a detailed analysis of such results due to the focus being an alternative one.
- The researchers had to be involved in cultural, game or archaeological studies as a focus, preferably touching upon all three areas.

- There was an attempt to balance the representation amongst the researchers interviewed as far as possible, but the small pool of experts fitting in the description and the ones who replied positively to having interviews made this aim limited in scope.

This selection was followed by a series of interviews that were then analysed using the narrative analysis technique (Smith 2000, 313-335), this enabled the exploration of the different stories told by the researchers, connected to their emotive experiences and interactions during the studies they chose to use as examples.

The above was used to explore what effects these different emotive experiences had both on the researchers and the audience in terms of audience emotive reactions or their own emotions. Lastly, I attempted to analyse the conclusions the researchers to extract applicable hypothesis to implement within my research and the development of the archaeogame, in connection with the emotive experiences related to the examples given.

The third step was, as mentioned above, an analysis of more expansive subject areas, which will be integrated into the making of the game to obtain the required effect, as it is understood that the use of archaeological study alone would be insufficient to enhance the storytelling aspect of the experiment or create emotive triggers, both of which have been studied in detail within more closely related subjects.

The fourth step dealt with interviewing users who tested the archaeogame produced using all the above information. The testers in this particular instance were different from the first group that focussed on researchers and experts in emotive and game design; this group was divided into four types:

- Archaeologists with knowledge and practice in using computer games: these were chosen so that the emotive reactions experienced during the game would be compared to the reactions of individuals who would have had archaeologist's values and ability to comfortably play games; the emotive reactions were expected to be controlled and inclined towards ethical and moral values attributed to someone who dedicated their life to archaeology.
- Archaeologists without previous gaming experience or knowledge: this group was aimed at giving a result in line with experts in archaeology who either did not have interest in games or never tried them before, in order to have a test sample showing the emotive reactions with the discomfort or novelty of exploring a gamified environment.

- Non-archaeologist gamers: this group would have no previous knowledge of archaeological study and a high level of experience and ability in using computer games, giving a result more in line with someone who would not be aware of archaeological issues, conflicts and ethical standards; producing a set of data akin to the general gamers public.
- Non-gamers, non-archaeologists: this group would represent the set of users who would be trying games for the first time and have no previous knowledge of archaeological theory or issues surrounding it, possibly being the more emotionally opened group as the new experience would trigger raw emotive reactions such as but not limited to discomfort, excitement, annoyance or amazement.

The fifth step was an analysis of the post-gameplay interviews based on a specific emotive analysis table which targets emotions including, but not limited to, anger, uncomfortableness, disgust, and other negatively associated emotions which were then classified as complex more than negative in nature; to ascertain both the effectiveness and impact of emotive triggers placed in the game.

The above analysis was performed using a combination of narrative analysis (Smith 2000, 313-335) and framework analysis (Furber 2010, 97-100), the first aiming at exploring the user's experiences through their version of the story they felt they experienced, what was the effect that each emotive trigger inserted in the story had on them and what they concluded from the resulting feelings.

The second analysis type employed at this stage was framework analysis, allowing the users to express which triggers worked and which did not without directly asking them to do so, through a series of indirect questions, to then ask them why according to them the triggers did or did not work.

The Sixth step was creating a technical methodology explaining the processes present within the game, its limitations due to skill and time, and how these issues have been worked around. The research will attempt to create a technical walkthrough that will give a clear idea of how the storytelling has been structured, how the interactions are meant to trigger specific emotions, and how the reactions will be recorded and evaluated after the test users have completed the game.

1.4 Chapter summary

- **Chapter 2**: Complex and nostalgic emotion in digital archaeology and archaeogaming: interconnections between emotions archaeology and serious archaeogames. This chapter explores the literature surrounding the topics of archaeology and emotion, archaeogaming, serious games and nostalgia. It expresses the need for further interviews with the authors, outlining the various issues that need to be explored and the questions that the authors will be asked.
- **Chapter 3**: Interview results and analysis. This chapter summarises the results from the interviews with the authors and researchers working in emotive work within the digital environment in archaeology.
- **Chapter 4**: Creative decisions behind the creation of the archaeogame. This chapter explores the different areas of study and the artistic motivation behind the study. It explains why certain aspects of filming, gaming, and storytelling were chosen for this study and the intended outcome after their use in creating a digital archaeogame.
- **Chapter 5**: Game storytelling design and questions. This chapter outlines the creation of the achaeogame, developed as a case study to test ways in which theories derived from the literature review, the interviews, and the exploration of concepts such as nostalgia, negative or complex emotions, and archaeology, could be applied in practice. This is followed by the questions testers would answer to fulfil this research's aims and objectives.
- **Chapter 6**: Analysing the archaeogame results. This chapter aims to descriptively show the results of the interviews and questionnaires completed by the test users of the developed archaeogame and group them in different topic areas. Areas of interest are to be further analysed in the following chapter.
- **Chapter 7**: Interpretation of the archaeogame results. This chapter serves as an analysis of the results described in the previous chapter, going into detail about what the results mean and their impact on the aims and objectives of this dissertation, summarising the results to obtain a meaningful conclusion to this research.
- **Chapter 8**: Conclusion. This chapter is the conclusion to the dissertation; it contains all the results of the investigation, its possible meanings, and how this research has a substantial impact on how digital gaming can aid archaeology in understanding the emotive aspects connected to nostalgia and negative emotions

which have not been investigated until this point. It also suggests further studies that may derive from this work and are essential to understanding emotive work within archaeological context.

Chapter 2

Complex and nostalgic emotion in digital archaeology and archaeogaming: interconnections between emotions archaeology and serious archaeogames.

To fully appreciate the initial ideas and the theoretical and technical development of this project-based work, it is necessary to paint the area of research using a broader brush before attempting to look at it in more detail. The following chapter will attempt to address this.

There are a wide variety of theories in archaeological reconstruction, and the development of such literature is constantly adapting to new technology, addressing concepts of precision, and attempting to use such technology to advance archaeological research, at times to the level of fetishism, as mentioned in work by Dr Perry (Perry 2019, 354-371) which will be further explored below. Just a decade ago, the landscape looked very different, relying on analogue technology and having a substantial emphasis on the study of what VR was, as opposed to how it might be used or the possibilities that such technology may have for reconstructions in archaeology (Forte 2014, 122-143). This fast-paced development makes it virtually impossible to give insight here into all areas, even within the limited extent of digital work.

Therefore, this chapter will focus on authors who attempted to study emotive factors observed within the use of digital technology in the context of archaeology and more broadly in archaeological reconstruction. The way in which the authors have explored emotive work has been limited to the technical argument of subjectivity and avoidance thereof. Therefore, the important emotive triggers and reactions which were accidentally discovered when focusing on other areas of research have been put to one side in order to concentrate on more traditional and safer-to-explore concepts, such as the technical exploration of precise reconstruction and discussions on how technology should be limited and controlled in terms of precision (London Charter 2009, López-Menchero *et al.* 2011), instead of being used freely within the emotive study.

Another important area that will be explored in detail within this chapter is the application of educational value, storytelling, immersion potential, emotive expression, and historical visual depictions that are possible nowadays due to the presence of areas of research such

as: archaeogaming, serious games exploring emotive concepts, historical games, and walking simulators.

All of the above have been developed attempting to integrate several areas closely connected to narrative and immersion such as literature, filming and gaming, something explored in more detail in the following chapters.

The present analysis of the literature on the topic of games may show potential applications to better express and analyse emotion within archaeological digital reconstructions but do require a wide variety of skills, equipment and talents that may not be available to the average person and therefore the application of such techniques and theories although relevant to the research will be acknowledged but only applied to the proposed game if in the spectrum of the available skills of a person with limited digital skills.

The reason behind this decision is due to the objective of this research is to identify a method possible to use by digital archaeologists with a limited grasp of digital design and no programming experience, to still create emotive experiences within basic if not rudimentary archaeogames, using as little programming and digital design as possible without impacting immersion and emotive triggers.

The literature analysis will be enhanced and advanced by using subsequent unstructured or partially structured interviews so that some unwritten concepts encountered by authors will be more visible and easier to understand. This decision was taken because many sample projects explained below indirectly touched upon interesting and surprising principles and issues which were not inserted into the literature or investigated in enough detail in terms of emotive presence. This may have been due to a variety of different factors influencing the researchers, including different focus topics, lack of funds, uncomfortableness of the topic, or other reasons that may only be revealed by directly talking with the researchers in question.

The end of this chapter will provide a set of questions to be asked of the investigated authors, covering emotive and technical facts encountered within their mentioned projects which were not included in the written work due to different focuses in research. The need to interview the authors is simply due to the fact that there is not enough literature available to review on the specific topic of emotive reactions, triggers and the presence of feelings of nostalgia and negative emotions in archaeology; these being the focal reason behind the development of this piece of research as a whole. The clear empty space left by the lack of such specific research, despite the clear presence of such emotive principles

within several research projects, is an indication that this area of study has not been explored before and may run the risk of being either ignored or lost due to the overall focus of archaeology on precision rather than emotive understanding.

To test the theories extracted from the interviews, enumerated in the subsequent chapters, the concepts discovered and developed will be integrated into the methodology to create an archaeogame built specifically to provoke emotions and study the issues raised during these interviews.

2.1 Methods of Analogue Reconstruction and Relation to Emotion

Methodology in reconstruction is usually established through the base archaeological data given, such as measurements, object discovery and purely physical descriptions which specifically attempt to avoid subjective interpretation. However, the common factor is that each reconstruction of the same site whether this involves standing buildings, dig sites, environmental reconstruction or objects found during excavations, varies depending on the person reconstructing, their skills in the chosen medium and their creative choices; a single reconstruction may even change over time, as the person doing the reconstruction changes their style or develops further skills (Gero 1995, 143-145).

The above description works hand in hand with the concept that no reconstruction is a simple, transparent representation of the past. All reconstructions are based on some pure facts, and on subjective choices based on a wide variety of other facts that may range from creative inspiration to political and cultural ideology, making images as subjective as words and considered to be more misleading (Smiles *et al.* 2005, 14-25).

Furthermore, the combination of image and text derived from the practice of the archaeologist is a complementary factor that helps the understanding of the story that is trying to be told, despite the issue of being partially or even fully biased due to the influence of artistic choice and cultural or political influences on the artist (Molyneaux 1997, 2-8).

But the crucial factor is that the final result is subjective to the person doing the reconstruction, which raises the question of the core reasoning behind their choices. (Hodgson 2004, i-xxiv) This usually involves interpretative differences; each site can have several interpretations, but in reconstructions, these may not just be based on the interpretation of fact, but on the style choices and background of the artist, including emotional and storytelling skills that become imprinted in the final product.

The most essential part of any reconstruction, whether it is grounded in the handcrafting skills of the researcher, such as an artefact physically remade in a particular material and setting, a museum display, an itinerary, or an artistic display, or even if it is remade using a digital reconstruction, is the storytelling woven around that artefact.

Without a story, there will not be a connection to history, essentially the telling of a past story or storytelling. Storytelling has been used regularly in archaeology, especially in the early days, by archaeologists such as Wheeler (Moshenska *et al.* 2011, 46-55). But with time this has changed due to a developing widespread belief that archaeology needs to be dry and precise, leaning toward processualist approaches to archaeology and quasi-scientific methods of excavation documentation, avoiding any emotional influence in order to combat the constant threat of subjectivity attributed to early archaeology based on colonialism (Liebmann *et al.* 5-20). There are many instances where it is simply not true, and archaeologists have found ways of using imaginative ways to depict archaeological data.

In the words of Rabindranath Tagore, "A mind all logic is like a knife all blade. It makes the hand bleed that uses it." (Little 2000, 10-13). This was inspired by the processual approach interpretation by Shanks in which there is a need for archaeology to allow emotions to guide the realistic representation of landscape (Shanks 1991) and Tilley, on the other hand, seeing subjectivity as a personal approach to memory and interpretation guided by emotion (Tilley 1994); in other words, if archaeology is explained all in logical dry terms, it will damage itself, and this is what happens when archaeology does not employ imaginative areas of storytelling for the public and restricts itself to what has generally been considered grey literature and scientific, academic work.

But storytelling is not only an exciting, fun way to depict and describe archaeology, it is a potentially productive means of communicating emotion which deserves more attention within archaeology, even without involving digital or video means.

The above can be seen in many museums, old and new, where since the very beginning, curators have been using a variety of techniques to tell the story of artefacts by displaying them in particular arrangements, which impelled the viewers to find out more about the context and the history behind them. This method started as an individual contextual positioning with no written methodology, but subsequently moved onto being a museum studies core subject (Moser 2006, Ames 1992, Walsh 1992).

It was stated that, despite the focus on storytelling, museums in the present are still having difficulty dealing with emotive responses and guiding them or giving them a general

direction. This is due to the complexity and elusiveness of emotions. The main issue and a constant area of testing has been in provoking any emotions, not in provoking specific ones. This has been the case even in projects where simple choices were to be made step-by-step in a story, in order to progress to a new scene.

The emotions perceived by the audience have been difficult to predict and focus on. For example, in the case of the Hunterian Museum storytelling experiment "The Antonine Wall: Rome's Final Frontier" (Economou *et al.* 2018, 1-8), the audience reacted in unpredictable ways, and the reasoning behind such reactions was hard to pinpoint as it had several subjective reasons depending on the audience member's background, personal experiences and preferences.

One issue with presenting museum displays as an example of emotive expression and catalyst is that some work is mainly related to emotion, for example the emotions expressed by art, or ensembles of objects intended to provoke specific emotions such as disappointment, rejection, or even disgust, yet visitors may react differently, or even oppositely to expectations.

Still, this approach is challenging to focus on due to the randomisation of emotive reactions and the use of artistic designs that do not give a direct, clear outcome. Due to the difficulty of focusing and obtaining a clear direction, some institutions and researchers have resorted to targeting only one emotion at a time, although even that has been found to involve a more complex mix of emotions than the single one intended, warranting a more focal approach again (Mazzanti 2021, 1-81).

Museologists have been working hand in hand with anthropologists to try to find ways to understand emotive connections with the past and convene those in the stories told in museums, as shown by Moser (Moser 2010, 22–32). Meanwhile, archaeology has advocated a cautious approach, concentrating mainly on the dangers presented by emotive reactions, even within emotive studies.

An interesting factor is that some archaeologists such as Moser, Perry and Economou, actively dealing with museology, have been caught between the two roles, resulting in a constant debate between combatting subjectivity and admitting its presence in emotions, without trying to understand the why of its presence and while categorising it as a negative trait instead of a complex one. This is especially the case when talking about a significant actor which appears to be at the pinnacle of this push towards isolation from emotion: nostalgia (Campbell *et al.* 2017, 609-611).

The concept of nostalgia has been mentioned on several occasions and closely associated to colonialism, subjective interpretation, escape from reality and a complex emotion that touches on other, mainly negative, aspects of the emotive spectrum, causing a subjective, instinctive interpretation of history. For example, one person may associate something negative with an event, while another may associate the same event with something positive for themselves and have a nostalgic feeling towards that past event as a result.

The great size of the argument and issues around nostalgia became so apparent while exploring it (Archer 2000, Boym 2001, Lowenthal 2015, Herzfeld 2005) that it warranted creating a chapter dedicated to the topic. Therefore, this will be explored more comprehensively later on.

Going back to the wider pool of information from museum studies, a practical approach to cataloguing the different crucial aspects to look at when creating a museum exhibit has been given in a paper by S. Moser, in which the main factors are laid out in a clear list, some components of which may be further analysed for the implied unclear presence or complete absence of emotive elements.

"Architectural style" (Moser 2010, 22–32) is the first emotional impact that the museum has on visitors; it affects how they perceive the environment around them, and the more it is connected contextually and emotionally with the exhibits, the better the experience for the visitor. This aspect can be difficult to make use of, as building choices can be limited, and the architecture may be appropriate for some exhibits and inappropriate for others.

The main factor of museum architecture, which is not hinted at but may play an essential part in how the visitor perceives the museum, even to the extent of whether they choose to enter or not, is their emotional association with the building, which irrespective of the curator's intentions, can result in unpredictable emotive reactions.

An example would be a case where the building had imperial or colonial architectural components and displayed an exhibition on slavery; how would the visitor feel?

Another clear example was observed during the 2007 exhibitions marking the bicentenary of the abolition of slavery. The displays were designed to remind audiences of what happened, and provoke emotive reactions as they explored these specific exhibitions. However, the response was surprisingly different from what had been expected, and very reminiscent of what archaeology attempts to do when dealing with uncomfortable issues. The recorded response was emotive redirection by most of the white viewers towards other discussions, which worked in opposition to the intentions of the creators of the

exhibitions and resulted in most viewers attempting to ignore or justify the negative facts (Smith 2010, 193-214).

A number of questions follow on from this: How did the curator of the exhibition decide on the setting? Did they choose to provoke emotion? Was there a process in the decision that resulted in the desired reaction? Were the emotional factors considered, or just the contextual and aesthetic factors? That would be a question of interest when looking into the emotional connection to reconstructions of cultural proximity and historical events based on controversial issues such as slavery.

The expression of the critical effects of the answers to the above questions is summarised in the conclusion of Smith's paper about engagement in museums and heritage sites; the emotive expression was extreme in many cases; emotions were uncontrollable and left many of the people interviewed unable to express themselves with words (Smith 2014, 125-132).

The emotive reaction can be both beneficial and detrimental. Having a way to control emotive reactions and direct them in a particular direction, for example, limiting emotional damage to the audience, is a priority that has barely been considered in archaeology although it clearly should be, given the unambiguous results seen in museology.

Following the Moser analysis, there are also other factors at play, apart from the physical representations; light, for example, can also have effects on emotions and needs to be considered by the curator alongside all the other factors.

"Design, colour and light" (Moser 2010, 22–32) cover the elements defining the colour and ambience in how an archaeological exhibit is displayed. This can give a sense of contextual harmonization, creating an environment where the objects look naturally at home, but it can also be used to desynchronize the thing, making it feel out of place. Modern styles can be mixed with ancient ones to attract the viewer's attention and the light, design and colours can create a situation in which commonly found objects can be as attractive as rare ones.

The research done on this aspect of presentation, similarly to the previous ones in museum studies, centred on the shock factor, environmental synchronisation or desynchronisation as an object of attraction for education and interest. Not much is said about the emotions intended to be provoked which may have caused such choices, or the emotions felt by the viewer in connection with the archaeology, nor is any information given about the lighting present in the area, or the odd modern art piece placed in contrast to the archaeology

around it. Questions about these factors could helpfully be asked of the authors of the relevant research on museum exhibitions.

"Subject, message, text" (Moser 2010, 22–32) explains how text is crucial in an exhibition to attract the scientific inquiry of a viewer, and how much text needs to be produced attractively so as not to look like a book. This description, in the same way as many others in museum studies, fails to explore the emotional aspect of the presentation of the text.

How can text feel attractive to the viewer? What factors make the viewer reject long, boring book-like text? What resonates within personal experiences to the point that the viewer stops and reads the text? There is also a clear risk here of enhancing the racism and stereotyping issues, or even collective fabricated history, instead of confronting and dealing with it, if one accepts the emotive attachment to the past previously considered by Smith and others in areas such as collective memory.

An example of the unseen but intrinsic effect of writing a message or a piece of text is that it may reinforce collective memories, which may have been used to cover up uncomfortable events to shield the emotive perception. This results in creating fake history which is widely accepted (Wertsch 2008, 58-71), and again, archaeology attempts to avoid similar negative emotive reactions and results by writing text in a dry and direct manner as opposed to storytelling.

"Layout" (Moser 2010, 22–32) gives the artefacts a precise position in relation to other artefacts and the public, delineating a particular area depending on the subject, size, and feeling of space related to the culture or the type of exhibit. This factor again has a potential for emotive reaction, which may have influenced many curators when making tactical decisions, for example, placing some cultures in proximity, with larger or smaller areas delineated for each, to show the historical importance according to the curator, or their might in war, depending on the topic. How did the curator feel about this? Was it a choice based solely on archaeological knowledge, or did emotion also guide it to provoke emotion?

"Style" (Moser 2010, 22–32) as applied to the way in which the displays are created has a plethora of literature backing it (Hall 1987, Riley 1992, Miles 2002, MacDonald 2010, Monti *et al.* 2016). Still, it concentrates mainly on the fact that museums have a function as 3D showcases of an object that the public would typically see only in books, and the fact is that many museums have been concentrating more on single idea exhibitions than focusing on their main purpose of simply showcasing the objects to the audience.

Style is an area where emotion should, in theory, be present. It allows an artistic aspect that can be used to showcase and provoke emotion connected with the archaeology. Still, the literature concentrates more on the physical function of the museum exhibit, only hinting at the possibility of emotion being a factor influencing the style.

Although there have been many examples of the use of style in the study of curatorship and museum exhibition techniques, most of it has concentrated on the cultural and historical knowledge output factor, the attraction of the audience, and the retention of museum visitors. Crucial questions on the emotive aspects which guided the curators and the visitors themselves in regards to the artefacts and the stories connected to them were covered by the emotive response of the viewers, with little consideration towards the question of the technical direction of the emotion, or how to control and guide this response, many of the researchers in the area seemed to have considered. They acknowledged the presence of these negative emotions, their lock and the reasons behind them.

The above may have been caused by shame, avoidance or resignation, but did not result in a plan or a solution to deal with them or provoke them to study them further to solve the problem (Sandell 2007, Smith 2010, 2014, Wertsch 2008, Tyrrell *et al.* 2004).

Up to this point, the revelation that museum exhibits still face the issue of not being able to direct and aid emotive reactions to the displays is relatively straightforward, primarily due to the way in which archaeology was introduced to the modern world, focusing on the emotional experience of the viewer, but in itself evolving into a subject less centred on emotions and more on the dry facts.

Stepping back to a time before more traditional museums, when the term represented randomised collections of curios collected by antiquarians, one can explore the post-colonial days of early archaeology as intrinsically connected to the issues explored above, characterised by the focus on the archaeologist himself and the almost human-like character given to the archaeology discovered by the early archaeologists, with famous examples such as the discovery of Tutankamun’s tomb by Howard Carter (Allen 2006) or Knossos by Arthur Evans (Marinatos 2020).

Archaeological reconstruction is not only based on reconstructing an area or an object or placing them in a museum environment, but is also the reconstruction of the contextual environment in which the archaeology was found; this is done in journals, diaries, and media (Capone 2011, 445-452).

In the early days, archaeologists were the centrepieces of their stories, romanticising the way they discovered archaeology (Thornton 2018, 31-32) and using methods that would be unacceptable for a modern archaeologist; they instilled emotions in the audience which made them want to travel and see for themselves the wonders reconstructed and fantasised in pamphlets and guides. These had a heavy emphasis on storytelling which, if separated from the colonialism of the time, is a crucial part of archaeology (Praetzellis1998, 1-3, Gibb 2000, 1-6).

The development of these guides was a natural evolution of painting and drawing in archaeology; these were the first methods of reconstruction, which coincidentally involved the use of detailed archaeological data to create an emotional aura around the site by making attractive maps, including rearranged and fantasised drawings of the site, with the archaeologist in the middle of the archaeology, represented as an adventuring hero (Thornton 2018, 31-32).

There might be a negative view of archaeology in post-colonial times compared to the ethically sound archaeology conducted nowadays due to its association with the British Empire and the subjective nationalist interpretations and descriptions typical of the time. Still, if looked from an emotive point of view; the drawings and maps used in archaeological studies nowadays lack the emotional connection that was made back in the days of archaeologists like Evans or Petrie. Those illustration had an additional dimension of emotional development between the visitor and the archaeology itself, which created an archaeological memory and story of the colonial era and still permeates the work left behind by these adventuring archaeologists (Thornton 2018, 1-48).

The last few paragraphs were intended to show that there are different levels and types of emotional and contextual developments in archaeology, which can vary from the stories built with a simple map to the stories made by the archaeologists who worked on the archaeology described. These are still types of reconstructions, they may not be physical, but they are contextual reconstructions based around the archaeology and the events happening as the excavation takes place, which may be even more important than the simple method of excavation and retrieval of data, since they also describe contextual archaeology as it is being created again on top of the more ancient archaeology.

If one is to think of the colonial environment nowadays, that itself is contextual archaeology, and the dig site, the maps created at the time and the stories of the archaeologists with all the emotions they experienced and allowed other people to share

have now become part of the archaeological site itself, as both tangible and intangible heritage.

Coming back to the images and illustrations made by both the early archaeologists and the antiquarians of the past, which were main culprits of the culture of publicisation of the archaeologist and the archaeology itself; these illustrations were also a separate entity to archaeology until the 1990s, relegated to being seen more as history or art, and they are still only part-way to being given actual recognition of their value in archaeology. Nevertheless, they have had a long-lasting effect and influence on archaeological research due to their interpretative power in reconstructing the past (Smiles *et al.* 2005, 1-5).

Since its early archaeological application in the late 1700s, illustration has been described as a way to test the theories brought about by antiquarians against the precise measurements and positioning of the objects represented.

This is because the illustrators themselves saw the advantage of the more precise use of visual representation when explaining the past in a historical context, combining the archaeology seen with the stories of the past told by historians (Smiles *et al.* 2005, 4-5). But what about the emotive aspects of such reconstructions? That is the focus of this project, and there is no intention to enter the debate around whether illustrations are precise enough for archaeology. There are many debates on the matter, which would unnecessarily push this research in a different direction.

But for the purpose of completeness, within the context of 18th and 19th century antiquarianism, the modern separations between art and archaeology did not yet exist. Historical paintings from this period, with their re-imagined depictions of the classical world, can be seen as emotive expressions, but such expressions have been more closely related to the discussion surrounding colonialism, and the presence of nostalgia may have developed from such emotive inventive depictions of a near-fictional past (Khol et al. 1995, 39-56, Khol 1998, 223-246, Khol et al. 2000, 149-174, Díaz-Andreu 2007, 209-278, Díaz-Andreu et al. 2014, 1-21). The presence of nostalgia will appear repeatedly, especially in connection with colonialism, and will be further analysed within the context of this research in later chapters.

The main focus here is the emotional power of archaeological illustration and, as one may imagine, there is great potential in this area; the illustrations themselves not only served as archaeological measurements, as the early authors claimed, nor did they only deliver the stories told by antiquarians, but they were also the only way to accurately deliver

emotional aspects of both the sites they represented, and the people illustrated in the same work.

As explained by Moser, there are cultural aspects to illustrations which, despite constant striving towards being as objective as possible, are inevitably connected to cultural and subjective interpretation. These are based on cultural landmarks which, despite the intention of being objective, go back to the icons of fire, and hunting due to generalised interpretation making them a subjectively interpreted list of objects (Smiles et al. 2005, 31-34).

Again, this may be an issue regarding actual accuracy, but how could this be helpful if looked at from the emotive perspective? Would Moser agree with the usefulness of archaeological illustration, even in religious icon imagery, for archaeologically representing and explaining human emotion from primal times to the present and connecting the viewer with the past? Are illustrations a window into the emotional culture of humanity? If so, how can this be measured or sampled? The above questions are not currently the focus of archaeological study; precision and culture, in general are.

In some cases, when looking into images, drawings, and paintings in archaeology, some authors create work that is both informative on the historical and archaeological site and, at the same time, depicts a level of emotional connection, which results in visual work which resonates with the viewer's emotions.

A clear example of one of these cases is work done by Kevin Wilson, whose illustrations are most commonly found in British archaeology magazines and Metier International, or directly in museum exhibits Fig. 1 and 2. He depicts the past, drawing archaeological artefacts and clothing as worn by the human characters he creates, putting a significant emphasis on their emotional state and character, as clearly shown by some of his work below, taken from his official Facebook page and his "work in progress" website.

Fig. 1 Bringing to life historical figures, (Wilson 2020).

Fig. 2 A necklace with interlinking beads made from reindeer antlers was found in a French cave inhabited in the Ice Age. (Wilson 2020).

Archaeological drawings of the particular type shown above has often been relegated to a more commercial, customer-oriented public sphere. Still, in terms of emotive depiction using visual, illustrative art, it is one of the few areas where emotions from both the creations and the viewers can be tangibly seen, and asking for the author's thoughts directly in line with the emotive aspects of his work would greatly benefit the academic theory, or lack thereof, behind this particular topic.

However, the interconnection between archaeological study and art has often been researched. The first observation to be made was that the interdisciplinary role of the practice did become productive, especially in the area of emotive reconstruction (Gant *et al.* 2017, 100-120); this is due to the unsurprising fact that art, in terms of drawings and depictions, has always been a catalyst for human expression and emotion (Nordbladh 1978, 63-79, Ingold 1993, 152-174, Jones 2006, 211–225, Helskog 2004, 265–288,). It was inevitable that such art, despite becoming increasingly digitalised, remained similar to its original state and was included in the archaeological process, as emotion was not an issue but a much needed expression to help in understanding the past (Whitley *et al.* 2015, 1-22).

One argument that could be made against the 'need' for emotive expression when creating archaeological drawings could be when talking about depicting buildings; one could say that this is a technical skill; a building has precise measurements and visible characteristics. Still, this argument does stand once one looks at the discipline that deals with the technicalities of building and drawing: architecture. There is no standing convention in architectural drawing regarding construction drawings or construction notations.

The reason behind such contradictory fact is that there is such an intrinsic relationship between design and emotion that agreement between different designers is impossible, especially when cultures are different; the emotive expression in their drawing is evident (Frascari 2010, 107-113). Therefore, when one sees the deep interconnection between such technical and artistic skills employed in archaeology, museology, and storytelling, it is inevitable that the discussion will converge toward emotive theory.

2.2 Dipping into archaeological and historical Emotive Digital Theory

With the advent of digital technology, some of the above-mentioned techniques, such as architectural or artistic drawing and painting, gained further applications, and the school of

emotive digital application was born. This project will limit itself to the area of emotive understanding, as opposed to all of the digital technology applied to visual contextual reconstructions in archaeology, as the topic would spread too broadly in the areas of technology's effect on society in anthropological terms, as many early and contemporary authors have looked into this area extensively (Bijker *et al.* 2012, Gell 1998, Latour 1996, Ingold 2007), whereas very few have researched into the emotive aspects.

The area of emotive study in digital reconstructions is vague in terms of what emotions it intends to research and, at times, of what it means by emotions, primarily concentrating on the wide concept of emotive triggering. It is also segmented into areas of research which are not easily connectable, and which are mainly aimed at another area of research altogether. For example, a paper that could be seen as a starting point for discussing emotive connection with archaeological reconstructions in the digital world is “Avatar, Monsters and Machines” (Morgan 2019).

The paper explores the accidental discovery during a Çatalhöyük reconstruction exercise made in the online multiplayer environment known as Second Life. The focus of the activity should have been the exploration of the reconstruction of the ancient environment, according to Morgan. However, she noticed that one of the most interesting aspects of the environment, as she logged in, was the choices people made in their avatar representations. They did not identify themselves as in real life. Instead, they made a more accurate representation of their inner feelings, giving their avatar a fantastic look.

Fig 3 Ruth Tringham’s avatar (Morgan 2019, 327).

The above Fig. 3 was explored as an extracorporeal experience where identity was crucial. If looked at from the emotive point of view, this change in appearance could have been emotion-driven. If studied from the that perspective, it would have produced data on the

emotive reasoning in making such choices; an interview with the people directly involved, such as Tringham or Morgan, would shed light on some of these aspects.

The "Monster" (Morgan 2019, 229-231) aspect of Morgan's research also investigated the effect of shock factors such as voices from the grave, and extracorporeal interactions could have been another area of interest for emotive research.

Morgan explored it as a technical exercise showing the functions and the possibility of connection to an expression of what is not allowed, what is not standard, challenging the mould; this may have been true, but there may have also been aspects of emotional connection with the created monsters, feelings of subversion, anger towards society and sadness, connected to such monstrous representations, and once again these would be of crucial importance in understanding emotive studies in digital archaeology.

The examples above have been loosely connected to emotive theory. Dr Perry, who has analysed the attractiveness of stories in archaeology, is one of the most recent researchers into storytelling in virtual environments, which was closely, but not entirely, associated with feelings and emotions.

Her focus was on the direction of emotions, hence her various contributions to the EMOTIVE project (Katifori *et al.* 2019, 11-20), but she still did not analyse the pure emotional factors themselves, limiting the study to their storytelling appeal (Perry 2019, 1-18). To be more precise, in her work on the enchantment of archaeology, she explored the fact that archaeology is a constant source of enchantment, of an appealing narrative that implies open-endedness.

Dr Perry contends that archaeology works on the crisis, the most researched and debated periods of history are typically studied in every aspect, and various versions of the facts are discussed in archaeology, but at the same time, the search for reality, as opposed to subjective truth, waters down the appeal of archaeology. The above takes a primary position in the last contention; according to Dr Perry, heritage experts support archaeology do nothing to appeal to the public with new narratives, and feticides historical narrative to the point that it works against itself (Perry 2019, 1-18).

The study of the enchantment of historical narrative was a fascinating insight into the possible reasons why archaeology is not as appealing to the public as archaeologists would wish. It explored the possibilities and potential appeal of stories within archaeology, but just like the research considered before, it did not concentrate on the emotional factor. What emotions pushed the public away or attracted them, and what did they feel when

exploring the narrative? How did the archaeologists expect the public to react to their narratives emotionally (Vrettakis *et al.* 2019), and what were the emotions archaeologists themselves felt when creating the story, or when receiving negative or no response from the public, as explained by Perry?

Once again, a series of questions targeting these areas might shed some light on what was not written, or was not the focus of this particular research, which would have contained various overlooked sets of information on emotional interaction between archaeology, the archaeologist, and the general public.

There have been some attempts by researchers to create emotion in virtual museums which would elicit an emotive response from the public. Unfortunately, such attempts have been limited to conference discussions, which would be better understood through a Q&A session with the researchers themselves (Perry *et al.* 2017).

On the matter of the EMOTIVE project, mentioned above, it seems that the most direct questions regarding the emotional aspect related to users' reactions and emotive responses are still in press, and this would warrant a need to interview most of the authors involved as they are still the only ones who may have conducted some concrete research on the matter (McKinney *et al.* 2019, Katifori *et al.* 2020).

One aspect of digitally reconstructed environments (commonly perceived as VR and associated with beautifully enriched environments, something possibly explored in detail in a publication by the EMOTIVE group but unfortunately not yet published (Katifori *et al.* 2020), which is intrinsically connected with storytelling, as explained by Perry, is the concept of presence (Schuemie *et al.* 2001). This concept was borrowed from psychological research focused on cyber technology. The main focus point comes from literature; it explores the different focus areas that make the reader become immersed in the story, enhancing the storytelling by use of the fact that the reader feels part of the story.

The research focuses on realism, social richness, immersion, and other descriptive factors of the context in which the reader needs to immerse themself. This goes to the extent of dividing and categorising how a person feels their presence in the environment. Still, just like many of the other areas of research focusing on digital environments, it omits the emotional side, or at least to some extent does not address it directly, resulting in the concept of presence being just another descriptive element of research on the context, with tools to describe the different ways users can be attracted by the environment (Schuemie et al. 2001, 183-199).

Presence needs to be looked at in more detail within the archaeological arena, as it is a volatile concept related to a deeper understanding of the emotions felt by users or viewers who may be exploring an exhibition or playing an archaeogame. Without presence, there is no relationship between the environment and the personal construct of the user, detaching the possibly interesting story within the storytelling from the experience of the user; creating a metaphorical, or even physical (as the research will describe later on), transparent wall that sabotages immersion.

A connected study explicitly carried out in the area of archaeology, and exploring the role of presence in virtual environments, was done at the Hellenic Cosmos, where the presence factor was analysed in the context of museum studies along with the level of user enjoyment and immersion given by the virtual reconstructions and the way they were programmed.

The research found out that the feelings of transportation, participation, and experience were the factors most important for the users; in technical terms, this would rely on how well the visuals were made, how well-crafted the story was, and the interactivity level of the exhibit (Tost et al. 2009, 157-176).

But once more, the aspect of emotional attachment, or the emotions that may have been the driving factor for the feeling of presence, was not explored or not considered crucial to the study. Despite the absence of emotive research in this project, it would be helpful to retrospectively interview Tost and Economou on what emotive aspects they may have observed while performing the surveys, or other factors that appeared in the study related to emotion, which were overlooked in favour of data more closely associated with their research.

The factors that seem to have the greatest prominence in digital reconstruction in archaeology are the widely used storytelling, and the more recent concept of presence. Despite both being constantly present in any reconstruction, or at least in the concept building, and the intention of the authors to include both, they are also the two concepts which are rarely evident in the method, use, and reasoning behind choices.

There are risks in going down the path of computer games' storytelling that need to be acknowledged, and Dennis did this quite extensively in the analysis of ethical issues in gaming. The main problem permeating the computer game industry, which is a robust means of dissemination of information, in many cases false information, is the complete lack of ethical treatment of both archaeology and history; there are many examples of games such as ‘Uncharted’, ‘Indiana Jones’, and many other treasure-hunting games

(Naughty Dog 2007, Lucasarts 1992), which deliberately depict the destruction and misinterpretation of archaeology as a fun factor.

One may consider the use of archaeology in games as a trivial matter to be ignored out of 'silliness', despite storytelling being effective in terms of emotions regardless of the level of graphics; but gaming is becoming more and more realistic and even sceptics who advocate for precision and fidelity are giving in to their possible applicability. The stories are so compelling that they feel historical and technically accurate, something very close to the use of storytelling as a whole genre, which will be further analysed in this chapter. So how do the general audience and the professional archaeologists react to such misuse, when both know that it attempts to distort history and make light of the destruction and abuse of historical artefacts, some of which have, in reality, been subjects of looting and destruction in the real world?

Dennis analysed and contextualized such issues regarding positive or negative influence. The results found that the general user did not care about any of the destruction and misinterpretation represented in the games, therefore reinforcing a lack of emotive response to real issues. This is an issue that the study of emotive reactions is targeting in this research and that will deliberately be placed in the digital game for both researchers and the more general public to explore, aiming at causing specific emotional reactions to further Dr Dennis's theory to a certain extent (Dennis 2019, 285-294).

The development of this hybrid entertainment and the archaeological emotive response-triggering game is an attempt to tackle the issue found by Dennis wherein archaeology creates wish lists with no strength in terms of ethics in digital work, and the commercial point of being ignored by the entertainment industry due to the lack of creation of capital by which archaeology is haunted. This leads to one of the main factors that may substantially influence the result, and this is the storytelling aspect of digital work, which may be vital in solving the problems mentioned above and creating a controllable emotive tool to use for the benefit of archaeology.

2.3 Digital Archaeology and the Storytelling/Presence Symbiosis

Storytelling is the process of constructing stories in archaeology based on the factual data given, and intertwined with either the interpreted environment and actions in the past, or a completely fictional story to engage the user or viewer in the story being told; be this

through exhibitions, games or videos (Praetzellis *et al.*1998, 1-3, Thringham 2003, 18, Thringham 2010).

For the purpose of this research, it will mainly concentrate on the application of storytelling in archaeology, gaming and cinema, and how these types of similar storytelling techniques interact with each other, or do not, and questioning the possibility of them needing, or not, to interact with each other.

One of the main advantages of storytelling is the ability to introduce shock or dramatic factors and/or horror into the digital exhibit to make the audience more personally invested in the historical environment (Lebowitz 1984, 171-194).

This should be reason enough to concentrate on this somewhat helpful and exciting effect, due to its applications in many areas of study and its impact on interpretation. Still, despite this emotive connection, archaeology has lagged behind in its research and application as compared to other subjects such as museology, information studies, cinematography, and anthropology, and rarely have any of them targeted specific effects imparted, such as the feeling of shock, horror, dramatic melancholy or sadness.

The spectrum of human emotions does not include only the good, there are also negative emotions involved, and few researchers have targeted these emotions due to their problematic nature. However, Schofield in York has been specifically applying horror in VR. It has mainly been studied in the area of game design and psychology (Wade *et al.* 2018, 435-1-435-6(6)), but it would be invaluable to enhancing the emotive study of archaeology if investigated further and, due to the relatively small number of sporadic publications on the matter by Schofield, obtaining an interview to classify the points would be a priority.

Going back to the general emotive area regarding character development and exploration, the concept of negative or shocking emotion is related to the emotive range of the characters encountered and the character that the user pilots, and this is not explicitly addressed as an essential factor in emotive research, as the emphasis is on the surrounding archaeological environment, not clearly on the people. As expressed in “Cyborg Monsters and Machines” (Morgan 2019, 229-231), the character factor would need further investigation regarding the story and presence in an emotive context.

But moving away from the character-centred storytelling study, there are other factors in the way that storytelling can talk about human interaction and emotions which may give a deeper understanding of how emotions are crucial to maintaining interest when using a

virtual or digital application. These include literary concepts such as humour, curiosity, and the excitement of the unexpected (Katifori *et al.* 2016), or could be precisely the opposite, such as the surreal, dark, and gloomy environment and the helplessness of being unable to change the path and interact with anything, inevitably going towards an expected demise, as in the case of "Dear Esther", which has been praised as both a new-age piece of art and an inspiration for the design of archaeology in the game environment (Frost 2012).

The approaches are opposite, but the crucial part is the emotion-driven environment, which focuses on particular emotions to keep the public's attention and uses this as a tool to show off archaeological environments and digitally spread data.

The issue with the above theories is the common trend of looking to emotions to attract viewers or tell a story. It still does not explore why these emotions are felt, how they can be induced, and the emotive result on the audience. These would all be exciting questions for Katifori and others involved in the EMOTIVE project.

The emotional perception of a reconstructed archaeological context is not only limited to storytelling; the concept of presence permeates into any reconstruction made with emotion in mind. This concept is more associated with the physical, emotional, and immersive feeling of the user in the reconstructed environment, making it possible to get lost in the story, the reconstruction, and the environment without being pulled back to the real world by something that does not associate with the user's current and previous experiences.

This can only be done by recreating a familiar and alien environment, invading all the senses and stimulating all the emotions described above. Something like this can be easily associated with work done by Dr Watterson (Watterson 2013, Fig. 4, 2014), who investigated how digital technology can be used to express reconstructed environments, which are at times conjectures and not utterly confident from the archaeology, focusing on several factors including emotion, dynamism, and experiencing past in the present: essentially touching upon the focus of the current project.

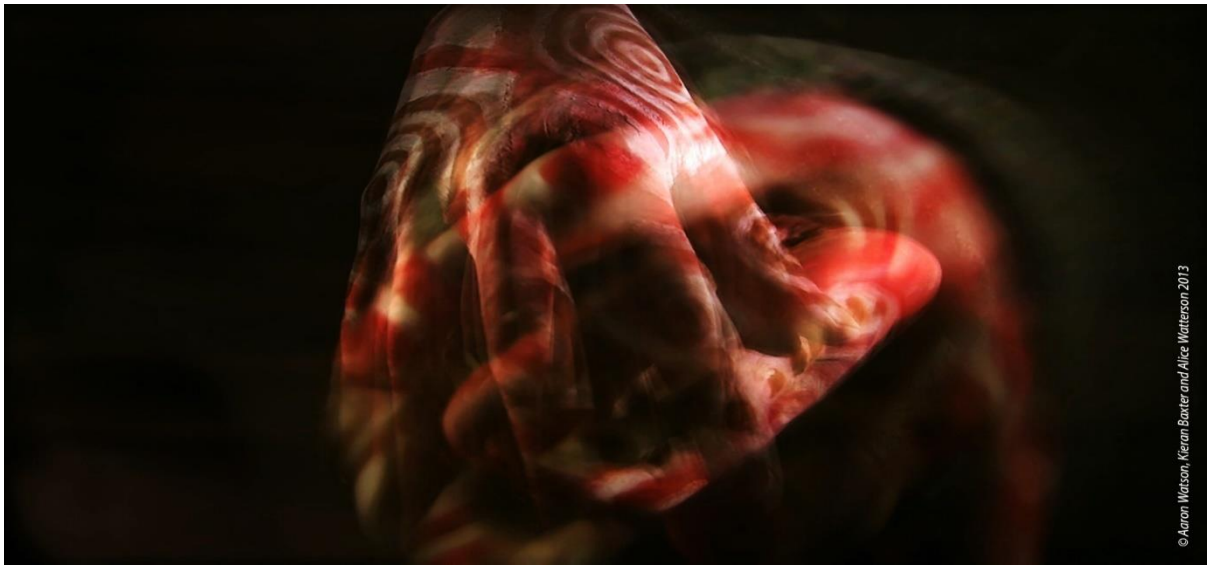


Fig 4 An image from the visualization process shows art, emotion, and ambience at the same time (Watterson *et al.* 2013).

The work Watterson did was primarily centred on the way the past is presented in archaeology and using new techniques, seeing what effect these can have on the audience; it never went thoroughly into detail on what the audience experienced in the emotional sense. What Watterson described was giving feelings of unease by going through narrow corridors and changing camera angle using the first-person experience.

She did not investigate what the audience felt, or why the types of experiences described above were perceived as uncomfortable or surreal. It would be helpful to ask Watterson what made her think that the emotional response to building the space in such a way would be a lack of comfort. What other emotions was she trying to create or convey? How did these affect the audience? What was the actual response, and did it show an emotional connection with the past or the experience and why?

The effectiveness of the project created by Watterson is mainly dependent on what has been described as presence in the virtual environment (Biocca *et al.* 1995, Biocca 1997, 15-32, Biocca *et al.* 2001, 247-265); in simple words, how the virtual environment feels natural and distracts the user from the real world; resulting in the suspension of disbelief (Coleridge 1817, Bystrom *et al.* 1999, 241-244).

This concept has been at the forefront of digital reconstructions due to the importance of making the user lose themself in the VR reconstruction to learn or interact with the area appropriately. Still, the focus of all the studies done on the matter has been mainly a basic psychological one (Wirth *et al.* 2007, 493-525), focusing on the technical ways in which the users may experience presence (Bruner *et al.* 1949, 206-223) and not on any emotive

level. Despite this focus, presence is another decisive factor concerning the user's emotive perception, and the digital environment's creator can create emotional responses using deep presence through storytelling techniques in the reconstructed environment.

As with previously mentioned areas of research, the above area would need a question-and-answer session with the researchers involved to understand whether they considered or encountered emotive factors as they explored the presence theory.

An element that appeared through the process of researching archaeological emotions and digital theory applied to the discipline was the strong presence of nostalgia and nostalgic factors, something that resulted in the need for further investigation.

2.4 The Meaning, development, and effect of nostalgia

The reason behind such a strong commitment toward studying and understanding nostalgia is the strong presence that it has in many artistic spheres as well as in archaeology; it is something that is intertwined between literature, movies, gaming and the archaeology of the past, especially within the problematic area of colonialism. Therefore, the main type of nostalgia that this research will focus on is the one strongly related to colonialism (Khol et al. 1995, 39-56, Khol 1998, 223-246, Khol et al. 2000, 149-174, Bissell 2005, 215-248, Díaz-Andreu 2007, 209-278, Díaz-Andreu et al. 2014, 1-21).

This discussion will then move towards the similar issues faced in game design, showing how the development of the two areas, archaeological reconstruction in terms of intangible heritage and memory work, and game development, have similarities in the area of emotive representation or lack thereof, and why combining them may aid both.

There is also a more substantial presence of nostalgia and interconnected issues in game design, and this presents some advantages which may translate effectively into an archaeogame using game storytelling and archaeology which share the same emotive triggers and psychological influences connected to nostalgia (Pickering et al. 2006, 919-941).

As a result, throughout this chapter, nostalgia will be analysed as a combined emotion that may have a broader scope and potential in an emotive study in archaeology, and the question of how this can be integrated into the archaeogame project on which this project leans as a testing case study will be investigated. But first it is necessary to have a clear understanding of what one means by nostalgia.

The original meaning of nostalgia can be traced back to ancient Greece, where the Homeric stories described it as a "home pain", missing the place of birth, and often it was such a powerful emotion that it would come to be associated with a fatal disease of the mind, which led a seventeenth-century physician to coin the word "nostalgia" in relation to the suffering experienced by Swiss soldiers when fighting away from home (De'Diego *et al.* 2014, 404-411).

Such a definition in the discussion at hand would be out of context; it is not something that is felt by an archaeologist when deciding what method to use to draw the environment of a dig site, nor the emotion felt by a gamer when playing old games as opposed to modern reiterations. Therefore, this needs further investigation.

As time went on, the definition slowly changed from being a specific emotional description, or a disease of the mind as it was often described, towards being a more general term with broader and deeper emotional meanings connected to it.

The modern version of nostalgia is a conglomerate of different emotive triggers which have a positive association with the past, not surprisingly, being a central emotion found in archaeology and history, but which may not be viewed as, or even called, nostalgia most of the time. Instead, intentionally, or unintentionally, it is warped towards something else, due to its unpredictable effects.

This, in turn, is due to the psychological variables of the feeling, depending on the age group questioned on its presence and definition (Batcho 1995, 131-143). To make this clearer, changes in modern society have made it harder for older generations to show personal appreciation for the nostalgic construct of early archaeology which was based on the concept of nationalism and pride in one's country (Díaz-Andreu 2007, 209-278, Díaz-Andreu *et al.* 2014, 1-21, Bissell 2005, 215-248). In fact, this has made it a taboo, or a concept to be forgotten and rejected by the younger generation due to feelings of guilt being imposed as a social norm (Bruckner 2010). This generational division and the very different approaches and views to it makes nostalgia a difficult topic to tackle.

Nostalgia can be associated in psychology with coping with difficult times by remembering the old good times, things that are more familiar and comforting than what is happening at the moment, allowing the person to get through alien hardships with more ease (Zhou *et al.* 2008, 1023–1029), but one has to remember that such a state of mind can be either an illusion, or a reimagining of the past. It may lead to the fabrication of reality and an unwillingness to accept that the particularly targeted past was different to how it is remembered. This is a concept that recurs in the understanding of colonialist ideologies

present in early archaeology, which did, in fact, create a fictional past or a subjective past in favour of nationalism (Khol et al. 1995, 39-56, Khol 1998, 223-246, Khol et al. 2000, 149-174, Díaz-Andreu 2007, 209-278, Díaz-Andreu et al. 2014, 1-21).

At the same time, it allows for questioning of whether the history was documented or invented. Does a person nowadays perceive the past as it was according to the person who recorded it, or do they perceive it in a way that the same person would have considered nostalgic and illusory? There are also instances where nostalgia has been used in films and games depicting times that were a lot worse than nowadays, but which were also better in some aspects. This makes nostalgia a problematic principle to define at this early stage, which is why several aspects of nostalgia theory will be further analysed to pinpoint the type of nostalgia relevant to this study, especially in relation to the archaeogame being developed and what type of nostalgia will be embedded in the emotive triggers.

There are different complex definitions of nostalgia that may shed light on the type of nostalgia this research is going to target, some of them more relevant than others, but all having features that will be part of the study.

One associated definition of nostalgia relevant to this project is that it is a path to self-reflection, which is a soothing mechanism for people who are insecure about themselves and their skills; it allows them to go back to times when other skills and environments were under their control, and thereby become more relaxed about the new ones, reminding themselves that, back then, they were the experts in a particular thing (Vess et al. 2012, 273–284).

This in itself can create an aura of false control, making them prone to mistakes and subjective interpretation, and convincing the nostalgic person that what they think is right and uncompromisingly unchangeable, like an illusory safety-net which creates problems without the person realizing it. This would be mainly considered a nostalgia associated with gaming and explains the sense of security and excitement in gaming which is not possible in the real word.

The concept above can also partly explain the feeling described by those archaeologists who still prefer classical drawing techniques to modern digital ones, but other emotional factors may be involved. As may be deduced from the different takes on nostalgia above, it is not a stable and constant concept, it has various definitions and effects depending on the target subject, object, and even person, which makes it one of the most complex emotions to define, but this project will attempt to focus on the effect it has on historical interpretation in terms of emotive influence and its subjective effects.

Another way nostalgia affects emotion in general, but which may be associated with archaeology in terms of interpretation, is the proven psychological effect it has on giving meaning to events and environments. When in a situation of uncertainty, a person tends to feel frustration and helplessness if a solution is not found, something that may be associated with archaeology and the investigation techniques it uses. However, when nostalgia is triggered, it gives meaning to what is being observed by placing it in an older and more familiar context, be that an ancient historical illustration, a film, or an old book. All these manifestations of contextual meaning emotionally assist the person investigating an unknown context (Routledge *et al.* 2011, 638–652).

Therefore, nostalgia can produce a feeling of safety within an investigation, and be used as a cover to delve into more problematic issues that need investigation, but which society might be averse to, due to the sense of guilt for the colonial past of many countries (Bruckner 2010).

Lastly, nostalgia is a self-deception mechanism, which allows the person feeling it to hide in a more familiar world where nothing has changed, and there is a feeling of rightful context that does not need any alteration; it is simply perfect as it is, and anything different is regarded as unnecessary, even worse than the past iteration, making a historical fact a correct fact despite changes in society and in the people who study historical truthfulness in the present (Hook 2012, 225–239).

Combining the above different approaches to nostalgia, for the purpose of this study, nostalgia will be defined as the feeling of guilt and pleasure associated with colonialist ideology, permeating within both the archaeology of the past, film, gaming and literature. The reasoning and emotions behind this type of nostalgia will be: guilt at the thought of missing times associated with concepts that go against modern society's principles; happiness created by the feeling of safety and expertise this nostalgia creates; and, in terms of gaming, happiness and guilt associated with the feelings placed in gaming when it was first tried in the early 1990s, connected to the still-colonialist approach to literature and film which was the backbone for the creation of many games during that time. The understanding of nostalgia at this point is a strong connection between guilt and happiness perceived by the different generations between colonial nostalgia and colonial rejection.

2.5 Nostalgia in archaeology

At the beginning of archaeology, there was a strong pull towards nationalism and the romanticisation of classicism, demonstrating deep connections and the roots of nations, obsessively attempting to connect with a powerful nation of the past, such as the Roman or British Empire, and French or Spanish tales of conquest (Khol *et al.* 1995, 39-56, Khol 1998, 223-246, Khol *et al.* 2000, 149-174, Díaz-Andreu 2007, 209-278, Díaz-Andreu *et al.* 2014, 1-21). Archaeology was both a political and ideological tool, used extensively to attract people to places like colonial Egypt with promises of adventures and riches to be discovered.

It was only after archaeology was turned into a professional, purely scientific discipline that all of this disappeared, going from one extreme to another, where the closest connection to emotion and nostalgia, possibly due to negative associations derived from imperialism, resulted in small instances like a limited study on the emotion of nostalgia unless it is to do with its origin as a Greek construct word and its development throughout time as a more general feeling of homesickness (Dahl 2016) and from romanticism as a symbolic concept (Boym 2002, 13-15). Archaeology may have distanced itself from such strong emotion, and even considered it even dangerous, because according to early studies it may have muddied the waters as to what archaeology was based on.

This is at least something that can be taken away from these studies on the past of archaeology, and it shows that nostalgia may have been looked at as a factor of little importance due to a clear-cut division between disciplines leading to it not being a central issue to be addressed, so that it was looked at purely on the level of curiosity by a number of authors. But as interdisciplinary approaches started to become more visibly essential and required, the process partially changed.

The attitude towards nostalgia above was the more conservative approach. Since then, it has been expanded and changed, with different studies looking at it from different directions, taking examples from other disciplines, hence the comment about interdisciplinary approaches on which this entire project is based. Nostalgia has, since then, been cited as a factor of influence in archaeological interpretation and studied due to its ability to influence people's perception of heritage sites (Campbell *et al.* 2017, 609-611). There have additionally been some intra-subject studies on both psychology and archaeology and how they interact with each other in many instances, in some cases having both a negative association and a positive one (Khol 1998, 223-246, Rowan et al.

2004, 3-23, Bissell 2005, 215-248, Shnirel'man 2013, 13-32, Díaz-Andreu *et al.* 2014, 1-21).

An example for the above concept is the association with one's ancient, proud heritage like the monumental constructions in Sardinia, the Nuraghi and, on the other hand, the disappointment of seeing the archaeology directly, finding that it is not how the nostalgic memory expected it, but different or worse than expected (Prayag *et al.* 2021, 1-16). All of this put emphasis on the relation between memory and archaeology, and how nostalgia may play a large part in it.

Some studies have been made on the archaeology of memory, connected to archaeological heritage and communities, which touch upon some aspects of nostalgia, although not directly and clearly, and, at the same time, this is a concept that fights against the false idea of memory. The two areas mentioned in a limited capacity are social memory and a negatively associated nostalgic issue that occasionally appears in the interpretation analysis.

Suppose one is to follow the concept of archaeology as social memory, or as an instrument of social justice. In that case, nostalgia is not seen as an emotion explored to a limited extent by archaeology, but as an ever-present concept that drove archaeologists to take narrative decisions contrary to the current archaeological interpretation, which includes unwritten and forgotten contributors to history (Saitta 2007) who were erased by nostalgic archaeologists who did not want to see or accept the reality of the present, and who interpreted the past in accordance with their ideas of how it should be, if memory and intangible heritage methods are to be followed with the modern concept of social justice in mind. In other words, archaeologists in the past and in the present make subjective interpretations of historical events driven by the way society works at that moment, based on the social norms of the present, and at times there is a connection to a nostalgic feeling that may distort the interpretation of the past, risking interpreting history in a personal subjective way and erasing the real history.

Some examples might include the romanticisation of past events that the archaeologist cannot see clearly due to missing data and the different social norms of the present, when this romanticised past was not, in fact, romantic or happy, but a dark period of history for the people who lived in it. Or, alternatively the possibility of a nostalgic past being informed by historical data having been written by the upper class, which make it feel and look like a wonderful time, while it was in actual fact a miserable and cruel time for most people.

This concept of nostalgia can also be dangerous due to the erasing of history by archaeologists who have been raised to know something which is then found to be untrue, and the difficulty of changing in their work something they considered an immutable norm. Some examples can be clearly seen in terms of colonialism and archaeology in the 1900s (Bickford 1981, 1-7, Hell *et al.* 2010, 294-319, Jørgensen 2013, 69-86).

Therefore, the limited amount of study on nostalgia is tangible in classical archaeology, which must not only excavate the physical past, but also needs to focus on the excavation of memories from the past in an attempt to make the forgotten or hidden memories in history resurface so that they may be interpreted and made ethically accountable in line with modern principles (Starzmann 2016, 4).

There is a concept now being associated with the work of archaeologists which adds an extra dimension of emotiveness; material data cannot simply represent this, sometimes it is not even present due to the decisions made by past cultures or political groups. However, ignoring it, or not attempting to interpret it, would mean forgetting historical facts which can aid humanity's understanding of the past in terms of ethical and historical dimensions in memory work (Young 2020, 94), which directly connects with the issues and dangers of nostalgia as explored in a limited way by some archaeologists.

For example, Michael Shanks approaches nostalgia in archaeology with a cautious tread, showing the reader how the emotion works in terms of sudden changes in historical performance, which cause a negative reaction from some people just because something does not sound like the older version, as in his digitalisation of Dylan's work (Shanks 2004), something which during that period was happening to many artists, and which still causes divisions between music enthusiasts: was it better the old way or the new?

The above is a simple subjective matter of taste, and either acceptance of the new or clinging to the past, which resonates in the way archaeology approaches how it works, the methods it uses, and the way interpretation is made; there is a comparable similarity between the rejection of the new techniques and the analogy explained by Shanks.

In some of his other works, Shanks explores a minor application of nostalgia and its use or potential when mixing performing art with physical archaeology. This is not a direct study of the nostalgia itself, but more of a comparison between physical and intangible heritage, an idea which has been around for a relatively short amount of time and has many challenges ahead due to the impossibility of physical evidence at times, or the issue which has not been fully addressed about the influence of nostalgia on intangible heritage performances, connecting the past with the present in a halfway space.

How intangible heritage can be represented with a mix of modern performance and knowledge of the past resulting from archaeological research is not a strict, scientifically proven system, and the assumption is, from observing how the entire argument is construed in Shanks's work, that there may not be an adequate or precise scientific method to do so. Art should be allowed to express itself to try and emulate or understand something which cannot be touched, but which existed in the past (Shanks 2012, 5-73).

The nostalgia part is considered an issue, something which may give a subjective meaning to the overall interpretation of a site or a cultural behaviour. The acquisition of a final answer to this argument should be addressed, but there are many other issues and debates between the tangible and intangible interpretation to be dealt with before this, so this argument should be postponed.

If one is to look at landscape archaeology traditions in the English heritage, there are many areas containing what could be called nostalgic scenes, in the sense that they reminisce about the old Empire and are distinctive from other types of landscape depictions, such as pre-historic and North American ones (Johnson 2004).

Such landscape nostalgia is again based on what was previously noted as people missing a simpler past, but, as expressed before, this has a much deeper ethical issue, it is about missing the romanticised beauty of the English past, which historically can be seen as imperialistic and give a subjective view of what was not such a beautiful time if seen through the eyes of those who were disempowered.

The argument is made that landscape representation, although it is rooted in scientific technique, is an illusion; landscape archaeology is deeply rooted in the author's view of the land before them, and the methods still used to represent such land are rooted in the Victorian period.

This in itself leads to several subjective issues in the representation of the ground, as well as misconceptions of historical understanding which have been debunked, but which for some reason still permeate in landscape representation as an artistic feeling, dangerously close to the negative representation of nostalgia on the ethical side.

Romanticism carries several ideas which influence the interpretation of the represented data, and while archaeologists may claim that they are using empirical scientific techniques, the fact remains that romanticism used in landscape archaeology carries the danger of fetishism of realities constructed in nostalgia and cannot be used as a scientific objective means.

The romanticised approach evident in landscape archaeology can also be spotted in modern interpretations of space, bringing with it the risk of creating a heritage space supported by just nostalgia and desire, making the interpretation of the past subjective to the author of the particular organised exhibition, and also running the risk of creating an illusory perception of what the past used to be, while actually attracting the audience simply by giving them what they want the space or the heritage to be, and not showing them what it used to be (Hall *et al.* 2007, 245-58). The evident risk of such an approach lies in the mimicking of the psychological concept explained above in which a self-tailored reality is created to escape the actual truth, fabricating history by using the modern eye and wishes to cover up the past in cases which may seem uncomfortable to accept or remember.

There is a connection between this fear of archaeology abandoning itself to constructed realities based on nostalgia, and the nature and history of archaeology itself. If one looks at archaeology's evolution, it started from a more subjective process of antiquarianism, the collection of artefacts on a whim to satisfy personal curiosity. In the beginning, as small number of individuals and collections formed the core of the practice. It then slowly evolved over time, and became a more scientific process, with many more individuals involved, and the purpose shifting towards exploring the facts (Smith 2016, 270–285). But this did not mean that abstract thought, interpretation, psychological, political, and artistic thought did not remain present in the discipline.

The presence of the above aspects of archaeology creates a possible issue in every archaeologist's mind: they do not want to go back to the subjective nature of antiquarianism, they are also not comfortable with the presence of approaches of a more abstract nature, such as arts, politics, and philosophy or psychology.

There is always a part of subjectivism which cannot be removed, and the choices in interpretation, and the representation of such understanding, do go back towards the realm of nostalgia, where old methods rooted in antiquarianism remain. Examples can be found in the pictorial representations still used today as references for investigating sites such as Palmyra, and the Robert Wood (Wood 1753) or William Wright (Wright 1985) reference data which is represented in a stylised Victorian depiction.

The above can be connected to habitual practice, which, if one was to explore it more closely, is a form of nostalgia itself, spawning from life experiences which occurred before a gradual or significant change, and which remained with the person despite the changes to the world around them and a loss of utility of such practices (Silversten 2004, 553–578).

A clear example that may explain how this can be connected to nostalgia and how this works relates to the situation during recent global lockdowns, where the old habits of restrained consumerism at home, as opposed to more modern consumerist habits have experienced a comeback. This was spurred on by old memories of things such as parents asking their children to turn off the lights, not throwing away food because you might need it later on, and so on. All concepts that the modern capitalist situation had made people forget.

All of the old habits and rituals came back out of necessity. People's homes were being used more, so they deteriorated more, and there were high home expenses, and there was no more free access to shops at any time. However, this event was limited (Errázuriz *et al.* 2020, 49-59), and this is a situation where nostalgia gives ideas on how to deal with the present, which archaeology has often been involved with.

Nostalgia can also create this false concept as a defence mechanism for cultures and people who try to explain the past in the present context but find themselves clashing with uncomfortable new rights and liberties. This goes back to the concept of the comfort zone of familiarity (Van Tilburg *et al.* 2013, 450-461) but depicts a world which is unfair by current standards.

Archaeology has moved from the simple study of heritage to the study of heritage-scapes, where the emphasis has been detached from the more traditional material culture. Greater emphasis has been focused on the individuals, the communities, the cultures, and the organisations studied in historical terms, making the intangible a more prominent part of the study and interpretation of history, and resulting in the appearance of some initial studies on human factors such as emotion as part of the archaeological spectrum (Shackel 2003, Smith 2006, Baird 2018).

This is partially because the general public had taken more of an interest in archaeology, unlike in the past, where it was a discipline spawned from the interest of the few. Such a drastic change, in line with the consideration of public benefits from archaeology, resulted in a more participatory system involving the public itself, as seen in countries like the UK, where the chartered institute for archaeology set clear structures on how to create benefits for the public (CfA 2020).

The discourse moved on towards the presence of heritage and what heritage was, as previously the application and understanding of archaeology were more limited; it was physical and definite, but now, with the introduction of heritage and heritage-scapes, the human factor was felt more, with emotions, memories and perceptions of reality,

depending on who the spectators or the actors were, having changed how archaeology was interpreted.

The fear was that both the new and the old versions of the study of archaeology did not have enough research or methodology into what to study in heritage and how to do so (Waterton *et al.* 2009, 10-27), making archaeology a more comprehensive subject, but at the same time a more complex and challenging one to handle, as there was an incumbent risk of subjectivity derived from the inclusion of emotion and possibly the effect of nostalgia on the public and the archaeologists themselves.

The other issue which needs to be addressed is how the public sees heritage in the past. The present (Marmion 2012), an all-knowing class of archaeologists, cannot guide the understanding, instead there needs to be a back-and-forth interaction between the public and archaeologists; that is how heritage-scapes can be understood fully; that is why the concept of memory, which is mainly associated with the people, and the archaeologist as the interpreter of it, is such a crucial piece of the puzzle.

The combination of heritage-scapes and memory studies has allowed archaeology to change the direction in which it had traditionally been working, studying, and recollecting the past, and it has moved towards acceptance of the concept that archaeology is future-oriented and uses the knowledge of the past and the present to critique assumptions developed through the years about human history and societies' development.

Furthermore, the use of the past to make decisions about the possible future ahead, makes archaeology a cyclical tool where there is no real past or future (Sassaman 2012, 250-268). This has made nostalgia not a memory of the past, but an ever-present emotion which keeps on coming back periodically, adding layers of complexity to a subject which is not stable and constant as it used to be, but malleable and more complex.

As mentioned previously, the concept of social justice, combined with the inherent dangers of nostalgia, changes the view of archaeological work quite drastically, as it is no longer the study of the past and the archiving or recollection of factual evidence, as it has traditionally been. Actors can use the concept of memory as a malleable interpretation instrument in history, to interpret the past and influence the future through archaeological and historical data (Young 2000, Van Dyke *et al.* 2003, Wylie 2008, 201–212), incorporating modern concepts like social justice (Little 2009, 115-119) and the remembrance of minorities or, often important, invisible historical figures, very often women.

Contrary to the nostalgic, traditional, more physical study of history through the methodologies of the past in archaeology; memory work is focused on the malleability of the understanding of the past, taking into account an emotive process of remembering the past, rather than using just the physical evidence, even if the archaeologist himself did not experience that past (Lowenthal 1996). This study of archaeology pushes the archaeologists to walk through the barrier of nostalgic traditionalism, the imaginary world that they built around them to justify ignoring changes (Van Tilburg et al. 2013, 450-461), and to explore the more complicated and insecure area of theoretical understanding of what created such a mistaken or warped understanding of the past when using material culture.

This concept can even create new opportunities for study, where older archaeology had given an impression of finality, as in African American history, which is now displaying many more aspects than the monochrome assumptions of past archaeology (White et al. 2017), and which has created a much more comprehensive range of histories that were undiscovered until the concept of memory work began to be developed (Gonzalez-Tennant 2018, 16).

If one was to look at studies on memory-work and nostalgia it would be impossible for memory-work not to fall into the nostalgic pit, this is often depicted and observed in work by Muller, as mentioned earlier (Bauer 2020), when observing the way in which modern generations, and even some of the older ones, tend to use nostalgia to hide from present problems and even blame them for change, forgetting the issues and horrors of the past as if they were minor inconveniences.

For example, one might consider the economic situation in East Germany or the German Democratic Republic, as compared to the western side, and people there missing the divide of the wall, forgetting the oppression and fear caused by that divide Another example would be the support for ideologies and individuals who participated in genocides, choosing to forget, or automatically forgetting, their deeds (Satter 2012). This can be seen in support for Stalin, missing the USSR regime, and so on (Tayor 2014, Maza 2018). This is why memory-work is challenging to deal with in archaeology and intertwines with nostalgia, making it an area which needs to be approached with caution, and the effects of such an issue have never been more evident than in the recent events concerning monuments.

Regimes such as the USSR under Stalin, or the Imperial rule over the British slave trade, and many other examples often result in monuments to showcase the glory and power of

the individuals involved, emphasising their superiority and control over other people. Still, not all monuments are for the same purposes. Some individuals or communities represented by such monuments may have done both good and bad, and much in between, consequentially meaning that monuments inspire mixed feelings when interacted with by the community.

Monuments all over the world that are studied in archaeology have a wide variety of meanings and purposes, but one of the most frequent ones is to remember a particular moment in time, commemorate an ideal, an individual, or a struggle; it is not surprising, therefore, that monuments result in a sense of nostalgia towards specific periods, or can be used on purpose to do so, and that, due to the passing of time and changes in society as a whole around such monuments, the feeling of nostalgia will connect towards a different concept and time depending on the person looking at it; resulting in living memory, a malleable memory which is ever-changing (Young 1993).

Despite the limited studies found on nostalgia, the concept in archaeology can be seen in the US, where the entire landscape is littered with monuments, including statues, sculptures, buildings and monoliths (Shackel 2001). Each one of them has a particular purpose, reminding the population of a specific time in the history of the country of which they should be proud and encouraging them to reminisce about the old times, while at the same time marking a point in history to remember, literally tapping into the power of emotive nostalgia.

But there is a danger in such extremely malleable objects; they can carry both a sense of longing and a sense of dread, depending on who is looking at them, and can be interpreted by the population in different ways, resulting in what is being seen nowadays, with the popular removal of monuments connected to people associated with slavery or other negative acts in history (Morris 2020). A further danger is posed by the direct use of monuments as manipulations of historical understanding, such as using commemorations and memorials to implement bigotry and nostalgia in misinformed parts of the population, in order to push political agendas (Shackel 2001, 655-670).

Therefore, there is no better time than the present to work towards studying the effect of nostalgia in archaeology, as historical and archaeological facts can be compared to the actions of people in the present, and the results of the use of memory and interpretation of the past using present cultural criteria are constantly witnessed and recorded with very different recollections, depending on who the public is.

The advantage of using game design to provoke nostalgia and give visual interpretations to enhance such emotion, connected with architectural constructs and historical settings derived from archaeological work, may allow the testing of the effect of powerful emotions such as nostalgia on historical figures, monuments, or heritage landscapes, without putting them in danger of an immediate emotional reaction due to personal interpretation.

Furthermore, there may be a way to analyse and test intangible heritage interpretation by the users by creating a fictional story that will allow the researchers to understand how nostalgia, like many other emotions, affects performance and vice-versa.

In order to succeed in such a task as the one mentioned above, there is a need for defining and explaining the terminology and literature around the strongly related topic of archaeogaming and historical games that will enable a connection between historical data, material culture and emotive studies within game design. The following will also give an idea of the reason for using game design as opposed to analogue artistic designs or other technology to investigate the specific emotive areas that this research intends to tackle.

2.6 Archaeogaming, serious games and emotion

The relationship between academic learning and computer games has been turbulent, the game has passed from being considered a maligned medium to an almost evangelical depiction of this technology as the future, with a constant debate on the accuracy of games being used to depict or describe archaeological data.

The fact remains that there is a friction between what is accurate and what is authentic, making a difference between the two looking at them as accurate basing the data used as a physical fact represented by absolute knowledge of something having happened or existed while being authentic being something represented in the way the culture and its people saw such objects or facts (Wright 2022, 166-177).

This is an argument that has been addressed through the interviews in chapter 3 discussing the ambiguity of archaeological interpretation being considered objective despite having a constant of subjectivity and being prone towards not acknowledging that it is not a pure fact but a series of interpretations, often lacking authenticity as defined above, making it a good discipline to combine with gaming to compensate this factor, therefore, resulting in the term archaeogaming.

There have been attempts by archaeologists to describe and delimit archaeogames within a specific set of qualities and definitions, some of these descriptions such as the one by Reinhard have been quite fragmented and confusing, following principles such as classifying mainly sandbox or open-world games as archaeogames, or concentrating on particular aspects of games such as characters, objects or topics disconnected with the rest of the game mechanics, making such classification quite hard due to the constant partial classification of such games and never being fully considered definite archaeogames.

The depiction of the game as a limited feature where the actions, the objects and the people designed in the game have also been met with mixed interpretations, such as considering both the virtual world and the physical one real, but then considering non-player characters or better described programmed simulations of people, not real people but just programs, raising the ethical ambiguity of the value of artificial life or if it is life at all (Reinhard 2018, 48-111).

Archaeo gaming has been taken with a critical lens by archaeologists, focusing on the precision issue later discussed in many parts of the interviews, and critically assessing archaeo games as inadequate, but this issue can be related to the possibility that too much was expected too early by an audience that understood too little about the topic, comparable to complaining about an alpha testing game not being a perfect product, something that again was further explored through the interviews to follow.

Despite a still difficult task to define what an archaeogame is in terms of its position in the real world and the effectiveness of its archaeological application due to the constant development of game technology concerning precision and application in archaeology, one factor is common in the description of archaeogaming, it is about archaeology and approaches archaeology and archaeological reconstruction of both human activity and material culture in a wide variety of methods (Reinhard 2017, 1-11).

The games can vary in style and objective, from the Amurabi game placing the player in the shoes of a Babylonian ruler, to Civilization, fighting battles between different civilisations that may have never had contact with each other, to Assassin's Creed where the player performs several assassinations within different historical towns and locations in very detailed and intricate reconstructions of such places. All these variations can be considered archaeogaming due to the setting (Reinhard 2017, 9).

But games archaeogames can have a stronger connection with the understanding of culture beyond the simple entertainment value, a principle that seems to work well with the devel-

opment of games that can be considered archaeological is the attempt to create a connection between cultures of the present and the past, and even attempt to save fading cultural memories, such as the Never Alone game that in a mix of objectives was mainly built with the above concept in mind. Therefore, archaeogames can also be defined as ethical and interconnecting emotions and cultures in the past with present ones (Reinhard 2017, 21-30).

One of the most interesting ideas in terms of archaeogames though, is considering the game themselves as both artefacts and archaeological sites. The example given by Reinhard is that the DVD, CDs, and USB drives where the game is placed can be considered an artefact and the contents of the case where they are stored, are other physical artefacts.

However, the contents of the memory storage can also be considered archaeological dig sites filled with artefacts and having several interpretations.

This would mean that designers are constantly creating artefacts and dig sites within their work, making most games archaeology, especially because it is not limited just to the graphical designs within the games, but the programming itself, the code can be considered artefact as games develop further and further, the older these 'artefacts' get (Reinhard 2017, 99-106). Therefore, in terms of this research, the creation of an archaeogame would slot within both archaeological study and material culture in the virtual interpretation of the above reasoning.

The above series of observations on the definition of archaeogaming can lead to a simple definition open to wider interpretation that is "Archaeogaming, broadly defined, is the archaeology both in and of digital games" (Hageneuer 2021, 631).

Archaeogaming interpretation can have some positive and negative aspects depending on the designer's level of ethical accuracy or lack thereof, for example, some archaeogames according to the above definitions can include Tomb Raider with the dedication to destruction and killing, representing the archaeologist as a gunslinging raider who is looking for one object leaving a trail of destruction while still showing beautiful archaeological designs and depictions; while other games such as Heavens's Vault instead tend to attempt integrating the archaeologist's reasoning such as investigating the where, how and what typically explored by archaeologists when attempting the interpretation of a site (Rassalle 2021, 4-11), showing at times the emotions that archaeologists may have had such as the frustration of missing a piece of the puzzle or the excitement of discovery.

There is an interesting conundrum within the differences between archaeogames, for example, Tomb Raider delves into the dangerous areas of imperialism, cultural appropriation, racism, and sexism in most of its iterations, and so do Uncharted and Indiana Jones,

all inspired by each other in many aspects and can create friction in implementing archaeoaming in academic work (Hageneuer 2021, 631-642). But at the same time, these are the stepping stones to develop further into a more ethical and reliable depiction of archaeology, keeping the fantastic narrative that creates the emotive appeal of computer games, such as Haven's Vault.

In terms of physical representations of archaeology within games, there is a particular method being used in many action-oriented archaeogames such as Uncharted and Tomb Raider, this is the inventory system with 3D views of the objects found and the presence of scattered objects with no apparent connection with the narrative but detailed explanation of their history and origin in archaeological terms (Livingstone & Jeffrey 2016, 1-8).

I used this tool in the archaeogame produced for this research to enhance the connection between material culture and storytelling, modifying the non-connection by interconnecting every object found with the narrative to enhance the emotional attachment and reaction.

Lastly in terms of archaeogaming and its reliability and usefulness within an archaeological understanding of emotions, the concept of Homo Ludens, the need for humans to play to simulate the real world and learn may be the best way to justify the use of games to depict archaeological concepts and practices (Politopoulos & Mol 2021, 81-92). During the process of play, the human learns safely experiencing the world while learning quickly and doing things that may result in danger in the real world, without ever being in danger, because in a game a mistake only means resetting and trying again.

In terms of materiality, the best example of how archaeology can take advantage of gaming is Heaven's Vault, where the interpretation of a fictitious alien language is interconnected with the entire environment, the material culture is in context to the investigation being performed by the main character and it resembles an archaeological investigation or at least a historical one in many aspects (Caracciolo 2022, 29-47). This clear concept, of successfully combining archaeological principles within gaming, makes archaeogaming an appropriate name for the functions of this game which is a partial inspiration to the archaeogame developed for this research.

In terms of emotions, a game can be a safe space where one can get out if too intense, detach themselves from the immersion at will or be fully immersed and experience real emotions in archaeology in a controlled environment without ethical issues that may result in the damaging of the person or the archaeology. Therefore, archaeogaming is an optimal choice to explore emotions within archaeology and material culture.

In order to develop a game of which the aim is not only entertainment but mainly an ulterior aim such as academic research or exploring serious topics such as emotion and archaeological material culture, it is not enough to consider it just an archaeogame; this type of game has been around for a much longer period of time, and it is categorised as a serious game.

The definition of serious games is not straightforward and can only be defined through the investigation of its aims and objectives, but the core principles to call it a serious game are the presence of experience, multimedia, and entertainment, touching upon design objectives that incorporate all three principles and none less, otherwise, the game would fall under different but similar categories (Laamarti & Saddik 2014, 3-4).

Serious games may also have a specific design in order to be successful and need to include the following factors:

"(1) Gain attention.

(2) Inform learners of the objective.

(3) Stimulate recall of prior learning.

(4) Present stimulus material.

(5) Provide learning guidance.

(6) Elicit performance.

(7) Provide feedback.

(8) Assess performance.

(9) Enhance retention and transfer." (Laamarti & Saddik 2014, 11).

All the above were considered and integrated into the design of the archaeogame produced, ensuring the position in the categorisation of serious games.

The mechanics of serious games are not only relegated to the digital world, but several practical applications also show how serious topics such as the Holocaust can benefit from the use of games to understand the dynamics of human emotion and the reasons behind behaviours in a sociological study.

For example, will people follow blindly the rules given, compared to the events leading to filling trains with individuals going to concentration camps, or how will people react when given complete freedom over what they can do with resources, studying human nature within a game, or understanding the inequality of cultural segregation and division through a game involving Mexican kitchen workers and how they need to utilise their extremely

low funds and take crucial decisions throughout the game to survive in a hostile segregated environment (Romero 2019).

Analogue games such as the ones described above can give a sense of emotion to users attempting to address serious questions, hence the description as serious games, but despite being analogue, they can be employed in terms of game mechanics within a digital archaeogame, hence addressing the issues of emotive stress and emotive risk brought up during the interviews to follow in chapter 3. The game mechanics as explained above can be adapted to evolve from simple technical puzzles as the ones described in the above subchapter on game design (Brown 2018, Wolf, 2002, 113-134, Bozdog 2020, 23-47, Robb 2015, 166-180), to serious games mechanics, attempting to deal with heavier and more complex emotive subjects.

There is also an argument to be made that addressing such issues within games and not media such as films, can allow through the mechanics and interactivity of the game, several experiences at once that may be played and re-played constantly obtaining a new message depending on the design (Brathwaite 2010, 311-329). For example, one may get a message about the emotive horror of getting on a train going to the camps the first time and resulting in the possible worst result such as ending at the camp and the next time in hindsight attempt to obtain a different result, this would give widely different emotional learning points and experiences for the users and they could be worked in the game as a mechanic easily, leaving a sense of choice and presence of hope or lack of it depending on the design, differing in the result every time.

There is a mechanical and straightforward element that can be implemented within a digital game that would allow the learning and experiencing of values and emotional triggers within an archaeogame, this is the process of creating a mechanic where the player makes a choice, the program reacts in a pre-programmed way to such choice and the process is repeated either through similar events or through the same event, giving the possibility of different outcomes but all predictable, hence creating a predictable emotive trigger that the player has to go through to progress in the game(Swain 2010, 217-235).

This system is a learning curve adapted in serious games that are normally aimed at bringing across a point or teaching a lesson through self-conducted learning and have been used in the past as testing grounds for emotional regulation dealing with monitoring and understanding the emotional stability and development of individuals to identify patterns of instability through gaming (Villani *et al*. 2018, 85-99), but can also be used in this research

to obtain varied but controlled results in the archaeogame in terms of emotional topics and engagement with them.

The emotive potential of a system based on pre-conceptualised choices that the player must make to obtain the desired result is described as a system of chance and flow (Isbister 2016, 1-77), where the player chooses to take a chance and the system follows with a flow of events that result in the possibly expected or unexpected result, inevitably influencing the player's emotive state by triggering different emotions depending on the result. This concept although generalised and difficult to pinpoint as each person may have different life experiences and different moral and emotive connections, allows for a certain level of control over the expected emotions, connected to the ability to provoke a wide variety of them and technically adapt to the individual character of the player and moral standard.

There is also a correlation between physical movement and emotions within games, this can be seen when the commands that come instinctively during gameplay do not work for the individual as expected when feeling panic and failing several times, this loss of movement control is completely due to emotive factors as opposed to simple physical inability (Shinkle 2008, 907-915).

The use of joysticks, physical representations of in-game objects as controllers would have been an interesting area to explore in terms of emotive reactions, but due to the low level of skill required to successfully address the development of a game that any non-designer or programmer could potentially produce, restricted this type of experiment. The loss of control and emotion in physical movement was approached within the game using a simple intentional camera angle and collision pattern within a room in the game which gave interesting emotional responses by testers in chapter 7.

The above emotive discussions are strongly based on their effectiveness in terms of archaeogaming from the concept of immersion, it seems that without an adequate level of immersion, the game cannot provoke the emotive response needed to feel strong emotions. Immersion is defined as "an illusion of non-mediation between the player and the gaming context so that the player feels directly embedded in the virtual environment and the story happening there" (Przybylski 2010, 161), therefore, to obtain a strong emotive response from players, a game needs to create this sense of detachment from the peripherals described as a sixth sense.

But on top of the above immersion based on peripheral disconnection, there is also an element of emotional immersion with the narrative that needs to be achieved, such as the

feeling that actions and events within the game have real emotional weight and the player is fully invested as if the consequences mattered in real life (Przybylski 2010, 154-166).

All these processes were addressed and intertwined within the narrative written for the archaeogame in this research as the emotive responses to the triggers needed to be evident enough to be easily recorded.

All of the above concepts of narrative (Story creating attachment to place or characters), ecological (responding to the game as if it is the real world), game (mechanics of the game such as controls), and artefact design (Artistic design of the game) have been flagged as the core principles to follow to create a fully emotive ensemble that should be present to have a successfully emotional game if one is to focus on the topic of emotive responses (Frome 2007, 831-835).

Due to the above topics and different aims in development, the approach of serious games tends to be more appropriate to the research at hand, as the commercial games tend to show their level of success through the capital invested vs the monetary gain at the end of the distribution process, the social aspect of the serious games tends to give different results that may be completely independent of revenue, and venture in the areas of, did they make people think about a particular social or political topic? Did they provoke an emotive response and was the response the one expected or different? What is the value of this result? (Bogost 2010, 81-92).

Addressing serious games as an action and result alternative to economic games, made the production of the archaeogame for this research more in line with the academic nature of its inception, all the while keeping in line with ethical principles and empirically addressing the main questions.

The above discussions have been focused generally on emotions and serious game designs, but there is a particular emotion that has a crucial importance in the questions set by this research, and this is nostalgia. Therefore, to investigate this complex and interconnected type of emotion the next few subchapters will discuss its relationship with games, archaeology, and other types of influencing media such as cinema and literature.

Nostalgia in Gaming:

There are several types and applications of nostalgia in games and the definitions interconnect with each other, since nostalgia is a multifaceted emotion and has very different results and effects depending on the situation. In terms of gaming, some of the basic principles involve two types of nostalgia: restorative and reflective.

Restorative nostalgia is about collecting older technology and programs in original boxes, and formats and using older computers to play in the original state and it is also about keeping the retro titles alive in the collective memory. This has been constantly repeated by Nintendo, a company that has been recycling the concept and technical gameplay of Mario so that players generation after generation have kept on playing the different reiterations of the game with occasional innovations and perks (Garda 2013, 1-13).

Reflective nostalgia does not recreate the game of the past and the same mechanics or even feelings, it is an inspired-by reimagining of the original, taking some of the basic ideas like the setting and the basic qualities of the main character, still modifying them to a new original script and even the character can change beyond recognition. For example, the Christopher Nolan-like prequel to Tomb Rider, the new instalment of a long-established franchise is situated rather around reflective nostalgia, since it reinterprets the original convention (Garda 2013, 1-13).

Beyond the simple two-sided division of definitions of nostalgia, McClancy shows that games can use the nostalgia of a less technological past as a way to explore the dangers of becoming fully reliant on games, such as in the example of Fallout, where the world has been destroyed in a nuclear war reminiscing the worst nightmare of the Cold War outcomes, and after hundreds of years the world is a dystopian hellscape where the mix between lack of technology and basic needs is mixed with high technology and impossible mixes between mutations and cyber enhancements (McClancy 2018).

The narrative here uses a mix of nostalgia for the nuclear family and simpler times when problems were easier to spot, with the familiar feeling of fear of nuclear war and the messages of overreliance on technology ever present nowadays. The style of immersion is further enhanced by allowing the player to go on side quests and ignore the main quest for hours or days enlarging the scope and the size of the world and the narrative, allowing the player to get lost in the environment and completely immerse itself in it.

There are also factors in media nostalgia and a sense of social place in games that result in a set of separate definitions due to the target of such nostalgia.

Definition of nostalgia for gamers returning to a familiar (game) place: Reliving past experiences in the same way remembered by the player, returning to, and expanding or finishing in-game goals, and experiencing original content they might have missed.

Sense of place definition: It is not only a physical or virtual place, but also a social belonging, a sense of adding more to a familiar experience, feeling at home belonging to the environment, and knowing and understanding the given lore.

Sense of social presence: This is an opportunity to spend free time with friends, at times family, and a game-specific type of group called guildmates, a fixed group of in-game friends that can always communicate these can be people met offline or through the game itself (Robinson & Bowman 2022, 421-444).

But there is also a much stronger connection to the games that do not necessarily involve the idea of the game itself, but the remediated memories in games, the nostalgia of the feelings of the past, not of the game itself:

Videogames are used in terms of nostalgia not only to recreate older games in different or similar ways to the past, but the feeling and the nostalgia for the actual real world from the past have a more crucial function within the game. Recreating environmental factors such as adverts from the past, objects like old cassette players, and even simulating the feeling of being back in a childhood gaming experience such as sitting on a bean bag and playing with friends gives a stronger sense of nostalgia than simply remaking or reimagining an older game (Sloan 2015, 525-550).

One feature prominent in games that provoke nostalgic feelings is using parody, sarcasm, and irony to compare the present with the past.

Games can create a nostalgic pastiche of references within them that can guide the player towards making their interpretation of the intention of the designer in the same way, games that use parody, sarcasm and irony enable the user to compare and contrast the contemporary social issues with the past, focusing on game design, culture and inevitably heritage and history. This tool can also be used by designers to guide the audience through their reasoning, may it be logical or emotive and give a better understanding of their philosophies, choices, styles, and choices in technologies (Sloan 2016, 34-45).

The old-school computer games and the feeling one remembers when thinking about them are dependent on many different factors, the personal condition when first played, the initial feeling of playing the game, and the memories associated with the moment playing the game.

This has been exploited by the industry to make the past ‘cool’, but the reality of the matter is that it is essentially a dream, the research showed that the feeling once one manages to replay an old game is a disappointment at most, as the equipment is not the same, the screen, the keyboard, the quality of the image, the memory of the moment first played has been augmented by time and is not as one remembers (Taylor & Whalen 2008).

Even the environment feels alien and fails to reproduce the feeling. This makes the coolness of the old-school computer games a pseudo-dream, an attraction point, but rarely able to stand to the memory of the past (Taylor & Whalen 2008, 19-31).

The nostalgic responses when looking at forums and comments on the games can be different from each other or even place themselves in different extremes, for example, the fans that complain about the lack of feeling from the previous games and the ones that welcome the chance to make the environment feel better, the ones that passively observe the changes and go back to the game enjoying its basic form being constantly modified and the ones that go in the game actively asking either to be modified further but in line with changes of the past or the ones that want the game to have specific immutable perks and characteristics present in the past reiterations.

These are all forms of nostalgia but start and develop in very different ways despite being targeted to a single game and create a level of unpredictability when attempting to target the audience's nostalgic feelings, what could please someone could subjectively alienate someone else, making this very difficult to predict (Taylor & Whalen 2008, 31-50).

The Plug it-in and Play TV Games (PNPs) are a physical representation of nostalgia marketing, these devices are Deja Vu versions of older devices, with some differences that enable the users to play their older games as if using the older platforms. This industry is quite developed and going strong, all based on the principle of collective memory of how it used to be playing these games as a child or in the past in general.

There are just like in previous examples several comments on the fact that the devices are not the same, they do not feel the same and this is connected to the discussion of the perfect dream nostalgic feeling, despite the closeness to the original, these devices will not recreate the same feelings, hence the Deja-New description (Taylor & Whalen 2008, 50-68).

In terms of applicability in digital games causing emotive nostalgic feelings, this is a concept that follows the coolness of old school, there can be an attempt to recreate the same environment, for example within a game one can create a room with an older computer

and an older system within it, attempting to target that dream feeling, but inevitably this would still evoke either just partially or not at all the same feelings the user would remember out of nostalgia.

Users and designers alike embed feelings of nostalgia in games using Hacks, MODS, Easter Eggs, and Fossils, creating interesting emotions in the process.

The concepts of hacks are related to looking inside the code of the game to either modify the game or see what's behind the curtain, this has been used to give a sense of nostalgia to the active hacker seeking little secrets reminding about the past of a game or the casual observer who read the news of finding old code and hidden objects behind the curtains.

Such hacks are also closely related to the concept of easter eggs, which is the basic principle of programmers and designers placing an instance of nostalgic memory such as an object, a phrase or a line of code hidden somewhere in the game, at times accidentally making the easter egg into a fossilised part of code to be discovered and causing nostalgia for the audience (Taylor & Whalen 2008, 68-90). This is a very powerful emotive trigger in games, films and many other media and could provoke specific types of emotive reactions combined with the prominent nostalgic one.

When looking at the process in gaming, especially in the first puzzle games such as Zork, there is a high dependence on narration and text, the game has been mainly text-based, but that does not mean that only older games over-relied on narration due to the technical limitations, but it means that it is a core function that can be complemented by new media and tools but not erased as it is the base.

An example can be showing a scene and then describing events that happened between such scene and another and not drawing or animating those events, this allows the process to be kept simpler, but at the same time, the narrative compensates for the lack of extra scene. In another case, a movement or change can be simply implied by factors in an image, like a cockroach appearing on the edge of the screen and then appearing on the opposite edge on the next screen but narratively not having moved as it looks like a translation from one scene to the other (Taylor & Whalen 2008, 90-108).

These are all techniques that can be used to save time, avoid pitfalls due to lack of skill and enable less skilled or resourceful developers to still produce games with narrative strengths that enable emotive responses by the users despite the roughness of the game.

There is an argument to be made for the importance of Adventure cinematic and colonialism romanticism within the discourse of nostalgia in games.

Adventure games such as Prince of Persia are the perfect example of historical settings with colonial tropes such as the suave British accent and the smooth movements in a magicked Arabian Night environment, there is a pullback to early cinema, especially in terms of cinematics and cutscenes, this is direct use of nostalgic feelings to attract the user to not only immerse themselves in the game but also reminiscent of older movies and romanticism while having the addition of interactivity that is fun and removes hindrances and suffering such as physical strain.

But while Prince of Persia attracts the audience through a suave historical fantasy, games like Crimson Skies attempt to analyse the past in a what-if. scenario, where the history is changed to the enemy winning instead of losing like in the real historical account and the dangers of modern technological development are shown; giving a compare and contrast ability to the user critically learning from the past to understand the present (Taylor & Whalen 2008, 126-144).

These types of changes despite being part of fantasy and fiction are strong tools for emotive triggers and deeper discussions of the repercussions of acting in the present, using the past as an example to support the point; it can be both immersive and powerful in terms of nostalgia, negative or complex emotions and at the same time allow the archaeologist to develop abstract ideas much further than a realistic factual reconstruction.

There is a strong case to be made for nostalgia in computer games to be compared and equal to the one for real-life experiences, only showing a stronger emphasis on self to increase the feeling of being part of a social group on group shown by events such as playing with family members such as parents being remembered nostalgically.

Therefore, nostalgia in a socio-psychological sense in games has the same effect as nostalgia for place, time, and world events. The other factor that has been ascertained is the fact that nostalgia in games is time-based too, it is related to the past as the other forms of nostalgia. There is also an argument that playing nostalgic older games is beneficial for social anxiety as users have been recorded preferring older games played in the past by them as being a place where to immerse themselves in cases of anxiety and social distress (Wulf et al. 2020, 83-95).

2.7 Development of interviews

The presence and interrelation between nostalgia and gaming mentioned above potentially shows that there is a potential for immersion and comfort in using older games for both

triggering nostalgic emotions and strengthening immersion as the users declare a feeling of safety and comfort.

This literature-based chapter showed the potential possibilities in employing game design through serious games and archaeogaming to trigger and study emotive reactions, but also a need to obtain more direct information in the form of interviews, from some of the authors mentioned. There was a potential especially in terms of emotive perception, use and depiction in the literature on emotive theory, nostalgia and digital storytelling focusing on archaeological material culture, tangible and intangible heritage.

The results of the interviews will be analysed and inserted into the missing data slots to complete the knowledge required to develop a system to test and induce emotions connected to both negative emotive feelings and feelings of nostalgia, all the while integrating the more comprehensive theory into the experiment.

The researchers to interview were identified and selected using a principle of an area of expertise near the topics of emotion, negative emotion, and nostalgia. The researchers were further divided into the ones who may have touched upon areas related to the aims and objectives of this research due to their research direction, but who did not elaborate further or consider directly in their written work the above emotive factors. Lastly, the authors were further divided into an ethical division between areas of study in cultural and racial minorities, dark heritage, slavery, and areas of cultural destruction.

The interviews described further down this chapter will be transcribed, focusing only on issues and data related to the aims and objectives of this research. Then they will be analysed using three different methodologies in line with the needed outcomes.

Various types of analysis were considered based on the appropriateness of qualitative data, such as the interviews described above, and the conclusion was that there may be a need to mix two well-researched and widely used methods.

The methods considered were:

Content analysis (Downe-Wamboldt 1992, 313-321), narrative analysis (Smith 2000, 313-335), discourse analysis (Jørgensen *et al.* 2002, 1-96), framework analysis (Furber 2010, 97-100), and grounded theory (Walker *et al.* 2006, 547-559).

Out of the list, it was decided to use narrative analysis, which focuses on the argument and restructures the content in the context in which it is being researched, technically removing the extra data and summarising the most important parts of the narrative. It was also decided to combine narrative analysis with framework analysis, which will enable the

creation of a systematic list of issues, identify the key issues and areas of interest within the narrative, and conclude with a well-defined interpretation following the steps of this method, which are: familiarisation; identifying a thematic framework; indexing; charting; and mapping and interpretation.

This last method will allow extraction of the information accumulated from the interviews and seamlessly inject it into the case study game, as it creates an almost function-like result highly compatible with the programming system of the game.

2.8 Questions for Researchers

The questions have been divided into areas of expertise. Some of the researchers interviewed were specialised in museum curation, while others specialised in digital design and reconstruction. It is logical to divide the questionnaire into several separate parts and only ask the pertinent questions to each researcher.

General questions applicable to all:

The first few questions are based on areas of research that lacked an explanation of the processes through which the researchers went.

- How high would you place nostalgia as an emotive factor in your work in the level of emotive importance? Why?
- Based on your observations during your research career, what emotions would attract the public to archaeology?
- What emotional reasons might discourage some members of the public from engaging with archaeology (as opposed to the previous question)?

The following questions were designed to explore some of the factors further touched upon, but not delved into, in a study by Moser (Moser 2010, 22–32). The questions aim to explore how a curator intended the audience to feel. What was the decision-making process to create such emotions? Is emotion crucial, or are aesthetics just contextual and personal to the designers of displays? Did their emotive associations guide the curator, or did they try to convey a general emotion? And if so, did it succeed?

- When writing or displaying archaeological data to the public, what emotional response are you aiming to achieve, if any? Can you give any specific examples?

- Do you have any emotive technical plan when designing a display or writing a paper about a subject that may provoke emotive responses?
- What emotional reaction did you instinctively have when the public showed interest or did not respond to your data display?
- Do you try to control emotive involvement in a project or instinctively feel emotionally attached to some of your projects? What is your opinion on having an emotive attachment to one's work?
- Would you say nostalgia has sway over you when dealing with projects, following the previous question?

The practice of creating illustrations is discussed in Smiles and Wilson (Smiles et al. 2005, 31-34, Wilson 2020). The questions following are an attempt to investigate the use of emotion in creating archaeological illustrations and how emotions were produced and delivered.

- Have you ever used digital or analogue archaeological illustrations to convey data to the public? If so, did you consciously decide what emotions your illustrations should create? If so, what was the process behind this?
- Did the audience respond as you expected, or was the response utterly different from the one planned? Why do you think this was the result?

The following questions are based on concepts touched upon by the Emotive Project (Katifori et al. 2016): emotions such as humour, excitement, and anticipation. The questions aim at understanding the process, if any, used by museum curators or academics to get the audience to have specific expected emotional reactions from the data displayed, how this may have succeeded or failed, and the researcher's reaction to the emotive response.

- How do you organise and depict environment reconstructions or displays, and do you aim to create emotional responses when organising or planning any displayed data?
- Were there any unexpected, or possibly adverse, emotive reactions by the public when observing digitally reconstructed data in any of your previous studies? Any instances of misinterpretation by the people, mistaken association, or negative emotive reaction? If so, what were the reasons behind it?

- Would you say nostalgia may have negative effects on the public? Why? Or why not?

Specific questions for museum curators and researchers in museology:

The following set of questions aims to identify the presence of emotive reactions to museum displays and the possible uses of a concrete methodology that curators can use to prompt specific emotional responses.

- Have feelings of nostalgia ever swayed how you create displays in museums?
- What effect do you believe nostalgia has on the visitors to museums?
- Are there any particular techniques or methods you use to organise museum displays to provoke specific emotions from visitors?
- Were there any instances throughout your work when visitors were either very happy or offended and angry due to how a museum display was designed? It can be related to someone else's work, not necessarily your own.
- According to you, what factors affect the emotive provocation of a museum display or exhibition?
- Do you have a standard aim or direction concerning the emotions your museum displays should provoke?

Questions related to digital work:

This particular set of questions is aimed at analysing how researchers have used digital technology to intentionally provoke a set of specific emotions and whether they developed a methodology to evoke emotions as a result.

- How did you attempt to provoke emotive reactions in your digital work? Did you have a specific pattern, method, or technique?
- Do you feel or purposely use nostalgia as an emotional trigger when recreating environments digitally?
- Did your digital work, or anyone else's that you observed, create a situation where the users were unhappy or angry at digital work? If so, could you explain why you would change your design or keep it as it is?
- How do you measure the success of your digital work concerning emotive reactions?

Questions aimed at researchers:

The following questions are aimed at understanding whether researchers who worked on emotive studies attempted to create or provoke emotions through their work and whether, in the process, they managed to develop a methodology based on new or preceding work.

- Have you ever encountered methodologies to create specific emotive reactions in archaeology? If so, which ones have you employed and why?
- What is your view on nostalgia when discussing emotive reactions by colleagues, the public, or even yourself when working on emotive projects?
- Have you ever worked on analysing or provoking negative emotions? Do you think this area should be researched? Why?
- Were there instances where you encountered negative emotive topics in your research but did not pursue the issue? Could you give examples?

Questions related to negative emotions only:

This set of questions was designed to investigate the area of negative emotions further. The main aim was to understand whether the researchers came across negative emotions, whether they considered them and took note of their use and purpose in context, and whether, in their opinion, there should be further research on the topic.

- Can nostalgia create powerful negative emotions? Do you think it is good or bad? Why?
- What range of emotions have you observed in your work? Are there predominant emotions constantly appearing?
- Do you have methods to provoke negative emotive reactions such as terror, anger, and resignation in your work? If not, do you think there should be space in research to deal with negative emotions in archaeology, and why?

The following chapter will aim to analyse the responses to the interviews and extract the answers to the various questions in order to critically analyse the identified issues and points of interest and use them to create the emotive triggers in the archaeogame described in Chapter 5.

Chapter 3

Interview Outcomes and Analysis

I took it upon myself to contact each one of the authors identified in the above literature and ask to have an unstructured interview with them. As expected, many were not able to get back to me with an answer, or had other commitments, but out of the many identified authors who may have been in possession of valuable data regarding the unwritten emotive factors encountered in their research, some replied. This allowed me to conduct several interviews that varied from one to two hours each and acquire a large quantity of data never made available before, as it had simply been observed in their previous studies, but never written down or mentioned again.

The data recovered showed a wide variety of issues and theories permeating throughout emotive studies that have not been mentioned or written down for publication before the development of my research. The authors interviewed who agreed to waive their anonymity for the purpose of a better understanding of their background and expertise to give weight to the importance of the theories and discoveries within their interviews were: Dr Tringham, Dr Economou, Dr Anderson, Dr Watterson, Dr Schofield, Dr Dennis and Dr Bozdog.

The interviews described in the previous chapter highlighted some critical issues and emotive topics within reconstruction in archaeology, which enhance the literature investigated once they have been extensively analysed. The focus topics were negative emotions, nostalgia, and issues with archaeological reconstruction that affect most archaeologists, which are strongly connected to emotive issues and subjectivity. The above theoretical discussions will be integrated into the archaeogame project this research aims to develop.

Following the technical organisation mentioned in the previous chapter, the following analytical body will combine the answers given by the authors using narrative analysis as mentioned above, along with the systematic nature of the second type of analysis chosen in the previous chapter, framework analysis. This will make it possible to develop a systematic approach to the integration of this data into the archaeogame mentioned above.

The tables will be divided following the name of the researcher interviewed, the most prominent points of interest related to emotive reactions and emotive theory that the authors raised during the conversation; all points that would then be integrated into the

development of the archaeogame and its emotive triggers; and finally, a summary describing the specific theoretical approach or hypothesis raised by the points of interest.

3.1 What importance was given to emotions and nostalgia by the interviewed authors?

During the interviewing process, there was a general sense of surprise; the authors were going through their initial ideas once more and extracting concepts they had not talked about in their projects but wished they had done. Some of the results were surprising both to the interviewer and the interviewee. One of the main emotional factors that kept appearing was a sense of importance associated or not associated with nostalgia within archaeology.

The most notable results within this part of the interviews were a sense of subjectivity associated with personal experiences, especially associated to childhood, that may result in unexpected reactions disassociated to the situation when nostalgia is experienced. It was also noted that nostalgia was associated to older games and technology as logically expected.

Table 1 shows the series of important points related to the above question.

Table 1:

Researcher	Points of interest	Theoretical approaches raised
Dr Tringham	Her nostalgic feeling was not connected to her country of origin or past there, but to her projects and travel in Eastern Europe, disproving the assumption that nostalgia is associated with childhood or provenance, and showing instead that it is associated with particularly emotional experiences utterly unrelated to our origins.	Nostalgia as subjective experiences not childhood or provenance.
Dr Economou	Could not give a straightforward description of nostalgia, especially within her professional work; she defaulted to focusing on specific emotive events within her work which encompassed relations within friendship, family, and work.	Nostalgia as a constant for familiarity.

Dr Watterson	She often re-experienced past events through the use of art and, as above, unearthed more information about the past which was not known when she initially experienced the past, she was nostalgic about. Her memories were of colouring books and discovering stories within the books, which eventually pushed her toward the game industry and directly motivated her to employ storytelling as an intrinsic device in digital design.	Nostalgia connected to childhood experiences and pushing to future experiences.
Dr Schofield	Described a project involving a series of technical devices and photography which gave information about the past in Newcastle. In this instance, elderly users were visibly excited and displayed longing when reliving the past through the instruments provided, and at times the feeling of nostalgia was even amplified further as some of the information provided gave more details than the users knew about the past, they were nostalgic about.	Nostalgia of a past rediscovered in the present.
Dr Dennis	Showed a level of interconnection between artistic style and emotive results, as there was a nostalgic connection between types developed in earlier games, especially in the 90s, as opposed to the ones used nowadays. The users were inclined to agree with and accept inaccuracies and mistakes as long as they fitted within the expectations of the game, regardless of their authenticity. Perfect examples would be the full functionality of overly complicated traps in adventure games which could not possibly be accurate due to either technical impossibility, age, or logical construction.	Nostalgia based on familiarity of experiences and not logics or contemporary principles and norms.
Dr Bozdog	Feeling of nostalgia for games in the same 80s to 90s period. Even though such games were much lower in graphical complexity, pixelated, and unrealistic, a variety of users included in her research still expressed fond memories of playing them.	Nostalgic attachment to the narrative complexity present in older games as opposed to the present.

3.2 Techniques intentionally or unintentionally adopted by the researchers to provoke emotive reactions.

Dr Watterson gave the first interesting answer for this particular area; she explained that despite archaeological methods being involved in some of the work she did, for example, on the Yupik culture, there was a different process involved in the character design in particular, which was not to do solely with archaeology itself, but with allowing the users to see themselves in the characters created.
In terms of interesting hypotheses raised, the personification of the viewer within the character mentioned above was an important point raised, and the second was again the importance of nostalgic association to the past and the importance of subjective personal experiences and the resulting personal emotive reactions of users.
Furthermore, an interesting concept raised during this pert of the interviews was what Dr. Tringham called a sense of mystery, something related to the control over how the story goes and the insertion of personal experiences and memory within emotive work.
Table 2 shows the series of important points related to the above topic.
Table 2:

Researcher	Points of interest	Theoretical approaches raised
Dr Tringham	The intentional creation of a mystery within the storytelling; this is something to be explored, analysed, and solved by the user, with some hints, an easy hand over the shoulder, concentrating on making this the main thread that holds the entire story together.	The effect of creating a mystery within a story allows the user to have the above feeling of being in control of decision-making and filling in the gaps, while having the encouraging aim of exploring and learning all the different stories of all characters and objects, regardless of the visual level of importance, due to the possibility of any of these small things containing a clue to how to solve the overall mystery of the story.
Dr Economou	She introduced the possibility of choice for the user and the feelings related to the option taken, which inevitably had consequences.	Stories connected to the concept of choice, modern principles and issues shared with the past, can

	"What does engagement mean? It means that they're offering you something where you can find something in common to have a strong connection. Whenever you give a person a choice or an emotional story, you get these complete differences between them. They don't care, and they get immersed in the world. Normally, you see the person's background story that changes how to interact with it." (Dr Economou).	be used to involve the public with the project emotionally.
Dr Anderson	Explained that if there is just an object being displayed, even with some context, but there is no story behind it, no theory or connection to it having being used by humans who had lives and various things happening around them, such as a story, then there would not only not be an emotive connection, but no interest in general either.	There is an interconnection between attractive or nostalgic stories, the feeling you may, for example, get out of a campfire story in terms of both the level of interest shown by people and the emotive reaction
Dr Watterson	Described an artistic development of what was necessary for the culture; how the characters and animals would need to look the way the artists depicted them in Yupik masks and ritual objects, with elongated eyebrows, lines in the body structure that do not necessarily follow the technical description of the character or animal, but which have an almost nostalgic connection to the objects of the past for the local culture. Children who have unfiltered reactions gave very positive outcomes, proving its efficiency.	Stylised reconstructions can be more effective than realistic ones in terms of emotive association and recollection.
Dr Schofield	Used a telescope to show the past around a well-known building through an overlay system inside the telescope itself. The above was aimed at people who may not be used to new technology; he described them as elderly and unwilling to engage with modern art and technology; this technique gave older people a feeling of familiarity with an alien environment, as a telescope is well known and familiar. At the same time, it allowed them to use new technology to see the past. Also used senses like smell as an immersive technique to give familiarity to the environment, such as burnt cardboard which accidentally gave a feeling of nostalgia to elder people connecting to older memories.	Combining old and new can create an emotive connection the past even through modern means. This can be enhanced through other senses such as smell and sound.

Dr Dennis	Archaeologists consider the public in a different position and try to enforce their own narrative style, which may at times be dry and unappealing due to the focus on facts and data. "Don't be mean!" (to the public) was the message.	Patronising attitudes in reconstructions, and the stories within those reconstructions, should not be present; the public needs to have a positive engagement with the material, regardless of the aim, be it positive or negative emotions, and this can be achieved by using humour.
Dr Bozdog	Suggested that there is a need for the user to fill in the gaps; rather than the creator of a digital archaeogame or a general story giving and imposing all the details on the user.	Allow the public to experience scenes with some information given, some other omitted, and the public fills in all the missing parts of the story with their own knowledge, their imagination, and their own experiences, both physical and emotional.

The next area to examine will be the effect of various displays and projects on the public. Were the researchers able to control the direction? Was it random or unexpected? Which factors weighed most heavily in the results obtained?

3.3 Emotive reactions observed by the authors during the sample projects

One of the initial concepts explored within the area of emotive reactions was difference in cultural background and the resulting difference in reactions.

A particularly interesting and unusual point was raised by Dr. Tringham, who used an Italian author's nationality and the comparative closeness in emotive terms to American nationality to make an example; this would later become a strong relevant point in the analysis of the reactions to the emotive triggers within the archaeogame. She explained that emotive responses would differ significantly between the British and Italians when dealing with specific reactions.

These reactions may have been closer between Italians and Americans due to their shared, more open approach to emotive expression than the British. Still, their cultural background would considerably influence the difference between all emotive responses.

Table 3 shows the series of important points related to the above topic.

Table 3:

Researcher	Points of interest	Theoretical approaches raised
Dr Economou	In a story-driven game, she placed different, strongly emotive, distant results depending on the user's choices, all while attempting to connect modern issues with ancient times. In some cases, the choices led to extreme results such as the abduction of a person or the loss of a child, creating something that would have been just as emotionally scarring back in ancient times as it would be today. These experiences did not feel alien and distant, but close and personal, despite the distance in time.	There is a potential in the process of familiarisation within virtual environments, as this is something the users tend to do naturally. There would be a possibility of control over the emotive reactions if the correct familiar triggers were to be placed in tactical positions
Dr Anderson	Explained an interesting potential issue when realistically recreating the past using computer technology; this is the possibility of triggering unexpected and powerful negative reactions, especially if the user was at any point closely connected to the event reconstructed, and/or there are factors in the reconstruction that were unknown to the user but which provoke grief, despair or painful memories.	There is a need to create a questionnaire asking the user to test their ability to emotionally endure some reconstructed concepts and asking them to stop as soon as a threshold is passed to avoid permanent damage.
Dr Watterson	Suggested that in some of her work, cultural proximity was vital. She went on to explain that during a project involving Neolithic designs, there was an assumption by the users that they would be seeing a family nucleus similar to the ones found nowadays, with dad, mum, son, and grandma placed in stereotypical settings or activities, or at least similar to what would be typically expected today. However, her reconstruction was created according to information from the past, which set the grandma in one area taking hallucinogenic mushrooms, creating a shock reaction that was borderline refusal.	Possibility of a different contextual design depending on the culture of origin, and emotional maturity connected to age of the viewer.

Dr Schofield	Was against the creation of uncertainty to represent uncertainty; this was symbolised by the commonly known “transparent walls” in digital archaeology: the concept of creating a transparent wall to describe something the archaeologists either don’t know about the structure or something they are not sure of. “When you have semi-transparent buildings that look different from those you're looking at, then people get distracted by that, or they're going to try and make some explanation, internalising the information, and it’s disruptive, actually more disruptive than speculative information.” (Schofield). The extreme opposite is also dangerous: a number of children have argued with their teachers that dinosaurs walked the earth with humans, as they saw humans next to dinosaurs in documentaries on television. They believed that what they were being taught in school as factual reality was not real, given the visual evidence they saw on television.	Avoid the transparent wall stereotype and the dinosaurs walking with humans, instead integrate a foggy environment obscuring uncertain areas, or use a cartoon-like style to remove the need for hyperrealism, which in turn allows emotive immersion without the risk of error or accidental fantasy building on top of the base story.
Dr Dennis	During an exercise done in Çatalhöyük, she noticed that different people reacted counterintuitively to their cultural proximity to the site when interacting with the activity. For example, tourists would be more interested in details about the site's factual information. While at the same time, the natives would ignore the site and the objects present and connect more emotionally to what the site represented in connection to their ancestry or how it compared to them nowadays. The interest for them was mainly in explaining their understanding of the site in terms of their current traditions and nostalgic feelings of the time before the site was excavated, at times ignoring its history completely, focusing instead on the now, and present emotions. “The tourist audiences were focused on the object itself. For the Turkish audiences, the data they provided had a lot more to do with how they related to the space and what it meant for them to see this type of place where they were from, and they had less	Cultural proximity seems to be a deciding factor when talking about familiarising with the environment.

	interest in the actual objects and interpretations." (Dennis)	
Dr Bozdog	The project she worked on involved people across generational gaps. They were asked to work on computer game technology involving reconstructions of past events and the result was symbiotic assistance between the older generation and the younger, the older generation were explaining the feelings and circumstances of the past involving the development of computers at the beginning of their creation, while the young were helping the old to interact with the new technology. "We had kind of the 60s + with working experience during the time, and then younger people who had the experience of working on mobile phones, and you got this symbiotic interrelation between the two when one has the real-life experience and the other the technological expertise to use the new to see the old." (Bozdog)	Assumptions of immaturity and incompatibility due to generational differences might not be as truthful and dangerous as anticipated by other scholars.

There is a strong case for the importance of cultural proximity and differences, as many of the above authors, such as Tringham, Dennis, and Watterson, emphasised, and this is an essential factor to consider when talking about emotions such as nostalgia, which is a complex ensemble of such background data. This has importance in the argument that the audience to be tested with the archaeogame should be of diverse, but distinguishable backgrounds.

One area that has yet to be analysed, but that was present in many of the discussions above, is the presence of negative emotions in the emotive spectrum, and how these can be provoked, analysed, and controlled, or if they should be avoided as has been done until now.

3.4 The presence of complex emotions and their potential role

There is a significant presence of negative emotions in archaeological research, but they are generally difficult to deal with, control, describe and justify. However, this is not a good reason to avoid them; the concept explained earlier in this research is that there are

risks when dealing with this type of emotions, but as researchers the archaeological community must explore all areas, including the uncomfortable ones.

The investigation into complex emotions had a varied level of responses, from the experiences in how uncomfortableness affects visitors of museums, to the above-mentioned need to deal with complex emotions even if there is a higher risk of conflict and offence involved.

The takeaway from the interviews was that regardless of the difficulty, there was a potential in the moderate use of strong complex emotions and their study and that emotions that may be categorised as negative may as a matter of fact be complex and actually positive developing emotions.

Table 4 shows the series of important points related to the above topic.

Table 4:

Researcher	Points of interest	Theoretical approaches raised
Dr Tringham	Described a more technical negative emotional trigger; this was a loss of familiarity, in particular one that happens too fast, for example, the use of a new platform, not knowing how to use commands, being placed in a situation very far from one's culture or having a sudden change of controls in a game.	Loss of familiarity especially if done to suddenly can cause full rejection of the immersion and the story as a whole.
Dr Anderson	A museum dedicated to Nazism, slavery, or the Twin Towers may cause distress, panic, and emotional harm. If created solely to make users feel these emotions, this doesn't seem right and appears counterproductive, but in the long run, the museums help people to reconcile with the past and build bridges to either forgive or live with the events. The pain and negative emotions endured will have been justified. "People could have an understandably profound and negative response to their emotional distress, visiting a slavery museum. But if long term that helps reconcile racial tensions, historical understandings, and, you know, empathy, etc., that justifies the risk." (Anderson).	There needs to be a balance between realistic representation, the message that one intends to give, and the result in the long-term of such a statement.

Dr Watterson	"The archaeologists there were going insane. It's like this is not exactly how it's supposed to be if we went into the exact way we should be, we lost most of the papers, so we don't know the exact measurements. Yeah, a year of work in a second. We'll never finish it, and we must finish it within a month." (Watterson). Watterson's message was that this obsessive drive towards precision was coupled with the assumption that archaeologists were the keepers of knowledge and knew everything, even though this was not, and is still not, true. She recorded a conversation between herself and a colleague, placing themselves as the artist and the site director; this conversation exposed the fact that there is a large number of assumptions and instinctive deductions involved in archaeological interpretation, this was taken negatively by archaeologists who were presented with the recording, as they feared this would remove the public's trust from them and result in chaos.	3 points: Unrealistic expectations create an impossible situation for digital designers in archaeology, expecting things to be done in impossible times with impossible precision. The concept of not approaching an event due to the ethical risk is comparable to historical censoring, and even if there is a risk that archaeologists may be found to be wrong in some of their interpretations. Should not deter them from showing the reality of things.
Dr Schofield	Confusion, frustration, and the inability to solve a mystery can all be as harmful as a transparent wall, and should be used carefully as they go against the principle of triggering the need to continue and the complete immersion explained by Tringham. There needs to be a balance between the immersion, horror, and emotional endurance expected by or of the user as Schofield described, giving details of nightmares that he experienced due to horror game experiences that went too far.	All techniques even if positive and potentially beneficial need to be used in moderation.
Dr Bozdog	Refused to define negative emotions as negative but expressed them as complex emotions due to their mutating nature. Her explanation was a good way to summarise the different approaches to negative emotion by all authors, as it combined all of their theories, as negative emotion was born from bad memories, assumptions, bad experiences, shock, or the inability to accept something; there were further steps to consider, such as the possibility that often such emotions may make the person mature and	Emotions may start as negative emotions, but they almost always mutate into something beneficial, and therefore should be treated as complex emotions.

	change their stance on their effect, and this can quickly switch from fear to acceptance, from hate to appreciation, or from difficulty to ease, and therefore their nature is complex and constantly evolving.	

3.5 Targeted interactions using game technology to expand and use the unwritten emotive data to provoke emotive reactions

The data resulting from the various interviews created a large pool of information that can be categorised and may be specifically adapted to create a 3D archaeogame design focused on a narrative that could be used to direct emotional responses from the users.

The main reason behind the interviews was to extrapolate data from the authors and practitioners on how to effectively apply both their theory and their practice on an archaeo-game which could instigate negative emotions, and work on the concept of nostalgia, which will be further explored in the following chapters. This section will summarise the most important discoveries and approaches resulting from the interviews and the analysis of the related literature.

The first concept which permeates the interviews is the presence of nostalgia. Despite some authors having initial doubts as to its existence or the need for it, by going further in the conversation, all of the authors eventually agreed that nostalgia had a prominent position when dealing with emotive components in their predominantly digital work, and the more sceptical ones concluded with comments on the fact that this relationship, which was not evident at first, had the potential to be an essential factor and, as a result, they were very interested in keeping up with the development of this project to prove or disprove an item of such an importance in the emotive spectrum.

Therefore, it is crucial for this project's success to prove that nostalgia serves as an essential catalyst for several emotive factors and may even influence the subjectivity and development of digital reconstructions in archaeology. Due to this debatable importance, there will be further clarification of what nostalgia is for the purposes of this project, and a chapter dedicated to exploring its effects on archaeological reconstruction in digital work.

Another essential aspect in both the interviews and the written data was the presence of an almost unwritten set of techniques to make the users feel the environment and connect with the objects, people, and animals.

There is no official technical direction that has been taken till now on how to do reconstructions, or how to create museum displays, other than ensuring the accuracy of the display and reconstruction, and, according to the authors interviewed, this may not necessarily be the right approach to create a sense of belonging and a feeling of space. Watterson was vocal about the need to appreciate and understand the importance of artistic style in reconstructions when it is to do with emotive attachment or creating the right feeling of intangible heritage with tangible objects.

Table 4 shows the series of important points related to the above topic.

Table 4:

Researcher	Points of interest	Theoretical approaches raised
Dr Tringham	Mystery is, according to Tringham, a fundamental concept in understanding and reproducing something that humans will emotionally engage with. Where a mystery needs to be solved, where the individual needs to act and take decisions, they will inevitably be emotionally involved in it, as curiosity will spark emotions such as conviction, frustration, anger, happiness, nostalgia and many others throughout the process.	A catalyst to provoke and spark emotions is the pull of mystery, without it there is less will to push forward or try something new.
Dr Economou	Introduced the possibility of choice in a story, which gives emotive control to the user; as the action is taken, it will have a consequence, and the responsibility will lie with the user only, creating a solid emotional bond with the situation.	Choices create different outcomes and different directions to take, this creates an emotive attachment between the viewer or user and the story.
Dr Anderson	Suggested the need for human attachment to a story, rather than just dry data, as the latter removes a critical aspect of history, which is the people; they are not stereotypes, each one is individually unique, and this is mainly represented by emotive stories surrounding them.	Emotions are crucial in an effective reconstruction, dry data cannot be considered even factual if lacking emotion as they are part of human nature.
Dr Watterson	Described her process as an artistic take that was aimed at making the people from the reconstructed culture recognise their environment through art, such as giving different shapes to animals, elongating their eyebrows to look more like the artistic depictions by	Artistic and stylised reconstructions can be more powerful in emotions than realism.

	the locals than the technical visual descriptions given by science.	
Dr Schofield	Suggested the use of interconnecting objects to show a more fantastic future to older generations, meanwhile connecting them with the younger generation's technology	Technologies and generational gaps can create stronger bonds than approaching a reconstruction aiming at one generation at a time.
Dr Dennis	Suggested that some cultures, especially those directly connected to archaeology, might not react as expected and might have a completely different emotional reaction to something which an outsider may see as crucial.	Reactions can always be unexpected, even if there seems to be no alternative possibility, people can always surprise.

The most shared reaction from the artistically inclined authors was the need to avoid breaking the fourth wall by creating oddly coloured objects or transparent walls to show uncertainty in facts.

The above is a concept widely expected technically in archaeology, that is aimed at showing that archaeologists do not know all points, but that at the same time breaks the storytelling's emotive connection and widely receives negative reactions from the public, not due to the story and archaeological content, but purely due to technical enforcement which is detrimental to both interpretation and heritage reconstructions.

Schofield considered the transparent wall method a further interpretational detriment, as the public might fill in the gaps with completely incorrect concepts, and, therefore, an approximate reconstruction not entirely based on fact might still be a better alternative in all senses.

Following the reactions area of research, the question about negative emotions in archaeology was challenging to answer for all authors. Still, in the end, several aspects of interest emerged.

One of them was the tendency toward embellishing and neutralising the controversy in archaeological data, making things that feel uncomfortable disappear behind others and avoiding the subject or contextualising it in modern terms, or even hiding the fact that archaeologists do not know the entire story and that it is always subject to change, which according to Watterson was a significant issue.

As described above, she encountered resistance towards making archaeology more transparent for fear of negative emotive reactions. Still, there might be an advantage to such a negative reaction if it allows questioning of the facts, making assumptions and interpretations, and making the public participate through choice. This might lead to rejection or even cause many types of negative emotions initially, but in the long run, it might be beneficial and create a stronger bond of trust between the audience and archaeologists.

Anderson and Schofield warned about going overboard with negative emotions and limiting the interaction within the reconstructed environment, ensuring no spilling over to the users' personal lives.

The principle to be used was clearly shown by Anderson, who explained that one needs to consider whether the risk and temporary damage are worth it if, in the long run, it will allow integration and understanding beyond what is present nowadays. That might be a good use of negative emotions, but if not, it should not be used in that particular context.

Dennis and Tringham took the question from different directions; Dennis expressed the need to study and work on negative emotions; they are part of the area of study in storytelling, and in life in general, and avoiding them would make archaeologist's work superficial and unrealistic; while Tringham suggested that many of the negative emotions experienced in the reconstructed environment may be connected to technical changes which are not accepted, for example, older people may not understand new ideas, they are different, scary and challenging to comprehend. Therefore, the reaction will be negative, regardless of the content and context.

But to sum up, Bozdog's idea of there being no negative emotions, but only complex emotions, is the most applicable to this project. The emotions are transitional, there is a point of newness, of rejection, and then of assimilation, engagement and appreciation, and integration; this concept may be at the heart of the development of the archaeo-game in this project.

3.6 Summary

This chapter was meant as a hybrid between the limited specific literature on the particular emotions and applications of emotions entailed in the present project. the unwritten ideas and, to some extent, the needs of authors and practitioners in the digital reconstruction of emotion through digital storytelling.

The most prominent comment amongst the interviews was the possibility that the technical concepts being tackled by the archaeological scientific community right now might be taking a misguided direction, preferring to focus on technical precision and undeniable truth, resulting in emotionless reconstructions that would defeat the point of accuracy anyway, since emotion permeates all actions in life.

There were also different concepts related to negative emotion considered as being other, or more, than simple negativity, such as hate, sadness, anger, fear, and desperation, but as a complex and transitional concept in need of more research, as opposed to the more common approach which has been avoidance due to the difficulty of dealing with such emotions and the fear of repercussions arising from the ethical evaluation due to the high chance of error.

Furthermore, the artistic analysis and suggested implementations described by the interviewed authors may have resulted in a much more practical and technical set of theories to apply to reconstructions than the more linear, purely technical theories expressed in the original literature, as this added both a way to tackle and understand subjectivity, and a way to integrate artistic concepts within a subject that until now has only concentrated on aspects of technical precision, even looking at emotion as a purely technical aspect itself.

The resulting theory is that there may be a need to create a more comprehensive experiment that involves several areas of research to obtain a resulting project that covers more than just the technical and precision aspects of archaeology, and looks at emotions as a form of art which may natively go against the precision concept and may embrace and use subjectivity positively.

The following chapter will investigate several areas of research that may not be natively connected to archaeology, such as film studies, literature, book writing, and game studies, and how their use of emotions may be applied to archaeology. The techniques developed by the subject areas mentioned above may serve the projected archaeogame, which will be discussed further in the following chapters. The other important topic from this chapter will be a deeper study of nostalgia, as it seems to be a solid emotive aspect present in many areas and still not fully understood or experimented on.

Chapter 4

Creative decisions behind the creation of the archaeogame

Following the interviews from the previous chapter, substantial importance was given to various areas of study connected with art, cinema, and gaming, which need to be considered, analysed, and integrated to follow through with the planned test game which will be used to provoke specific emotions and states of mind.

To instil emotion and obtain any reaction from an audience in the emotive spectrum, there has to be an underlying story, filled with factors that entice and attract attention, in line with the mystery, horror, cultural, artistic depiction, and other factors which were understood to be necessary as a result of analysing the interviews.

The entire process should take into account both small and bigger details which are intertwined in the environment with which the user interacts; this can include, but is not limited to: objects, people, ambience, shadows, light, weather effects, and the artistic placement of the whole area. But behind all of these, there is a story created by the storyteller, which is itself a product of years of reflection on previously read, watched, or experienced assets. All of the above are lessons from the various researchers interviewed which have been integrated throughout the reasoning behind the choices of style and art to use in the game storytelling design.

All of the factors will be dissected and explored thoroughly to show how and why they ultimately resulted in the creation of the game, which is the core testing ground of this piece of research. This will be shown in parallel with the design of the fictional story, featuring several issues in archaeology and society's understanding of archaeology, which the user of the game will follow, as the story, art and characters are created following the inspiration of the origin of the factors explained above.

The adventure’s point-and-click style was chosen between several types of gameplay, including virtual reality, due to the nature of the results of the interviews conducted and analysed in the chapters above. There is an intrinsic need for mystery, nostalgic feelings, and strong storytelling, which requires the user to follow a complex linear story and have a full view of the scene and the ambience, as everything will have an emotive and logical reason to be there.

If other styles of gaming were utilised, these features would be separated; some objects would be out of range, others would not be seen together, the characters would not be visible, and the main character would not be able to act out the important messages which

need to be experimented on to test the theories from the interviews; the techniques and theory behind the decisions described above will be explored in more detail below after an overview of the archaeogame itself.

4.1 Overview of the game

The game as mentioned above is based on a 90s style point & click adventure design. The game itself is played by engaging with the environment and the narrative while being in the shoes of a main character who is an archaeologist and a semi-colonial adventurer who touches upon several contentious issues to cause complex emotional reactions.

The character and the environment helped by side characters and narrators use cartoonish designs, humour, and sarcasm to portray several topics of debate within both archaeology and social issues connected to the treatment of material culture touching often upon cultural misappropriation and destruction of heritage. The game also follows some instances of fantasy and mystery to investigate the effect these curiosity triggers have on the emotive responses by the users. The character travels to different continents and the story is set throughout different time periods to investigate the emotions targeted in different cultural contexts and times.

4.2 Environmental Storytelling, Narrative Design and Immersion

The path towards analysing and understanding game design in terms of emotive immersion and integration needs to start from the basics of what a game derives or borrows from, which is in many cases literature adaptation, to then develop it into a ludic mode, resulting in ludic studies from the Latin word Ludus playing and a mix of literary work deriving from Litera or letter in Latin.

This mix of disciplines together with others derived still from the latter such as cinematography enable the developers of the games to build a world which appeals to and attracts the attention of players, enhancing their immersion within a fictional world (Bozdog & Galloway 2020, 789-808).

This in turn develops the environmental storytelling within a narrated story in computer games that aim at provoking and describing emotions. This is something that has been developing further in walking simulators, the mechanics of which in terms of objects and storytelling using objects have been actively integrated within the archaeogame produced during this research. The following will be a series of techniques and basic concepts extracted from different research and projects that were integrated into the archaeogame,

their analysis will range from narrative and immersion to techniques and styles, culminating in archaeogaming, serious games and nostalgia emotive theory to connect the current area of research with the overall theme.

Environmental storytelling and narrative design:

The environment or the space in a game is one of the fundamental elements that permeates throughout the experience, something that makes it unique, as the levels of the game are placed on a virtual map on which the user needs to navigate. Such map has to be immersive, evoke places that the mind can imagine, and the user can feel like walking into as if it is a tangible world. These spaces are normally created with directions to follow, for example a door to the right, a filed in front of the user, places where to physically move to and is immersed in the atmosphere that beckons to be explored. This is further enhanced by the concept of an evocative space, a place where the user can feel a sense of nostalgic attachment evoked by pre-existing narratives that the user has been through in the course of their life (Jenkins 2004, 118-130). The environment is a base on which a story can be told within games, and that brings the discussion to the different ways in which narrative can be used within game design in ways which have not been used before in more traditional media such as filming and writing.

There are several games that target alternative methods of narration using the tools available to game designers, but one that stands out in particular in this context, especially in connection with archaeological storytelling and narration is Dear Esther, this was a game designed as an environment exploration, where the user would explore an environment by literally walking through it, and have a narrator constantly narrate the background story to such environment. The game seems at first quite simple, the only thing to do is walk, but then the ensemble of music, narration, deep storytelling, and visuals create an artistic immersion that allows a sense of being the narrator of the story and an emotive control over the direction the story takes, despite having no real control over it (The Chinese Room 2012).

Robert Briscoe, the man responsible for the redevelopment of the original game by Dan Pinchbeck, the original researcher behind the project, developed a method to allow the audience to come to their conclusion in the narrative, the program in Dear Esther would randomly select from four different variants a narration element triggered by walking around the environment and the interpretation of the random flow of narrative would be up to the

audience, provoking emotive reactions that were different per person and gameplay (Briscoe 2018).

This is a good example of the raw triggering of emotions as there is no control over the outcome, but my research is attempting to control the direction of the emotive reactions and the type of emotions themselves, making this method not ideal for this purpose.

One method that was extracted from Briscoe's Dear Esther experiment to include in the archaeogame produced for this research, was the placing of random objects in the environment which had particular value or connection to the main character, this was considered particularly useful due to the more precise direction of narrative that they could develop (Briscoe 2018); connecting the user to the past of the main character and creating an emotive connection or in terms of negative association, distrust and annoyance with the character.

Game environment and narrative:

The points below are some of the basic steps considered in storytelling functions of a static environment.

- "Constrain and guide player movement through physical properties and ecology" (Smith & Worch 2010) To better explain the above, the point is that the designer gives boundaries that are not necessarily physical, but using implied references such as pillars that have fallen, bushes, fires etc… All of these things present have been implemented in several areas in the test game produced for this research.
- "Use player reference to communicate simulation boundaries and affordance" (Smith & Worch 2010). This point means that the environment can give a limit to the distance the character can travel, give social boundaries, such as not having enough money to take a ride, lack of keys to start a car, all things that are present in the game to drive the narrative.
- "Reinforce and shape player identity" (Smith & Worch 2010) Therefore, just like in the example of Dear Esther (Briscoe 2018), the objects placed in the environment can make the player feel like an archaeologist with personal distinctive character traits, depicting all the characteristics that give an emotive attachment to the main character, immersing themselves in the person they are projecting themselves in or simply placing objects in an environment such as

old statues and broken pots can make the player feel like they are in an archaeological dig without necessarily making in obvious.

- "Provide narrative context" (Smith & Worch 2010). The above is a strong point in the environment, it enhances the storytelling by showing not only telling the story, for example describing a rundown destroyed area and then having objects explode and collapse ruins all around, all storytelling environmental principles used in the research game.

All the above-mentioned methods are ideal for the application of storytelling within this research archaeogame example, enabling the avoidance of high graphics and level of skills as they visually represent many actions and parts of a story that would otherwise need several cinematographic designs, animations and camera changes that may be too difficult to program.

Puzzle design and narrative:

The typical basic puzzle design has an object to place in or on top of another object to open the way to the next area, the typical key in the door puzzle. But they enable narrative and emotive immersion in a way that immerses the user, one needs to go further, make the player feel smart, not give the direct answer to the puzzle but give hints, just like in a real life archaeological investigation:

- "Placing a cup of coffee in an odd place.
- Offsetting a chair in front of that table a little bit.
- Maybe it was hastily pushed over" (Smith & Worch 2010).

The ability to solve unclear puzzles also allows the narrator to place sequences of storytelling within the puzzle that carry the story forward, creating sequences of events, entering the mystery-solving area described by Dr Tringham in the interviews which is a strong emotive catalyst able to trigger specific emotions at each step.

Ludology (study of games) and Narrative are separate but inevitably intertwined:

There are many arguments in terms of the separation of what a game is and what a narrated story is, may it be film, book or other means; the authors of games tend to critique and get lost in the critique of how game-making is different or better than other means due to the addition of interaction and the same can be said about some writers and moviemakers talking about games:

"There is a direct, immediate conflict between the demands of a story and the demands of a game. Divergence from a story's path is likely to make for a less satisfying story; restricting a player's freedom of action is likely to make for a less satisfying game." Greg Costikyan (In Jenkins 2004)

"Computer games are not narratives... Rather the narrative tends to be isolated from or even work against the computer-gameness of the game." Jesper Juul (In Jenkins 2004)

I tend to think that there is an interconnection between narrative and games that just adds on top of the traditional ways of storytelling the player agency, this inevitably enables the gamer to experience a wider variety of emotions and types of immersion that is just like in other media means, guided by the narrator; the story is already written, but how the gamer wishes to follow it, how long and in which direction is up to the player. But it is also argued that not all games have a story (for example Tetris) and there any be a different direction the games can take beyond or parallel to the narrative (Jenkins 2004).

This multidirectional nature of games enables them to be the perfect playground to create new types of narratives, especially in the area of archaeology, where it is possible to intertwine emotions within the material culture without necessarily enforcing a set story and enabling the players or users to exert the extra abilities and methods provided by the nature of gaming.

Spatial cinematography to construct the game environment:

The development of the spatial environment within the produced archaeogame has been carefully thought through, several aspects made it crucial for the aesthetic and practical development to be appropriately planned.

The development involved spatial analysis, how the player could walk around the environment without impediment, aesthetic values of each scene, which involved changing the sizes of objects, placing the camera in a pleasing perspective in the room, and colour balancing, to give a sense of continuity in the design and not resulting n a random conflagration of non-associated items and colours (Belard 2019).

Many of these technical methods needed to be used especially in the case of this game due to the lack of technical abilities, to strengthen immersion, the environment needed to be compensated in the artistic sense.

There is a concept in narrative psychology that is useful in the context of the investigation of this dissertation in terms of enabling the users to project their own stories and their own experiences into the reconstructed environment; resulting in a strong immersion; this concept is life as a story.

The principle of life as a story needs to be further unpacked and it is clearly explained in a speech by Briscoe: “We see our life through the story we tell ourselves” (Briscoe 2012), and this concept although brief is very significant in the sense that in a game narrative, the user needs to empathise or be the main character telling themselves the story through their subjective experience. This results in an immersive connection that makes the user feel the emotions and these may differ depending on how they tell their story to themselves.

The hard part in terms of having control over the emotions felt is controlling the story the user tells himself to have full control over the targeted emotions and this is one of the tests that the archaeogame produced for this research has attempted to perform. In this case, a direct opposite of the Dear Esther objective of allowing random stories and emotions fully dependent on user interpretation and instead creating a predictable series of triggers to make the users feel the emotions intended by the archaeologists.

The literature in this research is wider than expected, one could say that there is no need to go into other areas apart from game studies and game narrative to develop a game, but there are many different aspects of narrative and development that have been brought further by game design, going back to the basic origin such as cinematography and literature can be reimagined in different ways.

A perfect example of game developers that did this is “Wayward Strand” (Bakker & Symons 2023), where the authors went back to the basics to give an immersive and emotional story within a game starting from the foundations and not fully relying on game design examples.

Moving on to non-Player Characters backstories, there is an interesting emotive connection to be done. Giving little bits of stories to non-player characters, the characters who animate the story by having their own lives alluded to in small portions of conversations and text can work very well in terms of immersive potential and emotive emphatic connection with the player (Bakker & Symons 2023), this is a strong trigger for emotive response and has been integrated as a crucial point in the methodology and development of the game.

Immersion:

The concept of immersion is a complex combination of a significant nature in narrative and storytelling, even more so in game design. There are crucial elements that make a game story successful, the combination of fun and allowing the users to feel like they are living in the created environment, and they are psychologically and physically moving in the environment as the main character or as part of the environment itself.

The game produced in this research aims at approaching engagement, engrossment and full immersion not simply through the graphics and sound, but through the use of emotions as the decisive factor that would make the user forget the world around them and feel free to experience the intended emotions without being pulled out, this would of course be enshrouded in the basic elements that make games a perfect tool for the job which are the ability to produce sensory (images, sounds etc..), imaginative (the ability to recreate and create anything with no special or physical limit) and challenge based immersion (puzzles and objectives), (Ermi & Mäyrä 2005, 1-14).

Once the narrative and the immersion have been established, there is a process of game design that needs to be implemented so that such principles may work well within a game, and this is the development of a coherent game design within a specific game genre or a combination of genres.

Game design and game genres:

The importance of making and breaking immersion with puzzle design is one of the core concepts to be tackled when designing a game. Point & Click adventure games are famous for having several complicated and convoluted designs that either help to immerse oneself in the narrative, enhancing or even driving the story, or completely break such immersion. The factors that influence such success are the logical connection between the story and the puzzles themselves.

Having puzzles that move from one character to another with no apparent connection to each other or no way of communicating for example can be one of these immersion breakers, others can be disconnection from the story to the point that the user does not understand where they are and why they are in the new place (Brown 2015).

All these pitfalls can be used to emotionally immerse the user and can be experimented with to see if the user's emotions change and in which direction they do if the rules are broken, something that has been tested with mixed results at the end of the archaeogame

by adding a pirate out of context in the scenes, changing the ambience of the game and removing some of the signposting and logical levels in puzzles.

The rules are as follows:

- "Provide clear goals" (Brown 2015): Like in The Day of the Tentacle, the player's long goal is to bring two main characters back from time displacements, or in Monkey Island, complete the three trials which are part of several subplots developed in puzzles to complete each trial. The archaeogame was developed similarly, the main plot in the first half for example was finding the hidden treasure in Palmyra, and the subplots were involved in finding a way to open the crypt and opening the altar.
- "Signpost" (Brown 2015): This involves giving clues all over the scenes to help the player solve the puzzles, looking at objects, talking to characters, and even having visual cues. This was done on several occasions in the archaeogame by giving detailed descriptions of some objects, placing them in odd positions, and giving lines of dialogue to both the main character and the other characters pointing at crucial points that would help solve the mystery.
- "Give feedback" (Brown 2015): The player needs to be nudged in the right direction if the puzzle solving is going right or if it is not, for example phrases like 'Nop', 'I can't do that' are not useful to some extent even if used constantly in games, and phrases giving a clue like 'I think I should avoid this place' or 'Stop wasting your time here, there is a contest to win' do give a better direction. Both these feedback have been used in the archaeogame with mixed results confirming the theory.

Technical puzzle design, step by step:

There are logical steps in making a puzzle design, and although there is a large amount of creativity involved, there are also steps that need to be followed for the puzzles to work both mechanically and psychologically for the user.

The puzzle designs in the archaeogame both follow and break some of these rules so that emotive differences could be targeted between enjoyment, pleasure, emotive immersion anger, annoyance, and rejection.

The design criteria for all puzzles were as follows:

“Mechanics” (Brown 2018): This is a set of rules and limitations to a puzzle, such as not allowing to move to a certain extent, and making things turn on while turning off others depending on proximity or colour. Turning on a trigger if an object is in the inventory or off if it isn’t. All these mechanics create the active part of the puzzle, and the player needs to identify them to solve it.

“The catch” (Brown 2018): This is the issue that stops the user from solving the puzzle easily, something that is not expected and adds another layer to the puzzle that needs a change in thinking or position to solve, such as a door that closes when a light is on and opens with another, but the other light won’t turn on if the other light is on.

A similar puzzle was introduced in the crypt in the archaeogame where the skeletons would give a gem once a skeleton was moved but would lock another gem when that particular skeleton was interacted with, making it impossible to solve the puzzle without going back and forward between the skeletons to interact in the right sequence in several attempts.

“Revelation and the assumption” (Brown 2018): This point is where the designer has to make the player think out of the box, to solve a puzzle in a way that they could not instinctively think about but at the same time misleads them into thinking the solution is simple and straight forward while it is not, for example avoiding a trap by noticing that the character changes chape at times when it is moving in a particular loop but does not every time, making it something that might not be noticeable.

A subtle variation of this was made in particular for archaeologists in the desert scene, where the player needs to go against archaeologist's principles and instead of using a delicate tool to excavate, they need to use dynamite, but this does not become apparent until the user uses the delicate tool, where the game pretends to end but then recovers and allows the player to have another try with the dynamite.

“Presentation” (Brown 2018): The presentation is arguably the more artistic part of the design, it involves placing the puzzle’s environment in a way that is deductive enough but complicated enough to make it both challenging and rewarding, this allows the emotive response to be stronger in case of a hard but fair puzzle and lower if too easy, but also frustrating and infuriating if too hard. An example of this can be seen in the archaeogame when trying to find the key to the car, the cat is holding it and there is a hint at the beginning of the scene that can be easily overlooked and the user ends up having to pixel hunt and rub objects together to find the solution that seems illogical due to the way the envi-

ronment and the logical connections between characters and objects are placed. This creates frustration and makes it almost impossible to solve to the point that the users had to use a walkthrough to solve it.

“The curve” (Brown 2018): This is the learning curve principle, that aims at easing the player into the game mechanics, the puzzles start from simple to medium to hard towards the end, keeping the interest and allowing the player to feel a sense of development and achievement as the progression in the game goes further.

The archaeogame has followed the same principle, starting with a simple series of direct puzzles, getting them harder and more interconnected between scenes, therefore making them wider in scope and solution. At times this principle was broken to see the negative or complex reactions by the user, for example, the jump in difficulty and complexity within the main character’s apartment.

Adapting game genres to fit the purpose:

The overall design of the games available nowadays follows genres that are highlighted by specific qualities they possess, such as first-person camera view, 3rd person, action, deduction, types of interactivities, the origin of the idea behind the games and many other factors (Wolf, 2002, 113-134).

To identify the most useful type of game genre that may have been used to create an archaeogame aimed at my needs in terms of emotive reaction, simplicity of design and target audience, the more I read through the genres, the more I realised there might have been a need to combine several of them to obtain a comprehensive test field. This is not to say that I invented a new genre, mainly I adapted a point & click adventure style, but I aimed at including little parts of other genres to make sure that the emotive triggers and the overall questions of this research would be addressed even if not completely at least in part throughout the archaeogame.

I decided to adopt, out of several types of genres a combination of adaptation, adventure, educational, puzzle and quiz games. This mix allowed the archaeogame to have the qualities and familiarity of scripts and perks from books and literature that the users may recognise and connect to nostalgic thoughts, adventure associated with popular ideas of archaeology to challenge the ideas around the discipline, giving an educational value exposing

some of the issues between popular ideas of archaeology and the realities behind the discipline. This was followed by puzzles and quizzes to enable the sense of mystery that would drive the users to immerse themselves in the storytelling (Wolf, 2002, 113-134).

Furthermore, the emotive directions were guided through image triggers related to particular topics such as the ones encountered in Dear Rachel in the live performance inspired by Dear Esther, the users of the game were exposed to geographic, meteorological, geological, biological, medical, architectural, religious, mechanical and social with elements of communication-related imagery (Bozdog 2020, 23-47) on top of many others closely related to negative complex emotions and nostalgia, complemented by literature related to the topics.

Due to the archaeological nature of the research and a level of interest in the material culture the objects within the environments and inserted in the game mechanics connected to the above image classifications have been developed with particular emphasis on social functionality such as what they are made for, the design features employed such as the texture, colour, artistic designs and the intended effects in term of emotive results when either observing the object or using it (Robb 2015, 166-180).

Adapting horror to limited skills and enabling fear within immersion:

The integration of horror in gaming has created difficulty in defining what constitutes horrors, possibly due to the interaction of such genre with other mediums such as cinema and literature, combined with the innumerate emotive abilities that gaming technology adds to the genre (Therrien 2009, 26-45). The integration of horror in the archaeogame in this research comes from the need to add fear and uncomfortableness in the environment, an emotion negative in conception and complex in both definition and triggering; inevitably ending in the most complex and difficult to trigger emotion area.

In hindsight, having looked at the different possibilities of gameplay available and the different studies of what could have been done in terms of horror, like for example the use of body horror both from the player's perspective and the monster's perspective (Perron 2009, 121-140, Perron 2018), clearly effective in games such as Clive Baker's Undying, having a first-person environment where the player could have directly experienced the horror might have been a stronger trigger for the users, but this would have needed an implementation of a different type and genre of game that would not combine well with the one needed for many other triggers employed.

Therefore, the choice was made to limit the body horror trigger in the archaeogame to the main antagonist at the end of the game in terms of making him a disfigured zombie pirate that can be barely seen in the darkness, adding to the imagination of the user to enhance the fear and possibly horror feeling.

There is an argument to be made that horror and fear can be integrated into games through more traditional methods without working heavily on linearity and narration, but purely on visual cues that would employ means related to techniques in cinema for example, darkened rooms, particular objects, traces of blood, active lighting giving a sense of unease and the presence of an antagonist or monster that one can almost ever see but that makes his presence apparent all the time like Pyramid Head in Silent Hill (Kirkland 2007, 167-178). All of these methodologies were further employed alongside the deformed zombie pirate to attempt to create such a feeling of fear in the last few scenes of the game and adapted to the point & click style so that the other methods for other emotive triggers could still work along the horror side of things.

The next insertion in the archaeogame style used for this research was the influence of walking simulators that despite not being the central style of the game, have had a great deal of influence in its conception.

Walking simulators:

The term walking simulator has been arguably a controversial one, aimed at depicting and pointing out the lack of interactivity and ironic comparison to just the ‘go out for a walk’ concept, it has been also associated with games like goat simulators, but there is a wider and deeper level of artistic and technical design beyond the minimalistic nature of such games (Grabarczyk 2016, 241-263).

Walking simulators have been on the rise in their more concentrated form in the last few years, attracting both awe and criticism but essentially crystallising what a walking simulator should encompass in terms of design, creating a list of games that can safely be considered in all terms walking simulators:

Gone Home, Firewatch, Dear Esther, Proteus, The Beginner’s Guide, What Remains of Edith Finch, Everybody's Gone to the Rapture, Tacoma, Sunset, and Virginia (Koenitz 2017, 1-28).

This is a useful group of games to glance at, to get a visual feeling of what a walking simulator is, but this research will not delve into the individual analysis of each game as it will

push the discussion off-topic. The analysis will strive towards analysing the concepts and useful designs within this genre of games to integrate or not within the archaeogame.

From the assumption that walking simulators lack interactivity such as objectives and perks typical of computer games especially in the style of shooters, being in some cases a literal extract from shooter games to the praise of the attractiveness and freedom given by their vastity and interrelation with life, death and artistic depiction of large, beautiful environments (Kagen 2022, 1-28, 45-63), resulting in theories supporting the fact that walking simulations are just a digital development of literary inspiration practices as supported by the comments from famous writers that walking and wondering inspired them to write their work (Carbo-Mascarell 2016), with more recent confirmation that there is a strong link between literature and walking simulators as a link between gaming and literature writing (Colthup 2021).

There has also been an association between queer movement and walking simulators, showing them as being non-linear flexible path enablers but having developed through storytelling direction or physical limitations such as invisible walls and unsurmountable paths as being as fixed path oriented as many games as possible.

Furthermore, the success of recent speed-runner challenges has further constrained this possibility of the non-straight path by making the attempt to find the straightest line through a game narrative to finish it within record time, creating a limiting human factor within the potential branching storytelling playthrough (Ruberg 2020, 632-652). This concept of speed-running has been limited within the archaeogame in this research by intrinsically intertwining puzzles with most of the environment, making the optional virtually optional, but compulsory in reality, by making every observation, and every action necessary to move to the next scene.

The description and removal of interactive complex programming might give the feeling that walking simulators would be the right direction to take to build an archaeogame that could be beneficial for emotive studies in archaeological reconstruction, but the choice was made to use a point & click-stylised game despite these advantages due to the size and difficult to control narrative style that these types of games show. The game would need to be a small and limited size with a few emotive-packed scenes and the user will need to perform actions to show their different decisions following a controlled fixed narrative to attempt to guide and control the emotive reactions; this is essentially the set of problems that this style would bring in.

The walking simulator is despite not being directly employed in the archaeogame, present in nature as the exploration factor, the artistic depictions of environments and the emotive triggers out of object location and depiction which creates emotive triggers and attachments by the presence and description of such object and environment ensemble (Zimmermann & Huberts 2019, 29-50) were still developed and inserted into the game and the presence of principles of walking simulators have been argued to be felt in a wider variety of games that do not consider themselves walking simulators, such as Zelda, The Last of US and Death Stranding (Kagen 2022, 1-28).

One concept that was extracted from the walking simulator Firewatch was the ambiguity of masculinity and actions to constantly counter masculinity in that game, where the main character is a rugged cowboy-like person and keeps on getting put down every time he attempts to solve problems of moving forward, eliminating his confidence, and working on guilt (Kagen 2018).

This same concept has been constantly applied using irony in the archaeogame produced for this research, by allowing the main character to have a rugged, messy, and almost unpunishable attitude such as using explosives and destroying archaeology, but at the same time having the narrator and the cat constantly deriding and belittling his conviction exposing his insecurity and inability to do anything right.

This concept was developed to mediate the upsetting nature of destruction, cultural misappropriation, and illegal acts to show that they were morally wrong, without affecting the tone of the game to go towards one that might push towards a limiting emotive spectrum.

After analysing the wider game design principles and delving into some of the game styles that inspired the archaeogame design of this research, it is only logical to move towards investigating tools and methods from which the above derived from, to have a connecting bridge between archaeology and videogames and the different tools they both utilise within their storytelling.

4.3 Story and literature tools

Not possessing all the cinematography and game designer skills required for a high-level game production, nor the resources, I decided to first explore some of the relevant techniques used by writers and cinema director. The basic design ideas, storytelling techniques were then integrated within the theory extracted from archaeogaming and

serious games to attempt to create a workable archaeogame that integrated a multidisciplinary approach.

The need for this wider integration was found to be necessary due to the possibility that archaeologists attempting to replicate my method may have a general level of knowledge in areas of literature and film as opposed to programming and graphics design; having the following theory integrated in my research would allow a larger pool of researchers to have the means to replicate my experiment using the same technology with the choice to follow different paths towards storytelling design and immersion more readily available to researchers with different educational backgrounds.

The classical structure of a story does not start from but can be easily connected to how Tolkien wrote "The Lord of the Rings" (Tolkien 1991[1954]). The storytelling follows a very linear endless circle; it starts from a calm, cheerful, familiar, and light environment in both atmospheric and emotional state and proceeds to bring the characters to a foreign, hostile and dangerous environment, characterized by darkness and corresponding weather conditions. Then, by the end of the story, it returns to the familiar light and cheerful atmosphere, with a brief reminder of the possibility of things getting bad again to continue the cycle in future adventures.

That is one basic form of an adventure, a story that involves emotions, but it is not necessarily the best or the only way of telling a story, as some of the authors below may show.

The above structure has been employed in many early instances of literature, dating back as far as the Odyssey. The cyclical system has been deeply researched in the works of Campbell, such as "The Hero with a Thousand Faces" (Campbell 2004, 1-358), where he expresses the cyclical nature of storytelling by using the term Monomyth, a three-stage system in which the hero goes from initiation to separation and return, passing through smaller sections which describe a recurring narrative cycle adapted by virtually all stories.

The monomyth device has been used many times, and it is pretty straightforward and formulaic, almost inevitable, and present in many stories, to the point that Dan Harmon, lately famous for his TV series "Rick and Morty", simplifies the structure even further, having the same, if not unpredictably better, impact at times.

His structure included the following:

"A character is in a zone of comfort,

But they want something.

They enter an unfamiliar situation,

Adapt to it,

Get what they wanted,

Pay a heavy price for it,

Then return to their familiar situation,

Having changed." (Myers 2018.)

Due to the complexity and variety of emotions identified while interviewing the researchers, and because it is difficult, if not impossible, to have all the different non-connected emotions in the same storyline without breaking the fourth wall, the narrative cannot be formulaic. It has to have unpredictability and the safety of the well-known structure must be taken away, just as it was by Harmon.

For this reason, the game structure will only keep some parts of the classic storytelling structure, retaining the period of calm and the period of danger and chaos, but restructuring the circle into a seemingly random formation, a technique that has greatly increased in use in cinema during the last few years. This structure will ensure that all of the more complex emotional reactions can be thoroughly tested and analysed, such as the mystery, negative emotions, and nostalgia. These, in particular, would be hard to interconnect, but using the technique below, it can still be possible.

Time in a story can be moved around to form a different structure from linear paths. The scenes in cinema can be mixed up, the characters can be placed in different settings and seamlessly combined in a way that appears to show one event after the other or predictable jumps forwards or backwards in time. The viewer can be tricked and confused by placing a character in a time that seems to be happening after the previous scene, but which is actually happening in the very far past or future, only to then be thrown back into a recent past or future. This may be used to emulate the human emotive condition when thinking about nostalgia, connecting the past with the future and the present to find something familiar in every association.

This technique is employed in shows like "The Witcher" or "The Stand" by directors like Alik Sakharov, Charlotte Brändström, and Mick Garris (Sakharov *et al.* 2019, Garris 2021). This technique works and is reconciled with more classical writing techniques by having the last act in the film bring together all the storylines in a comprehensive conclusion, like Geralt meeting Ciri at the end of "The Witcher" or Flagg being seemingly

killed at the end of “The Stand”. These shows were also aided by the strong monomyth background given by the books that inspired the adaptations, as both King and Sapkowski religiously followed the cyclical system in their storytelling (King 1978, Sapkowski 1993).

The advantage of this technique is that the emotions perceived by the audience can be unpredictable; it moves them from a feeling of danger to one of calm, then to fear of something happening, even when the scene should logically be the calm one if it were following the classic structure. This newer structure, which will be employed in the game, will attempt to make sure that the emotions felt by the audience will be at the forefront and as varied as possible.

There is a possibility of this not working, due to previous works of cinematography having used familiar and expected things to create fearful reactions in the audience’s mind, such as Hitchcock’s use of birds (Hitchcock 1963). There may be a section of the audience that will not have a solid reaction to the changes, but this will still be in line with the data accumulation, as in the questions the users will be asked to explain how and why they did not react to some triggers, but did react to others, attempting to connect this to other influencing factors.

However, the most important thing, which is constantly emphasised by directors like Steven Spielberg, George Lucas, and Jerry Bruckheimer, is the central piece of an adventure, the McGuffin, a term first coined by Angus McPhail and adapted in cinematography by Alfred Hitchcock (Harmon 2012). The McGuffin is an object, a person, a place that the main characters are trying to obtain or have met and will drive them throughout the adventure, or simply the place they live in, which drives the whole plot with the changes and events happening there. Some clear examples are the Ark of the Covenant in “Indiana Jones” and the treasure in “Pirates of the Caribbean”, but there are many others (Spielberg 1981, Lucas 1977, Verbinski 2003). These are not necessarily the best ways of focusing a story, as it may be seen as lazy writing, but it is a solid way to provoke nostalgia in the user in terms of old movies and collective memories of past cinema, or even the fabricated reality associated with the influence of cinematographers such as Spielberg; and as nostalgia is a complex emotion with different background triggers, and it is one of the most central areas of investigation of this research, it will be a good fit for the style in which the game will be developed.

As the game will play as a point-and-click adventure game, this will be introduced at the beginning and will be the focus one way or the other throughout the entire game. But

following the reasoning of nonlinear time jumps, the McGuffin will include a gem found by a young girl in Palmyra. If the story were to move in a structure similar to Tolkien's around a single timeline, it would be straightforward to focus on one object in time. Instead, due to its erratic nature and the emotive focus, the McGuffin needs to be divided into two distinctly different timelines with different feelings associated with the McGuffin being present in both periods.

Another classic crucial point in storytelling that will be used in the game, and which has a broad effect on the emotional interaction between the story and the user in games and books, is the narrator.

This is a concept famously used in a variety of ways, such as the unreliable and psychotic narrator in "The Tell-Tale Heart" by Edgar Allan Poe (Poe 1843) giving contradicting or nonsensical explanations of the occurring events; or, in terms of games, the sarcastic narrator Lewton in Discworld Noir (Perfect Entertainment *et al.* 1999), who spends most of the time making fun of his environment, which itself breaks the famous fourth wall by hitting back at the narrator, and which was inspired by the well-known satirical fantasy works by Terry Pratchett including books like "The Colour of Magic" and "Guards! Guards!" (Pratchett 1983, 1989).

Other instances can be found in games like "Gabriel Knight: Sins of the Fathers" by Jane Jensen (Jensen 1993). Not only does Gabriel embody the ambience of the game by having a Jamaican accent and talking about Voodoo during the story, but there are also added descriptions of the environment which set the emotional scene by remarking on the hair on the main character's neck standing on end due to a bad feeling, the shadows flickering with a sense of warning and dread, or the cheerful air around a musically active park environment.

The powerful effect of a narrator is tangible in emotive stories. As such, a narrator will be inserted into the game by having, in the present, the ghost of a Palmyrian girl observing and telling stories to the unwittingly unaware main character, and an oracle narrating from afar on the events happening to the girl in the past when the scene changes to that timeline; resulting in a mix between the Jane Jensen and Edgar Allan Poe variants, with a hint of sarcasm from Pratchett.

The above techniques will allow the author to change the mood-setting and theoretically control what users will initially feel at the start of each scene. They will also enable the artefacts and the history to have a say on how current owners treat them, as the girl will

constantly comment on the origin of the objects and how she feels when seeing how they ended up in modern times.

The reason behind this personification of objects is to test the theory that things have an emotive connection with past people and with present people, which differ from each other and can be associated with positive or negative emotions depending on the person interacting with them, something which was evident through some of the interviews above, the presence of nostalgia.

The emotive connection to material culture and therefore to objects will make use of the technique present in Dear Esther of placing objects with descriptive history and emotive attachments all over the scenes (Briscoe 2018), adding a sense of immersion through challenges connected to the objects (Ermi & Mäyrä 2005, 1-14) that should provoke the user at an emotive level.

But a story is incomplete, especially in the adventure genre, which is closely associated with archaeology, without a villain. In the case of Stephen King, some of his most famous stories like “The Stand” and “The Black Tower” had a specific evil villain in the forms of Flagg and Walter (pseudonyms for the same immortal wizard, who himself was an analogy of the Wizard of Oz) (King 1978, King 1982). Tolkien had Sauron, “Indiana Jones” the Nazis and the “The Wizard of Oz” the Wicked Witch. All these villains were physical representations of an evil entity trying to stop the hero from succeeding.

Archaeology has more earthly issues as enemies, which can be easily translated into the purest version of horror in gaming and writing, which is fear of fear itself: being buried alive due to a collapse, being trapped in a dark environment surrounded by skeletons, being in a small setting with no apparent exit, or, in the case of the past, being told about curses, having an illogical fear of some areas of the estate, fearing failure or disappointing someone, without going into types of unnecessary duress such as gore and extreme horror scenes which were warned against during some of the interviews.

The game's main villain will be reminiscent of many horror films and horror games, basing his grotesque appearance in the theory of grotesque body horror, ensuring that the sights of the antagonist results in a mix of fear, disgust and horror (Perron 2009, 121-140, Perron 2018). The environment in the game made for this study will include the villain, dark corridors, strange noises, psychological blocks caused by what someone told the main character and being stuck in small rooms only shared by the dead. The above techniques are used by some of the most successful horror books and games such as “The Shining”, another work by Stephen King (King 1977), where the story intrinsically

enhances the psychological factor, but Kubrick managed in the movie version to give a sense of psychological horror to the environment represented by the film sets (Kubrick 1980).

The environment has a stronger character than the main villain, and the villain might not even be evil. The villain may be just a product of the environment, or, as in games like "Silent Hill 2" by Hiroyuki Owaku (Owaku 2001), the creepy environment itself is the main villain, making players scared of moving forward, even though there were very few instances where there was actually a monster. In some instalments of the long series of Silent Hill games, the monster only appears in the last scene after 24 hours of gameplay. Still, it is as if it was always there, due to the environment. The main triggers that will be inserted in the part of the game dedicated to horror and fear, will contain the visual cueues that allude to violence and horror and the presence of the antagonist, just like in Silent Hill, only to show him at the end, implementing a game narrative technique known to work well in these cases (Kirkland 2007, 167-178).

The inclusion of horror in the game is an essential feature for the understanding of emotions in archaeology; horror, terror, and fear are basic emotions that humans have, and have had, due to the need for survival, and horror has been intertwined with cultural fear of the unreal or the supernatural (Clasen 2011, 89-104), making it an emotion which interacts with the mystery concept explained by Dr Tringham.

If one is to reconstruct an emotive environment to describe and provoke the emotions that may have been experienced by people in the past who believed in the supernatural, or to give the user or audience in a museum or a reconstruction a sense of the environment that does not feel artificial and simply material culture-related, this primal level of emotion needs to be included in the mix.

This will avoid the common error when a family is shown in stereotypical roles with no emotion and no background to their actions, their beliefs, and their life. Fear can make the reconstructions and the user experience feel natural, make them forget or ignore that what they are experiencing is simply a reconstruction or a staged history lesson through archaeological data, and fully embrace the storytelling, the feeling described in previous chapters as immersion through non player characters and meaningful interaction with the environment (Bakker & Symons 2023, Ermi & Mäyrä 2005, 1-14).

4.4 Gameplay style

The game style of choice for the game in this project will be a point-and-click adventure, but before delving into what this implies, there needs to be an analysis of the other gameplay styles and why they were ultimately not chosen.

The gameplay style is not only the interactive way in which the user can explore the environment, but it has a more profound and more critical use; this is explained in archaeological terms of emotive research in "Avatar, Monsters and Machines" (Morgan 2019, 229-231), but studies in the core areas of gaming, and psychological studies on gaming, have shown that gameplay style is much more influential on the user and the outcome of the session than the simple pleasure of it.

The types of gameplay, for example, different stories, different intended results, and different interactive modes of gameplay, can influence people's academic performance within a game (Alharthi *et al*. 2021, 1-49). This demonstrates a correlation between good game storytelling and learning, and the gameplay style can be shaped in a way which focuses the user's abilities and skills towards a specific area (Ventura *et al.* 2012, 1260-1266). For example, the point-and-click adventure style chosen here is aimed at emotive exposition and driving the feeling of mystery, in the meanwhile, allowing the user to question the actions taken concerning contemporary and past issues in archaeology.

An accidental focus of this research was the creation of avatars, or main characters, which were not accurate factual representations of the physical form of the user, but a representation of their inner selves and, therefore, of what they saw themselves as in an emotional sense.

The strong connection that this theory has with how a game is developed is how the designer depicts both the main character and the other people; the choice of game style can make significant differences and changes to the perception of the user. For example, factors such as different avatars which feel and act differently, various monsters, be they ghosts, voices or the environment itself and multiple machines, can be placed in the game, and can be the interactive ways for the user to connect to the virtual environment and experience an emotive back and forward exchange, so that the domain does not feel stale and unnatural, creating the concept of the transparent walls which the interviewed researchers generally dreaded.

There are countless gameplay styles available when making computer games; many of the popular ones include first-person style, typically in shooters, where a user can take control

of a person as if they are in the game environment, and through their hands, they can shoot, fence, punch and manipulate the setting by pressing buttons and having fundamental interactions; this incidentally seems to be the best style for VR gaming, but it is limited to environmental storytelling with a seemingly, but not genuinely, unlimited interaction, which is in fact limited to a simple task, for example, shoot everything, destroy everything, or simply just look at everything, at the cost of more intricate interface interaction and more complex storytelling.

Furthermore, this causes the author to lose control over the story, or gives the author too much power, making it unemotional. Examples of such games include "Doom", "Half-Life", and "Star Wars VR" (Bethesda Softworks 2017, TM & © Lucasfilm Ltd 2019, Valve Corporation 2020). Some advantages include allowing the user to be fully immersed in the environment and using VR to recreate archaeological environments. Still, the style is focused on violence and the expected functionality is action-based and not investigative or emotion-based in the manner required in the archaeological analysis of the story and environment as intended by this project.

The above has been modified to create what is now considered a walking simulator, with the explicit reason of removing the violence-based gameplay and concentrating on the narrative and immersion, the best examples are Dear Esther (The Chinese Room 2012) for removing the combat options and Firewatch for removing the game's masculinity drive (Kagen 2018), but this was not the style chosen either for other reasons explained later in the chapter.

Another gameplay style could be a stealth game; these are typically characterized by the user needing to avoid detection, wander around the environment in the first person, interact with the environment to solve puzzles, kill unaware guards, and steal objects, as in games like "Thief" and "Hitman" (Ion Storm, IOMO, 2004, IO Interactive, Feral Interactive, 2016); this may be in line with a fantasy adventurer archaeologist style, but will still be limited to a narrow range of emotions. It has the potential to contain short stories, such as guards talking with each other to add to the environmental effect and giving a feeling of normality, but this can be inserted in various different game styles, as will be explained later on in this chapter.

Adventure games would be another plausible option to follow, some of them already rely heavily on archaeology and history as a driving factor, such as "Tomb Raider", the "Indiana Jones" action games, "Assassin's Creed", and "Uncharted" (Core Design, Aspyr, 1996, Factor 5, Lucasarts, HotGen, 1999, Naughty Dog 2007, Ubisoft Montreal 2007).

However, the issue with these games is the pure focus on action and straightforward and quick environmental manipulation. This can end up distorting the archaeology and resulting in fun destruction of archaeology becoming almost unemotional by the end. It also leaves very little space for emotive emphasis beyond a simple movie with no player input.

The game needs to give the players time, and have no emphasis on one particular set of emotions, but a wide variety of emotions driven by the gameplay and the author's storytelling. Furthermore, creating adventure-style games requires large studios, a wide variety of employees, and areas of expertise inaccessible to the average scholar. As this is a study based on emotions in archaeological reconstructions, being carried out at a university, it needs to be accessible and have the means to be tested and recreated for further research with limited resources.

One last possible game style to consider before proceeding to the one which will be used in the creation of the game in this project is the walking simulator. This is a genre that has been applauded by both the media, for its immersion and artistic style, and archaeologists due to the frequent use of an archaeological environment followed by randomised emotive prose prompts (Pinchbeck 2012). The games in question include "Dear Esther", and "Everyone is Gone to the Rapture", by the same creators: The Chinese Room (The Chinese Room *et al.* 2012, 2015).

This style was not chosen in this instance because of the difficulty of not being able to use interactions, something that can allow the designer to quickly weave a narrative using the objects and focusing in particular emotive directions and the lack of control over the prose or dialogues (Briscoe 2018) that are an integral part of this research, the designer and the user need to provoke and feel specific emotions are every trigger and this cannot be done if the dialogues are randomised and do not follow a linear path and can still be difficult to monitor the emotive decisions of the user if there is no choice even in the case of more linear dialogue presence due to the lack of direct interaction with the environment and choices of the path.

Furthermore, there is no interaction between the environment and the user, and no other people present to interact with each other which might give rise to the concept of short stories, which will be further explored later. This style also does not allow for attempts and mistakes, connected to a mechanic of investigation and knowing more than the narrator tells the user, following a more technical and precise type of game development based on

clear goals, signposting, and feedback (Brown 2015) that encourages and nurtures the sense of mystery.

Lastly, suppose one is to explore the concept of the difference between realism and fiction in 3D reconstructions in archaeology. In that case, there is a debate on how realism should be the standard for archaeology as it keeps the facts clear and easily interpreted (Roussou *et al.* 2004, 59) in opposition to the monster of fictional reconstruction, which delves into the cyborg area of being challenging to understand, and which doesn't guide the user.

But the basis of the project on which this research is centred is the positive uses of fictional or monstrous archaeological 3D reconstructions, as stated by Martinez, who, in essence, says that non-photorealistic reconstructions allow the user to understand that the reconstruction is an interpretation and avoid the assumption given by photorealism that it is factual (Martinez 2001, 14).

The end line of using non-photorealistic reconstruction in the project at hand is that it will allow users to engage with the environment, conduct some critical thinking, as opposed to passively taking in information as a fact, and experience the human agency in archaeology which will inevitably aid the expression of emotive experiences and processing emotions as the user explores the areas (Huvila 2021, 46-59).

As a result of the above reasoning, the method of choice for the game in this project will be the point-and-click adventure game style. This style, which began with Sierra and LucasArts Games, disappeared and reappeared across the various changes in computer game fashions, and continued in one form with Telltale games until their closure in 2018 (Edge 2006, Corriea 2014, Williams 2018). It relies on storytelling, environmental art, and user interactions which do not involve killing or jumping or any other kind of platforming, but simple investigation of well-crafted and artistically appealing environments, more importantly it is purely based on solving puzzles (Wolf, 2002, 113-134) and a wide variety of mechanics that can be easily used to create an emotive immersive environment driven by the need to know more, the objects as material culture can tell a story through interaction and the choices can be varied giving a sense of different paths to follow (Brown 2015). This game genre can be easily used to adapt all the principles of puzzle-making without having to go into programming by using the below programs.

Furthermore, it is a method accessible to most beginning and intermediately skilled artists, with the potential for high-quality results as digital design software such as Blender (Blender 2021), and game design engines such as Unity (Unity 2021) can be combined

with visual programming to create games without the need for extra skills or a large team of employees. (This aspect will be further explored in the methodology.)

Point-and-click adventure games are primarily reliant on the artistic style of the environment, little details, photography, lights, shadows, cinematography, and camera positions, and at the centre of all of it is the story and the immersion. It is like reading a book and being able to see all the details and feel all the emotions as the author intended, removing some of the reader's control, like the ability to imagine the environment, but at the same time giving them some control by allowing them to explore and interact at their own pace and get emotionally involved with the events, as they feel as if they are being triggered by the user's actions.

The genre has developed in the last few years into a form intentionally meant to pull the player toward nostalgia for the old times. It was initially created by authors who themselves worked in the film industry during the boom of adventure films such as "Indiana Jones", itself a product of nostalgic feelings towards older movies by the directors themselves, during a period when many technological advances were speeding up the changes in society, making even recent memories feel nostalgic. Point-and-click style computer games, due to their history and connection the players who may have memories of when they used to play on older devices the games or connect the memory of the game to their own personal experiences in the past (Taylor & Whalen 2008, 19-31); touching upon the principles behind collecting older technology and re-experiencing emotions for past gameplays tapping into restorative nostalgia (Garda 2013, 1-13).

Point-and-click adventure games tend to tell a long story, over a period of between 10 to 40 hours, of the environment itself and the history behind the events, and they use emotion as an entertainment focal point; this may be dread, fear, excitement, sadness, or fun, it all depends on the story and the artistic setting itself. For example, "Gabriel Knight" (Jensen, 1993) which was an inspiration for the gloomy and surreal environment used in this project, centres on the ambience and the emotion of the environment itself more than the main character.

On the other hand, "Indiana Jones and the Fate of Atlantis" by Hal Barwood and Noah Falstein (LucasArts 1992) is an excellent inspiration behind one of the main characters, the ancient ruins, and the historical settings, concentrating on objects and conversations about objects in terms of material culture and archaeology, creating an environment that develops around the material culture, the colours and the shapes of the objects within the

environment that can be used and manipulated (Robb 2015, 166-180) along with the feeling of mystery and adventure which the environments in this project attempt to evoke.

The ghost of the girl, which will be present throughout the game, and her experiences in a past life are closely inspired by the "Blackwell" series and "Unavowed" by Dave Gilbert (Wadjet Eye Games 2018), which were point-and-click adventure games focusing on the traumatic experiences of people before they die and the fantasy possibility of a tortured afterlife dedicated to finishing a task before they can move on to the next life.

4.5 Using the environment to tell the story

In museum studies, a crucial set of effects needs to be considered to create a compelling environment that can be easily translated into environmental design in game production.

A good museology-based example is "Design, colour and light" (Moser 2010, 22–32), where it is explained that these three design factors can create a sense of contextual harmonization and an emotional or interest attraction for the viewer when looking at a display case. This is equally true with game environments, as they work like display cases. The colour and ambience in how an archaeological exhibit is displayed can give a sense of contextual harmonisation, creating an environment where the objects look natural and at home, but it can also be used to desynchronize the object, making it feel out of place.

There is also a factor of "Subject, message, text" (Moser 2010, 22–32), which states that, when creating a display, such things should blend in and give a contextual explanation as much as draw the viewer into the story of the artefacts; another essential factor which needs to be intertwined in the game environment.

Lastly, the "layout" and the "style" (Moser 2010, 22–32) are two crucial factors in the creation of an immersive ambience when designing museum displays which capture the viewer's emotional attention. It is evident from the nature of game technology that this is also a crucial factor to consider when making games.

There is a storytelling point where the choices made are subjective, but this is reasonable given the proper justifications; the first step evident in the design of the game in this project is the creation of the environment, considering the concepts above.

The discussion with Schofield and Bozdog in the previous chapter presents an alternative to the written and tested methods found in archaeological theory or museology. This is the combination of the way different users appreciate and understand game technology, by which it can be ensured that there is no interruption in the immersion due to an invisible

wall, or a forced change of perception which causes the breaking of the fourth wall. This has to be intertwined within the game design and production in the same way as a game or movie script which complements the graphic design.

Game producers have different ways of starting game production; some prefer the story to be written, some the script, some start from the beginning, some from the end, and some concentrate on the characters first. However, in this game, the first focus will be the creation of the environment itself, a method inspired by the company Naughty Dog, creators of the "Uncharted" series designed by Neil Druckmann, Mark Cerny and Hirokazu Yasuhara (Naughty Dog 2007, Minotti 2016). They admitted during some of their interviews that they first created the immersive environment and then thought about the story and how the characters were going to interact with the area.

This method is appropriate for a game that intends to use archaeology to tell an emotional story; the real protagonist of the story needs to be the environment, reminiscent of Silent Hill, which uses the environment as a villain as much as the main villain that appears at the end of the game only (Kirkland 2007, 167-178, Perron 2009, 121-140, Perron 2018), there is a potential in archaeological gaming to use the environment for much more than just a backdrop, and therefore the choice made for this game is to first create the environments and then add characters and a story to them.

Creating an appealing and immersive environment starts with artistic standards: choosing the right colours, adding the basic structures and objects in an area, and making it clean and artificial to give a feeling of where the user will be set (Briscoe 2012).

Then the room or environment will be destroyed, not in the sense of just trashed, but with the addition of a variety of little out of place details, removing the utopic, unreal feeling of perfection and symmetry. For example, in a tomb, there may be cobwebs, a fallen pillar, crumbled walls, and piles of rocks with bones scattered all over the place (Briscoe 2018), as opposed to a clean slated tomb with shiny marble and perfectly set skeletons in their immaculate sarcophagi. Old point-and-click adventure games inspired this method, and it is an art almost forgotten in the days of 3D despite still being possible.

What was observed throughout the game's development process in this project was that 3D was not always better; an investigation of parts of the history of the development from 2D to 3D showed up the issues with this concept. As an artistic choice, the advantages of 2D and 3D were mixed, and some of the errors and issues experienced in the past needed to be addressed and avoided, as explained below.

There was a period in point-and-click adventure gaming where the design passed from rough 2D to immaculate 3D; the first reaction of users was a complete rejection, then reluctant acceptance until it became the norm, but this did not mean that it was done in the right way, especially in terms of emotion and environmental immersion.

The perfect example was “Gabriel Knight 3”, where Sierra moved from immersive 2D artistic design to half filmed and half 3D, to complete 3D, and the changes seemed to have emptied the rooms of life; nothing was active like before, fewer people, cleaner environments. Not surprisingly the series came to an end, despite cliff-hangers being included at the end of the third game (Ravipinto 2004, Cobbett 2014).

The underlying issue with 3D was the movement away from creating a ‘messy’ lived environment to creating a slick, perfect one, as 3D allowed considerable precision compared to 2D. Most of the users complained about what they called a lack of life: the scenes which had initially contained several people, a significant measure of activity, dirt flying around, desks filled with paperwork randomly arranged, and the artistic dioramas which were once full of unidentified colours which made it feel like one was exploring both a foreign land and a painting were gone, replaced by linear clean walls, tidy geometrical desks, and plain backgrounds showing an attempt towards reality, which was not the point of gaming in the emotional sense. The above is why this project will attempt to stay as far as possible from depictions of this type and concentrate on emotive, full, and alive environments.

Some games were remade using the new techniques, with the result that the companies failed, all due to a lack of feeling in their work. The trend continued, almost removing point-and-click adventure games from the market, but then the technology advanced. More details could be placed in 3D environments, recreating the feeling of walking through a painting and adventuring in an alien land. Still, the previous period had damaged the game industry substantially, and it had moved towards action-adventure, abandoning the artistic, emotional style of point-and-click.

There have been more recent developments, with both wins and losses in adventure gaming; for example, Telltale Games (Williams 2018) seemed to have rekindled the appreciation for art and emotions in adventure games, but collapsed after a few years, and LucasArts (Rundle 2013) was also removed from the map when Disney closed the company down. But just recently, Disney announced the re-opening of the company after a 10-year absence into the new Lucas Films Games; this will take over the intellectual

property of old point-and-click adventure games and may bring back emotive storytelling and artistic designs in gaming once more (LucasFilms Games 2019).

There have been attempts to insert archaeology in the emotive spectrum of games and digital design; the arguments against this were based on the focus on material culture and precision (Wright 2022, 166-177), something that has slowly been addressed by archaeogaming, which comprises a wide variety of games with archaeological or historical settings (Reinhard 2017, 9), but which is still within a difficult friction due to adaptations that include imperialism, cultural appropriation, racism, and sexism (Hageneuer 2021, 631-642).

The games that were criticised for various reasons above, were motivated by the creation of emotive stimuli through artistic means in games followed by impactful narratives, many of which were not appropriate to academic work, but in archaeological reconstructions this is rarely attempted and rarely succeeds. Some partially successful examples can be seen in more serious level of games in archaeogaming, such as Heaven's Vault (Caracciolo 2022, 29-47) and to a certain extent Dear Esther (Briscoe 2012), where the negative factors such as racism, imperialism, cultural appropriation, and sexism were either addressed or not implemented.

The working hypothesis is that by combining the stories available in archaeology and this old, but firmly emotionally attached, game creation method, one might solve the problems with a strong emotive integration, and this idea is one of the pillars of this research, that it might ascertain the possibility of using the mentioned technologies to aid the creation of emotion in archaeological digital research while being emotionally impactful and coming under the category of serious games by following the basic serious games criteria (Laamarti & Saddik 2014, 11).

Another tool used in both cinematography and gaming is the remarkably varied use of the camera. Games use the classic positions of first, second, and third-person camera angles, which involve positioning the viewpoint in front of the face of the main character, as in "Dear Esther" (The Chinese Room *et al.* 2012), over the shoulder, as in "Assassin's Creed" (Ubisoft Montreal 2007), and overlooking the entire exploration scene, as in classic adventure games such as "Indiana Jones" or "Gabriel Knight" (Jensen 1993**,** LucasArts 1992).

Still, the company mentioned above, Telltale, created a new perspective and methodology towards the use of cameras in games, which was reminiscent of the use of camera cuts in movies (Telltale 2004). The camera in a game can be used to focus on the narrative

moment; it can enhance the emotive experience and focus the user on objects and events which may not be very, or at all, visible in any of the other more classical camera views.

In the game on which this project is focusing, the tactical choice of using the Telltale Games camera style combined with a third person viewpoint, as in classic point-and-click games was selected. The combination style will allow the user to see the overall explorable area, and at the same time focus on particular events, such as an object dropping or a ghost zooming behind their back, or on mechanisms such as moving paintings and wall details which one would not be able to see from afar, thus bringing into view all the little interactions to which the game itself and the reconstructed environment will wish to expose the user.

This technique sounds complicated to use, and in real life, in a movie set, it would require several cameras and camera operators switching views constantly and changing focus. But in the case of game programming, this is simply a matter of placing several cameras in particular areas of the scene and making an automatic switch whenever something different needs to be the centre of momentary attention. Programs such as Unity make the regulators and the presence of hundreds of cameras easy and fast (Unity 2021).

The environment is the centre of attention in point-and-click adventure games; if one were to remove the character, the cameras, and the interactions, it would still be possible to revel in the artistic style and the beauty of the environment itself, focusing on the emotion the author intended to provoke, while all the other things simply help the focal point to come across more easily. Dear Esther did exactly the above: stripped the environment of most interactions, cameras, and play styles to allow the user to lose themself in the art and emotive aspects created by the environment area (Briscoe 2012).

The use of the camera fulfils many of the required objectives to create a serious game, it Allows to Gain attention. informs users of the objective by focusing on the objective, it can point out to things that may be interacted with due as a result of prior learning, presents material in a stimulating way by having appealing angles, points out things like a learning guidance and the character and environments provide the feedback needed for effective learning enhancing retention (Laamarti & Saddik 2014, 11)..

Therefore, there is no point in removing these extra advantages; it would be like having a car, but only using it to drive in the backyard; all the available tools should be used to enhance the emotive factors of the environment.

To meet the above aim, this project's game will not only use all the tools mentioned above to improve the environment's emotional impact, but also the programming available to use special effects such as interchangeable light and shadows to create a mood effect that may vary from romantic to scary, use smoke and fire and other effects to give an artistic ambience to every scene, such as light shafts with specs of dust flying through the morning light, which creates a feeling of peace and relaxation, or thick smoke from house fires and panicking crowds as an invading army destroys the houses.

All of the above methods have been employed lately in artistic games centred on the environment; they can be observed in "Uncharted", "Gabriel Knight the Remake", "Assassin's Creed", and many more (Naughty Dog 2007, Ubisoft Montreal 2007 Jensen 1993). The environment in the case of emotive development and interaction needs to be as complete as possible to give a broad enough spectrum at the end.

This type of game development for archaeology is ideal in terms of emotive reaction because it can be focused entirely on what archaeologists do, analyse the environment, interact with it, combine the clues, and follow the story of the object or culture to conclude what happened in the past, all within an attractive immersive environment which, with the help of the artistic style and all the factors mentioned above, creates an almost magical but instructive environment, in which all types of users can find something to emotionally empathise with or feel things which are rarely experienced in other games, and even less often in simple archaeological reconstructions.

4.6 Player characters, non-player characters, long and short emotive stories

The concept of the main character in games can vary substantially; for example, in "Dear Esther" (The Chinese Room *et al.* 2012), the character is an unseen avatar (Morgan 2019, 229-231), meaning that it represents the user and has no real back story unless explicitly explained through the narrative or text-based finds in the game.

In the case of systems like "Second Life", as seen in experiments like those in "Avatar, Monsters and Machines", the character has no story; it is a self-representation of the user who made it, and therefore in terms of emotive response, it may be the subject of a personal attachment and evoke memories personal to the user. Still, it does not have storytelling-related emotions.

This is another reason why this project has been focused on a third person point-and-click adventure game: this particular gaming style relies heavily on the main character's

personality, history, and acting skills. If one were to play (particularly) the old games which relied on storytelling and less on graphics due to computing limitations, one would notice that the main character is very similar to a character in a television series; this is due to the amount of time allowed for developing the story. One clear difference between films and television series is that the film has to rush through the entire background and full story arc of the main character, ideally in a maximum of two hours.

Since a series may have several hundred hours in which to do this, it can interweave a much deeper character development. Examples of this can be seen in long series like "Game of Thrones", "American Gods", and "Black Sails (Benioff et al. 2011, Gaiman 2017, Dougherty *et al.* 2014). The viewer has enough time to get attached, live in the characters' shoes, and suffer when they die, or something happens to them, as if they are almost family.

A point-and-click adventure game has the same properties; there is an extended time period, from a minimum of 24 playable hours to hundreds, in which the user gets attached to an actor following a linear story and has to help that character traverse the story arc, essentially giving a third dimension to a television series.

Examples of adventure games mentioned above have memorable main characters like Gabriel Knight and Indiana Jones (LucasArts 1992, Jensen 1993), while other adventure games also contain good emotionally appealing characters like George Stobart in "Broken Sword" by Charles Cecil or Guybrush Threepwood in "Monkey Island" by the pioneers of the adventure game genre, Ron Gilbert, Tim Schafer and Dave Grossman (Revolution Software 1996, LucasArts 1991).

The factors that all these characters have in common is a robust woven story arc taken from classical structures such as that seen in "The Lord of the Rings": introducing the character in familiar calm settings, bringing them into desperate, problematic situations with apparently no hope, or having them experience many unfortunate events, only to then resolve all issues towards the end (Tolkien, 1991).

The above tools in an adventure game make the style extremely helpful in creating emotions in archaeological games due to the possibility of immersing the user in the personal tales of each main character, creating emotional bonds and emotional shock as the user becomes more and more familiar with the invented or historical characters, this gives the possibility of attempting to feel something for the characters who inhabited the ruins found today, and move away from the cold static representations which archaeology is accustomed to use in reconstructions.

The character, as opposed to the archaeological standard, needs to be able to influence the environment, be affected by it, and freely and seamlessly interact with all that is around, including the narrative, the story, and the psychological factors felt by viewing the environment, in other words, the main character has to go through the process of agency (Graesser *et al.* 2001), it is not only the role of the user to interact, but the main character has to be both the guide and the explorer in the reconstructed environment. The characters will no longer be cardboard cut-outs of people randomly placed in an area, but relatable people who can give a sense of emotion that is largely ignored in the study of archaeology.

Another character type in all books, films, and games is the supporting or non-player type. These characters are placed in the scenes to support the main story or work as background mini-stories to give a sense of an entirely relatable environment.

One of the main issues with the advent of 3D technology in games, as previously mentioned with regard to environmental immersion, was the feeling of emptiness in many remakes of the original game stories, as commented upon by game critics revising remastered games (Cobbett 2014). This feeling is brought about by having less disorder in the scene, giving the environment a utopic feeling, and also by the fact that a few immaculate non-player characters cannot make up for crowds of people or strategically placed people engaged in their life events.

This particular issue is also present in adventure games; due to the amount of processing power required, which has a heavy impact on computer performance, the number of moving and acting people needs to be limited to a few, but this does not mean that these few characters cannot have a story of their own. For this reason, this project has adapted a literary and game technique which is rarely used, but which had a visible effect on emotive immersion: non-player character short stories.

This technique is usually present in stealth games, where the main character is rewarded for not being seen, for stealing, and for exploring an area without alerting guards or other people. The particular game which started this trend was “Thief” (Ion Storm, IOMO, 2004). These games not only created the sneaky type of interaction and the use of ambience immersion as an emotive factor which was later used in “Dear Esther” and many other games, but they also introduced the short stories effect. Occasional bystanders or guards acted out the short stories to give an emotional context to the scene and give a feeling of life and immersion while sneaking around locations.

The guards would occasionally complain about pain in the back due to their bad bed and cheap homing, a bad stomach due to their partner being unable to cook, or the famous

"Skyrim" random conversation, "He got an arrow to the knee, that is why he is not fighting anymore, and I am substituting him." (Rosemberg 2017.) All of these stories gave a feeling of investment and life to the non-player characters, as they showed they had lives, things that happened to them, and everyday issues which are never seen in archaeological reconstruction. Typical scenarios in archaeology might include a slave cleaning, a soldier standing at the door, a cook cooking, but none of these characters' actual real-life issues.

The above is something that still plagues adventure games; some characters stand silent in a corner, or read a paper, or just stare straight ahead with no interaction; this project will introduce into the archaeological adventure game a series of very short mini-stories that will hopefully bring the context and the environment to life, giving a feeling of immersion.

The short stories will focus on the action of the characters in question. In this case, action is characterised, as it was by Aristotle, as an essential thing the character does, which defines the story and is ultimately more important than the character itself (Freeland 1985, 397-414). In other words, each little action that a non-player character performs will, in itself, be their story and drive the short story; for example: limping and coughing can be associated with a war injury and an unhealthy lifestyle

The main antagonist is one last type of character in games, movies, and books that appears to be central to the emotive reaction of users, viewers, and readers. It can be a person, or a creature, such as Sauron in The Lord of the Rings, the Dark Man/Walter/Legion in the Stephen King books, Moriarty in Sherlock Holmes (Doyle 1893**,** King, 1977, 1978, 1982, Tolkien 1991). They can also take the form of fantastic creatures, ghosts and literal bad guys such as the voodoo spirit in Gabriel Knight, Monkey Island's zombie pirate Le'Chuck and Indiana Jones's Nazis (Jensen 1993, LucasArts 1992, LucasArts 1991).

All good and successful stories provided a character to hate and despise, someone who would make the audience want them gone. Sometimes, however, the bad guy was also charismatic and relatable, which called into question the morality and feelings of users and audiences. As a matter of fact, the more relatable the bad guy, the more the people would get involved in the story, this was a one dimension issue with "The Lord of the Rings" and "The Dark Tower" which many critics resented (Winter *et al.* 1982, pp 197).

But one of the best evil characters in books, movies, and games can be the environment itself, which is rarely used as such. In horror, one of the most assertive emotional styles available in games, since it incites emotions like raw fear, the environment is more emotionally impactful than the bad guy, as seen in cases like "Silent Hill" (Toyama,

1999). In “Silent Hill 2”, there is a villain, Pyramid Head, but he is seen only twice in the whole game, and once he is seen, the emotional immersion is broken. The most horrifying aspect of the game is the ambience, the building creaking, the doors slamming, the wind, the occasional whispers, the surreal foggy rooms, and the dirty, destroyed furniture.

All of the environmental characteristics give a sense that the houses explored have their own life and story. It is terrifying because something that cannot be seen or touched is often scarier than something tangible, as expressed in expert game reviews (Croshaw 2011). Therefore, this project will attempt to employ the environmental immersion factor and have less linear evil characters, which will have a more open-ended motivation and behaviour than monochrome dark lords or “bad people”.

4.7 Choice and emotive storytelling

A particular focus in some games is the ability to allow natural choice and concentrating on emotions as a primary feature of the game. This area of gaming takes a more focussed approach to emotions and uses narrative elements to reinforce player’s identities and providing an impactful narrative context (Smith & Worch 2010), resulting in the player getting fully immersed in the environment (Ermi & Mäyrä 2005, 1-14, Przybylski 2010, 161).

Games such as “Dear Esther” (Briscoe 2012) and “The Last of Us” (Naughty Dog 2013) place the storytelling on an emotional level. One focuses on the melancholy of a silent world lacking physical characters to explore in one’s own time, and the other on dramatic human emotions experienced in cutscenes based on special cinematography (Belard 2019).

There are a wide variety of opportunities by giving a choice to the player when it comes to emotional interactions, for example the game in this research will provide several situations where the player will be given choices that will either destroy, lose or cause irreparable damage to objects, heritage and people producing a moral conundrum (Romero 2019); this will be through the manipulation of the environment or through choice of dialogue options as explained in the technical tutorials on how to create enticing puzzles (Brown 2015).

The narrative mechanic will be simple and effective in terms of allowing the user to perform an action, expecting something to happen, the program will then go through a series of predicted events resulting from the player’s choice to then deliver a predicted outcome that may satisfy emotionally the player, but at times this will be not as

predictable as expected and hypothetically cause the player to feel negative or complex emotions due to the adverse result (Swain 2010, 217-235).

The opportunity presented by such type of emotive conundrum will allow the analysis of the reactions and choices of users through the spectrum of serious games, seeing the reactions of users when they discover that their choice despite of or because of their intention resulted into particularly unethical consequences and therefore creating a mix of emotions in terms of negative or complex emotions or in some cases unexpected emotive reactions, having to replay or try again after an inevitable negative result (Brathwaite 2010, 311-329).

The game created for this particular research will attempt to use emotive triggers extracted from games such as Dear Esther, Tomb Raider, Uncharted, and Heaven's Vault (Caracciolo 2022, 29-47, Briscoe 2012, Naughty Dog 2007, Ubisoft Montreal 2007), in order to focus on the topic of emotive responses (Frome 2007, 831-835) as opposed to the industry success in terms of monetary value, this means that the success of the development of the game will be balanced against an emotive response may it be expected or unexpected, the engagement with the social contents embedded in the narrative and the effectiveness in terms of knowledge contribution value (Bogost 2010, 81-92) and not comparing it to industry standards, making this archaeogame fit well within the concept of serious games (Romero 2019, Laamarti & Saddik 2014, 11).

The final result will be a game that allows the interconnection of emotions, ethical and cultural context of the past with the present one, essentially making this game a clearly defined archaeogame Reinhard 2017, 21-30).

4.8 Music

A critical part of the emotive design is the use of music, which has been widely employed among audio storytelling, television, and computer gaming; this last has created an academic movement dedicated to the particular effects of music and different musical styles and sounds that characterise themselves as separate from general music. Games, according to the concept of ludo-musicology, are a mix between "Ludo" games and "Musicology" music (Moseley 2013, 283-308).

There is a different approach to normal composition when looking at games and creating music. It is intrinsically centred on the creation of emotive response and effect on the user, which sets the mood of the area, e.g. sad, happy, or dangerous. By using sounds and slight

changes in music, the user is warned of things that are about to happen, or what they may need to do in the area just discovered (Robson 2008, Collins 2008, 19-20, Chodosh 2018).

But the emotive effect of music has virtually no information or research associated with archaeology, in the sense of its impact on emotive reconstruction and rather than the history of music itself.

Music is often used in documentaries to enhance the sense of adventure and create the right ambience to make it feel like one is walking the area being shown, but this is very different in archaeological reconstructions. The usual question asked when exploring a virtual environment dedicated to archaeological study is: “How authentic is this music? As opposed to: “What emotions did the author intend to provoke when placing this particular piece of music in the scene?

The former is a principle followed by the ICTM, International Council for Traditional Music, which was formed relatively recently, in 1981 and dedicated itself to the study of the origin, use, and methods related to ancient music. It has had several conferences around the world, studying the more technical and historical aspects of music, but there has been no mention of emotive aspects (ICTM 1981-2021).

Therefore, as an inspiration for the emotive effects of music on archaeological games and reconstructions, the focus was shifted from academia to pure cinema and the video game industry. One example is the “Dear Esther” musical environment, where music was used to heavily emphasise the melancholy of the situation, but at the same time was local to the area represented in the game and gave a feeling of familiarity while emotionally guiding the user through the adventure (The Chinese Room 2018).

But the composer and musical author who may be said to follow a scene's emotive aspects most closely is, unsurprisingly, John Williams; his most famous compositions have been for films such as “Indiana Jones” and “Star Wars”. Many other composers deserve a position at the table with him; including Hans Zimmer, Michael Giacchino, or Ennio Morricone. Zimmer tends to make words into sounds and follow cues, Giacchino bases his work on one particular chord, Morricone bases it on the overall emotion of the story, seamlessly continuing through entire scenes. Nevertheless, Williams is more beneficial for the project at hand due to his complete dedication to emotion in each moment of the scene (Lehman 2013, Hubbard, H.L. 2022).

There is an excellent example of how Williams intertwines emotion and music in a scene in one of the Harry Potter films. It is Christmas morning and Harry receives the invisibility

cape. Williams divides the music into twelve parts with different emotional connections between excitement, sleepiness, disappointment, and happiness in just two minutes, rendering it possibly the most complicated and emotional scene in cinema history.

Williams's use of music is a perfect match with a game that intends to create emotional effects and ensure the user feels each change of tone.

Unfortunately, technical limitations may not allow so many changes to be made in one scene. Still, the focus should be on creating emotional responses through every musical note, combined with the rest of the cinematographic means available in gaming.

4.9 Bringing it all together

To summarise the uses of the above methods, there has not been much research into how to make stories and contexts emotionally stimulating in archaeology, mainly due to the assumption that serious data and research should stay as far away from emotions as possible. That is fundamentally the reason why, when showing parts of this project to colleagues, and to others during video conferences, the most common question would be, “But how accurate is this reconstruction?” as opposed to, “How do we feel when interacting with the program?”

As a result, the project will explicitly concentrate on creating and inciting emotions for the audience in archaeology; the environments reconstructed will be approximate, the history partially fiction, and the place will be considered in the emotive sense as opposed to being an accurate reconstruction of materials. Material culture will be one of the central aspects of the research, as the objects and environment will be evaluated and integrated using emotional impact and emotional stimuli as a main research interest, combined with cultural understanding and proximity with the audience and users.

On the other hand, this research will also concentrate on the emotional state of people in archaeology, both the historical figures and the archaeologists as emotive observers, investigating everyday actions and possible emotions from the past within a modern spectrum. This is not to say that the project creator knows, or assumes to know, the emotive state of people in the past, but that he intends to create emotive situations to mimic real life in an area of study that, regardless of the potential, has been completely void of emotion up to date.

The general structure resulting from all of the above investigations into game, film, and book emotional reconstruction, will be as follows:

A narrator will take central stage throughout the game, the ghost of a Palmyrian girl who died during the Roman attack by Aurelius in the conflict against Zenobia. The girl's character will be a mix of melancholy and sarcasm; she will initially observe the archaeologist character from afar, then tell him the story of how she ended up in her current state, and throughout the story, she will narrate the actions while following her own actions in the past and recollecting critical parts of her life.

The girl will be the main character the user will follow in order to unravel the main storyline; It will be possible to use her as an interactive tool to explore and learn about life in ancient Palmyra, while the story itself will concentrate on different emotional factors involving the main character, the people she meets, the people living in Palmyra, and even the area itself will feel like a character, an integral part of the emotive story.

The environment, as mentioned above will have its own character, gloomy streets or rooms, bright and happy areas, areas of suffering, and areas of joy, demonstrating these emotions through the state of repair, chaos or order, at times with noises and whispers giving a sense of horror or mystery.

Since the environment nowadays represents heritage destroyed by terrorism, which will be recalled in context with the story from time to time, this should create an emotive response of sadness and regret at having lost such culture, another empathetic factor not explored by archaeology when considering the reconstruction of heritage destroyed by wars and terrorism.

The evil character, the focal point of every story mentioned above, will be the society and the environment; the girl will be a partial outcast, someone on the wrong side of history, to increase the pressure of the emotive interaction which should be caused to the user. The non-player characters in the story will be seen going through their issues via a series of short stories and conversations. The environment will contain a storyline to be traversed, with the main storyline continuing to the end in the horror-based corridors of the museum.

The entire story arc and each point of emotional impact will be reinforced by using multiple musical cues and sound effects to experiment with Williams's concept of emotive music in a context that has not previously used it.

Finally, the story will reach a conclusion that should cause an emotional shock or surprise to the user, coming to a familiar but unexpected ending that should be able to uphold the hero's final dilemma, leaving open the possibility of a story continuation, despite the start of the story, and progressing the feeling of mystery instead of ending it.

All of the above will hopefully create several emotive interactions between the archaeology, the story, and the environment, and focus mainly on the interaction between material culture, fictional characters, and destroyed archaeology. This last, on its own, has emotive factors related to the destruction of culture and allows for the possibility of the presence of fear, anger and raw emotive triggers in archaeological reconstructions.

Going through the emotive triggers used by literature, cinema, and gaming, there was another critical factor that was flagged up, which requires further investigation before it will be possible to consciously declare the ability to create a game capable of provoking the required emotions in archaeological reconstruction and storytelling; this critical factor was the complex emotion of nostalgia, which will be analysed in detail in the next chapter.

Chapter 5

Game storytelling design and questions

Following the data gathered through the literature, the interviews, and the specific areas of nostalgia and emotive triggers, it is time to explain how all of the above factors were integrated into the game used to test the theory. The game is available alongside this research and there is a full description of the game in written form in the appendix.

The following chapter will explain all the theoretical frameworks, questions, and emotional triggers placed into the game design.

The users will be asked questions relating to the research question through a series of semi-structured interviews in the same style and format as those performed with the researchers in the above chapters. As a continuation of the previous exercise, they will not be anonymised, with their express permission, as seen before; emotions can be subjective thanks to factors including profession, cultural background and gaming experience, and related to the individual's line of research or study, if any. The results will be analysed in terms of qualitative data to verify the following three main factors:

- Are the users explicitly reporting or implicitly expressing experiencing the emotions intended by the creator?
- Are the users explicitly reporting or implicitly expressing that nostalgia, negative emotional triggers, or mystery are motivations to continue playing?
  - To what extent can connections between reported triggers of these sentiments and the user's immersion in storytelling be identified?
- Gameplay raises emotionally and ethically challenging issues, ranging from destruction, theft, preservation of dark heritage, and slavery, to cultural appropriation.
  - To what extent do users explicitly report or implicitly express that the emotional and ethical challenges related to each issue raised:
    - Were clearly explained through dialogue or text?
    - Were portrayed through visual media?
    - Has it challenged the user's prior views?
    - Has it led to critical reflection on the issue?

This chapter will go into detail about three of the fourteen scenes present in the game, explain the decision-making behind each storytelling step, and unpack the ethical considerations and evaluations rigorously performed to ensure the users could provide feedback data with no risk of psychological repercussions or unnecessary exposure to negative emotions beyond the limit needed for the data to be sufficient.

5.1 Risk assessment criteria and preventive measures against psychological harm

Because this project is centred on the role of negative emotions, the game contains several distressing elements. These must be present, despite the mood changes they may cause, to address the project's research questions. To keep these changes in mood, and the associated risks, within tolerable limits, and to assure the ethical integrity of the research, each trigger has been assessed for its necessity to the study and potential harms, and checkpoints to determine mood and stop gameplay if needed have been built into the experimental procedure.

In order to mitigate the overall risk associated with exposure to triggers of negative emotions, checkpoints between scenes are used to self-assess and stop gameplay if warranted. A method of practical use to avoid from the very start any unintended risk was identified through a review of the literature on psychological damage, self-harm, and extreme empathic reaction, which may cause psychological harm. After a careful search for different methods of prevention and screening (Daffern *et al.* 2012, 137-143, Gratz 2003, 192-205, Anderson *et al.* 2010, 151-173, Lerner et al. 2021, 146-159), a variation of a psychological program closely related to the same effects the archaeogame would have, was put in place.

The chosen method was taken from a study dealing with films that may cause distress and intense mood changes; this study aimed to ascertain the emotive effects on random candidates that a series of three films would have on them. This particular example was closely related to the one presented by the archaeogame because it involved not telling the users details about the films they would watch. However, they contained scenes of depression, struggle, and eventual suicide. The mood changes were carefully recorded using a comprehensive scale that included the following:

- "Inner tensions
- Self-esteem
- Life satisfaction

- Depression
- Suicidality
- Attitudes toward suicide" (Till *et al.* 2011, 149–160)

A simple test with a score from one to five, including these factors, would be the ideal prevention method to ensure the users would not quickly fall into depression, high levels of distress, and self-harm.

The variation which will be applied to the archaeogame will require the users to go through a series of six questions in line with the above every time they move to a new scene in the game; the warning signal will be a quick switch in score, from one to three or more, between specific scenes, especially in the depression and suicide areas. The candidates would be advised to stop the game if any of these criteria were to change too rapidly.

The questions will be as follows:

Reflect on the following questions after every scene and record your response. In scoring your feelings, with 1 being the most positive and 5 being the worst, if you register a number higher than 3, please stop playing and contact me as soon as possible.

- How tense do you feel, from 1 to 5?
- How much do you believe you have good character qualities after this scene, from 1 (I believe in myself) to 5 (I am a failure)?
- How satisfied are you with yourself after playing this scene, from 1 (very satisfied) to 5 (not satisfied)?
- How do you feel, thinking about yourself, from 1 (happy) to 5 (I hate myself) after completing this scene?
- How far would you agree with a person wanting to die due to the suffering from this scene from 1 (don't agree at all) to 5 (completely agree)?
- Rate your opinion on the right to suicide resulting from feelings experienced in this scene from 1 (I don't agree) to 5 (I fully support).

This test should allow the research project to be a safe environment for any user and give ample time to avoid any change in the user's psychological state that might endanger them.

The basic procedure described above will enable ongoing monitoring of the effects of gameplay on the users and is designed to prevent serious harm. Beyond this, the negative

emotive triggers included in the game have been evaluated through strict risk assessment criteria, considering the necessity of each emotive trigger's presence in line with the research questions, the level of expected discomfort, and a description of both the effect expected and how this has been mitigated to protect the user's psychological vulnerability.

The risk assessment table has been added to the online link in the appendix section 11.3.

The risk assessment list of questions and tables containing all the reasoning behind design decision-making was ultimately used to design the game itself. As an integral part of the game, due to the need to consult the table as the user proceeds in the game, the initial five questions on the state of mind will be provided to the users to answer every time they finish interacting with a scene.

The scenes are comfortably divided by title cues in the game, so it is evident when the user will need to pause and fill in the questionnaire. The overall game has been a work in progress throughout the research period from the very start. It was initially just a simple reconstruction that was then turned into separate scenes; later the results of the interviews with the researchers analysed in the chapters above were fully integrated into the game storytelling and mechanics.

Finally, the considerations for the health and safety of the users, as well as the overarching aims and objectives of this research, were fully integrated into the game.

What remained was to create a set of carefully crafted questions to ask in a semi-structured interview with the users, a decision made due to the success of the previous application of semi-structured interviews with the researchers.

5.2 List of questions divided by scene:

The users will be allowed to play the game thoroughly before being asked questions through semi-structured interviews; the only requirement will be for them to take the risk assessment test every time they finish a scene to avoid any unpredicted results from stress caused by emotive triggers, which will differ from location to location.

The pool of users will be relatively small, as the quantity of data to be extracted will be similar to the one obtained from the previous interviews with the researchers, and by knowing the last result in terms of quantity, it is appropriate to have a manageable and focused amount of data available. The users' backgrounds will vary between gamers, non-gamers, archaeologists, and non-archaeologists, with an appropriate balance in diversity.

Due to the structure of the interviews, the questions to follow will be a general guideline and will change depending on the situation and reaction of the user during the interview, staying focused on the main topic targeted for the particular scene the user is being interviewed for, but allowing a level of flexibility as emotive reactions, associations and experiences can vary widely between users.

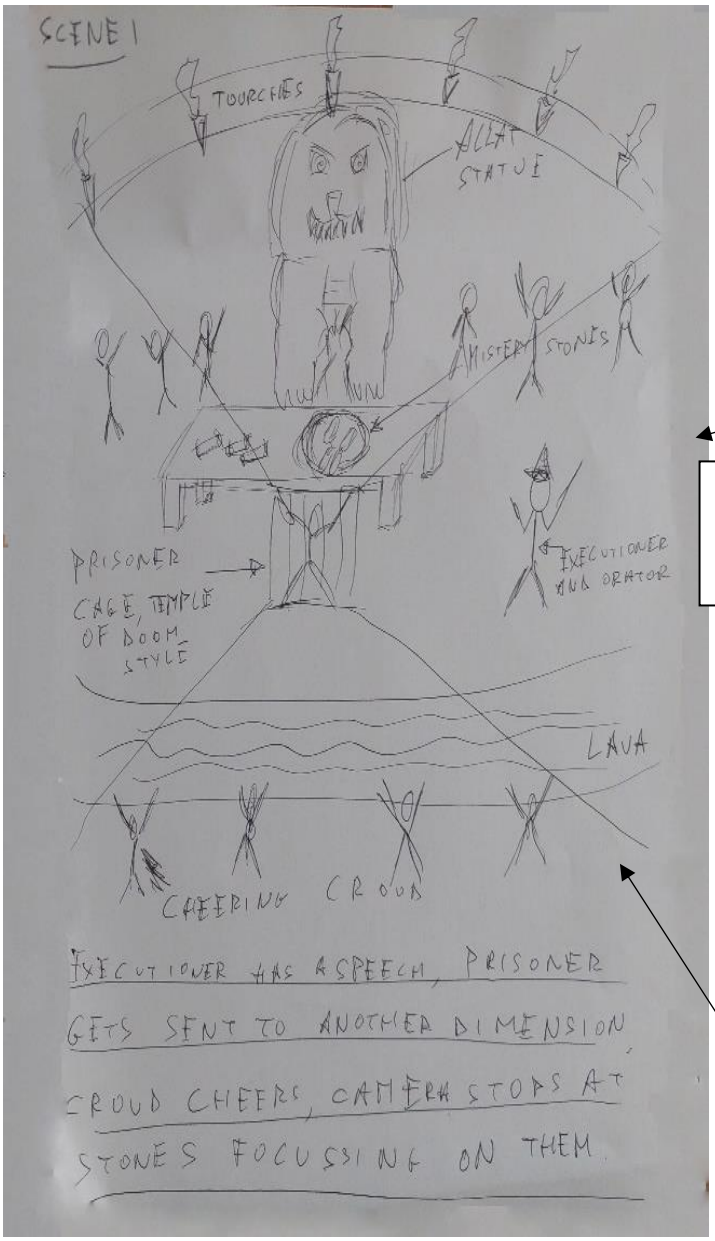
The questions regarding the first two scenes represented by the trademark and the main menu are listed in detail in the link provided in the appendix section 11.3.

What follows is an accurately detailed description of the most representative scenes in the archaeogame, in particular, scenes that contain many theories and concepts taken from the researcher interviews and several emotive triggers and mechanics that repeat themselves in the other scenes for similar results. All the descriptions are aided by visual designs and screenshots that give a clear idea to the reader about the processes the creator went through to create the final product, keeping in mind the aims and objectives of this research.

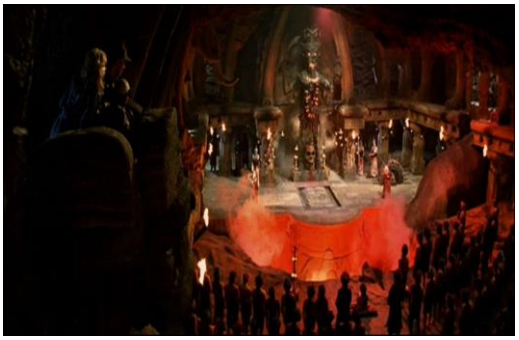
The following are extracts of three of the most complex scenes in the game. All the issues and theories have been expanded and explained in detail to give a clear idea of the intended reactions expected from the users and the reasons behind the decisions on the storytelling, graphics, and emotive triggers taken throughout the game. The intended users will be a combination of researchers, archaeology students, habitual videogame users, and users new to the gaming world.

5.3 The ancient temple:

- Scene design



Statue of Al'Lat from Palmyra, severely damaged during a terrorist attack (Virtual Museum Syria 2017)



Indiana Jones and the Temple of Doom design (Ebert 1984)

Fig. 5 The ancient temple

The third scene Fig. 5 containing the ancient temple is what the gaming industry calls a cutscene (Říha 2014, 661–668); in this one, the user has no direct input, but there is a large amount of storytelling and many emotive triggers present, which prepares the mood, sets

the pace, and introduces the central mystery which should push the user towards getting further invested in the story further, with the anticipation of being able to interact with it.

The people present in the scene are part of an ancient society mixing magic with technology; this is a misdirection asset aimed towards drawing the attention of the user towards fantasy and magic, although all of it is technology, just the type that is too advanced to be logically connected to the time in which it is depicted. This inclusion creates a tool to explain the unexplainable in archaeology, such as instances where magic is described on artefacts and dismissed as fantasy. Still, it may have been possible given the right technology, but the evidence of such technology may have been lost or never found.

- Underlying theoretical concept in storytelling

The concept is used to explore the issues with archaeologists attempting to discern whether something that was written was accurate or complete fiction; the most classical example is the dialogues of Plato, a topic which instigated many expeditions and attempts to locate the town of Atlantis (Plato, Timaeus, Vol 3, 25), which was, according to Plato, highly advanced in technology, a factor which was never proven true, but not wholly dismissed as fake.

The main point of this scene is not to establish any existence of advanced technology in the past, but to allow even the wildest theories to be tested and shown using this game technology, allowing out-of-the-box approaches that may enable users to possibly see what the people in the past may have imagined, or test theories that may feel too surreal in a safe environment which may lead to discoveries of some truth or falsehood in the descriptions found on historical documents. It will also assist in the attempt to understand if there are emotive reactions such as excitement, need, and drive for mystery, as expressed by Dr Tringham.

The above concept could be considered a specific type of nostalgia employed to avoid a generalised type, which is hard to explain, as Dr Economou suggested. This type of nostalgia would be about the part that old expeditions, movies, and games may have played part in the persistence of such wild theories in the archaeological environment, despite the high probability of being untrue, such as Atlantis most likely being an example of a utopic environment philosophised by Plato.

The above concept can be categorised as immersive storytelling, which creates a half-truth, a myth, purposely omitting important information, such as the location and the time,

and which, at the same time emulates unanswered archaeological questions which are interconnected with the close relationship shown between myth and fantasy and the half-truths hidden within it. The importance of this scene for the whole game is the fact that it declares an intention towards abstract interpretation, deep thought, and emotive reactions, as opposed to the focus on precision of material and historical facts that is more common in archaeological interpretation and reconstructions (Christenson 1989, 97-102).

- Emotive reactions

The first emotive reaction expected to the scene is targeted at scholars and researchers, a feeling of mistrust, offence, annoyance, and rejection along the lines of 'Why should someone who is professionally involved in archaeology look at this?' The general public expects the opposite; this type of user should embrace the mystery, the action, and the performance with excitement, in the same way as watching a film can prove a correlation between different specialisations and different emotive reactions.

The above also sets the stage for the theory by Dr Dennis that there needs to be an emotive focus in archaeology, and that stale and supposedly precise reconstructions should not be the focus. That emotion, which is part of what makes a person human, should be represented too, regardless or even because of the fact that scholars will have emotive reactions to this type of work which may be negative.

- Character design

The next eye-catching feature in this scene is how all the characters are designed; the completely featureless, transparent skin was placed in this scene to show another issue in archaeology, that of the constant use of transparent walls and unremarkable people. The above point was an issue raised by Dr Schofield and Dr Watterson; they both complained about the issue of the transparent wall in archaeological reconstructions, which removes immersion and may cause more misinterpretation than recreating the theoretical reconstruction without changing the colour or visibility.

Many of the characters in the crowd do not even have clothing, which can also be seen as an attempt to show that there is uncertainty in how they dress.

The issues shown here are varied, and range between technical and emotive. The first one, as mentioned above, is the further uncertainty created by either simplifying the person or object to the point that it is too openly interpreted or completely misinterpreted; the second is the issue created by doing this in an emotive sense.

The above has been purposely accentuated by the actions of the people in this scene, showing sacrificial-like activity with the people in a scene recalling the imperialistic view of India in "Indiana Jones and the Temple of Doom" (Spielberg *et al.* 1984). The emotive reactions expected from this scene range between irritation, confusion, frustration, offence, anger, and repulsion, but in some cases it may trigger cinematographic nostalgia due to the obvious references.

- Architecture

The building and architecture are also factors that play on the confusion and misinterpretation; it is a mixture of film references, abstract interpretation, and natural objects which were lost in the Palmyra attack. The crucial reasons for this mix between Palmyra, with the presence of the same statue depicted in the start menu, the Al'lat statue, references to Atlantis, with mysterious powers being used in the background; and "Temple of Doom" scenery depictions such as the middle sacrifice, the room environment and the semi-circular alignment of the room and unclear cultural connections, are emotive.

At this point, there is a possible issue to flag up, as people directly connected with the site by either having visited it in the past, or being culturally close to it, might be at risk of a negative psychological reaction.

Such a range of reactions is expected to be negative in the sense that the users mentioned above will have a trauma-related experience associated with the object in question. Still, studies done on similar situations that might have been more directly connected to the individual tend to sustain that the psychological impact is only temporary, with a quick, harmless dissipation, and the data provided has a positive effect on society as a whole as a result of the beneficial and rewarding developments that result out of it (Legerski *et al.* 2010, 429-442).

The emotions which are intended to be triggered in users familiar with Palmyra are anger, sadness, and confusion, as their objects are trivialised and placed in a gaming environment entirely out of context, something that is constantly seen with the collectables available in computer games in the past and nowadays, for example, in "Indiana Jones and the Fate of Atlantis" and the "Uncharted" series (LucasArts 1992, Naughty Dog 2007), where actual buildings and objects are scattered in the wrong places, semi-destroyed, to be either photographed or collected as trophies Fig. 6, with complete disregard for the original owners or the culture they belong to.

Fig. 6 Collectable menu “Uncharted” (Ramsey 2020)

The music in the scene also plays a solid emotive part; this is interconnected with the chanting, which can purposefully be heard in the background. The feeling it needs to evoke is urgency, feeling trapped, wanting to run away but being unable to move while all this is happening around the central character. The idea came from the concept of horror by Dr Schofield; this is a typical dangerous situation where emotions are directed towards fear and the feeling of inevitability. The music is taken from an abstract of Hell and Heaven, emphasising the Hell songs, which are in horror style, and the particular one used here is “Running Away from Hell”.

- Speech

The last crucial component of the temple scene is the speech performed by the other character in the centre of the room; this is intended to be provocative and heavy in emotions; it furthers the mystery and creates friction and subjective decision-making from the very start; who will the user support? The cruel technologist or the incriminated magic user?

The scene is also aiming at showing the presence of bias in interpretation, which is inevitable regardless of the effort made to avoid it. There is clear cultural division in the matter, and there is also hypocrisy, as the technology is being used in combination with magic despite the protagonists clearly declaring the evil of magic, and the archaeologists who would have to interpret the situation in a real scenario would be drawn to one side or the other depending on the speech or writing available, which would be biased, regardless of which side was represented. This shows that all interpretation is subjective.

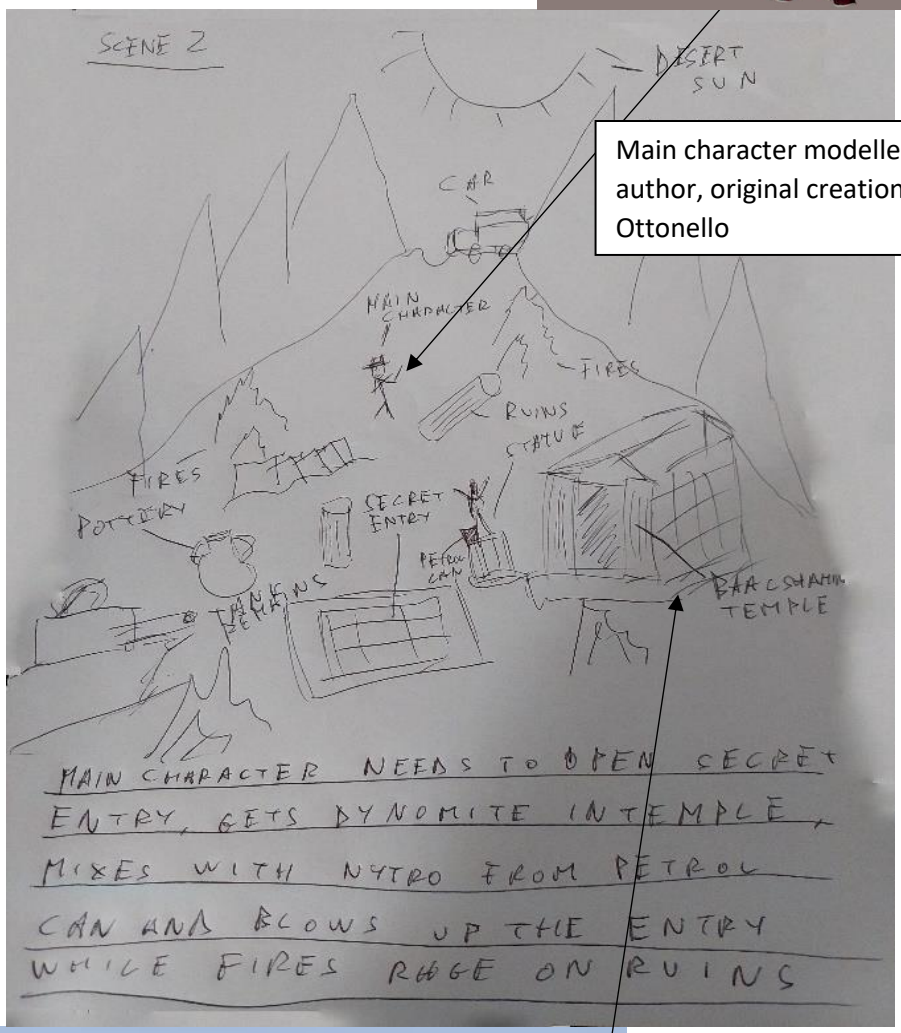
In terms of emotions, this should provoke frustration, self-doubt, anger, helplessness, and, intentionally, empathy and sympathy towards the convict, despite the fact that he may be the villain.

This scene intends to show how some aspects of archaeology play into the misinterpretation of environments by the user or viewer, mainly when dealing with transparent features, and the impact this has on immersion, represented by the semi-transparent characters that populate this scene.

It is also aimed at showing how society has been exposed to unethical, direct, psychologically harming depictions of cultural heritage, and, at least in the Western part of society, this has become part of everyday filming, regardless of ethical changes claimed to be in place nowadays, as the trend continues; for example, “Uncharted” and “Tomb Raider” in gaming and cinema (Naughty Dog 2007, Core Design 1996) are remixes of the same type of values, but still result in different reactions depending on the viewer or user.

5.4 The desert excavation:

Main character modelled after the author, original creation Luca Ottonello



Temple of Baalshamin Syria, destroyed by terrorists (Rekrei 2022)

Fig. 7 The desert excavation

The fourth scene Fig. 7 is the first in which the user can interact with the scenery; the previous scenes were produced to introduce the mystery and the world, mainly focusing on emotionally investing the user in the game.

In the desert scene to which the user will be introduced, there are physical signs of war happening all around, and destroyed antiquity can be seen everywhere. Everything is easy to interact with, and everything is up for the taking, again introducing the issue of artefact theft. Still, in this case, there is also an issue of emergency and rescue archaeology, raising the question of whether it would be better to leave the archaeology to be destroyed, or to pocket the artefacts, removing them from the environment and losing the context.

- Emotive urgency and unease

There is also an element of urgency introduced in this scene, in line with the horror concept explained by Dr Schofield; every time the user examines something, showing interest and taking their time, a bomb will drop and set fire to a nearby area.

The scene has a lot of complex issues going on at the same time; as mentioned above, one of them is urgency, another is rescuing archaeology at the cost of losing the context, destruction of archaeological areas by terrorism in the Middle East, and the right of members of Western society to take artefacts away from their place of origin, supposedly in order to save them. These different issues should create an emotive reaction that will differ depending on the user's cultural or educational background.

The predicted reaction of someone educated in archaeology would be unease about the situation, as they will feel personally responsible for the decisions. Other users less connected culturally or educationally to the case may react like video game players and try to pick up everything as an achievement goal. The feeling of achievement should be a positive one, as it has often been used in game design to provoke emotions using nostalgic feelings, collectable items, object fetishism and reminders of when the players were young using object prompts within the game (Taylor & Whalen 2008, 68-90). These triggers are often consistently present as an achievement pop ups Fig. 8, significantly in the most recent reiterations of old games or the latest titles available (Jensen 1993, Naughty Dog 2007, Ion Storm, IOMO, 2004).

Fig. 8 Image of achievement popup in “Uncharted” (PowerPyx 2015).

Users who are culturally proximate to the objects involved in the scene might react oppositely to the above. Such users might feel emotionally hurt, sad, angry and offended by the trivialisation of their destroyed culture.

Some may even recollect a feeling of distress when seeing the destroyed Palmyra, as they may have experienced it directly or seen it on television. But to lighten the impact, the entire game has been made in a cartoonish style to show that this is not an accurate reconstruction. It is not intended to accurately represent the contextual culture, following the principle by Dr Schofield that there should not be invisible walls and wall-breaking features. There should also be an element in the program that makes sure the audience is aware that there is no exact data.

Feelings of lack of comfort and urgency should also be felt by the user, due to the fires and bombing, creating panicky urgency and pushing them to solve the mystery faster, despite actually having unlimited time to do so, adding the feeling of helplessness to the list of emotions.

- Nostalgia

Following the above emotions, another constant should be the feeling of nostalgia, not targeted at the destroyed scene, but at the memory of what Palmyra used to look like before the bombing.

Another vital part of this scene is the main character and the narrator; they are both written in a way that should show off the internal conflict and self-consciousness of the archaeologist, who is in an almost colonial situation, but with current social and scientific knowledge.

The main character is also a narcissist, trying to portray another side of the character of an archaeologist, showing one of the many reasons one would choose to pursue such a career. The character will focus on discovery, achievement, and completion of tasks, using sarcasm in many situations to cover the nervousness over the actions performed, making the character more human and relatable, one of the main techniques to get the user emotionally involved with the story.

Some of the actions of the main character will be outrageous and extreme, for example, using a bomb to open the entrance to the main chamber. These actions should have an emotional impact on the user, especially if they are culturally proximate to the area, or an archaeologist who knows the previous methodologies used by colonial archaeologists.

The character will be moving from one ecological archetype to another, following the typology set up by Dr Roskams in his book on excavations (Roskams 2001, 32), as it encompasses all the different types of archaeologists set in all the different situations in which an archaeologist might find themself.

Users with a more general understanding of archaeology, or a total lack of understanding, may feel nostalgia for seeing the archaeologist acting quickly and destructively, just as they do in some portrayals in movies in the 80s and 90s.

This particular factor will approach the concept of nostalgia towards fake memory, for example idolising something that is not ethically appropriate, or which is overall a product of pure fantasy, so that the nostalgia is towards something that never actually happened, but is just what society constructed in the user's memory. The above may still be happening today, using the same medium, cinema, and may be enhanced through video games such as "Uncharted" or "Indiana Jones", to name a few (LucasArts 1992, Naughty Dog 2007).

- Sound

The last relevant part of this scene is the music and the bombing sounds; the music is purposely inappropriate; it is happy-wrecking music suggesting a light-hearted approach. This was done intentionally to highlight the contrasting reconstruction style used in archaeology: utterly devoid of emotion, giving no emphasis to cultural factors, and creating a scale-detached environment at times even comically out of place, as clearly stated by Dr Watterson and Dr Bozdog clearly stated these.

The concept is respectively aimed towards lack of artistic freedom, cultural proximity and understanding, covering the obsession with precision, ignoring other factors that make things imprecise anyway, such as personal preference and instinctive bias that even individuals who aim for precision exert without realising it.

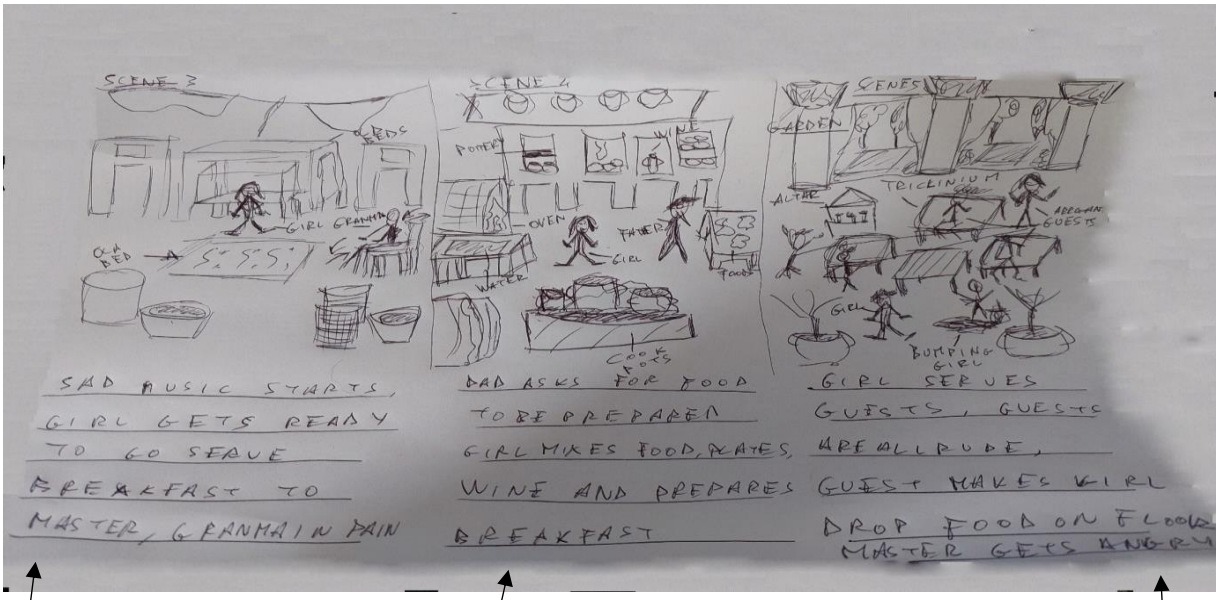
The bombing sounds, on the other hand, are a reminder of the reality of the situation, which is also a reminder for archaeologists to consider the circumstances in which artefacts have been taken away and the actual emotive problem which should be recreated when reconstructing areas.

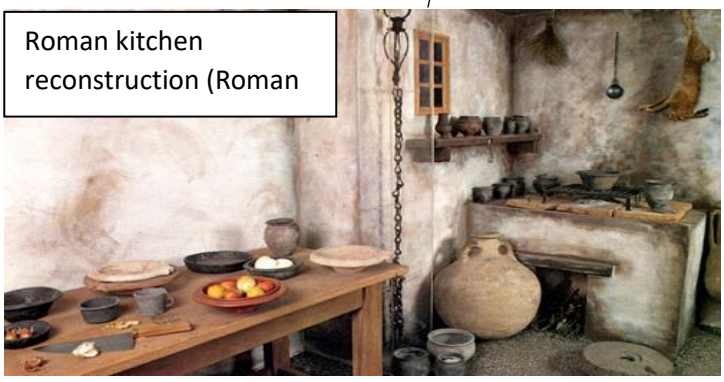
The emotive emphasis of the sounds should be confusion between the contrasting bombing and happy reggae music; it may cause offence and anger to be experienced by users with cultural proximity or archaeologists who may find this depiction a trivialising parody of more appropriate, precise scientific work.

5.5 The slave quarters, kitchen, and triclinium:

This scene in Fig. 9 is a cold and dirty environment; the blue lights help to connect the previous catacomb scene with the new uncomfortable set of beds piled on top of each other, giving the depressing rugged feeling that the scene is a premonition of events yet to happen in an already oppressive environment represented by the slave quarters.

The aim of this scene is not only to create a low-level environment where enslaved people would have been living during the selected time period, but also to intertwine the storytelling and emotive triggers present in the room itself as if it is a character, a method used by Stanley Kubrick in films such as “The Shining” (Kubrick 1980), to make the user feel the room is itself alive and reflects the feelings of what enslaved people could have been feeling, giving the beds a backstory, such as the incident involving the grandfather that is discovered when examining the lowest bedding on the floor.





Roman kitchen reconstruction (Roman

Roman Triclinium, showing the luxury contrast with the slave quarters (Vita Romae 2022)

Slave Room Pompeii (Abrams 2021)

Fig. 9 The slave quarters

- Emotions

The emotive triggers in this scene are some of the most sorrowful ones in the entire game; they are aimed at sadness, the feeling of injustice, and the inevitability of an unjust death looming over the prominent characters related to the previous scene.

The fact that the user has already experienced the future and seen the skeletons displayed cruelly leaves no space for the imagination and should trigger specific emotive reactions in all users, regardless of their background.

There is also space for nostalgia in this scene, but it is subtle; it is a recollection. When looking at the middle floor bed, the girl will tell the story of her grandad with a horrible ending, but at the same time, this will trigger in her a feeling of sorrowful nostalgia for the time when he was ill and dying, but still alive and so that the family could enjoy his company.

The above is an emotive method commonly found in games and movies, and the one used here is taken explicitly from the time-jumping method used in the series "The Witcher" on Netflix (Sackharov *et al.* 2019).

Lastly, in regards to the grandfather story, there should be a feeling of anger and wanting revenge towards the master, who is the main antagonist of this particular part of the game, this is also related to the fact that the user knows that the master may win anyway, regardless of the actions taken, due to the knowledge about the catacomb.

- Characters

The characters in this scene are the slave girl and the grandmother; they are both purposely not named to give a stronger feeling of impersonality; they are considered objects by the master, and deserve no name, as they are relegated to a subhuman state. They are both morally and physically damaged; there is no hope for either, but at the same time, the girl feels hopeful with a sarcastic hint of optimism as if someday she will get out of this and she will have control over the situation.

The above is a theoretical supposition of how an enslaved person might have been able to cope psychologically in such a hopeless situation, connecting current feelings and culture to the past, something which Dr Watterson mentioned with regard to the animal depictions in one of her projects needing to be stylised in order to be more recognisable by the culture to which the animals belonged.

The enslaved people here have been psychologically stylised to connect to how a person may want to cope with such a situation if they ever found themselves like this. This does not mean that enslaved people in the past actually thought or behaved in this way, but it creates a bridge between the user and the character.

The social interactions between the grandmother and the girl have also been constructed using interactions described by both Dr Schofield and Dr Bozdog when interacting with community members who knew the environments they depicted in their work, mixing a feeling of direct attachment to the area with a nostalgic memory about all they see recreated and described.

- Environment switch

The next scene is the kitchen, where the environment changes drastically from a bare and dirty environment to a richly stocked one, where all the food and all the equipment are carefully stored in order, and the light is bright and active, showing a passing from a sad, slow death to a place where life happens.

The scene is supposed to show a strong contrast between the enslaved person's world and the owners'. At the same time, it needed to feel familiar, similar a modern restaurant kitchen, so that the user could feel an attachment and familiar feeling towards what they were interacting with. The comparison is also intentionally provocative, as the typical restaurant kitchen is not a friendly and calm environment, instead, the hectic environment is often unfair and cruel, just as during this time of slavery, creating an impactful comparison to ancient and modern slavery.

The above concept of time and context comparisons has been developed following the various suggestions by Dr Anderson and Dr Economou that there needs to be a personal and contextual connection to explain and avoid extreme cases of distress when dealing with delicate matters such as slavery. Nevertheless, it still needs to be personal and connect to the user in a way that will allow the feeling of decision making and living the life of the fictional character, just like the Roman family conundrum developed by Dr Economou.

The objects, as in the previous scene, have a backstory, and the girl is allowed to see and touch them after talking with the father, as she is supposed to prepare the master's breakfast. The interactions tend to show a cruel division of rights, with the enslaved people having to cook significant portions of beautiful looking food, but not being allowed to eat it themselves. The girl shows again a sarcastic approach which should induce the

user to understand that, despite her apparent intelligence, skills, and good heart, she is still just an object to be mistreated by the master. The scene is inclined toward the emotive triggers shown in “Dear Esther” (Briscoe 2012); the girl explores the area and tells a story like the disembodied man did in the above-mentioned game.

The primary emotions to be expected in this scene are anger towards the master and frustration towards the girl’s situation, with empathy and sympathy because she is brave and helpful and wants to protect and help her family.

The dynamic between the girl and the father is pitiful, respectful, and rebellious at the same time; there is no hope in sight, while she has to help her father, as she is subordinate to him, at the same time, she has to help him because he cannot make it by himself anymore.

However, on top of this, she is still a rebellious teenager, which puts her in danger with such a cruel master, and the father is trying to train her to remove this rebellious streak, in order that she might survive. The situation represents the disparity and the taking advantage of this disparity by the higher class; there is no hope of pity or gentleness from the master; there is only a memory of punishment, for example, in the grain story which emphasises the master’s cruelty.

- Music and sounds

The music is the same as in the previous scene, aimed at recreating the same feeling given by the musical theme in “Dear Esther”: melancholy, sadness, and despair depicted also in the design as for example in Fig. 10.

Scene 9 takes place at a party, in a beautifully decorated triclinium, where several guests are enjoying the master’s hospitality while the enslaved people hectically do their work.

This is another more robust example representing the difference in living conditions between the two castes.

Fig. 10 Similar to “Dear Esther’s” melancholic environment (Briscoe 2012).

As Dr Anderson and Dr Economou suggested, it has been depicted in a way that is relatable to the user without going to a damaging extreme. The emphasis is on creating the emotive reaction of the user, having gone through the initial rooms showing extreme poverty and servitude, they are then delivered into extreme luxury, which should create a strong emotional response and, as Dr Dennis suggested, extract the real emotions from any user, regardless of their background.

- Class differences

The room has every luxury possible, marble, gold, an abundance of food, and luxurious textiles, and the room’s size itself shows an extreme contrast to the previous small, crowded rooms. The other characters are served and revered and show disrespect for the enslaved person as if she is an annoying object. Despite all the luxury, they are negative, harsh, and unhappy, showing another connection to the modern world, making the user feel conflicted. At some point in life, they may have acted in a similar way without realising it.

The above creates a complex emotive reaction in the user, as the condition of the enslaved person may not be a familiar feeling for most.

The guests' actions may stir some self-guilt in the user, perhaps about a time when they complained about the food at a restaurant, or a hotel room, demonstrating to them how similar their thoughts and actions may have been to people they may have never imagined being like. This theoretical experiment is directly influenced by a combination of Dr Dennis’s call for more emotive representations, which may be understood by all, and Dr

Anderson’s call for an appropriate presentation of complex historical facts making people feel the issue without being too extreme.

The dynamics of the characters in this scene are also fundamental: the girl keeps acting in a submissive way, and she has to help all the arrogant and unsatisfied guests with their every whim before she can move on to her task of serving breakfast to the master. All the while, she is internally screaming at them, but inevitably she cannot complain. This is a theory of what an enslaved person in their teenage years might have thought, arrived at by observing the reactions of young students who work in a bar or a restaurant in order to pay their rent.

- Feeling of discomfort

The comparison is brutally direct and evident, and users should pick up on the similarity, having an emotive reaction depending what memories this may stir. Some may feel hurt and angry because they were the waiter, or some may feel guilt and apprehension because they were the client, again calling upon the brutally honest emotive reaction supported by Dr Dennis, and leaning on the horror feeling expounded by Dr Schofield, as some users' nightmare might be seeing themselves being the villain, creating a complex storytelling narrative which makes a cartoonish scene feel too real, and giving the user the inescapable realisation of this.

The last conversation is automatic; there is no way out of it; the girl drops the food on the floor when a woman bumps into her and immediately disappears, almost deliberately and too obviously. This situation furthers the mystery concept of Dr Tringham, which must be sustained throughout the story to keep the user engaged, giving them a reason to go through all the problematic emotive clashes.

The emotive reaction after hearing the master shouting at the girl to get into his office, having seen what happened and accusing the girl of being at fault, should create an extreme emotive response in the users; they should feel a loss of control, wanting to argue, but having no voice to do so, inevitably heading towards an underserved and unjustified punishment after having behaved perfectly since the beginning of the story.

5.6 Summary

Concluding this chapter, one may understand from the details above that several technical and ethical changes were made to the initial project, considering how users could have reacted, preventing unnecessary stress, and removing any disturbing part of the game design that was unnecessary for this research.

On the other hand, this chapter also covered some of the more intrinsic aspects of the storytelling present in the resulting archaeogame, giving an overview of the essential emotive triggers and the different techniques acquired from various disciplines and commercial practices that made a practical application of the theories expressed in the interviews possible.

The following chapter will deal with the results of the open-ended interviews and analyse the correlation between the answers obtained from the users and the objectives of the game itself, giving a definite answer to the overarching aims of this research.

Chapter 6

Analysing the archaeogame results

After conducting a series of unstructured interviews based on the initial questions in the previous chapter, and following the criteria and in-depth questions outlined above, interview transcripts were coded to produce a substantial, high-quality dataset. These data include some expected results, confirming the game's effectiveness in triggering emotional engagement with heritage, but also reveal a wide range of responses that varied from the intended reactions.

These variations were not wholly unexpected, as emotions are personal and based on personal experiences. However, as discussed in this chapter, the topics touched upon and the reactions to particular emotive triggers in the game were sometimes the opposite of the intended result.

Some of these reactions lay in another area altogether; for example, the triggers started discussions on technical issues in archaeology, and performance issues in commercial applications in gaming, while in some instances, the importance of immersion and the inner reasoning behind creating the emotive trigger was more critical to the user than the emotion or the trigger itself. This outcome highlights the breadth of research needed on the topic of emotions in the areas of nostalgia, archaeology, and negative emotive situations.

This chapter will use the same approach as the previous chapter involving interviews with the authors of work on emotive and artistic applications in archaeology; this is not only because some of the testers were the same authors, but also because of the nature of the data, which is best analysed in a combination of narrative analysis (Smith 2000, 313-335) and framework analysis (Furber 2010, 97-100), as the game was built following the framework basis.

There is a table based on the possible range of reactions expected due to the design based on the above literature and methodology, these are not extensive and the results did produce some unexpected results as stated on the tables.

The narrative contains all the different reasons behind specific emotive reactions. As explained in Chapter 4, the game industry has also been working on emotions and emotive responses parallel to archaeological studies. Still, the results of attempts to create a strong emotional reaction from users in many games like “The Last of Us”, “Dear Esther” and

games developed by David Cage, or titles such as “Metal Gear Solid” and “Final Fantasy” have had varied hits and misses, despite their public image of entirely emotive, storytelling focused games. The various attempts will be used as a comparison in terms of non-archaeologists and gamers to see how these projects involving emotive storytelling contrast with, or confirm, the assumptions of the gaming industry, or if the failures of emotive triggers present in this project may be similar to the ones shown by their commercial counterparts.

The analytical path will follow the order of the main questions asked in the previous chapter. It will be done on a scene-by-scene basis, depending on relevant content, and on a contextual basis if the contextual development is spread across several scenes, and this will be repeated every time to show the different or similar responses that depend on the changing situations, therefore:

Scenes 1 to 14:

- Are the users explicitly reporting or implicitly expressing experiencing the emotions intended by the creator? And are the users explicitly saying or implicitly expressing that nostalgia, negative emotional triggers, or mystery are motivations to continue playing?
- To what extent can connections between reported triggers of these sentiments and the user’s immersion in storytelling be identified?
- Gameplay raises emotionally and ethically challenging issues, ranging from destruction, theft, preservation of dark heritage, and slavery to cultural appropriation. To what extent do users explicitly report or implicitly express that the emotional and ethical objections related to each issue raised:
    - Were clearly explained through dialogue or text?
    - Were portrayed through visual media?
    - Has it challenged the user’s prior views?
    - Has it led to critical reflection on the issue?

The interviewed participants who went through either interviews or questionnaires, depending on their availability and time allowance, were divided into archaeologists, gamers, non-gamers, and non-archaeologists, to give a wide range of users who, due to their different backgrounds and interests would provide a more varied and comprehensive result in terms of statistical representation. This further supports the usefulness of not using anonymity for the test subjects, on top of the fact that personal experiences have a

substantial impact on emotional reactions, and research done by the academic participants also shapes their experience, as was explained in Chapter 6.

The list of participants and their backgrounds is as follows:

Dr Tessa Poller (archaeologist, non-gamer)

Dr Imants Latkovskis (non-archaeologist, gamer)

Miss Yasamany Nabati Mazloumi (archaeologist, non-gamer)

Dr Ruth Tringham (archaeologist, has experienced in-game storytelling)

Dr Megan Kasten (archaeologist, gamer)

Mr Doron Finkelstein (non-archaeologist, gamer)

Mrs Chen Finkelstein (archaeologist, non-gamer)

Mr Cole Juckette (archaeologist, gamer)

Dr McAllister (non-archaeologist, non-gamer)

Mrs Philippova (non-archaeologist, non-gamer)

6.1 Scene 1

Scene 1 was the most difficult to obtain information from, because not all the participants were experienced gamers; therefore, this had been expected. The scene started as a trademark being shown with some similarities to the LucasArts trademark used in many adventure games before Fig. 11, this was attempted by using a character in the middle, two words and a square format just like in the original, attempting to modify it to a point where it is barely comparable but familiar enough to possibly trigger an emotive response from familiarity; the intended emotive result and trigger was to provoke an instant feeling of nostalgia, but as logically expected, very few people out of those interviewed had such a reaction and they mainly included experienced players.

Fig. 11 Original LucasArts trademark 1992-2005 compared to the one present in the game (LucasArts 1992).

As an initial reaction, the difference between computer game players, non-computer game players, and players who had lived through the game industry development of the 90s was substantial. The reaction of those with a contextual memory attached to the trademark was as expected and successful.

Here is the table of results:

User	Possible range of reactions	Triggered?	Reasoning given
Dr Poller	None	No	Never experienced or saw it before
Dr Tringham	None	No	Never experienced or saw it before
Mrs Finkelstein	None	No	Never experienced or saw it before
Miss Mazloumi	None	No	Never experienced or saw it before
Dr McAllister	None	No	Never experienced or saw it before
Mrs Philippova	None	No	Never experienced or saw it before
Dr Kasten	Showed a reaction	Yes	Immediate nostalgic reaction when seeing the trademark, even pointing out the fact that it mentally prepared her to experience a '90s game before she even started
Mr Juckette	Showed a reaction	Yes	Was an avid player of the "Star Wars" games produced by LucasArts in the '90s, was instantly brought back to the mental state of those nostalgic times
Dr Latkovskis	Showed a reaction	Partially	Did not at first recognise the trademark, but when talking during the interview, he remembered seeing something similar in connection with old games. Unfortunately, it was too late to connect it to his emotive state while playing
Mr Finkelstein	Showed a reaction	No	Found the trademark cute and interestingly designed but did not recognise or associate it with any

			memories and only had a brief reaction associated with pleasure from a cartoon

6.2 Scene 2

Scene 2 Fig. 12 had a different set of reactions dependent on a wider variety of factors, possibly due to its more complex nature and the fact that some archaeology was involved to a certain extent. For example, Dr Poller had a brief moment of interest targeted mainly at the mix of objects collaged in the menu, with particular emphasis on the ship, but not much else in terms of emotions or emotional triggers, even when asked about the music, showing a brief but limited engagement in exploration.

Fig. 12 Screenshot of the main menu with the statue on the left, ship on the right, and map in the middle.

Here is the table of results:

User	Possible range of reactions	Triggered?	Reasoning given
Dr Poller	Archaeologists interested in objects	Partially	Brief moment of interest targeted mainly at the mix of objects collaged in the menu
Dr Tringham	Archaeologists interested in objects	Both in archaeology and partially in gamers expected reactions were triggered	She immediately started trying to make a logical sense of the scene, coming to the conclusion that there might have been pirates involved, due to the pirate ship on the right-hand side, but apart from that she was not triggered emotionally either by the images or the music, which was an upbeat adventure tune intended to prepare the audience to start an adventure with a possible associated nostalgic feeling.

Mrs Finkelstein	Archaeologists interested in objects	No	Sense of familiarity and anticipation about what would come next. Still, she did not directly mention or describe nostalgia, the intended emotion. Mrs Finkelstein doubled on that feeling of anticipation, only noting that it made her feel like she wanted to get on with it.
Miss Mazloumi	Archaeologists interested in objects	No	She said: “I was like, ‘Oh, come on, it's just too much. Let me just go, you know, and do that, you know.’” (Miss Mazloumi) She sounded more frustrated by the menu than intrigued and wanting to know more.
Dr McAllister	No	Partial	It reminded him of a movie screen, with feelings of familiarity connected generally to films, but they could not identify exactly which one. The conclusion was a slight feeling of nostalgia and generally positive association.
Mrs Philippova	No	No	Cool
Dr Kasten	Archaeologists interested in objects, players nostalgia and recognition of menu design	Partial	Experienced no real emotional trigger from the setup of the menu, she just went through it, only noticing the music due to the high volume, but in this case, she did have an instinctive reaction to the music, saying, as was intended, that it gave a feeling of preparation, establishing that this would be an adventure and setting a particular emotive mood in her mind which cannot be associated with any of the intended emotions directly despite being an emotion. “I don't think it made a huge impact on me, except I was like, ‘Okay, that's the sort of like feel he's going for, like this is like a proper point and click, like that sort of era game.’” (Dr Kasten)
Mr Juckette	Archaeologists interested in objects, players nostalgia and recognition of menu design	No	Sense of familiarity and anticipation about what would come next. Still, he did not directly mention or describe nostalgia, the intended emotion. Mrs Finkelstein doubled on that feeling of anticipation, only noting that it made her feel like he wanted to get on with it.
Dr Latkovskis	players nostalgia and recognition of menu design		His approach to the menu was more of a technical nature than an emotional one; he did not engage with it emotionally, but commented on the size of the mouse icon, which looked disproportionate.
Mr Finkelstein	players nostalgia and recognition of menu design	Yes	in line with one of the intended emotions, the feeling of mystery; he did focus a large part of the conversation on the impression the music gave, which was of excitement and anticipation, and due to his inquisitive nature he went through all the options and

			dedicated a long time to analysing the menu, but without putting much emphasis on the objects. He described a feeling of mystery and anticipation about playing, which was one of the intended triggered reactions predicted from the setting up of the menu.

6.3 Scene 3

Scene 3 Fig. 13, a cutscene with no real input from the user, was commonly well analysed; there were cases of surprise reactions to the scene, and many instances in which the triggers worked as intended.

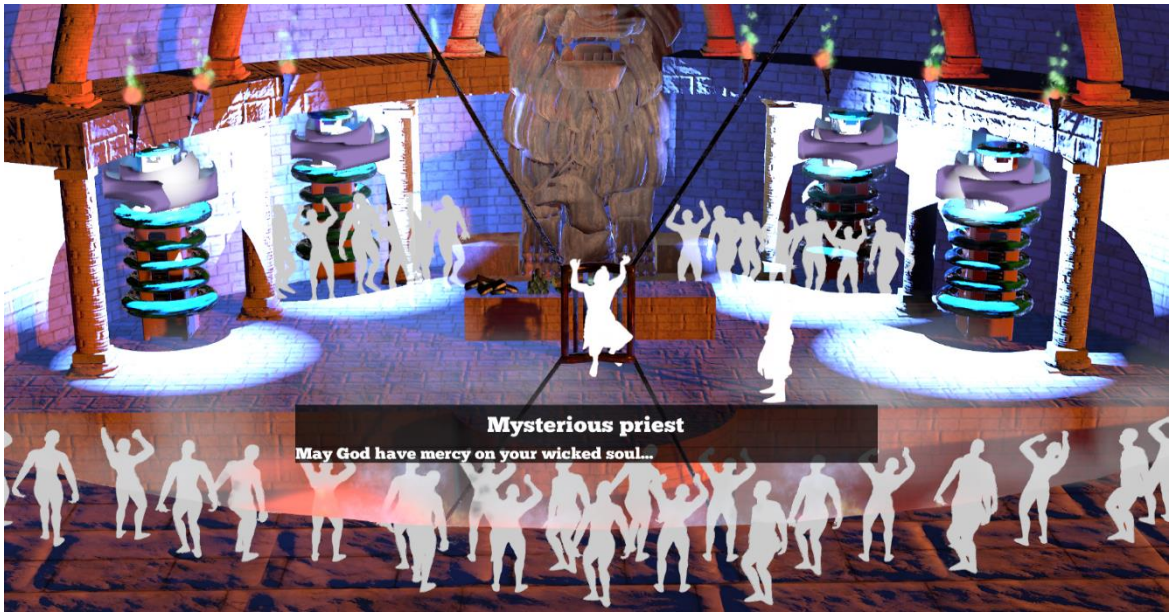


Fig. 13 Screenshot of the scene featuring an unidentifiable crowd, a sacrifice, and a speech, with a clear representation of the statue of Al'Lat Destroyed by ISIS in Palmyra behind.

Here is the table of results:

User	Possible range of reactions	Triggered?	Reasoning given
Dr Poller	Interest in some of the environment objects and rejection of stereotypes portrayed	Partially	Minimal stimuli from the different things happening in the scene, taking a very detached approach from the whole situation that was happening. The main feelings she experienced were irritation with the music, and not enjoying what was happening in the scene, as it had a vague resemblance to old movies with solid stereotypes.
Dr Tringham	Interest in some of the environment objects and	No	the most prominent emotional expressions were frustration and confusion, with a sense of loss of control, since she subjectively has an analytical character

	rejection of stereotypes portrayed		that attempts to try and understand the inner workings of what is going on, coupled with experience in creating intricate storytelling. But most of her comments were technical; she did attempt to identify the semi-transparent characters and all the characters in the scene, making her own informed guesses, and expressing her frustration towards the trope of magic vs technology as a mistakenly interesting topic even though, according to her there is enough magic in the world that it is not necessary to add more. However, she then identified the reasoning behind it and added to the technical discussions related to how to make a story enjoyable in an archaeological context and how this was provoking the emotions intended, but not pushing her concept of investigation of the mystery appropriately; it was too confusing, too many things missing.
Mrs Finkelstein	Interest in some of the environment objects and rejection of stereotypes portrayed	Unexpected	Interesting recollection of the scene, identified the origin, and showed a level of nostalgic remembrance of the movies from that period, with the adventure vibe and consequence-free action, showing how different perceptions of nostalgia can manifest.
Miss Mazloumi	Interest in some of the environment objects and rejection of stereotypes portrayed	No	Two different reactions and interpretations of the scene; one was the feeling that it was frustratingly long, she wanted to get on with it and not immerse herself in the storytelling, and the other was that she did not remember or feel any interest in the conversation or any of the text, removing any empathetic attachment to the tortured character.
Dr McAllister	Recognition of film tropes and situation, possible discomfort.	No but easy recognition from films	It was just like an Indiana Jones movie.
Mrs Philippova	Recognition of film tropes and situation, possible discomfort.	No but easy recognition from films	It was just like an Indiana Jones movie.
Dr Kasten	Interest in some of the environment objects and rejection of stereotypes portrayed, reminiscence of cutscenes expected from old and new games with heightened interest in the mysterious situation	Partially in terms of archaeological reaction	Did not concentrate on the inner workings of the scene and story development like Dr Tringham, but was more shocked and felt uncomfortable about the events in the scene, with the person being sacrificed. However, her emotional state did not come from the act itself, which she said was generally unsettling. Instead, it was the thought of having not only him removed, but also all of his legacy, any trace of his existence in the historical world, that made her most upset, something that had not been foreseen, but

			which made perfect sense. For an archaeologist
Mr Juckette	Interest in some of the environment objects and rejection of stereotypes portrayed, reminiscence of cutscenes expected from old and new games with heightened interest in the mysterious situation	No	Identified the scene even more precisely, quoting the title of the movie it was taken from, but expressed entirely different emotions; he was not horrified or upset about the sacrifice and the situation, he had a negative reaction due to the concept, but detached himself from the event and was thinking that it was just a game.
Dr Latkovskis	Reminiscence of cutscenes expected from old and new games with heightened interest in the mysterious situation	No	Skipped ahead, no interest
Mr Finkelstein	Recognition of film tropes and situation, possible discomfort.	Yes	Ideal response due to the emotions he described. One emotion was being uncomfortable with the events, the torture, the sacrifice, the chanting, and the stereotyped behaviour, which he described as an African tribe chanting, despite being represented as semi-transparent characters. Again, this was entirely subjective, since the crowd was not identifiable. At the same time, his analytical side was trying to take in as much information as possible to feed his need for mystery, another side of the emotive trigger that worked as it was supposed to in the scene.

6.4 Scene 4

Scene 4 Fig. 14, was the first real interactive scene of the game, the user was now able to analyse and touch objects, and each object and scenery piece had a description and suggestions on how to advance and solve the mystery in a style reminiscent of an escape room. This is where the approach and the emotive responses were set apart; each user described that their experience changed and their ways of interacting were substantially different; even Dr Tringham, who could not interact as she was only watching, had a change of perspective from the previous scenes.

Fig. 14 Screenshot of the scene featuring a desert area in the middle of a war zone with distinguishable parts of temples and a nod towards the Temple of Baalshamin in Palmyra, destroyed by ISIS, on the bottom right.

Here is the table of results:

User	Possible range of reactions	Triggered?	Reasoning given
Dr Poller	Discomfort, urgency, distress due to the destruction of heritage, feeling of loss of control and annoyance at the cheerful music.	No	She attempted to rationalise the situation, trying to solve the issues and progress to the next scene. However, as she was not given specific instructions again to encourage the notion of mystery and wanting to see what happens next, she spent a long time attempting to learn how to solve the puzzles. In time she understood how to use the “examine” and “use” options. Still, by then, she declared that her emotional detachment from the game was at its peak, as the logical part of her reasoning realised that it was a mechanical construct and that there was no actual risk of death, as the bombs were never going to hit the character at this rate. This was a new development that had not been expected in the results, as it had been predicted that the emotive triggers in the game would provoke specific emotions, or fail to do so. There was no previous data, and no prediction about emotions changing into the opposite: from urgency and anxiety to apathy, acceptance and detachment.
Dr Tringham	Discomfort, urgency, distress due to the destruction of heritage, feeling of loss of control	No	Followed her logic but attempted to understand what the game's creator wanted the user to feel and the concepts he wanted to get through with the design implemented. The above was developed through her idea of mystery. Instead of being directed toward

	and annoyance at the cheerful music.		following the storytelling, she was trying to be one step ahead of it, another unexpected result. Noted discrepancies with real archaeology and allusions to archaeological debates.
Mrs Finkelstein	Discomfort, urgency, distress due to the destruction of heritage, feeling of loss of control and annoyance at the cheerful music.	Yes	Commented on the feeling of familiarity in the scene and she felt panic due to the speed of the character and the use of explosives to open the way. She was worried but immersed and felt a level of nostalgia as she described, only annoyed at the music not matching the situation and environment.
Miss Mazloumi	Discomfort, urgency, distress due to the destruction of heritage, feeling of loss of control and annoyance at the cheerful music.	Partial	Commented extensively on the inaccuracy of many of the elements in the area, and she felt both frustrated by the speed of the character and the use of explosives to open the way. She generally felt a mix of anger and frustration; this was due to her expertise and life experience, which amplified these feelings, making the triggers in this scene particularly successful with her, as anger, frustration and negative feelings for the area and the situation were the intended result.
Dr McAllister	Fun and nostalgic in terms of films, a feeling of urgency and danger leading to discomfort and speeding up the experience.	Partial	Seemed mainly to have had fun with the scene, there was a sense of urgency, and he quickly adapted to the situation; some frustration was present due to a lack of familiarity with the commands and the inventory not being easy to find, but in general, it was an interactive film experience for him. There was no apparent connection to nostalgia, but the situation had entertainment value.
Mrs Philippova	Fun and nostalgic in terms of films, a feeling of urgency and danger leading to discomfort and speeding up the experience.	Partial	Entertained by the cartoonish graphics, the walk of the character, and the overall lightness of the environment, despite the bombing situation and the destruction of heritage. She felt frustration towards the commands and interactive triggers, and a sense of urgency due to the bombing, but she quickly learnt how to use the controls and then concentrated on the challenge of completing the scene to move on to the next.
Dr Kasten	Discomfort, urgency, distress due to the destruction of heritage, feeling of loss of control and annoyance at the cheerful music. Also, familiarity with similar game situations and nostalgia, odd walking	Yes	Both familiarity and a certain level of nostalgia; the game and the environments were designed taking heavy inspiration from famous and well-played games from the early 90s, which aimed at making people like and miss the old times even back in the 90s. They therefore had an intrinsic level of embedded emotional trigger towards nostalgia. The other trigger was the environment, and the archaeological artefacts, which were realistic and partially taken from reality, which made Dr Kasten think of a time when these artefacts were still available, before they were destroyed by a number of different factors.

	commands and comedic tropes typical of point & Click.		At this point, there was an interesting switch in emotional connection; the feeling of nostalgia was somehow connected to feeling uncomfortable; Dr Kasten said that as the objects and the environment were developed following reality, it felt wrong, and anxiety started seeping in as she imagined how this could happen or could have happened.
Mr Juckette	Discomfort, urgency, distress due to the destruction of heritage, feeling of loss of control and annoyance at the cheerful music. Also, familiarity with similar game situations and nostalgia, odd walking commands and comedic tropes typical of point & Click.	No	Disoriented and irritated Mr Juckette; this was boosted by the mismatch in the music of the scene, being cheerful in tone despite the horrible things going on all around. To an extent, Mr Juckette seemed to be more prone to being emotionally affected, mainly negatively, by music and sounds. He often expressed irritation at the musical mismatch and the loud bombing going on.
Dr Latkovskis	Familiarity with similar game situations and nostalgia, odd walking commands and comedic tropes. typical of point & Click.	Yes	He described a change in how he experienced the game, from a sandbox, unlimited time exploration, to a speed run to be able to win: “My approach to playing games is very patiently at first. First I try to explore as much as I can. So I kind of like take my time, but then, if something gives a sense of urgency, it makes me switch tracks.” (Dr Latkovskis)
Mr Finkelstein	Familiarity with similar game situations and nostalgia, odd walking commands and comedic tropes. typical of point & Click.	No	Urgency and frustration were his primary emotional expressions; he started the conversation about this scene by describing how he was looking at it from a game perspective; he had played similar games before, and the illusion of time limit given by the exploding bombs every time he examined something gave him a feeling like he had to hurry up.

6.5 Scene 5

Analysing the above results, which seemed to converge towards a conclusion of a more chaotic nature than expected, the storytelling linear path with the mystery as a driving force started becoming a background concept. This was not to say that the mystery approach was not working in creating emotive responses in line with the expected negative and nostalgic emotions, but a new factor started emerging, which was the much more significant impact of individuality in the way the emotions materialised.

The next scene shown in Fig. 15, was supposed to give a false sense of choice, with dialogue options aimed at allowing the user to take an alternative path towards a solution and the discovery of more clues towards the mystery. That choice was then removed, causing a negative reaction of feelings of oppression and a sense of inevitability about the destruction of objects of cultural value. But given the previous effect of emotional triggers, a new theory seemed to be emerging, one in which it was not the dialogue and the story causing the triggers, at least in part, but also a two-way interaction between the user and the story itself.

Fig. 15 Screenshot of the scene featuring a series of skeletons in a gloomy, eerie area, with the fake choice of destruction or preservation.

Here is the table of results:

User	Possible range of reactions	Triggered?	Reasoning given
Dr Poller	Feeling of unease, fear and expecting the unexpected, followed by annoyance, anger and dismay toward the fact that the character was destroying cultural heritage.	Partially	The combination of blue lights occasionally triggered phrases from the character. The presence of various distressed-looking skeletons gave a sense of something bad being about to happen, possibly something scary and dramatic, in opposition to the slow and calm music playing. The eerie blue light was one of the primary emotive triggers that gave this uncomfortable feeling, which was in line with what the author wanted to provoke. No mentioning of the destruction caused by the main character.

			Repeatedly discussed her disassociation from the scene, saying that she kept making decisions based on the fact that she was in a game. She may not have made the same decisions in real life, or even ever have been in such a situation in real life. Therefore, a certain amount of emotive immersion was confirmed by the existence of the emotions described, but the immersion was not complete, as she was constantly and fully aware of being in a game.
Dr Tringham	Feeling of unease, fear and expecting the unexpected, followed by annoyance, anger and dismay toward the fact that the character was destroying cultural heritage.	No	Had an utterly unemotional approach to the room; she stated that she saw what the designer was attempting to do, approaching the issue of ethics and morality in the desecration of burials, but she was not bothered by it. She stated that, in reality, the skeletons would have been found in a much worse condition, almost dust, therefore, taking the jewels would not have disturbed much, even for future archaeologists. The environment was conveniently excavation free and, therefore, an ideally accessible area to investigate as an archaeologist; consequently there were no actual emotive triggers for her in the situation. What she did focus on was the same theory that was slowly being developed as the data was being analysed; the little bits of personality development and the immersion triggers such as the narration text, the self-narration by the character, the actions and reactions of the environment as part of the game interaction, creating a back-and-forth dialogue between the storytelling of the designer and the inner monologue of the user.
Mrs Finkelstein	Feeling of unease, fear and expecting the unexpected, followed by annoyance, anger and dismay toward the fact that the character was destroying cultural heritage.	Yes	Had a subjective emotional reaction entirely connected to personal experience and ethical decisions came from Mrs Finkelstein, an archaeologist active in Israel. In that area, burials are a controversial issue to deal with during excavation due to the different authorities, religious regulations, and cultural conflicts; so this scene evoked a very familiar situation for her. She felt uncomfortable breaking and desecrating the skeletons as she recalled all the issues she would have had to deal with at home.
Miss Mazloumi	Feeling of unease, fear and expecting the unexpected, followed by annoyance, anger and dismay toward the fact that the character was destroying cultural heritage.	Yes	She stated that breaking the skeletons and desecrating the area was frustrating, and felt like: “Oh, my God! Oh, my God! I just! I felt that I was just ripping out my chest.” She continued in an emotional state of annoyance and disbelief at the situation, in line with the expected reactions.

Dr McAllister	Feeling of unease, fear and expecting the unexpected, followed by familiarity with films and popular culture, resulting in a feeling of mystery to be solved.	Yes	Was mainly entertained, following the mystery and wanting to figure out how to unlock the puzzle; he described feelings of sadness from the music and, at the same time, cosiness from the lights; he felt like he was in a real cave with a magical feeling; he did not have issues with desecrating the corpses and taking the gems.
Mrs Philippova	Feeling of unease, fear and expecting the unexpected, followed by familiarity with films and popular culture, resulting in a feeling of mystery to be solved.	Partially	Had an uncomfortable feeling, did not like the presence of skeletons, and was scared, stressed, and wanted to get out of the area quickly, as it gave her feelings that something wrong was happening, or was about to happen, in the tomb. She had to summon up courage to touch the skeletons. She was worried they were going to move.
Dr Kasten	Feeling of unease, fear and expecting the unexpected, followed by annoyance, anger and dismay toward the fact that the character was destroying cultural heritage. Followed by familiarity with 90's games in the point & click type ending in nostalgic association of such experience with childhood and enjoyability contrasting the archaeologist sense of unease and repulsion for the actions.	Partially	Had an interesting mixed reaction to the skeleton room; she decided to take the extreme action of destroying all the skeletons after investigating the environment. She did not feel negative emotions, as she stated that she had disassociated herself from the environment and knew from previous experience in gaming how it would work, but she also developed an instinctive reaction to the puzzles which brought her back to the 90's way of navigating point-and-click adventure games, which became a nostalgic experience for her, going into the pixel hunting process as one used to do when objects were just pixels and challenging to distinguish, and hence, the user had to click on everything until the solution presented itself.
Mr Juckette	Feeling of unease, fear and expecting the unexpected, followed by annoyance, anger and dismay toward the fact that the character was destroying cultural heritage. Followed by familiarity with 90's games in the point & click type ending in nostalgic association of such experience with childhood and enjoyability contrasting the archaeologist sense of unease and repulsion for the actions.	Partially	Correctly guessed all the games by which it was inspired: the concept of soul stones from "Skyrim", and the altar in the middle activated by stones from "Uncharted". He had a feeling of nostalgic deja vu while playing it; he did not approach it as an ethical dilemma or a traumatising experience, but just as a new way of exploring old entertainment from the past, which shows another different direction a user could have taken in their experience of the catacomb.
Dr Latkovskis	Feeling of unease, fear and expecting the unexpected. Familiarity with 90's games in the point & click type ending in nostalgic association of such experience with	Partially	Had some expected emotive reactions, such as the uncomfortableness of extracting the gems like a looter, and the calmer and slower environmental feeling given by the blue lights and the music.

	childhood and enjoyability.		
Mr Finkelstein	Feeling of unease, fear and expecting the unexpected. Familiarity with 90's games in the point & click type ending in nostalgic association of such experience with childhood and enjoyability.	Partially	Commented on the emotive power of the music being played in the area, along with the hints of cave sounds and flowing water; he could feel like he was in the environment and felt a lot calmer in terms of emotion than in the previous scene. He also had a slight feeling of expectation and anxiety, as the room gave him a sense of something about to happen, possibly associated with his personal experiences of small surroundings, or films depicting similar situations.

6.6 Scenes 6, 7 and 8

The scenes relating to the slave character shown in Fig. 16-18 in the game were closely related to each other, and the emotive effects were designed to have a lasting impact that developed more complex emotive reactions in the user as they interacted with further rooms; that is why they were analysed as a single unit.

Fig. 16 Screenshot of the scene featuring a standard slave-quarters reconstruction.

Fig. 17 Screenshot of the scene featuring a standard kitchen area reconstruction.

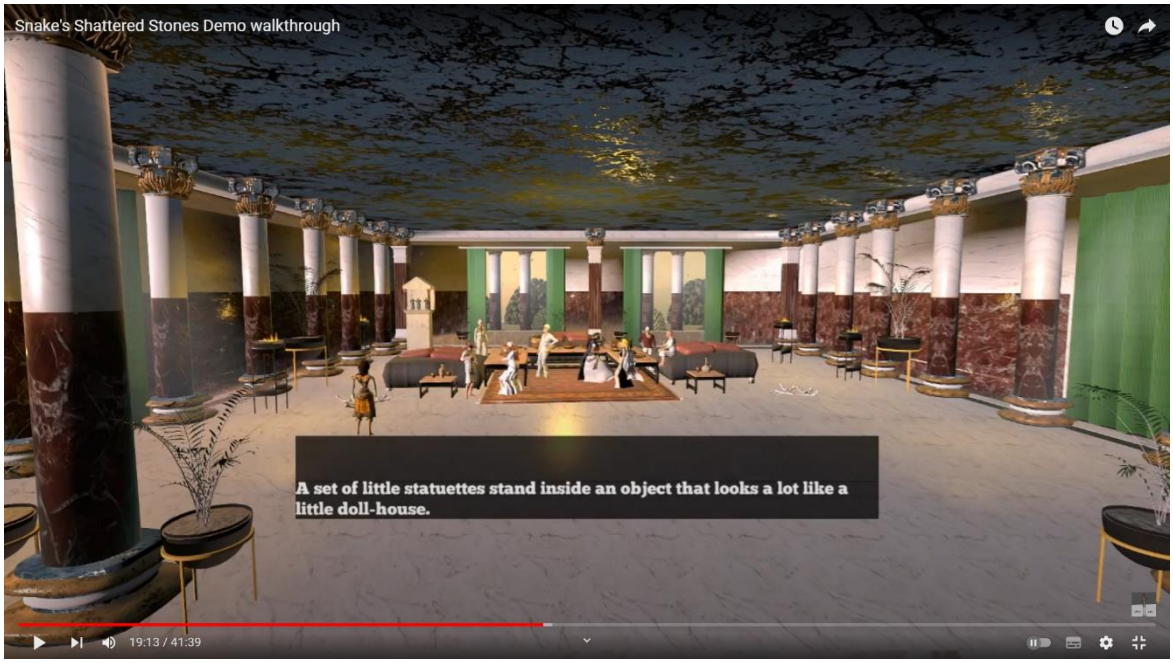


Fig. 18 Screenshot of the triclinium area.

Here is the table of results:

User	Possible range of reactions	Triggered?	Reasoning given
Dr Poller	Interest in the accuracy and detail of the area, calmer reaction to the environment losing sense of urgency and closer immersion due to the more detailed and archaeologically sound reconstruction. Feeling of sorrow and anger due to the enslaved situation of the main character and the interactions with other characters.	No	She declared a feeling of calm and relaxation, there was no urgency to finish, and the melancholic environment gave her time to try to analyse everything and speak with everyone, but, at the same time, she did not feel the expected attachment to the new main character, she was just going through the scenes mechanically, trying to get to the next one. Another emotion she experienced was slight sadness, and she could feel the pressure put on the girl to perform her tasks, but again she was very detached from the complete immersion expected.

			This separation may be a unique aspect of someone who does not have previous experiences in games and is fighting between the frustration of having to deal with a new way of moving and interacting and a lack of excitement or desire to use the game UI, as there is no initial self-propelled interest in doing so.
Dr Tringham	Interest in the accuracy and detail of the area, calmer reaction to the environment losing sense of urgency and closer immersion due to the more detailed and archaeologically sound reconstruction. Feeling of sorrow and anger due to the enslaved situation of the main character and the interactions with other characters.	No	Her main feelings were confusion and anger at the situation. She appreciated the reconstruction of several areas to a level of archaeological detail not found in the previous scenes, and this made it more immersive for her due to her expertise; she also understood the direction that the story was taking, and the intended emotions, despite not feeling them herself.
Mrs Finkelstein	Interest in the accuracy and detail of the area, calmer reaction to the environment losing sense of urgency and closer immersion due to the more detailed and archaeologically sound reconstruction. Feeling of sorrow and anger due to the enslaved situation of the main character and the interactions with other characters.		
Miss Mazloumi	Interest in the accuracy and detail of the area, calmer reaction to the environment losing sense of urgency and closer immersion due to the more detailed and archaeologically sound reconstruction. Feeling of sorrow and anger due to the enslaved situation of the main character and the interactions with other characters.	Unexpected	She felt familiarity and a sense of nostalgia, as demonstrated in her clear statement: “For a person that has the roots in the Middle East, I've seen them a lot in the real world, you know, and I liked that in that scene I liked. How I could finally play things.” This switch to a sense of familiarity and nostalgia, despite the uneasy situation with the enslaved people, was one of the intended deeper triggers in this scene, and it is a sign of success as it was explicitly aimed at users with cultural origins in the Middle East.
Dr McAllister	Feeling of sorrow and anger due to the enslaved situation of the main character and the interactions with other characters. Attempting to solve the mystery and save the girl, exploring every conversation attempting to associate modern reactions	No	Feeling of calm and immersion as he went through these scenes; he commented on the realism despite the cartoon-like graphics and the strange fact that the main character in these scenes felt both out of place and just right for the situation, making the user feel empathy and association with her, despite her being an enslaved person from hundreds of years ago. He did say that the concept of slavery was not a good feeling trigger, but

	to the girl such as answering back in anger, rebelling and not following orders as an emotive reaction to suppression and inevitability only to eel frustration when realising the truth.		simultaneously, the scenes were calm and enjoyable.
Mrs Philippova	Feeling of sorrow and anger due to the enslaved situation of the main character and the interactions with other characters. Attempting to solve the mystery and save the girl, exploring every conversation attempting to associate modern reactions to the girl such as answering back in anger, rebelling and not following orders as an emotive reaction to suppression and inevitability only to eel frustration when realising the truth.	Similar to what was expected by archaeologists but no strong emotive reactions.	Liked the environment and remained calm throughout the experience, even when faced with the constant progress towards a bad thing happening, which was hinted at. The storytelling showed as the story progressed. She commented again on the realism and detail of the areas, despite having no training in archaeology; the detailed care taken was palpable to her.
Dr Kasten	Interest in the accuracy and detail of the area, calmer reaction to the environment losing sense of urgency and closer immersion due to the more detailed and archaeologically sound reconstruction. Feeling of sorrow and anger due to the enslaved situation of the main character and the interactions with other characters. Attempting to solve the mystery and save the girl, exploring every conversation attempting to associate modern reactions to the girl such as answering back in anger, rebelling and not following orders as an emotive reaction to suppression and inevitability only to eel frustration when realising the truth.	Unexpected and partially	The conversation with her was more about the area of effectiveness, the realism of the scene and the objects created, and the relationship between characters while progressing through each room. She stated she felt sad and uncomfortable walking through the environment in the shoes of the slave girl. She also recollected the looks and behaviours of the family, with the grandmother suffering and in pain, and the father looking much older than he should have done, while the girl looked emaciated. She also noticed the change of scenery from the kitchen to the triclinium. She commented positively on the realistic details, such as the bones on the floor next to the tables while people were eating, which immersed her in the environment and the storytelling.
Mr Juckette	Interest in the accuracy and detail of the area, calmer reaction to the environment losing sense of urgency and closer immersion due to the more detailed and	Unexpected and detached	He analysed and explored everything, and he declared that he had felt uncomfortable and well aware of the situation; he felt that despite being cartoonish, the girl felt real, her issues quite heavy-weight, with the allusions to physical abuse. He also picked up on a hidden storytelling element meant to trigger emotions of disgust and

	archaeologically sound reconstruction. Feeling of sorrow and anger due to the enslaved situation of the main character and the interactions with other characters. Attempting to solve the mystery and save the girl, exploring every conversation attempting to associate modern reactions to the girl such as answering back in anger, rebelling and not following orders as an emotive reaction to suppression and inevitability only to eel frustration when realising the truth.		uncomfortableness for the most fully immersed users. This was an observation by the girl, when looking at an object, which hinted at the master being physically attracted to her despite their ages, and that, as expected, triggered the above feelings. On the other hand, he barely remembered any conversations. He was disappointed that he could not get the girl into trouble through the set phrases in the triclinium, as he was curious to see how far the girl could get into trouble.
Dr Latkovskis	Feeling of sorrow and anger due to the enslaved situation of the main character and the interactions with other characters. Attempting to solve the mystery and save the girl, exploring every conversation attempting to associate modern reactions to the girl such as answering back in anger, rebelling and not following orders as an emotive reaction to suppression and inevitability only to eel frustration when realising the truth.	Unexpected positive feelings and relaxation with no empathy.	“My first reaction when I saw the options was one of terror, because I thought, ‘Oh, well, all these options are bad, and I'm about to get, you know, someone's going to erupt in anger.’ But then I realized the answer didn't match because she always said something different. I thought that was funny.” (Dr Latkovskis)
Mr Finkelstein	Feeling of sorrow and anger due to the enslaved situation of the main character and the interactions with other characters. Attempting to solve the mystery and save the girl, exploring every conversation attempting to associate modern reactions to the girl such as answering back in anger, rebelling and not following orders as an emotive reaction to suppression and inevitability only to eel frustration when realising the truth.	No	He felt it was an uncomfortable situation, with poor hopeless characters, especially in the slave quarters, where he remembered the dirty look of the water and the feeling of oppression and poverty. He also couldn’t remember the conversation with the grandmother, despite it being filled with emotive triggers. It seemed to have failed in its intended purpose, and he did not engage fully with the issues of representing dark heritage, or even the basic issues being represented in the three rooms; he stated that he was talking with the characters in order to get the key to the next area and progress, to satisfy his need to solve the mystery.

6.7 Scenes 9, 10 and 11

This particular set of scenes shown in Fig. 19-21 was not strictly related to archaeological work but was extended to social issues connected to cultural appropriation, the slave trade, the illegal antiquities trade, and illegal collections accumulated through family inheritance.

The setting is New Orleans around the 90s; this was intended to create a sense of nostalgia for some specific famous point-and-click adventure games of the period, and a sense of cultural depth due to the rich historical background this particular town has connected to dark heritage such as the slave trade, and how the imported cultures adapted to the area and changed the environment in distinctive ways.

Fig. 19 Screenshot of the apartment belonging to the main character with various distinctive collected cultural assets and hints towards the location.

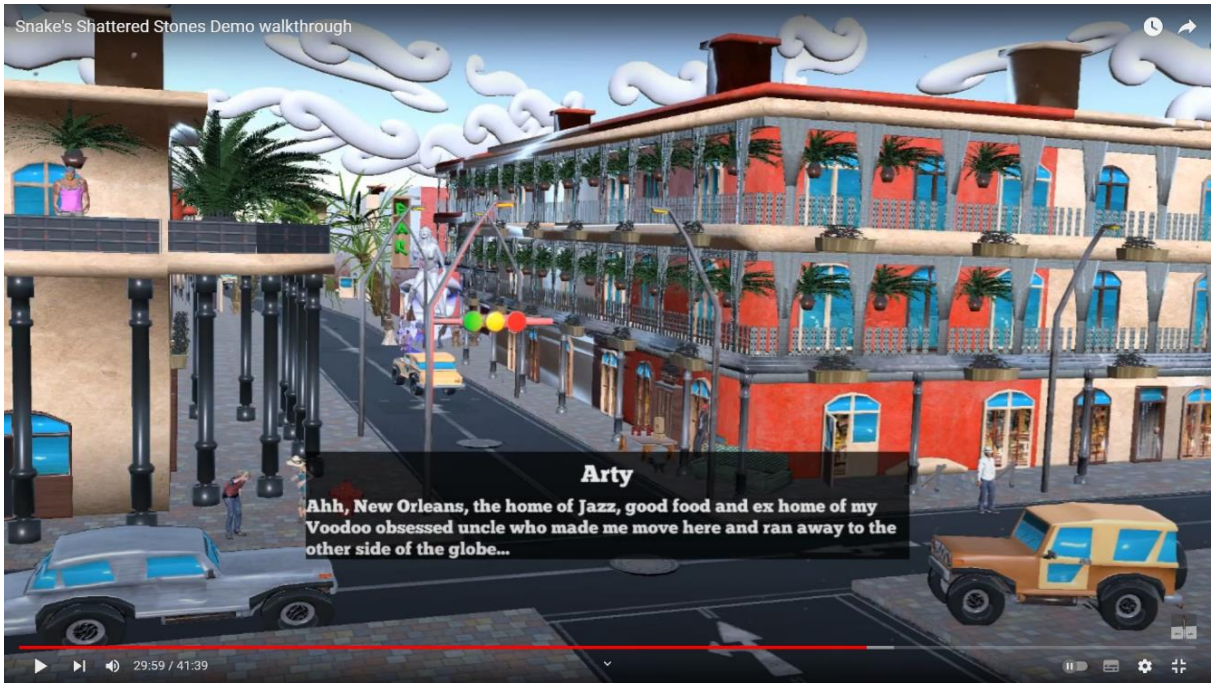


Fig. 20 Screenshot of a stylised reconstruction of Royal Street in New Orleans, featuring demonstrations in front of statues, illegal trade, and various triggers connected to heritage issues.

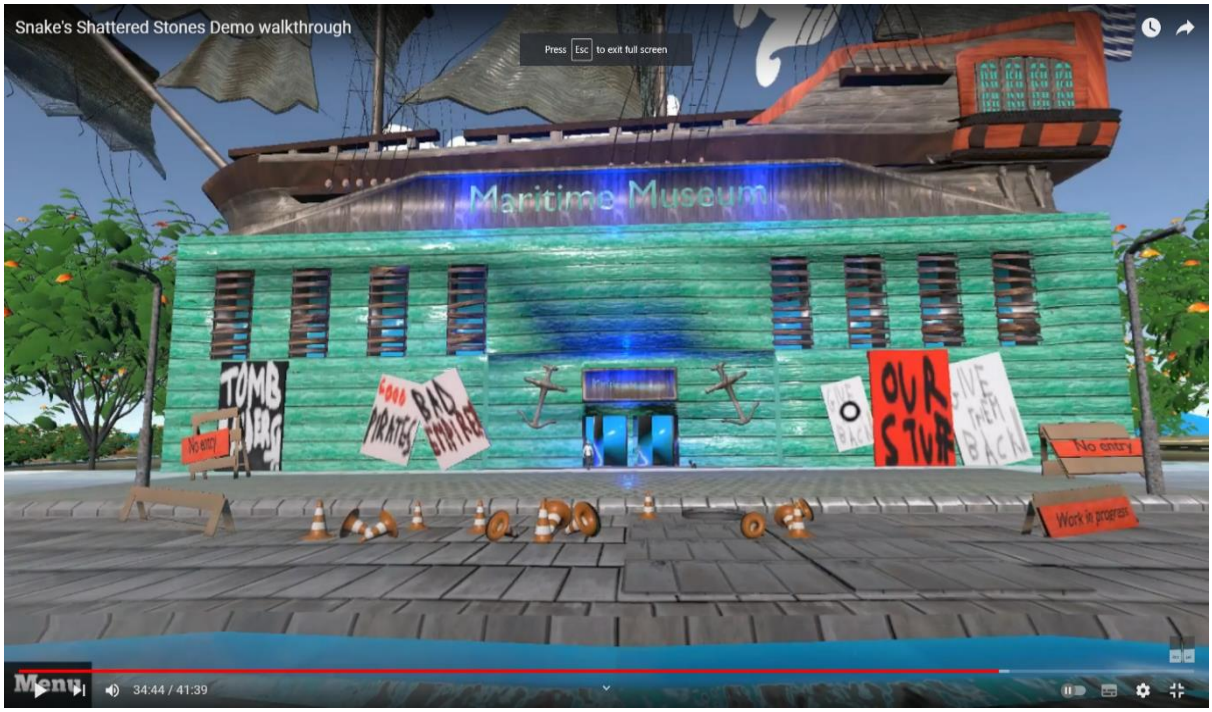


Fig. 21 Screenshot of the maritime museum, featuring protests involving cultural misappropriation and the controversial role of museums and archaeologists according to the public.

Here is the table of results:

User	Possible range of reactions	Triggered?	Reasoning given
Dr Poller	Annoyance, disdain for the illegal appropriation of artefacts, engagement with the capitulation of statues argument and annoyance at the cat character. Followed by interest in the different historical objects placed in the scenes and the setting itself in the town of New Orleans.	No	Stopped Playing
Dr Tringham	Annoyance, disdain for the illegal appropriation of artefacts, engagement with the capitulation of statues argument and annoyance at the cat character. Followed by interest in the different historical objects placed in the scenes and the setting itself in the town of New Orleans.	Yes	The triggers placed in the room were almost immediately spotted, and the reactions, unlike in the previous scenes, were in line with what was expected; the ringing phone and the cat caused annoyance, and the statuettes and the comments about them being collections stolen from other cultures did give a sense of disdain and anger towards those actions. The sense of mystery was also amplified through the cat now containing the soul of the enslaved person with whom the users had interacted during the previous scenes. When thinking about additional areas that could have been represented in this town, Dr Tringham suggested that the cemeteries, which are a significant feature, and an emotional one, would have been an excellent addition to the environment, and this, coincidentally, was something that the artist had intended to include in the game, but which had not been possible due to time constraints.
Mrs Finkelstein	Annoyance, disdain for the illegal appropriation of artefacts, engagement with the capitulation of statues argument and annoyance at the cat character. Followed by interest in the different historical objects placed in the scenes and the setting itself in the town of New Orleans.	Very light on annoyance but not many triggers affected her.	Commented on the familiarity and cosiness of the environment, giving few comments on the misappropriation of heritage that caused her some level of annoyance, she had positive feelings for the cat and did not go into many of the conversations, mainly describing the entertaining environments.
Miss Mazloumi	Annoyance, disdain for the illegal appropriation of artefacts, engagement with the capitulation of statues argument and annoyance at the cat character. Followed by interest in the different historical objects placed in the scenes and the	Partial, annoyance and anger triggered but not to the expected target and no nostalgia.	Commented on the illegal seller outside the apartment dealing with stolen antiquities, as this was something familiar and infuriating for her and added to the sense of anger the game was intended to engender, especially with users who were nearer culturally to this type of situation and the artefacts themselves.

	setting itself in the town of New Orleans.		
Dr McAllister	Emotive immersion, feeling of having to solve the mystery, comfort, and entertainment, followed by possible connection to archaeological debates in the public eye such as capitulation of statues with possible negative or complex emotion attached to it.	Partial	He felt they were light-hearted and had several interesting storytelling elements interconnected with movies and Easter eggs; he also has a particular interest in French culture, which was further triggered by the location represented in New Orleans which has a solid French connection in the US. He did not comment negatively on the ringing phone, nor on the illegal trade, the statue, or the elements of cultural misappropriation. He considered them to be part of immersive storytelling, and no more profound value was added to them.
Mrs Philippova	Emotive immersion, feeling of having to solve the mystery, comfort, and entertainment, followed by possible connection to archaeological debates in the public eye such as capitulation of statues with possible negative or complex emotion attached to it.	No	Annoyed by the ringing, took a very long time to figure out the puzzles, and generally had issues interacting with objects. Her general approach towards conversations and extra exploration options was to move forward and either ignore, or quickly glance over them. She had very little recollection of them, so very little emotive involvement apart from annoyance.
Dr Kasten	Annoyance, disdain for the illegal appropriation of artefacts, engagement with the capitulation of statues argument and annoyance at the cat character. Followed by interest in the different historical objects placed in the scenes and the setting itself in the town of New Orleans. Sense of familiarity and purpose with a mystery to solve and several easter eggs from the early 90's games to trigger feelings of nostalgia, such as the odd camera positions and the pixel hunting.	Partially, mostly related to gaming, no reaction on the archaeology debates.	Had a feeling recalling some of her earlier games, and automatically went into the "find clues" mode that she was used to; she did find that the phone ringing at the beginning of the scene triggering an emotive state of annoyance, and the room containing artefacts was uncomfortable in the sense that the artefacts were not supposed to be there. Nevertheless, her concentration was mainly on the feeling the environment was giving her, reminiscent of David Cage games, with emotive interactions to create ambience, something that the author was trying to avoid by placing more purpose in the actions themselves. In terms of specific emotive triggers, there was one in particular that worked well in the room, which was the unstable camera direction and the pixel-hunting model, widespread in the 90s, where the user would need to move in a specific area at a particular angle to be able to pick up the next clue or critical object. Dr Kasten did recognise this, and she did experience the feeling of familiarity this particular trigger was aimed at provoking. As for the conversations, such as the one next to the statue outside and the one with the seller, Dr Kasten had very little to say; she barely acknowledged them and did not go into detail.
Mr Juckette	Annoyance, disdain for the illegal appropriation of artefacts, engagement with the capitulation of statues argument and annoyance at the cat	Partial, annoyance and anger triggered but not to the expected	Declared that he was greatly angered and annoyed by the phone ringing, and could not figure out that the cat had it, due to the illogical situation, and that made him even more

	character. Followed by interest in the different historical objects placed in the scenes and the setting itself in the town of New Orleans. Sense of familiarity and purpose with a mystery to solve and several easter eggs from the early 90's games to trigger feelings of nostalgia, such as the odd camera positions and the pixel hunting.	target and no nostalgia.	annoyed, which was a positive result in terms of emotive trigger reaction.
Dr Latkovskis	Sense of familiarity and purpose with a mystery to solve and several easter eggs from the early 90's games to trigger feelings of nostalgia, such as the odd camera positions and the pixel hunting.	Partial, no nostalgia but feeling of immersion was there.	Had positive emotions and user experience in this scene; he considered the puzzles intriguing and did not use the walkthrough because he wanted to get through them himself using trial and error. He also stated that the extra objects with descriptions gave a good immersive feeling by telling the backstory of the main character. As for the scene on the street and in front of the museum, he did not dawdle there, but opted to head directly into the museum.
Mr Finkelstein	Sense of familiarity and purpose with a mystery to solve and several easter eggs from the early 90's games to trigger feelings of nostalgia, such as the odd camera positions and the pixel hunting.	No	Had very few emotive reactions. The fixed one was annoyance due to the phone puzzle at the beginning, but he gave little to no importance to the artefacts, he did not click on them, and when he went outside, he did not engage with the conversation in front of the statue or with the seller next door. He moved to the museum area and entered giving no attention to the posters and the state of the exterior of the museum. This was probably due to automatic immersion in the challenges of the game, he wanted to get through the story and solve the mystery for his own personal satisfaction and the details lost all interest for him.

6.8 Scenes 12, 13 and 14

This set of scenes shown in Fig. 22-24 takes place inside a museum setting, approaching another group of issues, such as the misappropriation of culture and problems with physical reconstruction in museums, and adding a Dan Brown-style mystery to the exploration, with a Steven King-level of fear and horror, including blinking lights, darkness, animatronics gone haywire and a killer which is difficult to see and is hunting in every room. The key emotive triggers were intended to be fear, uncomfortableness, anger, and mystery; in some cases, just as in every other scene, there should also have been a feeling of nostalgia, but the responses of all the users were quite different from the expected ones.

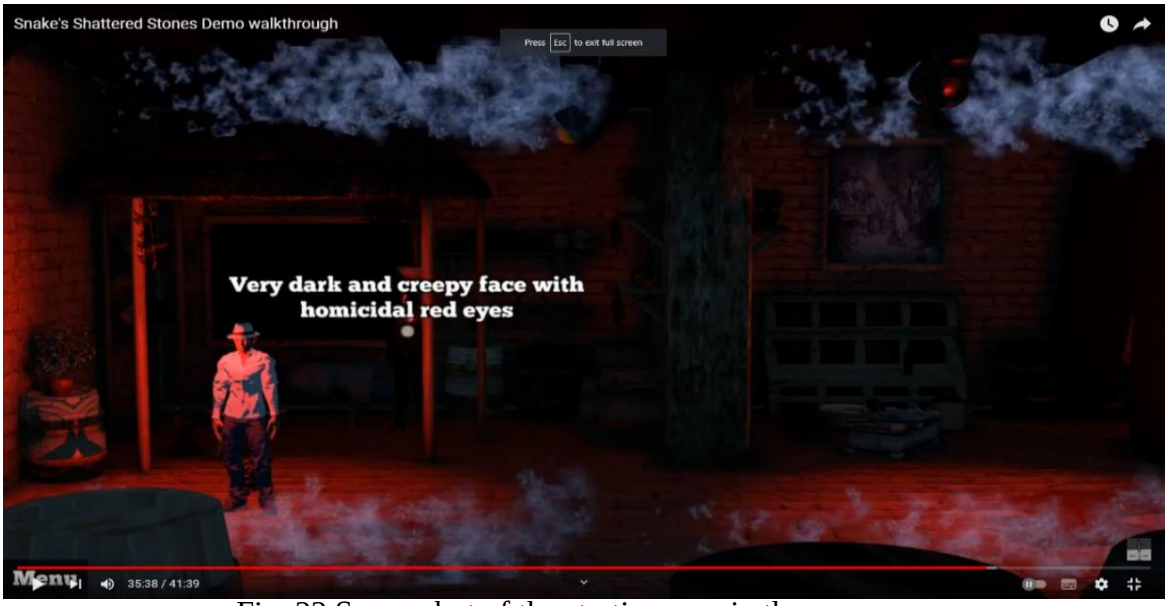


Fig. 22 Screenshot of the starting area in the museum.

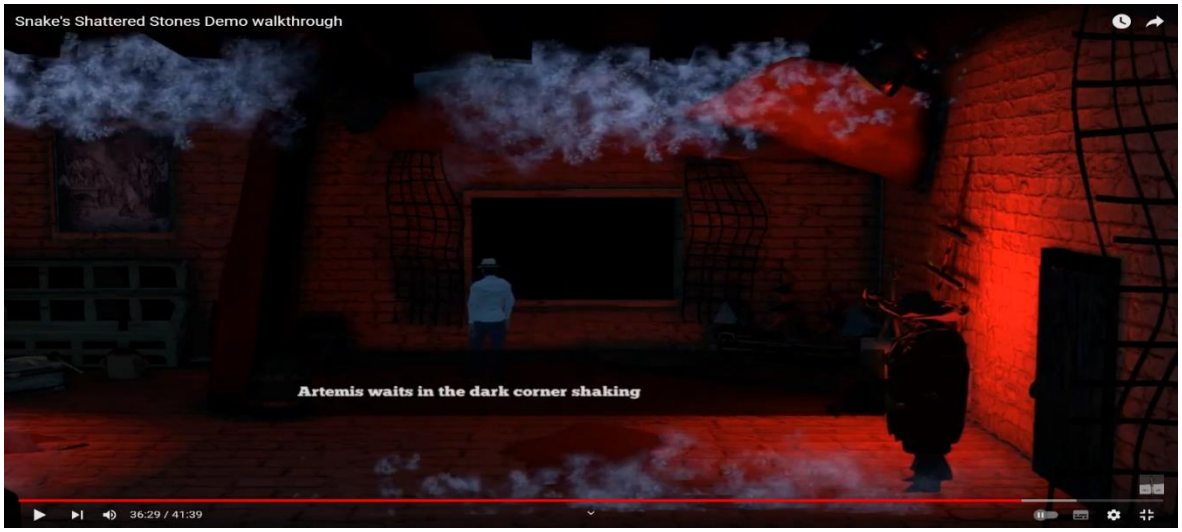


Fig. 23 Screenshot of the killer hunting in the museum.

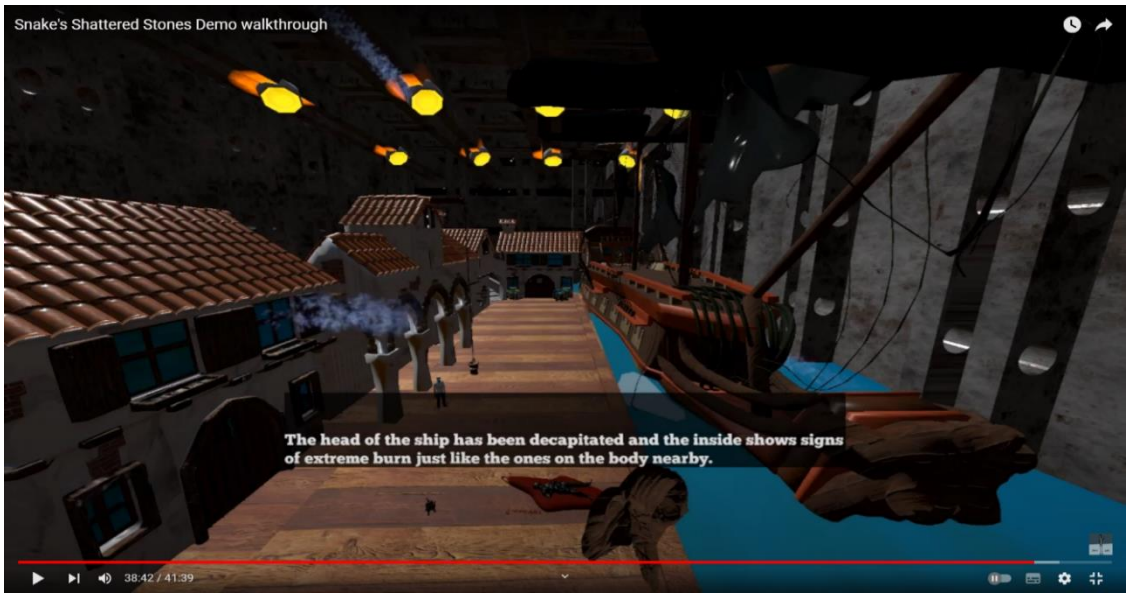


Fig. 24 Screenshot of the “Dan Brown inspired” scene in the museum.

Here is the table of results:

User	Possible range of reactions	Triggered?	Reasoning given
Dr Poller	Confusion, fear, annoyance to the lack of realism, mistreatment of human life, theft and damage in a museum.	No	Stopped Playing
Dr Tringham	Confusion, fear, annoyance to the lack of realism, mistreatment of human life, theft and damage in a museum.	No	The first reaction was to completely ignore any emotive triggers and to ask many questions, for example, why were the lights blinking? Why is there a pirate in the museum, and how is he connected to the rest of the story? Where is the cat? (The cat was in a corner in the dark.) And what is the significance of this scene in this setting? All of these questions were constantly being asked, but not once did she experience an emotive reaction; the possible reason for this that was discussed was the possibility that, as she was watching a video of the game as opposed to playing it, the lack of interactivity with the scene removed any chance of the sense of fear which was dependent on interaction with the environment, every time the game should have stopped her from moving to give a sense of helplessness, every time she had examined something, she would have received a short comment intended to increase the urgency and the danger. She did not experience these things due to the absence of such interactivity.
Mrs Finkelstein	Confusion, fear, annoyance to the lack of realism, mistreatment of human life, theft and damage in a museum.	Unexpected nostalgia	The most surprising reaction in the list was possibly that of Mrs Finkelstein, who did not mention fear or anxiety at all, but was astonished by the similarity and realism of the museum displays as compared to some Greek museums in Cyprus, which she described as messy and illogical, something that was mirrored in the one shown in this set of scenes. The purpose of such a chaotic display was to create a feeling of alien unfamiliarity mixed with realism that should have made the horror feeling stronger, as the uncomfortable situation of being in a slightly familiar but chaotic place would, in theory, have enhanced the storytelling and the connection with the audience.
Miss Mazloumi	Confusion, fear, annoyance to the lack of realism, mistreatment of human life, theft and damage in a museum.	No	Completely opposite reaction to this series of rooms; she felt disgusted and wanted to end the game; she did not get involved in the storytelling and assumed that she had to break more objects. In a clear statement that her level of hate for the situation from the start of the game was reaching its limit, she stated that, if offered the chance to continue beyond the murder scene in the museum, she would not, as the accumulation of negative

			emotions had made her lose interest in the story as a whole
Dr McAllister	Confusion, fear, enjoyment, and familiarity with movie tropes presented in the scenes especially reminiscing Davinci Code. Some level of Nostalgia developed through watching movies from the 80s and 90s.	Yes	Was curious about the situation and confused by the different triggers that were aimed at creating a sense of pure fear and terror. It was a detached reaction, as if he did not feel immersed at all, but entertained, like watching from the outside. He did become interested at the murder scene, which was pushing towards the mystery, and a need to overcome the instinctive fear the previous scenes should have caused. Therefore, in this case, the trigger worked well.
Mrs Philippova	Confusion, fear, enjoyment, and familiarity with movie tropes presented in the scenes especially reminiscing Davinci Code. Some level of Nostalgia developed through watching movies from the 80s and 90s.	No, more in line with immersed gamers.	She felt disgusted and fearful and did not want to continue with the scenes; she thought the monster at the end was scary enough to make her want to quit playing, and she did not enjoy it or want to interact with the environment.
Dr Kasten	Confusion, fear, annoyance to the lack of realism, mistreatment of human life, theft and damage in a museum. Nostalgia for earlier games, feeling of belonging, recollection of film tropes from 80's and 90's, feeling of urgency in solving puzzles faster. Feeling of mystery and disappointment for the cliffhanger situation at the end.	Yes	Her emotive responses were almost perfectly in line with the triggers placed; she felt a sense of danger and urgency as she entered the ruined museum, she felt fear due to the short pauses in movement control and the apparent lack of hiding places when faced with the killer. She said that the exploration factor of looking at different things in the background gave her an increased feeling of uncomfortableness that was a mixture of the fear surrounding the story and the superficial and inadequate way historical objects were displayed, filling both the emotive response requirement and addressing the issue of reconstruction and display in museums that can be offensive and inadequate for the cultures from which the objects were taken. Perceived the transition from danger and fear to a calmer environment, despite the threat still being around when entering the murder scene. The feeling of mystery was activated again by the position of the body and the clues that she had to investigate, completely deactivating the panic and fear effects of the previous room.
Mr Juckette	Confusion, fear, annoyance to the lack of realism, mistreatment of human life, theft and damage in a museum. Nostalgia for earlier games, feeling of belonging, recollection of film tropes from 80's and 90's, feeling of	Partially	Had a different emotional reaction, but in a different direction from what was expected. He declared that he felt the panic and urgency created by the red blinking lights, the screams, and the darkness, but it was not a panic created by fear itself; it was a panic created by the assumption that there would be a time limit before the game would make the user fail. The above was unexpected, as the main effort had gone into the creation of fear and horror; instead, it had accidentally created, for this particular user, the same situation as the desert scene, which had

	urgency in solving puzzles faster. Feeling of mystery and disappointment for the cliffhanger situation at the end.		been intentionally designed to give a sense of urgency to the fear of failure. The other surprising emotion described by Mr Juckette was the feeling of disappointment when finding the dead body at the end of the museum. He did not feel disgust or horror.
Dr Latkovskis	Nostalgia for earlier games, feeling of belonging, recollection of film tropes from 80's and 90's, feeling of urgency in solving puzzles faster. Feeling of mystery and disappointment for the cliffhanger situation at the end.	No	He did not fully engage with the horror part, but he did feel a sense of urgency. Towards the end, he did want to continue the game, but he had a sense of disappointment at the abrupt ending, which was one of the triggers intended for that particular point.
Mr Finkelstein	Nostalgia for earlier games, feeling of belonging, recollection of film tropes from 80's and 90's, feeling of urgency in solving puzzles faster. Feeling of mystery and disappointment for the cliffhanger situation at the end.	No	He did not concentrate at all on the horror. He did recognise the emotive aspect of the scene and what it was trying to evoke, but he took his time, not giving in to the urgency caused by the music, which encouraged a faster pace. The most interesting observation he made was the inability to fully engage with the fear and urgency factor due to the triggers being text based; he said that if there had been footsteps, screams, and the voices had been audio, and not written, it would probably have had a more substantial effect on him

6.9 Summary

The above analysis went into a substantial and detailed explanation of what each user experienced when using the game, and their most essential comments on the different triggers and important topics covered, this was mainly descriptive of their experience, and in the next chapter, the results will be interpreted in depth, attempting to explain how all this connects to the initial aims of the investigation, and how it may answer some of the core questions of this project.

Chapter 7

Interpretation of the archaeogame results

Chapter 7 was dedicated to the direct analysis of each participant through each scene played, attempting to show, in a primarily descriptive manner, what happened when any of the emotive triggers was encountered, but it contained mainly a limited set of rough data in need of further interpretation.

The following interpretation is a final summary of the different sets of data accumulated empirically from the user testing of the archaeogame.

In this chapter, the data has been simplified and interpreted so that the main areas of interest can be easily identified and compared with the expected results extrapolated from the initial interviews from Chapter 3, attempting to extrapolate theoretical findings and possible new theories.

The evaluation, interpretations, and conclusions throughout this chapter will be based on comparisons with storytelling research in games, the limited literature available, and a mix of narrative analysis and framework analysis (Smith 2000, 313-335, Furber 2010, 97-100) present within a previously tested method of empirically evaluating the effectiveness of the storytelling content (Gong *et al.* 2018, 30-45), combined with the emotive literature explored in the previous chapters.

The reason for this combination is that the original work by Gong was based on engineering and artificial intelligence work, focusing mainly on empirical results; this needed to be modified from the original formula to concentrate more clearly on human emotion and reaction to emotive storytelling.

The testing method will be based on an 11-factor process given by identifiable terms set out in the AI-focused research preformed by Gong (Gong *et al.* 2018, 30-45):

- Engage and explore combined with emotive immersion.
- Scriptwriting focused on how the user emotionally connected with the characters and how the logical thinking of the characters was either attractive or not to the user.

- Distance from reality, and how the world and the story did or did not emotionally affect the user in terms of how near to the story they felt, or how disconnected and outlandish the story felt to them.
- The ability to have autonomy or not and the illusion of freedom in the actions and whether this led to an emotive reaction by the user or not.
- The values of the characters, and how they aligned with or differed from the user's own, and the emotive effect this had on the user.
- Identifying the presence of empathy and how the user connected empathetically with concepts, characters, or parts of the story, or how this did not affect them emotionally.
- Analysing the presence of competitiveness and how the situation emotionally influenced the user to continue doing things faster, or did not, depending on the emotive reaction caused by the game in terms of story.
- Multiple-challenge levels related to how the different backgrounds and skills influenced the user to have a different approach to the game and how much of those skills and knowledge they used to aid their understanding of the situation, and how this emotionally influenced them when it worked or did not.
- Investigating the sense of power, control, or loss of power in different situations in the game, and how this caused emotive responses such as fear, fun, or annoyance, depending on the user.
- Physical features of the characters and how this influenced the attitude of the users towards them, as previously investigated by Gong. For example, an extensive list of attributes, including, but not limited to, emaciated, frail, in pain, overfed, rich, and attractive.
- Familiarity and how the familiarity with events or areas in the game caused nostalgic feelings.

The interpretation will attempt to compare, and contrast expected results with the unexpected, explore the effectiveness of the game design as a plausible means to provoke emotive triggers and extract new theories that may be used in the future to further the study of what started with the results of the interviews of the authors of relevant literature.

7.1 Scene 1

The initial scene was a short splash screen image, which it was expected would be difficult to use to provoke emotions. Nevertheless, there was a theory attached to it, and some notable reactions unfolded. As expected, some of the users who were more used to gaming, or had previous gaming experience, did react instinctively to it, and had an immediate sense of nostalgia as the scene unfolded, while the most unexpected reaction was also from an experienced gamer who did not have any nostalgic response to the logo.

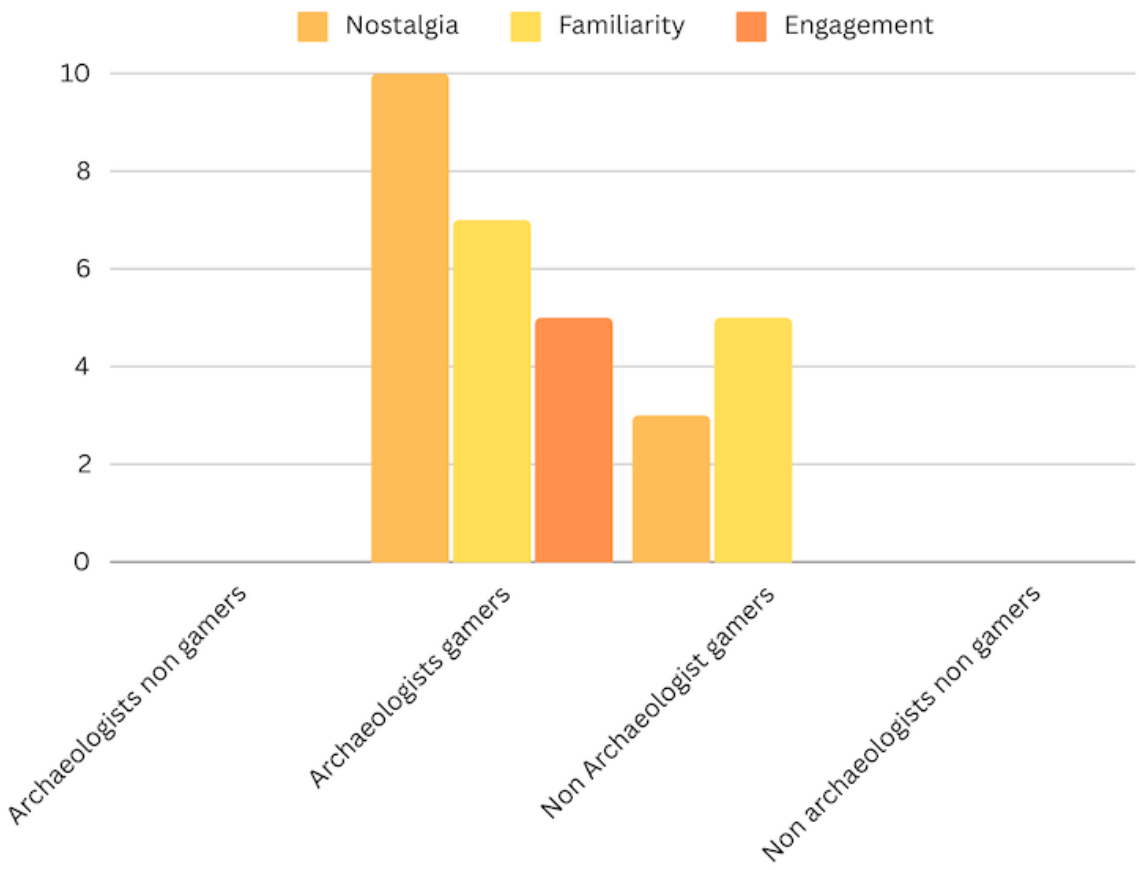


Fig. 25 Trademark emotive triggers effectiveness.

The summarised data in the table in Fig. 25 shows an apparent lack of reaction from non-gamers; in terms of non-archaeologists, there were instances where these users had played some games at some point, hence the familiarity and, to a certain extent, nostalgia due to past experiences that may have been related to the moment they were playing the games, or just to that time period, without an actual relationship with the game in terms of memory and nostalgia.

The archaeologist-gamers were the most reactive to this trigger; they engaged and felt anticipation due to the memories of such logos, and experienced nostalgia and familiarity directly related to the games these logos were associated with.

The simple conclusive analysis of this scene in terms of emotive trigger success was a focus on familiarity. It worked with the people who were familiar with the images, but not at all with others, and therefore it seems that the nostalgic trigger was dependant on a specific experience, which may not be relevant to people who play games nowadays and who were not born before the early 2000s. In this case, the trigger was partially successful, as it provoked nostalgia as a critical emotion in this study. However, it may benefit from a more comprehensive background contextual representation in future research.

7.2 Scene 2

Scene 2 was represented by a menu containing some elements of storytelling; the expected reactions of the users were, anticipation, curiosity, nostalgic association with 90s games and possibly nostalgia related to specific types or genres of games. This scene was designed following the same criteria as older commercial point-and-click adventure games that implemented design theories related to nostalgia and immersion.

By following the presence of nostalgia in games associated with topics such as childhood memories and the immersion in games themselves (Taylor & Whalen 2008, 50-68), the hope was that the scene should have triggered, at least in the users with previous game experience, a certain level of emotive reaction related to nostalgia.

In the case of archaeologists, the expected response was intended to be a colonialist negative association associated to ethical values expected in archaeogaming (Reinhard 2017, 21-30), or more specifically, in the case of archaeologists with knowledge about the particular objects in the scene, a negative association aimed at destroying heritage by war and terrorism and colonialisation with appropriation of cultural heritage (Taylor & Whalen 2008, 126-144). The surprising result was instead a complete lack of reaction, or an opposite, un-associated series of responses.

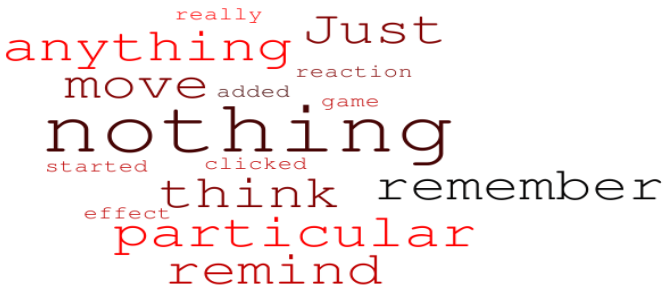


Fig. 26 Nostalgia and negative association**.**

The word cloud in Fig. 26 shows that this particular scene did not provoke substantial emotive reactions; the non-archaeologists and non-gamers were the only affected group. They essentially felt that the menu was a waste of time and it frustrated them; they wanted to get on with the game. Therefore, it did not provoke nostalgia or association with past experiences, contrary to what was expected following the nostalgia theories based on previous experiences in gaming (Taylor & Whalen 2008, 126-144).

Fig. 27 Main menu.

Overall, the main menu did not perform, or activate the intended emotions, as expected. A feeling of mystery and anticipation due to the collage of curious objects was developed,

but feelings of nostalgia and negative emotions towards some of the objects, such as piracy of the Al'Lat statue from Palmyra Fig. 27 which ISIS destroyed was not perceived at all, apart from slight allusions to nostalgia by non-archaeologists/non-gamers, possibly due to insufficient cultural proximity and an emotive connection to older movies or personal experiences that associated the images to an earlier time in their lives (Taylor & Whalen 2008, 126-144).

It would have been interesting to see people's reactions to the affected areas, but the menu performed short of the intended result in this case. On the other hand, this showed the need for user to have a particular cultural background in order to experience negative emotional triggers from specific objects, still confirming a previous hypothesis.

7.3 Scene 3

Scene three was one of the most controversial; it implied a level of discomfort, a topic that was challenging to depict, dealing with the stereotypical depiction of ancient societies in the early days of colonialism and as popularly shown in films. The scene was meant as an explanatory preamble to what the main character would look for in the game, and some background story to the McGuffin reinforcing player identity and giving context to the narrative using methods described in terms of gaming narrative design (Smith & Worch 2010).

It was intentionally modelled after one of the scenes in "Indiana Jones and the Temple of Doom", which contained several controversial issues. It did, therefore, encapsulate the emotive triggers intended. The users were expected to react with uncomfortableness, disgust, or hatred for both the depiction and content; they were supposed to empathise with the victim and be intrigued by the mystery encased in the storytelling.

The reactions in terms of storytelling and underlying negative association with the characters' actions went relatively unnoticed; most users ignored the situation, did not comment on the speech of the accuser, and did not comment on the generalised depiction of the culture with its unreasonably illogical traits.

A possible explanation for this lack of connection might have been the fact that none of the participants had ever been in such a situation or might have not seen it by chance, but in general they could not associate any life experience closely enough to provoke the connection depicted by Briscoe "We see our life through the story we tell ourselves" (Pinchbeck 2012); inevitably resulting in a failure of the emotive trigger due to their lives never having experienced such a story on themselves.

Some users even stated that they did not read any of the conversations, partially blaming it on the lack of voice acting, which was one of the significant limitations of this experiment, and partially on the lack of interest in general in reading; they wanted to get into the action immediately and had little interest in the storytelling at this particular point.

But one aspect which seemed to be universally agreed on was the dislike for the transparent people, an analogy to the transparent walls used to show uncertainty in archaeology that took over the whole conversation when interviewing users about this particular scene.

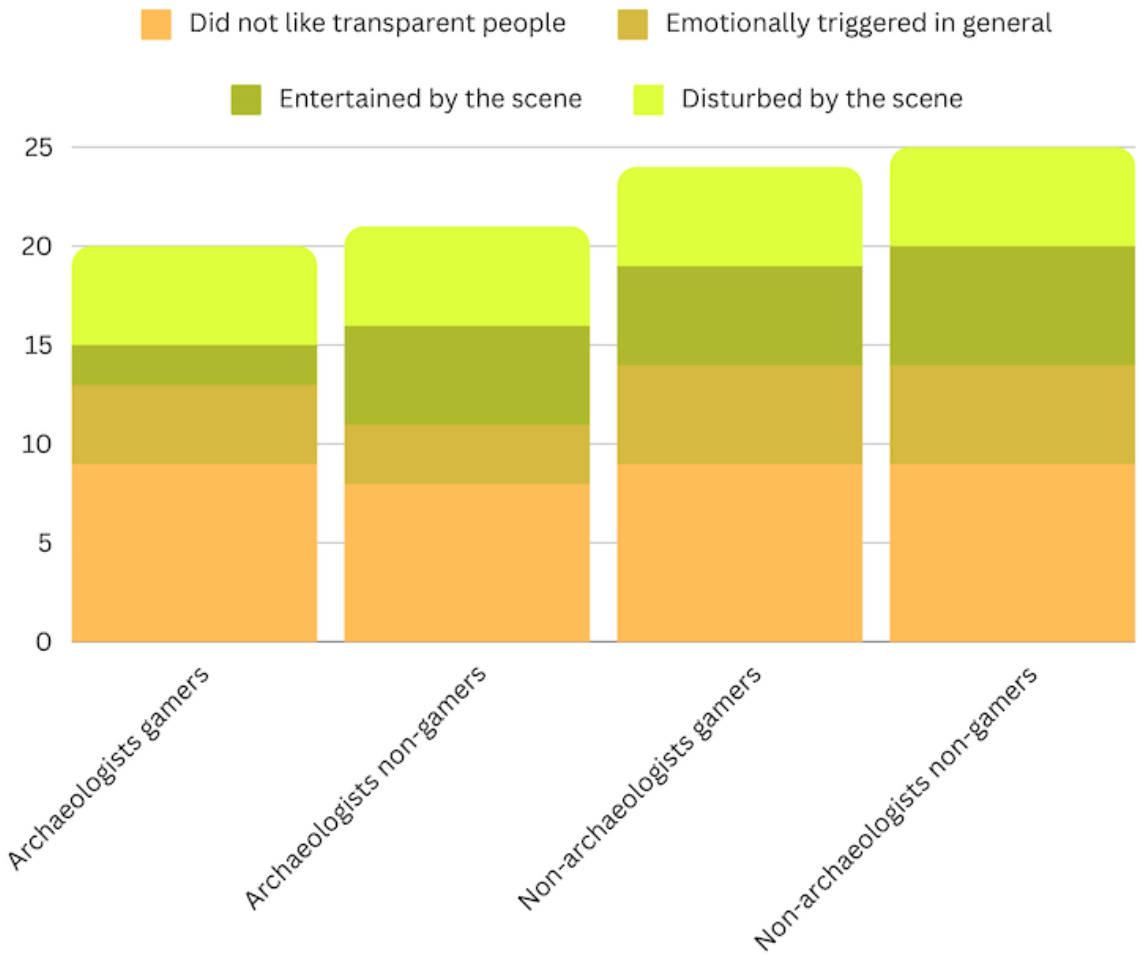


Fig. 28 Emotive trigger responses for ceremony scene.

The graph in Fig. 28 shows an apparent dislike of the transparent people, considered distracting or unappealing, as they took the user out of the storytelling involvement. The emotionally triggered users were limited to less than half the group, as archaeologists were not intrigued or pulled in by the storytelling, and just waited for the next scene to start, and in terms of disturbance, there was a general feeling of disassociation with some limited engagement, therefore it did not provoke a strong reaction.

Slightly more than half of the users were entertained by the scene. They identified its origin in the film industry, possibly provoking a slight nostalgia associated with this scene. But overall, the only conclusive, solid result was the dislike of the transparent people Fig. 29, showing an apparent issue with the transparent walls technique adopted by archaeology.

Transparent characters distracting **Long text** **Cinematic generalisation.**

Fig. 29 Start cutscene in the temple.

This result was mixed and seemed to be entirely individual, not related to knowledge in archaeology or experience in gaming; the underlying drive for different emotions and different reactions to the triggers was based more on whether the people being interviewed did or did not enjoy certain types of movies; while between gamers, who were the ones who should have been more emotionally affected, the reactions were opposite to each other, possibly because it was specific to the type of game each one was more interested in. Mr Juckette was emotionally unattached due to his use of fast-paced action games with an emphasis on fast progression, while Kasten was more in line in terms of appreciation with the point-and-click adventure-style games, which give preference to exploration and immersive narrative at a slower and more analytical level.

But it was clear that most users, regardless of their background or expertise, considered the transparent people to be something distracting that made them lose their immersion. This was in line with the reaction of loss of interest in the narrative and disconnection from the game resulting in general confusion. The level of detachment and loss of immersion was also aided by the lack of active interactive puzzles (Ermi & Mäyrä 2005,

1-14, Przybylski 2010, 161), resulting in assumptions unrelated to the intended effect the designer of the game wanted to provoke.

Half of the users, regardless of their background, found the scene disturbing. In contrast, the other half ignored the challenging topic or found the scene entertaining, showing polar opposite reactions.

7.4 Scene 4

Overall, the results of the fourth scene were much more populated and produced many more hypothesis on the cause of the emotional reactions as opposed to the effectiveness of the emotional triggers. The triggers did work in one way or another with all the users, and mainly caused the expected emotional reactions, except for more logically oriented users, who preferred investigating the reason behind the triggers to letting themselves be affected by them, but even in this case the users did prove the success of the game design by going step by step through the requirements of a game being logical and effective avoiding confusion and lack of interconnectivity in the puzzle (Smith & Worch 2010).

In some instances, the users were distracted by the mismatch between the dramatic urgency of the bombing happening in the scene, and the happy, upbeat music used as a background; this was also set to a high volume to increase its emphasis. The users at times complained about this or felt offence at the light-hearted beat associated with a personal attachment to some of the structures, such as the case of Miss Mazloumi, who was infuriated by the situation and did also notice a mistake in the text, showing a high level of criticism and immersion in the scene, as expected by the designer.

This particular scene in Fig. 31 did not display differences in reactions depending on the backgrounds of gamers, non-gamers, and archaeologists. It produced an amalgamation of reactions in line with the expected ones, regardless of the professional or hobby-type background of the users.

But the most significant discovery in this section was the complete mismatch between why people felt distinctive emotions, and what type of background had been predicted to cause each emotional reaction in the different users. Gamers and people without archaeological backgrounds were more detached and their interest was based on self-defined challenges, while archaeologists with less game experience were less logical and more emotionally affected by events than might be expected from the simple attachment to history, they should naturally have had due to their profession.

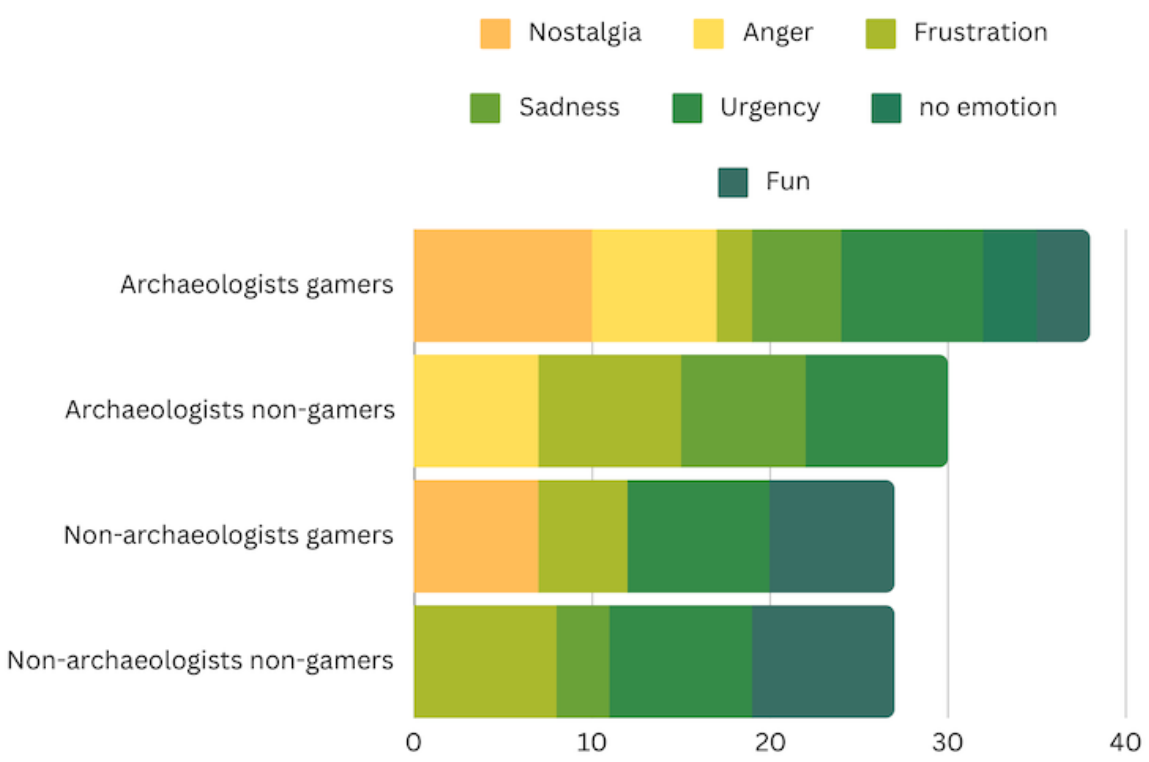


Fig. 30 Emotive reactions in terms of specific emotion.

There was a sense of randomness about the reactions in the above scene. When consulting the graph shown in Fig. 30, it is clear to see that the levels of fun, anger, frustration, and nostalgia were varied and unrelated to the specific context given by the game.

This was more related to personal experiences, whereas urgency, on the other hand, was the most effective trigger, as it did not vary regardless of the background of the user, and therefore the emotive trigger did work as expected. One particular trigger that piqued interest was the no-emotion one; it showed that in rare cases, some users detach themselves from the story and mechanically play the game with no emotive association or contextual storytelling reactions.

This reaction although unexpected was still in line with emotive triggers associated with nostalgia, and resulted in the user associating the game to something personal that was not necessarily connected to the game itself. The situation in the scene was associated by the user to subjective unrelated situations, making the resulting reaction completely unpredictable and not controllable. The user's emotive personal association was the deciding factor on their emotive reaction and nothing to do with the designer's intentions (Taylor & Whalen 2008, 31-50)

Fire burning the area and bombs destruction.

Dramatic famous temple

Fig. 31 Desert scene.

The conclusion from the data in Fig. 30 is that, contrary to the expectations in the initial assumption, it is not just passion for a profession or habit, or passion for the games that influence the emotive attachment and empathetic reactions, but it is something more complex, something to do with the user's personal background, subjective to the person, and, at times, with how the story itself interacts with the user, regardless of their experience.

7.5 Scene 5

Scene five was intended to be the most emotive in terms of sadness, calmness, and uncomfortableness so far; the triggers were aimed at causing a conflict of interest and moral debate within the users and gave a combined feeling of inevitability and destruction, which should have triggered all the negative emotions associated with such environment. The other aspect that should have been triggered was a nostalgia for similar games for those users with gaming experience, and a compulsive immersion following the intricate mystery surrounding the underground area.

Some of the aspects of the scene, such as the background of the people buried in the grave and the facts surrounding their death, connected to the gems placed in odd places on the skeletons, were supposed to make the users interact and immerse themselves in the story, reading every detail and attempting to connect the issues presented to solve the puzzle and progress in the narrative, encouraged by this sense of mystery.

The scene was relatively calm, and the music and ambient sound were tuned to support this feeling, which was quite a success in some cases, given the high score in this type of emotion. At the same time, it was supposed to entertain the gamers and disturb the archaeologists, something that was in line with the predicted results, but only in the field of entertainment. Surprisingly, many archaeologist users also felt entertained, and showed little to no empathy towards the skeletons, despite the precise description of one of them being a girl barely out of her teens, and the fact that most of them showed clear signs of distress at time of death.

Another surprising result was the complete lack of attachment to archaeological morals, the breaking of the skeletons and destruction of cultural heritage by the main character was mainly overlooked, or even carried out with a feeling of entertainment and fun, even by the archaeologists amongst the users; which may point towards the fact that in a fictional scenario they may have forgone moral and emotive attachment and allowed themselves to experiment with the environment in ways that would not be agreeable in the real world.

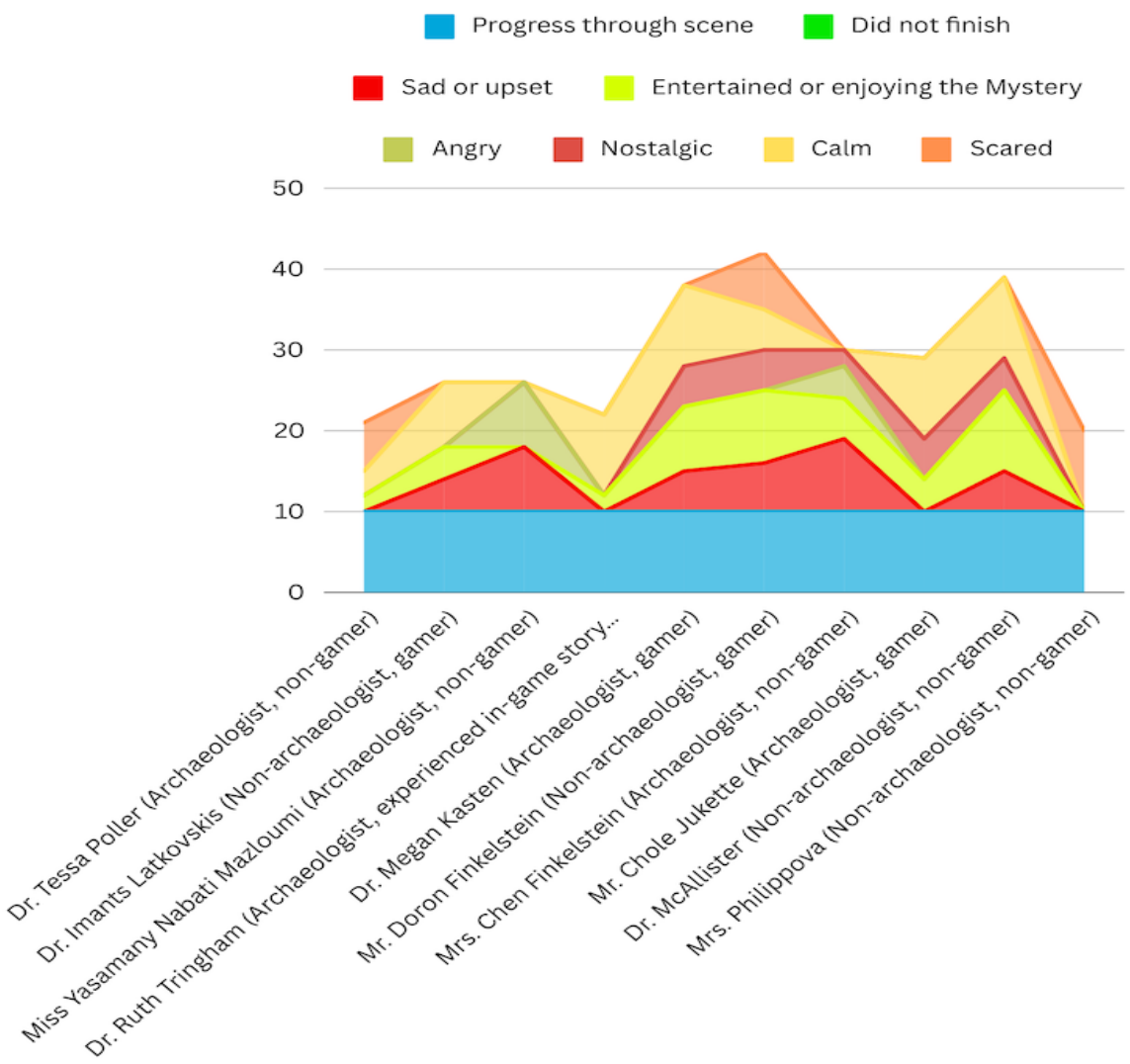


Fig. 32 Emotive responses per user and levels of reaction.

The graph in Fig. 32 shows that everyone progressed through the scene, and there were no users who gave up on this due to frustration; on the other hand, there was very little fear or uncomfortable emotive response related to the scene, only two users had a medium reaction in terms of anxiety and uncomfortableness and only one a strong response that may have been linked to personal experience. Nostalgia was inconclusive, as half of the users did not react, while the other half did, but only with a moderately low level nostalgic response.

Entertainment was, on average, the most mentioned aspect, as most users were entertained, and only one was not. However, this was related to cultural proximity and an expected reaction. As expected, the non-entertained individual was also triggered in anger, enforcing the assumption of cultural proximity.

The anger trigger was not mentioned in any form, apart from another culturally proximate user who associated some of these interactions with something in her home country, again showing that cultural proximity is a decisive factor. Lastly, regarding sadness, this trigger was quite random; it may have revealed a personal life experience association; some users

had a strong reaction, others had none, and others were moderately triggered, making it an inconclusive but interesting result.

Skeleton destruction by character **Cold light and subtle environment**

Fig. 33 Catacomb.

Overall, this scene shown in Fig. 33 was one of the most interesting ones in terms of showing the subjectivity of interpretation and the vast difference in the emotive reactions of users.

They did all have one or more reactions as expected by the designer, but through the analysis of how they experienced these reactions, it became evident that it is not just the choice given and the stress level in the situation that provokes the emotive responses, but also the power of the interactivity in gaming storytelling that allows this back and forth development of broader and more fleshed out emotive experiences attached to a seemingly light storytelling script.

This is something that could not happen if the storytelling was not emotional enough, or if it was giving too many choices or too much of a written narrative, as opposed to being a narrative driven by the environment and the actors within the environment.

Therefore, the realisation and the theory development is that the power of storytelling in archaeogaming is not the interactivity within the game, or the ability to see different theoretical choices and experience the result; it is the possibility of building the perception of the environment, the history, and the interpretation from one's own perspective. There

is no need for narrative branching; all that is needed is a story with a baseline, and a few triggers which are both emotional and immersive in the sense of narrative. Then the user can create a narrative using their own background to attach to the experience.

7.6 Scenes 6 to 8

This set of scenes was focused on the strong expectation of an emotive response of empathy for a segregated, mistreated part of society in the Roman Empire, based on their system of slavery and amplified in level of suffering through assumptions of the thoughts some enslaved people might have had during Roman rule.

The word assumption here is critical, as there is no easy way to understand or verify what was going on in the enslaved person's mind when working for different masters. These may have varied in behaviour from a moderate employer style of behaviour to a familial style, due to the possibility of marrying out of slavery or paying oneself out of it through work, or even to sadism and inhuman treatment.

The line of environmental feeling in this series of scenes was an extreme mistreatment of humans, emphasised by an explanatory series of texts and a high level of cruelty from the masters and the nobles. The scenes culminate with a final one where the user has the choice of answering back to the nobles, and the result is inevitably a lack of reaction, regardless of the answer, attempting to give the user a feeling of helplessness.

The design of these scenes was based on the attempt to make an emotive connection between events in the past, cultures in the past and cultural context of the present, applying modern values to the past to understand it in the eyes of the present; essentially covering the principles of learning from the past to understand the present in emotive terms (Taylor & Whalen 2008, 126-144).

The emphasis was based on the assumption that the users would have read the text and explored the area, or at least felt sad and empathetic towards the enslaved people, but the user's reactions were surprising in many cases.

There was a very low level of anger and a high level of entertainment, positive enjoyment of the scenes, and a lack of interest in the text to the point that the users did not remember any of it and considered it over-the-top, sad and in a sense not realistic. In one particular instance, one of the users attempted to provoke emotional distress and get the main character killed out of simple curiosity about how, and if, that would happen and why, which was quite a surprising reaction given the ethical nature of the users.

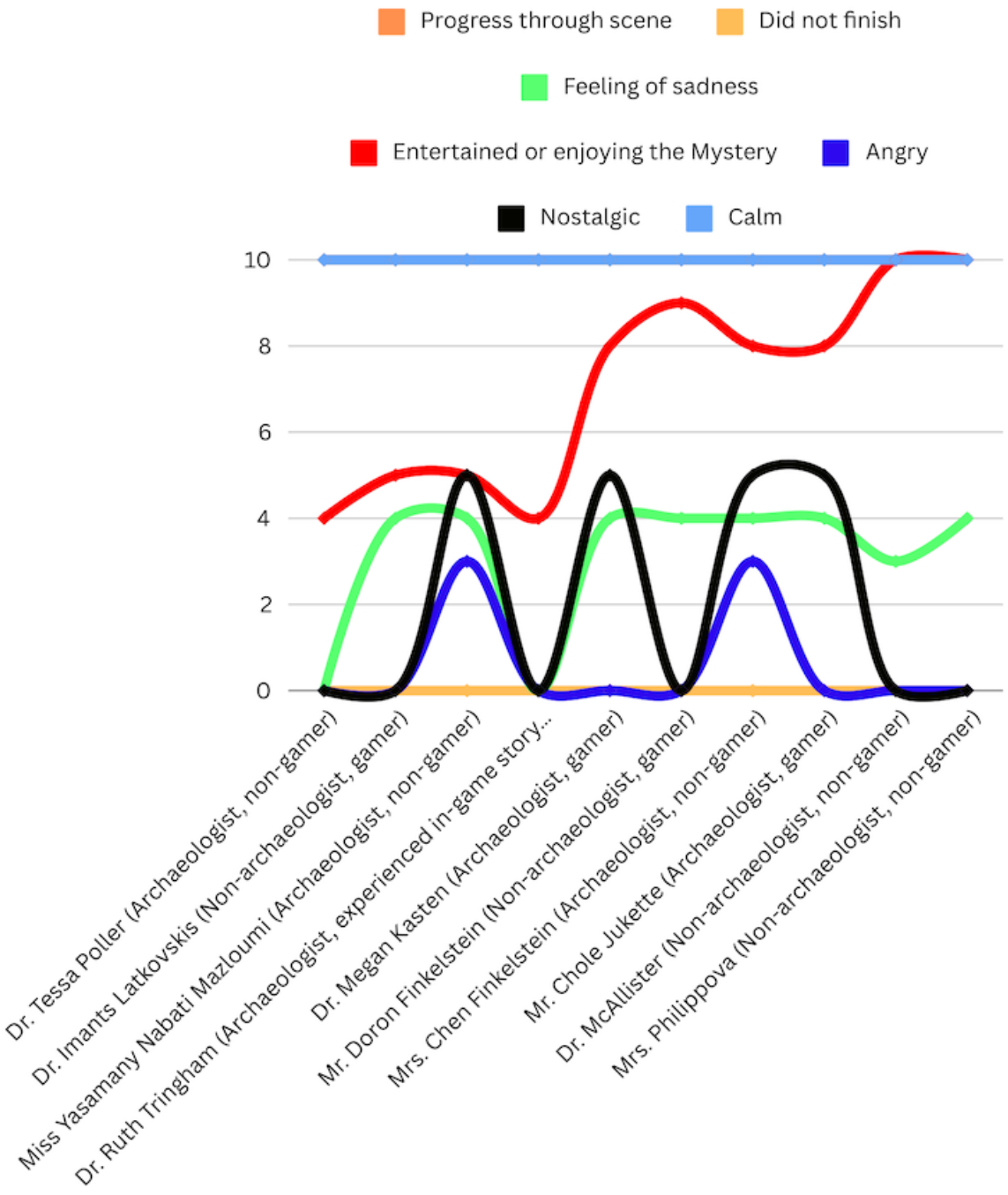


Fig. 34 Emotive responses per user and levels of reaction.

The graph in Fig. 34 shows how the series of scenes aligned with the deeper issues embedded in the game that the author aimed to address. It was a successful result for the experiment that one of the users recognised this subtle emotive trigger connected to a more significant archaeological issue, not necessarily to the storytelling itself.

Overall, scenes six to eight gave some surprising results, the first being that there was no real empathetic, emotive attachment to the characters, despite the various representations of dark heritage, especially when it came to the expert archaeologists. The second was the

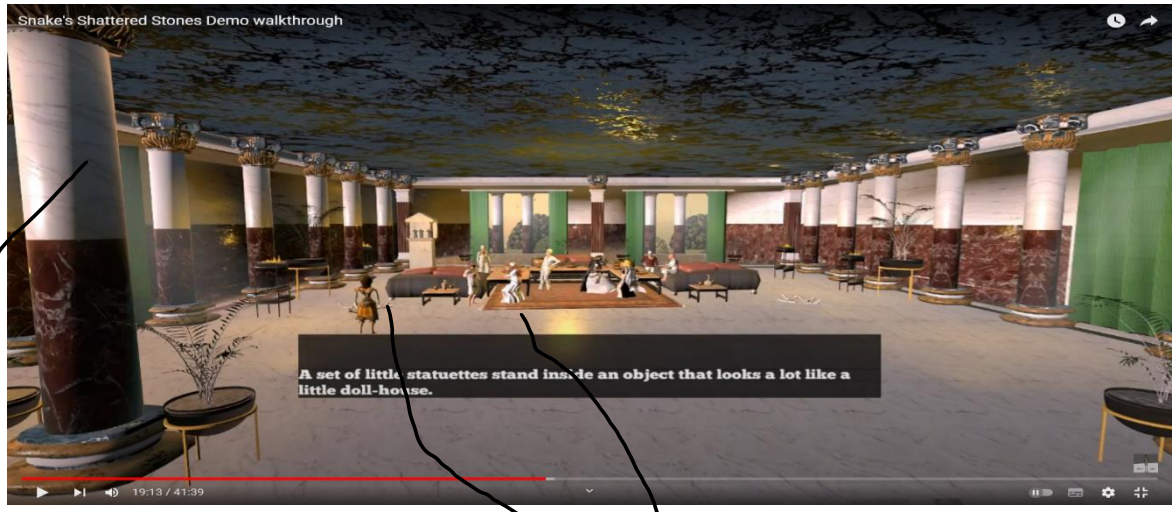
discovery that dialogues were not noticed or made minimal impact on the immersion and the investigation into the mystery.

Another interesting observation was the continuous decrease in emotive attachment and response, followed by a mechanical escape room interaction where all objects and people were important as keys to open a door, but they started losing emotive appeal.

Descriptions of abuse **Visible extreme poverty** **Continuation of sad, colder lighting**

Fig. 35 Slave quarters.

Some stronger emotive triggers based on values rejected by today's society and rarely shown, for example, child abuse as part of slavery, seemed to have an effect regardless of the users' immersion in the storytelling; while some other aspects, like the emotions expected by the author as the users explore the detailed environments, were surprisingly put into question, and may require further study.



Visible difference in wealth and style **Unappealing characters** **Contrast with the enslaved person**

Fig. 36 Triclinium.

The overall results were comparatively more linear and similar between the different users interviewed, regardless of their background, with a couple of exceptions, such as Tringham and Poller, and a constant represented by the calmness level. The linearity of such results is easily identifiable in the graph below and was unexpected due to the different contextual triggers involved in these three scenes.

Interesting points about the reactions represented in the graph were the feelings of anger and nostalgia, which seemed to follow each other in terms of trigger, despite being technically opposite: one longing for the past and one despising the actions in the past represented in the scene. There may be a correlation between attachment to some past events and the anger triggered by showing uncomfortable issues described in such a time.

7.7 Scenes 9 to 11

This series of scenes was based on a series of simple puzzle designs following the criteria set up in the literature that pointed out at the need for a successful puzzle design to have logical mechanics, that make the puzzle function without glitches, a catch represented by making the puzzle more complicated to allow a level of satisfaction for the sure once the solution is obtained through the realisation stage of the solving of the puzzle (Brown 2018).

The presentation and the curve principles, one being based on giving some obvious triggers while hiding others and presenting the puzzles in a series of events that start from

easy ending in the most difficult ones were also implemented in the scenes (Brown 2018), showing the effectiveness in gaming of these puzzles and the possibility of seamlessly placing them into archaeogaming (Hageneuer 2021, 631) and as a result into serious games (Laamarti & Saddik 2014, 11).

An interesting and strong emotive reaction came from Mrs Finkelstein; she said that seeing all the artefacts in the main character's room, compared to all the following scenes, was the thing that triggered her the most, and this was in line with the theory that personal experiences can cause triggers and amplify them much more.

In her case, she said this scene was very common in Israel, where some archaeologists would have their own private museum at home, with artefacts taken away from dig sites and displayed for their enjoyment at home, to show to guests.

The above struck a chord in her because as an archaeologist she did not condone the practice, and in fact she hated it. This representation, which was supposed to trigger annoyance in archaeologists, and the hints towards the adventurer-archaeologist which increased her annoyance at the stereotype, led to a situation where she felt uncontrollable intense anger and was seriously upset by it. As this emotion took over, it was also curious to observe how all the other triggers were ignored completely until she entered the museum.

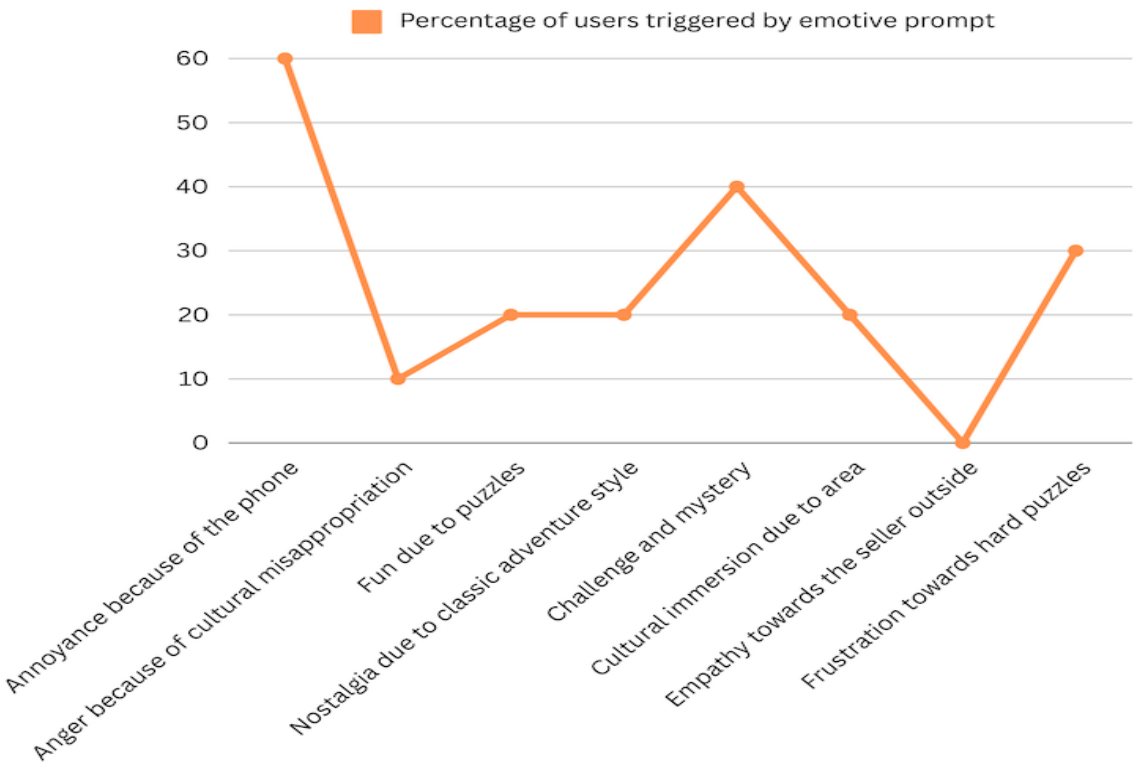


Fig. 37 Users triggered by emotive prompt.

The highest reaction level on the table in Fig. 37 was caused the annoyance trigger with the phone ringing as the scene started; most users found this very annoying, hated it, and were frustrated that it could not be found, making it the most effective trigger so far.

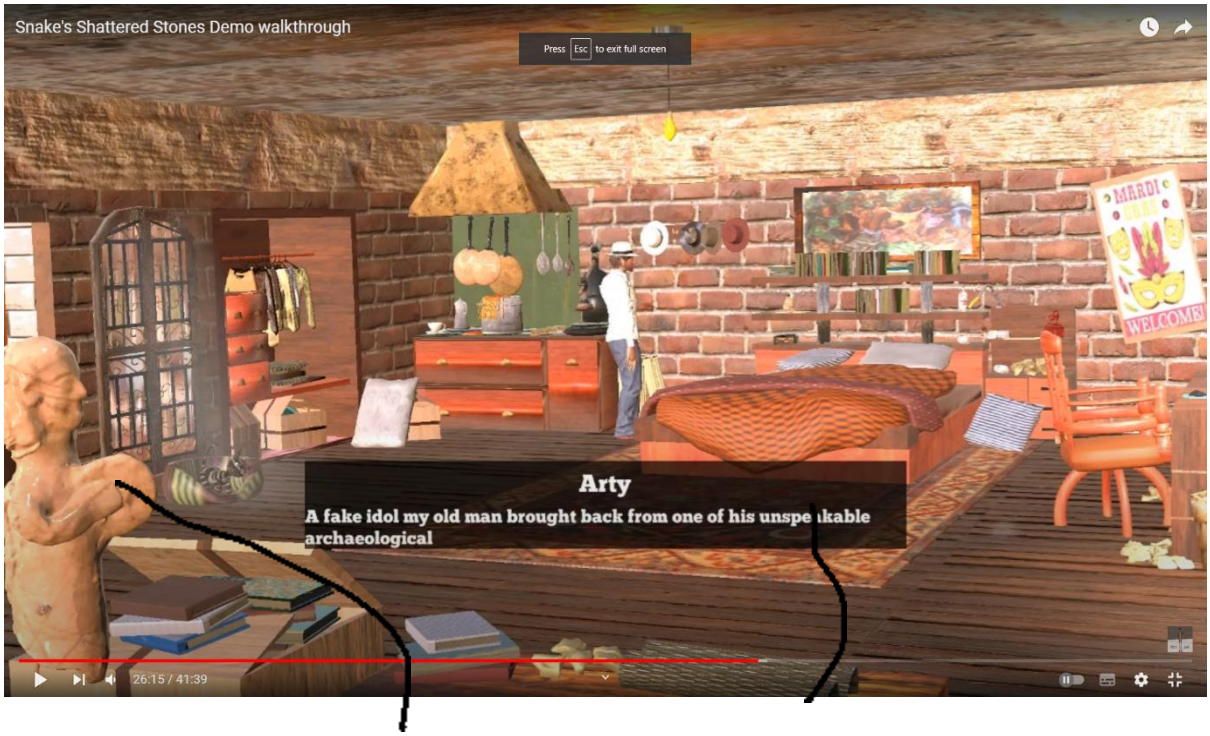
The cultural misappropriation shown by the statues in the apartment in Fig. 38 and the seller outside was in line with empathy towards the seller. However, although one person was disturbed by the statues, none gave particular attention to the seller or his products, nor did they show empathy, mainly because most people avoided reading the long texts or having any conversations, showing a strong hint at the lack of usefulness of long text in the game, as shown by the opening scene.

The fun, cultural immersion, and nostalgia triggers were also not strong, only affecting two users to a limited degree, and for reasons unrelated to the ones expected. They were supposed to be strong triggers, especially for gamers, but the effect was missing. Although frustration and mystery challenges were higher than some of the other triggers, they remained in a low percentage, making these scenes some of the worst at triggering reactions in the game, despite the intricacy of the triggers employed.

This particular set of scenes was interesting, not in the sense of its effectiveness, but in the exact opposite reaction, resulting in a complete failure of the intended triggers and in registering unexpected emotional reactions. This result opened up the discussion on the randomness of the emotive reactions due to their subjective association to different life experiences.

The story and triggers present in the scenes were unrelated to the level of emotional response and the hypothesis tested in these scenes remained untouched due to the completely random reaction caused by the subjective nature of emotive association show by the users. Although the response was unexpected, the concept expressed by Sloan regarding pastiche of different factors may have been a deciding element of these results (Sloan 2016, 34-45).

Furthermore, the background experiences of the user have once again proven to be a strong catalyst for the direction that the emotions take but an unreliable and unpredictable factor in terms of the actual direction taken by such emotions (Taylor & Whalen 2008, 31-50), in some cases making them lower in level, for example, annoyance and irritation instead of anger or extreme reactions such as upset and fury, due to personal connections to the issues represented.



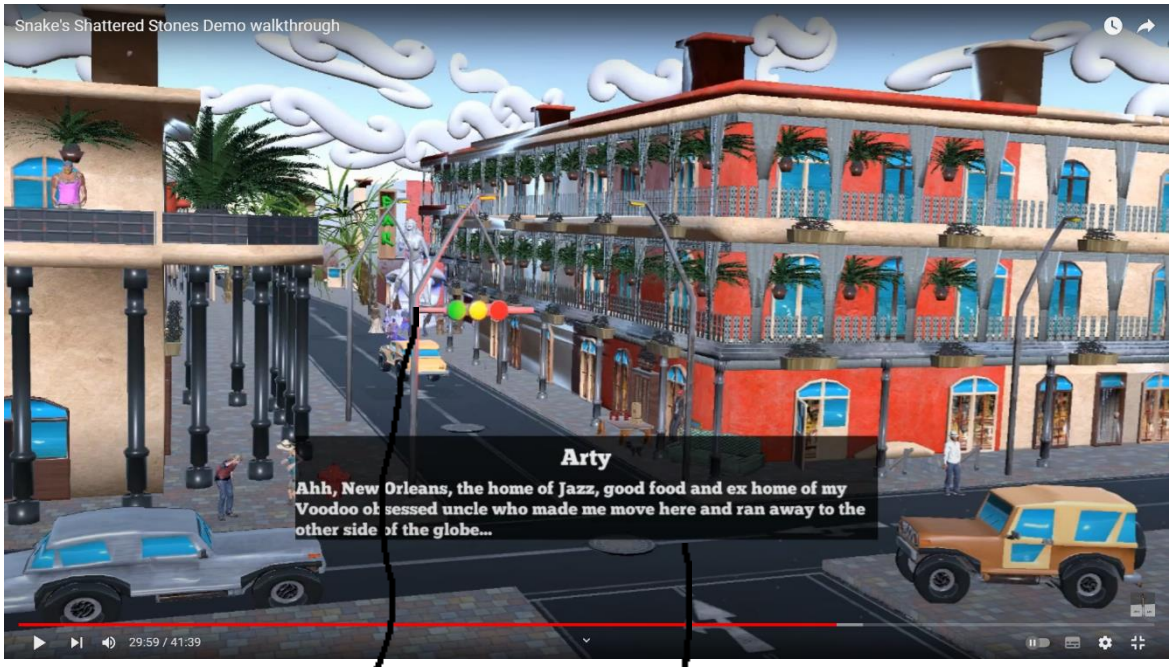
Cultural misappropriation Inheritance and dismissal of the importance

Fig. 38 Apartment.

Interestingly, an element that did not resonate as predicted with most users, was the presence of stolen artefacts around the apartment scene. The same element had a substantial impact on a single user. There was an allusion to the fact that they had been removed from the archaeological context and kept as souvenirs in the house, then passed on to members of the family, which should have provoked a high level of anger, disgust, offence, or ethical rejection.

Still, many of the archaeologists did not react at all to that; they concentrated more on the technical aspects, such as the camera issues when entering an area, which created annoyance due to the odd positioning, or the noise coming from the hidden phone, but had no interest in or comments about the apparent archaeological crime present throughout the scene.

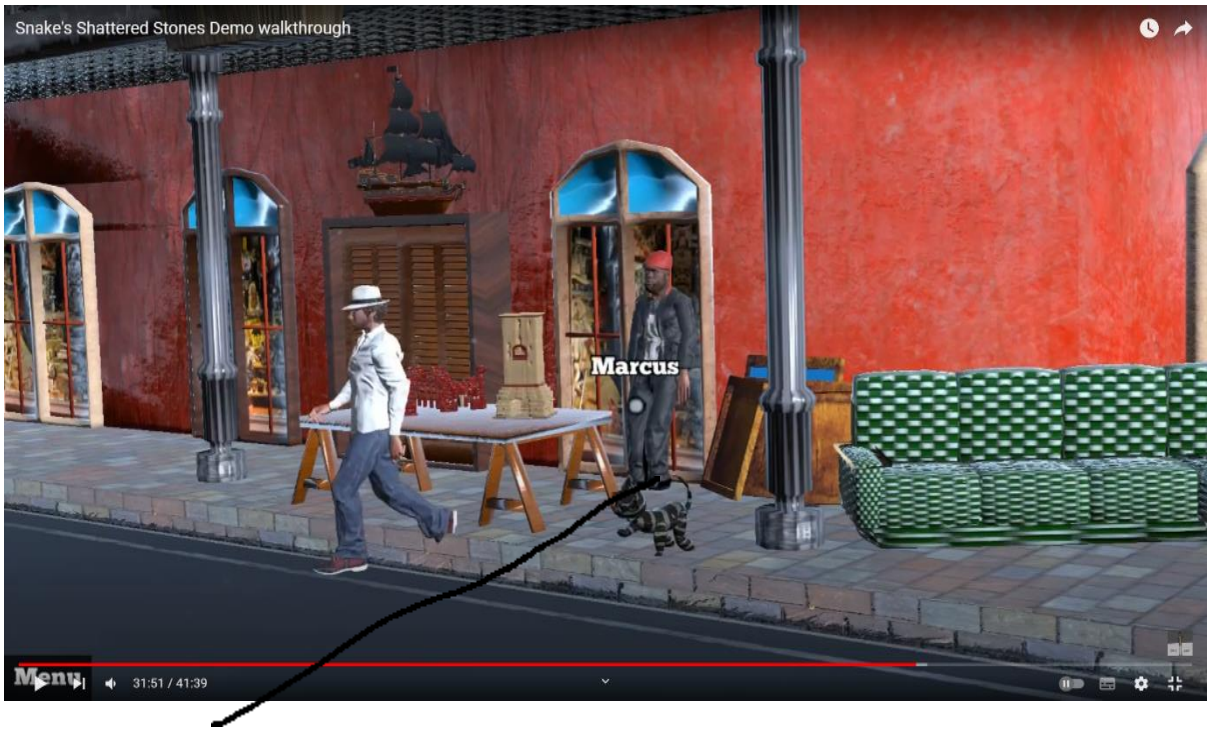
The situation became even less effective in the following scenes; in one of them, Fig. 39, there were two potentially strong triggers, one being the illegal artefact seller in the corner in Fig. 40, giving out artefacts with the justification of needing money to maintain his family, while the other was the statue of a controversial figure with some protesters giving arguments for why it should remain and others justifying why it should be taken down. Both triggers failed, as users ignored them and went on to the next scene, barely acknowledging their presence.



Statue demonstration **Text describing the event**

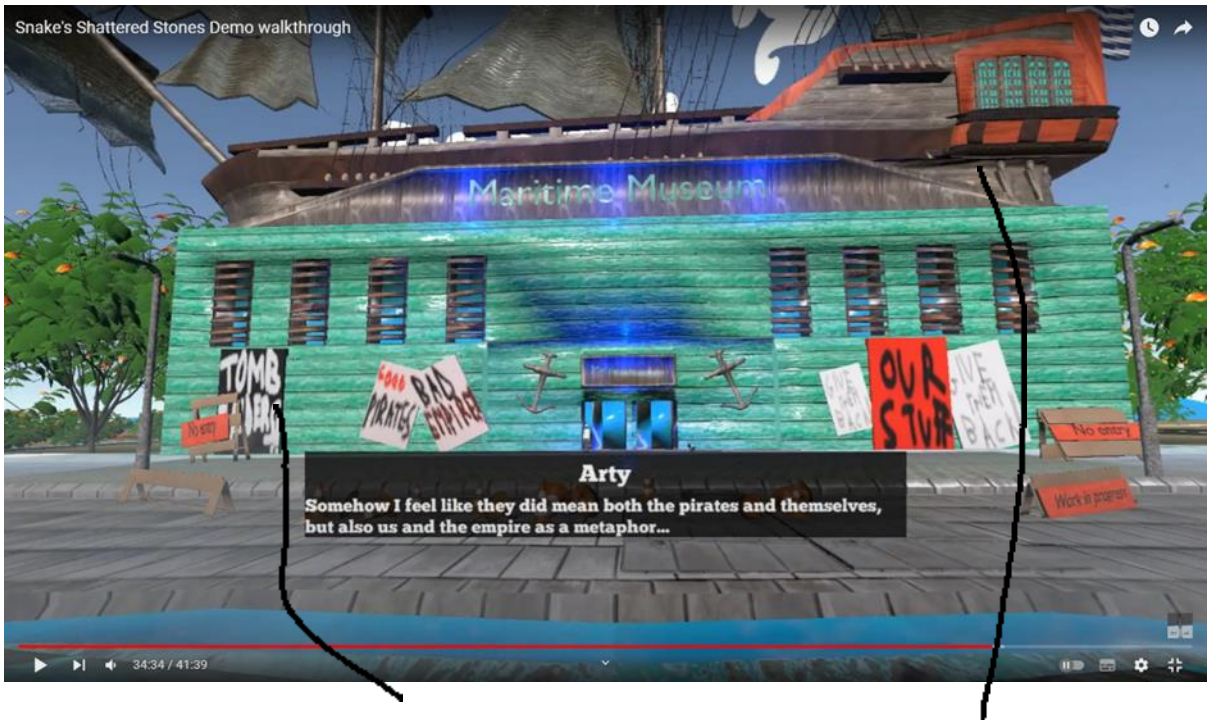
Fig. 39 Street.

The scene outside the museum in Fig. 41 also contained some triggers of a similar nature dealing with cultural misappropriation and represented by graffiti and posters. Only Tringham gave some quick thought to understanding their nature, but had no real emotive reaction at this point. The overarching explanation the users gave was that they did not read the text. They wanted to get on with the game, and their level of attention dwindled from the apartment onwards.



Illegal seller of antiquities

Fig. 40 Street seller.



Demonstrations against cultural misappropriation **Disrespectful display**

Fig. 41Museum outside.

Overall, there was mostly a limited level of impact relating to the misappropriation of artefacts, and what there was came mainly from a couple of users. In general, the users did not have much to say about the areas of cultural misrepresentation, the debates on statues, and the selling for survival concepts depicted in the game, which may mean two things: they were implemented in the wrong way: too invisible, too subtle or placed in a conversation that was ignored; or they were just not strong enough triggers for users assumed to be the best targets for such triggers and discussions.

But an interesting point could be that there was no personal association through subjective memories towards these types of events, and this allowed the archaeologists to ignore the proverbial elephant in the room.

7.8 Scenes 12 to 14

The next scene was a sudden change of pace compared to the previous ones. Even more so than the scene in the desert with the constantly approaching bombing; this scene was supposed to create a situation where the users would start wondering what was going on, and their curiosity should have been piqued by the strange emergency happening in the museum.

The trigger seemed to have worked effectively mostly on the archaeologists, who did not understand why things were happening and how this made sense concerning an archaeological game. In contrast, the non-archaeologists and the gamers seemed to have taken this scene purely as having entertainment value and were not triggered extensively by the sudden change.

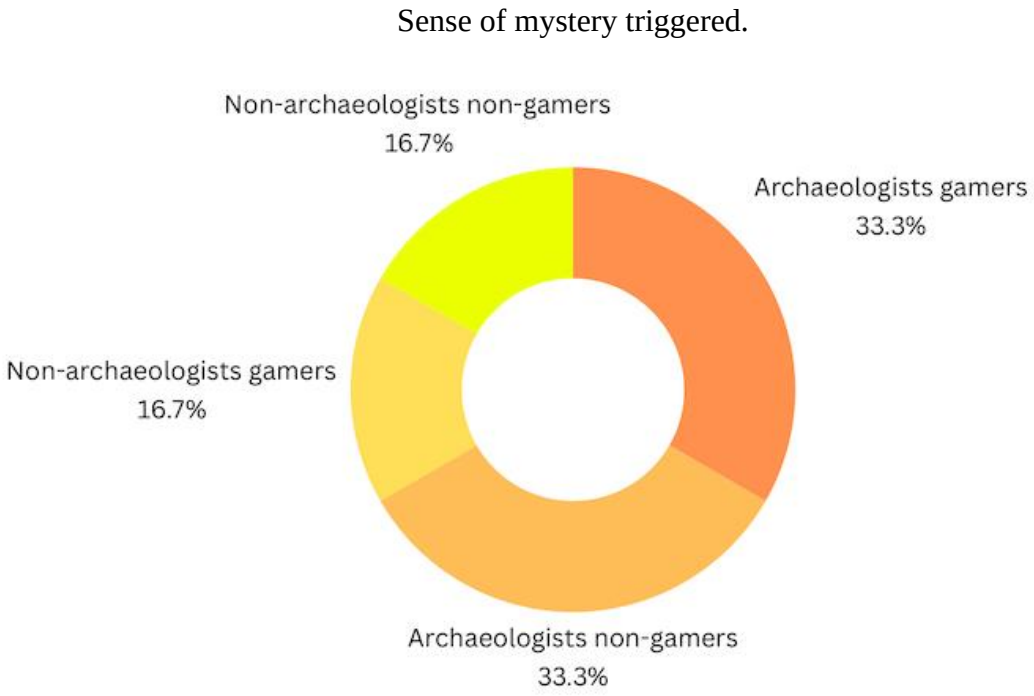


Fig. 42 Sense of mystery triggered.

The comparison between the sense of mystery felt by the archaeologists and non-archaeologists, regardless of the level of game expertise, was quite substantial, as it was 33% in the case of each group of archaeologists individually, while in comparison, it was only 17% in the case of each non-archaeologist group in Fig. 42.

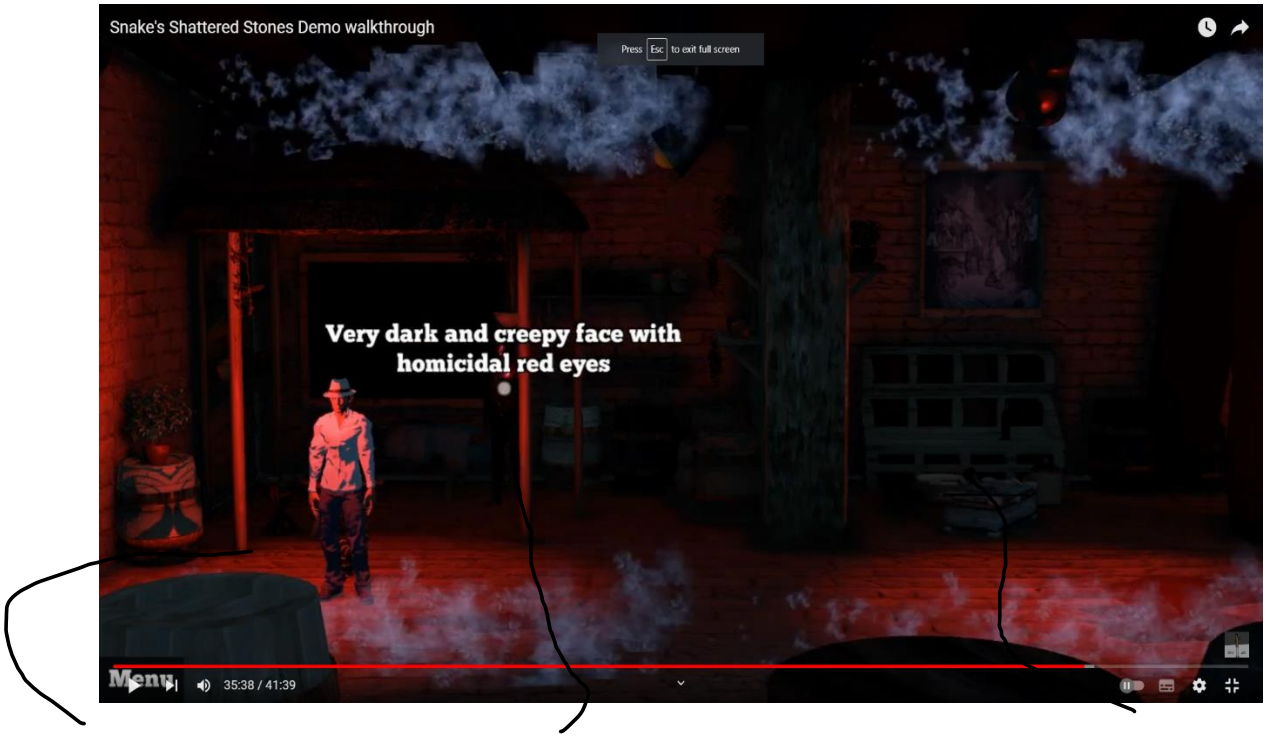


Fig. 43 Inside museum.

The scene in Fig. 43 was littered with discomforting triggers such as blinking red lights, dark shadows with eyes visible in them, voices screaming discomforting things, and puddles of blood, culminating with a zombie at the end of the walk and a corpse in the next scene. The above triggered some of the non-archaeologists, but had virtually no effect on the archaeologists or the more experienced gamers. One type of user was detached from the environment, and the other was used to such scenes from other games.

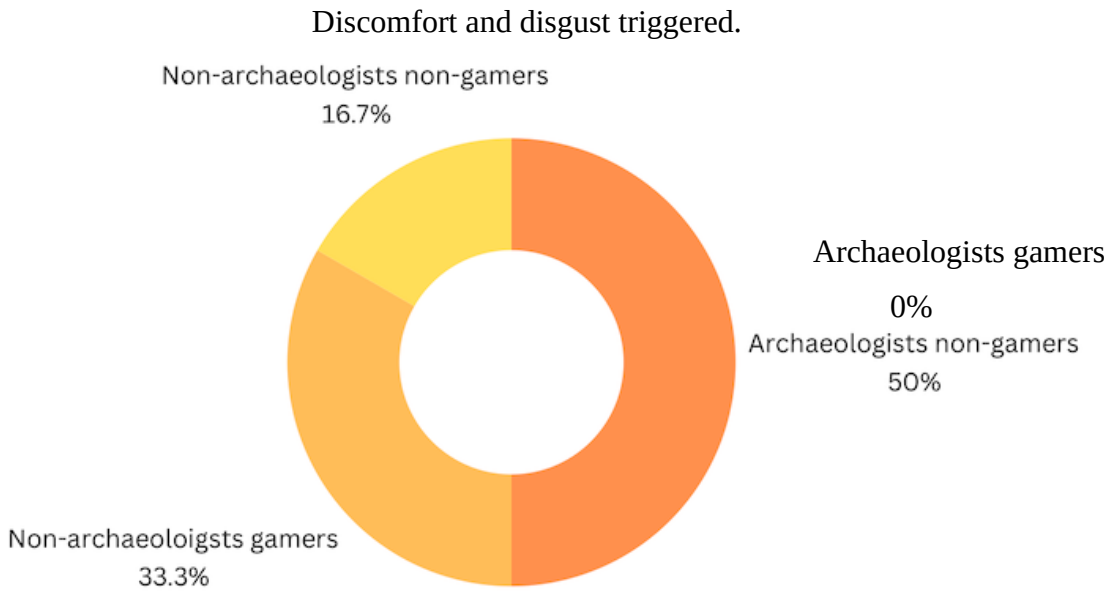


Fig. 44 Discomfort and disgust triggered.

In the case of discomfort or disgust, there was a strong reaction shown by non-gaming archaeologists in Fig. 44. In contrast, the ones who had played games before were not emotionally affected in this way, showing immunity to such emotions due to previous gaming experiences, while the non-archaeologist gamers, as opposed to non-gamers, showed a propensity towards fear and disgust.

According to the interviews, this was due to the ability of such gamers to immerse themselves in the storytelling, something that, as archaeologists, they seemed to have lost. This is a significant observation, as it may show that archaeologists detached themselves from the context in a stronger way than general users.

Fig. 45 The pirate.

Several aspects of these scenes caused the users to lose interest in the story; one was the change of pace and style towards a more fantasy-oriented theme, with pirates, zombies, and horror elements, which was a significant step away from the more realistic and lighter style presented before.

The users did not concentrate on the content, such as the animatronics in the museum, or the colonial style of display. The main analogy was with museums which, for attractiveness and entertainment purposes, create a superficial theme that viewers and visitors may find appealing or lose interest in entirely. In the game it may cause a mixture of unbearable discomfort or detachment from reality to the point that it forces the users to stop playing.

The other aspect that did not work in terms of the emotive trigger was the sense of urgency. These particular scenes should have pushed the users towards hurrying to the end to save the character in danger, or simply to get away from the discomforting situation represented by the emergency lights and the potential killer, but none of the users did report such a sense of urgency being triggered, and most simply gravitated towards wanting to quit the game.

Lastly, one aspect of the game was flagged up at this point by some of the users: the lack of voice acting and the need for them to read all the text created strong gravitation towards leaving the immersion. Some users did not even notice that there was shouting, or text that should have provoked urgency and discomfort, as they did not read it, and when this was pointed out, they unanimously agreed that the presence of voice acting and better sound effects matching the environment would have had a different impact on their immersion levels. It may have even encouraged them to continue wanting to play the game beyond the last scene.

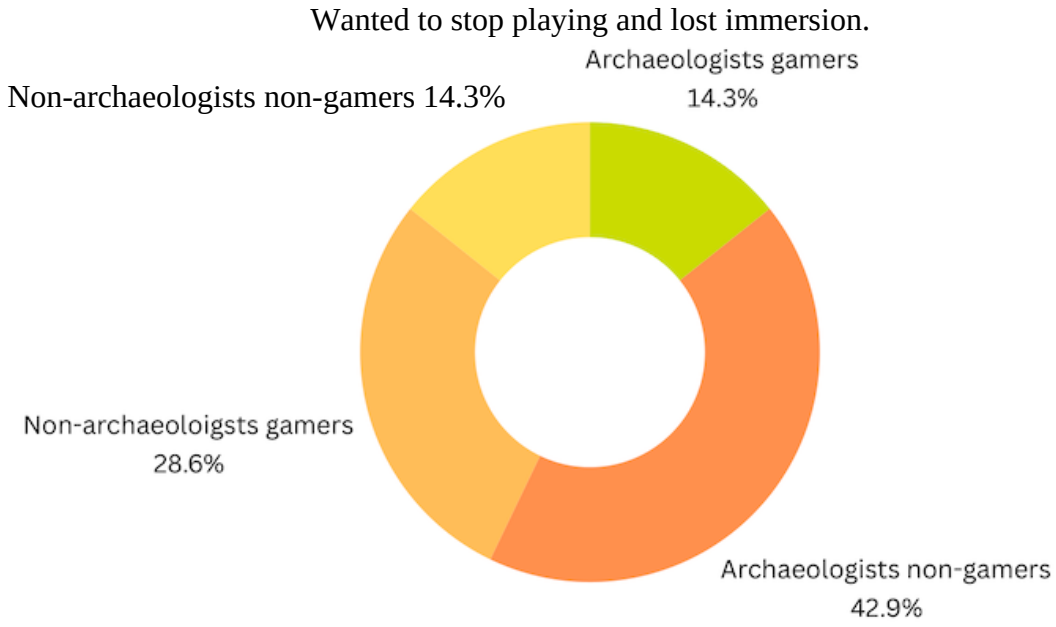


Fig. 46 Wanted to stop playing and lost immersion.

Due to the abrupt end, and the change in theme from adventure to mild horror-fantasy, most users were put off. As shown by the chart in Fig. 46, the effect was expected and, therefore, successful; only a tiny percentage expressed a wish to continue playing.

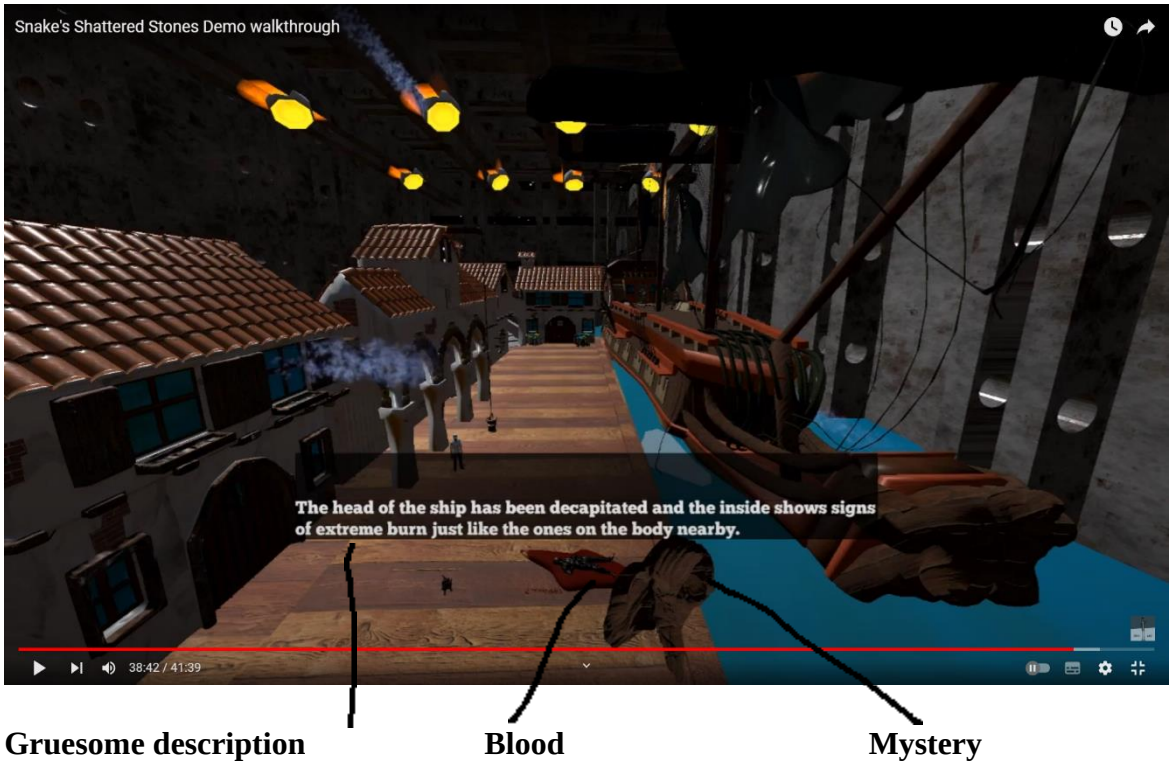


Fig. 47 Murder scene.

Overall, these scenes had a level of success in terms of evoking feelings of discomfort, urgency, and chaos, and the chaotic and irregular nature of the environment emphasised the issues with displaying and misappropriating heritage without understanding its significance for the cultures it was taken from, whether that heritage was near to or far removed from the museum workers and the archaeologists.

The differences from the expected results were related once again to the origin of the feelings. Kasten was caught between sincere fear and urgency, and a level of nostalgic memory due to having played through similar situations in similar games, while the urgency experienced by Mr Juckette was more to do with fear of failing the game. In the meanwhile, some users, mainly the ones who were not adept at the use of computer games, had significant difficulties in feeling an emotional attachment, so they concentrated more on the practical aspects. There were a few surprises too, in terms of the need for audio to make emotive triggers more effective, and the unexpected presence of nostalgia caused by the artistic design itself.

7.9 Summary

Several aspects of the research confirmed some of the theories developed and tested in the game, while others did not, or went in a completely unexpected direction. The first scene

was concerned mainly with familiarity and nostalgia. Hence the users who had previously experienced similar triggers had the strongest nostalgic reaction. At the same time, the second scene showed that having a cultural background near to the one depicted was necessary for emotions to be triggered. The third scene was approached entirely differently depending on each user's personal preferences, and the emotions were very mixed, if not unexpected, at times.

The fourth scene was interesting in terms of discoveries, as the emotive triggers did work in many cases. However, the background and culture of the users were all very different, and as a result, the origins of the emotions were also very different, despite all these emotions being in the same spectrum, which begs the questions, 'Is anger for one reason the same as anger for another? Is nostalgia for one reason the same as nostalgia for the completely opposite reason?'

The fifth scene gave an insight into the interactivity, the choices, and the dialogue options and started a trend that continued throughout the game. Is storytelling really about the amount of content and the choices given to make it more personal? Or is it more critical to provide open storytelling with fewer options and fewer details, so that the user can create their storytelling around what is given, creating a back-and-forth interaction with the game that more restrictions, such as a heavier narrative and choices, might accidentally create?

The above is a concept supported by the discussion encountered in Chapter 3, where Dr Economou and Dr Bozdog suggested that there is a need for the user to fill in the gaps, therefore, the creator of a digital archaeogame or a general story should no give and impose all the details on the users, but allow them to fill in the missing gaps themselves, creating a much more personal space in which to experience their emotions, as opposed to enforcing one that makes the user subject to the designer's choices.

The following three scenes with the slave girl as a protagonist caused very different reactions and pushed the issue further with long dialogues and details about the environment being displayed to the user as in both traditional and modern gaming. The issues with this were shown by the fact that most of it was ignored or forgotten.

The effect worked counterintuitively by decreasing the level of emotional attachment to an almost robotic level by the end. Most users did not feel empathy for the enslaved people, nor did they care what would happen to them if they were punished; one user even went to the extent that he wanted to know what would happen to the girl if she did behave unacceptably for the time and situation.

The modern-day scenes confirmed several issues, such as the difficulty that the users found in empathising with, or even noticing things such as the representation of conflict over statues, cultural misappropriation, and the illegal artefact trade.

The emotive reactions were mostly in line with what was expected in terms of gameplay, feeling anger, frustration, annoyance, and nostalgia; but the reasons for feeling such emotions were again completely dependent on the cultural and experiential background of the user, and again begged the question, 'Are the same emotions experienced for entirely different reasons the same?'

There was a good level of immersion success (Ermi & Mäyrä 2005, 1-14, Przybylski 2010, 161) using the technique of seamlessly making the puzzles part of the story and making human and natural connections between the environment and the user as explained in game design theory (Brown 2015), leaving enough space and strong emotional perks to make the storytelling more effective in terms of emotional connection.

The last few scenes were intended as the discomforting part of the game, which did work in some sense in the areas of urgency and uncomfortableness. Still, they did not push the emotive state further than that, as the game's environment never strayed too far from irony and did not fully embrace any realism in horror or fear. There was not enough emotional attachment created by the storytelling due to the various areas with a closer relation to emotive responses aligned with nostalgia and diminishing comfort, and some technical aspects such as the lack of distinctive sounds and spoken conversations also reduced the effect, avoiding the area of fear, but fully embracing discomfort.

Some users also reported some surprising results, such as the feeling of nostalgia fully evoked by the user's past experiences, or the feeling of disappointment caused by a different approach to situations expressed by another user.

The key triggers present in all the scenes were controversial acts by the characters involved that should have caused anger, sadness, and conflicting feelings within the users; some triggers were aimed at more primal reactions, such as causing fear through the presence of violence, and urgency, as in the case of the dropping bombs in the desert scene.

Other notable triggers which should have caused negative reactions, such as uncomfortable feelings, empathetic sadness, cringing, or simply anger towards the situation, were embedded in the slave treatment, the sale of cultural goods for personal

profit, and the destruction of history by both the bombs and the main character, as in the case of the entrance to the tomb and the skeletons.

The triggers were successful to a certain extent, although not in all scenes, the general emotional reaction was largely as expected, but the level and magnitude of the effect were almost entirely unexpected. Furthermore, the reasons behind the feelings were at times opposite to the expected ones, and the background of the users, whether they experienced such feelings or not, was also surprising, as in the case of archaeologists being at times completely unhinged by the destruction of a culture or the misappropriation of objects.

The empathetic reaction towards some of the characters or human remains was also very surprising, as only some of the gamers reacted with pity or sadness. In contrast, the archaeologists did not react, focusing on continuing the story and not noticing the emotive triggers in the conversations.

The text and conversations were weak triggers for everyone, these were supposed to give a good level of control over emotive triggers as it was adapted from mixing the puzzle designs encountered in game design theory (Brown 15), giving clear goals, signposting, giving hints about locations and actions to be performed, and the emotive prose inspired by the narrative in Dear Esther (Briscoe 2012), omitting the randomisation of the text. The reason for this detachment could be associated with an error in design such as not making the conversations more crucial to the puzzles by requiring a specific combination of answers and objects to progress or simply it might be an emotive subjective factor, as the users reacted at times randomly to triggers.

The overall observation of emotive tendencies between the groups of users came to the clear conclusion that archaeologists with no gaming interest or experience detached themselves from the immersion principle (Ermi & Mäyrä 2005, 1-14) and worked mechanically through the game with little empathy in their approach, and a similar effect was seen on the part of the non-archaeologists with no game experience, showing that early exposure to games creates an empathetic and emotional connection to the storytelling.

The gamers, both archaeologists and non-archaeologists, had a strong reaction to many of the emotive triggers, but this reaction also depended on age and experience in certain areas of gaming. With reference to the storytelling, the ones with an interest in action gaming were less affected by any emotive trigger and tended to speed run through it. In contrast, the ones with adventure tendencies in gaming and experience in 90s games had a more immersive and empathetic approach to the game, possibly guided by the nostalgia they felt

for their own experiences in the past or directly for the games themselves boosted by the presence of various easter eggs (Garda 2013, 1-13, McClancy 2018, Taylor & Whalen 2008, 68-90).

Coming back more explicitly to the original questions this chapter was asking:

- Are the users explicitly reporting or implicitly expressing experiencing the emotions intended by the creator? And are the users explicitly reporting or implicitly expressing that nostalgia, negative emotional triggers, or mystery are motivations to continue playing?
  Non-archaeologists and archaeologist gamers are more explicitly reporting emotive reactions towards the storytelling, with generally more positive and nostalgic feelings, while archaeologists with no gaming experience are more implicitly not expressing a wide variety of emotions. When they are, it is typically a negative emotion, such as anger, disappointment, and disgust, with no personal empathy towards the story's contents.

- To what extent can connections between reported triggers of these sentiments and the user's immersion in storytelling be identified?
  The different levels of immersion have partially answered the question; the gamers tended to be more immersed.
  Still, this only held true for those who tended to play adventure games, not those who generally played action games, and the triggers did indeed work on the former quite often. In the case of horror and fear, it seems like non-gamers with no archaeological experience were the ones most triggered in general. In contrast, archaeologists with no game experience only felt disgusted and annoyed.

- Gameplay raises emotionally and ethically challenging issues, ranging from the destruction of heritage, theft, preservation of dark heritage, and slavery to cultural appropriation. To what extent do users explicitly report or implicitly express that the emotional and ethical challenges related to each issue raised:

    - Were clearly explained through dialogue or text?
      The text was generally avoided and forgotten; it removed the emotional connection for almost all users.

- Were portrayed through visual media
  The visual media aided the emotive interaction by both gamers and non-archaeologists, but archaeologists with no game experience overlooked many of the aspects which were controversial in the visual depictions.

- Have the user's prior views been challenged?
  Some archaeologists who were non-gamers did show interest and intrigue about this type of media, and did understand the messages being inserted quite well, seeing this as a possible tool that might be used for more effective storytelling.
  Regarding ethical views and actions, it seemed that archaeologists with less or no gaming experience felt freer to act differently to how they would in real life, being aware that this was not the real world, so it may be a way to experiment freely with an act which would have consequences in the real world.

- Did the above lead to critical reflection on the issue?
  Critical reflection on particular issues such as cultural misappropriation and the destruction of heritage by war and terrorism was investigated by a number of users, regardless of their background, but more complicated problems with multiple repercussions, such as the statues, how human remains are treated, or slavery and its depiction were generally experienced without a critical reflection.
  Furthermore, the lack of interest in written text throughout the game made it harder to investigate such considerations, as more information was missed by avoiding the conversations.

This chapter has shown some of the abilities of archaeogaming in terms of triggering specific emotions and dealing with complex subjects related to destruction and heritage misappropriation. However, it has also exposed some issues in the technical nature of creating and triggering emotions that go against what is now considered the standard way

of doing this, even proving at times that it is precisely the opposite reaction that these technical approaches create.

Several other aspects may need to be further investigated, such as the immersion that could have been developed using voice acting and sound to enhance the immersion and the effect of different levels of graphics and details on the psychological immersion for different types of users. However, due to this project's time and technical limitations, it was impossible to go into more detail about these particular aspects.

The next chapter will be a comprehensive conclusion tackling and combining the two sets of interviews dealing firstly with emotive theory not being fully expressed in literature, and secondly with the technical application of the emotive triggers in a gaming environment. The result will be a series of theoretical observations on the results, and suggestions for further research which have emerged through the course of this study.

Chapter 8

Conclusion

The following chapter will be dedicated to clearly stating what the implications of the results and analysis are for the broader archaeological discourse, following the objectives stated in the introduction to this research, and showing that this is an area of study that has been, for better or worse, neglected to a certain extent, or purposely isolated and denied due to the uncomfortableness involved in investigating it, together with the issue of re-opening an area of archaeological study which has been, from the advent of more precise and scientifically rigorous criteria, ignored entirely.

To be clearer, the areas of negative emotions and nostalgia within archaeology have been researched with a cautious and prejudiced approach, as archaeologists have preferred to tackle easier and more comfortable subjects, only talking about nostalgia and negative emotions as an area of danger connected to subjectivity, instead of fully embracing them as a challenging but important part of archaeology.

Furthermore, the more robust scientific approach towards archaeology, which forgets the concept of humanity that emotions represent within the subject area, has been detrimental to the subject, and a bolder approach was seen to be needed to fully explore and understand emotions within archaeology, both from the archaeologist's perspective, and the audience's perspective.

The project also considered the need to create an emotive, thoughtful, and compelling narrative attached to digital archaeological projects, immersing the user in exploring human nature through archaeology. The above resulted in a possible tool to investigate emotions felt by people in the past, the audience, and the archaeologists themselves. The following headings will be an expanded interpretation of the results obtained when answering the research question from Chapter 1:

- Identify relevant literature which focuses on emotive implementations in archaeological digital designs.
- Explore the unclear or incomplete analysis of the application of emotive research through a series of targeted interviews with researchers and practitioners who may have encountered nostalgia and negative emotions through their work.

- Explore how the representation and use of emotion in other media might improve and inspire new forms of archaeological storytelling, especially involving negative emotion representation and nostalgia.
- Create a test archaeogame aimed at predicting and understanding emotive reactions through storytelling combined with theory from cinema, literature, and videogame technology, all areas focused on emotional reactions. And ascertain its effectiveness and usefulness for future nostalgia and negative emotion study research.

The above questions developed into more complex answers, and stretched into a wider variety of research areas due to the complexity of the topic and the need to integrate a larger body of scholarly work to give a more comprehensive answer to a series of questions that had a larger interconnected pool of interest areas and a more comprehensive number of sources than expected.

8.1 Analysing the literature and evaluating its relevance to emotions within digital reconstructions in archaeology

One of the main objectives of this research was to identify literature that explicitly concentrated on emotive research involving digital work in archaeology and approaching such emotive data using a multitude of interconnected subjects comparable to a densely connected Venn diagram, the review of such varied topics and areas of study was arduous, but a more common occurrence as of late and one that suited the success of this research.

To a certain extent, this was already a difficult aim to achieve due to the limited amount of work that had been done in digital reconstruction involving storytelling in terms of the presence of emotions in the archaeological community, and in provoking emotions amongst the audience.

Still, it was even harder to find work relating to a combination of digital work and emotions which did not attempt to investigate and control the presence of subjectivity (The London Charter 2009, López-Menchero *et al.* 2011), or which had an over-reliance on technology (Perry 2019), straying away from provoking and studying emotions that both audience and archaeologists may have perceived. This was mainly due to the tendency toward scientific archaeology based on precision, as opposed to understanding the emotive reasons behind the development and study of archaeology, or the emotions embedded in the archaeology itself.

The initial areas were relegated to more technical aspects of digital archaeology, concentrating on technology's effect on anthropology as a whole (Bijker et al. 2012, Gell 1998, Latour 1996, Ingold 2007). The research then encountered a small relationship with storytelling, addressing some of the issues of how archaeology dealt with its emotive aspects. This included areas such as emotive studies (McKinney et al. 2019, Katifori et al. 2020), with different approaches to the matter, such as the fetishism surrounding using technology with little regard for the reason, but simply to use it (Perry et al. 2017).

Still, none of the research encountered directly approached the emotive side of things, such as the emotions felt, how they were provoked, how they were integrated using the new technology and the underlying reasons behind such emotions.

Most of the research was focused on the dangers of not controlling emotional content, the dangers created by technology, and the need to control subjectivity and develop rules to guide archaeologists through this seemingly uncontrollable variety of hazards.

The literature started providing new and unexpected results when dealing with accidental finds, or more artistically related approaches, mostly getting away from traditional controlled, factual investigations and heading more into sociological and abstract work (Morgan 2019, 229-231, Vrettakis *et al.* 2019) and the related concept of presence (Schuemie *et al.* 2001). Such approaches were still not directly related to the specific aspect of pure emotive reactions in a negative or complex manner and/or in nostalgia. Still, there were some cases where some answers could have been found by delving more deeply into the thoughts of the researchers.

For example, the odd behaviours recorded by Dr Tringham in some of her research with Dr Morgan (Morgan 2019, 229-231) had a firm grounding in emotive reactions and instinctive reactions, not only as an interesting incident, but more deeply as a potential factor to understand how digital technology could be used to better analyse emotive responses, and maybe create controlled triggers for it.

Due to the nature of the discourse within the academic literature, the observations lacked some details needed to fully implement the discoveries in a purpose-built environment, and that was one of the reasons why face-to-face interviews were required with some of these authors to identify and isolate the specific tools to implement when attempting to provoke emotions.

The tools were identified in part through analysing the literature relevant to archaeo gaming (Reinhard, 2017, 2018, 99-106, Rassalle 2021, 4-11, Livingstone et al. 2016,

Graham 2022, Hageneuer et al. 2021, 631-642, Politopoulos Mol 2021) serious games within the applied emotion area (Bogost 2010, Brathwaite & Sharp 2010, 311-329, Swain 2010, 217-235, Isbister 2016, Villani et al. 2018, 85-99, Shinkle 2008, 907-915, Przybylski 2010, 154-166, Laamarti 2014, 11-11, Frome 2007, 831-835, Järvinen 2008, 107-130, Hodent 2017, 2020, Swink 2008), historical games (Chapman 2016, Champion, & Champion 2011, 129-155, Wright 2022, 166-177, Draycott & Cook 2022, Caracciolo, 2022) and walking simulators (Kagen 2018, 2022, Carbo-Mascarell 2016, Zimmermann & Huberts 2019, 29-50, Grabarczyk 2016, Ruberg 2020, 632-652, Koenitz 2017, Colthup 2021, Bozdog & Galloway 2020, 789-808, Bozdog & Galloway 2020, 23-47).

The combination of these areas of study allowed me to conceptualise and develop a game despite my low level of digital design and no programming knowledge. The techniques identified (Brown 2015, Wolf, 2002, 113-134, Therrien 2009, 26-45, Perron 2009, 121-140, Perron 2018, Kirkland 2007, 167-178)were not only technically adept to create a reconstruction that could be used in archaeological work, but were also well developed in targeting the emotive discourse, which ended in discovering a strong connection with nostalgia, an emotion that together with negative or complex emotions became a focal point of this research.

The literature pertinent to digital archaeology seemed to find more common ground and areas of applicability with the research intended when looking at authors who were themselves designers and artists, especially when involved with videogame design and critique. The focus of these authors, as opposed to the more traditional archaeologists dealing with 3D design and virtual environments, was the concept of presence (Biocca *et al.* 1995, Biocca 1997, 15-32, Biocca *et al.* 2001, 247-265), a way to suspend disbelief and immerse the user entirely into a virtual environment without being re-transported back to reality by distractions (Coleridge 1817, Bystrom *et al.* 1999, 241-244).

This concept was ideal for understanding the emotive reactions of users in a virtual environment, as it would technically allow the emotions to be wholly instinctive and devoid of any logical distraction, making it an ideal tool for investigating the areas of focus of this research, something that until this point had not been an area of particular interest for many of the emotive authors due to their different foci of study.

Authors like Watterson, Schofield, and Denis took a different approach to emotive understanding in both archaeology and display for different types of audiences; their focus was directed by their involvement in gaming and the artistic side of gaming, which included both the development of emotional, intense environments and characters and the

different emotions triggered and the reasons behind them, be they negative associations, as in horror, or positive, as in nostalgic reconstruction and cultural art development (Wade *et al.* 2018, 435-1-435-6(6), Dennis 2019, 285-294, Watterson *et al.* 2013).

The work done in their projects and the emotive focus, together with the heavy use of modern technology in the field of gaming, presented a prolific area of investigation, but as with the literature before, the focus was on the problems encountered and the attempt to create an objective and realistic design to stay in line with archaeological requirements, again pushing to one side the subjectivity and the negative emotions or nostalgic results that may have been happening during their research.

Despite the shift in focus, the meta-analysis of the available literature demonstrated that there were many emotional aspects of reconstruction and digital media. Still, it was underreported, which was one of the reasons behind the development of a series of questions to ask the above authors about their work, a possibility of recording what was not documented through the exploration of their experiences.

8.2 Understanding the thoughts of the researchers behind digital and emotive work in archaeology and extracting sincere emotive thoughts using semi-unstructured interviews

As a result of the above incomplete focus on emotions, despite the research being technically concentrated on the emotive factors, a further level of analysis was necessary. This was implemented in the second main objective of this research, which was to interview some of the authors of research in the emotive field in digital archaeology, to point out and explore emotions which had been seen as too uncomfortable and problematic to be the focus of research before. These included negative (complex) emotions such as uncomfortableness, anger, hopelessness, lack of choice, fear, and annoyance, and, on a comparable and interconnected level of importance, the complex emotion represented by nostalgia.

The interviews were based on the following questions and the basic answers, as seen below. The researchers expanded these further, but the basic idea was to identify the underreported emotional aspects of digital reconstructions and media in archaeology.

- How high would you place nostalgia as an emotive factor in your work in the level of emotive importance? Why?

Answer: ‘Uncertain’ consciously, ‘high’ unconsciously.

- What emotions do you think would attract the public to archaeology, based on your observations during your research career?

Answer: Negative emotions and nostalgia.

- What emotional reasons might discourage some members of the public from engaging with archaeology (as opposed to the previous question)?

Answer: Unclear, but subjective to each person.

- When writing or displaying archaeological data to the public, what emotional response are you aiming at achieving, if any? Can you give any specific examples?

Answer: Consciously, understanding, and precise educational data, subconsciously, emotional understanding of the historical importance and the emotional impact in the background process. At times the second aim was conscious but limited because of the discomfort caused by openly aiming at it.

- Do you have any emotive technical plan when designing a display or writing a paper talking about a subject that may provoke emotive responses?

Answer: Technically, emotions are controlled and directed; practically, many uncontrolled and subjective choices are led by emotions.

- What emotional reaction did you instinctively have when the public showed interest or did not respond to your data display?

Answer: Technically neutral reaction, unspoken, at times negative, at times positive, but frustration was present.

- Do you try to control emotive involvement in a project or instinctively feel emotionally attached to some of your projects? What is your opinion on having an emotive attachment to one's work?

Answer: There is a strong level of control attempted, but there is always an emotive attachment to one's projects which underlies the work on a project, and the opinion on its presence is different depending on the level of control the researcher wants to subjectively show or feels like showing.

- Would you say nostalgia has a sway over you when dealing with projects following the previous question?

Answer: Unclear on the definition of nostalgia being such a complex emotion, but in terms of observation, it is a constant in every instance.

- Have you ever used digital or analogue archaeological illustration to convey data to the public? If so, did you consciously decide what emotions your illustrations should create? If so, what was the process behind this?

Answer: There was always emotive planning behind illustrations, especially in 2D by hand. The archaeological community somewhat impeded this when working in 3D,

- Did the audience respond as you expected, or was the response completely different from the one planned? Why do you think this was the result?

Answer: The audience was always strongly emotive, both positively and negatively; most of the examples of reactions were unplanned, a surprise. The result was given due to human nature and the unpredictability of subjective, emotive reactions by different members of society.

- How do you organise and depict environmental reconstructions or displays, and do you aim to create emotional responses when organising or planning any displayed data?

Answer: At times very technical, at times spontaneous and emotive, it was a subjective individual process based on some technical requirements that also differed between individuals.

- Were there any unexpected or possibly adverse emotive reactions from the public when observing digitally reconstructed data in any of your previous studies? Any instances of misinterpretation by the public, mistaken association, or negative emotive reaction? If so, what were the reasons behind it?

Answer: Almost always different, sometimes very positive, at times very negative but not in terms of anger towards the creator, rather in terms of unpredictable reactions associated with the previous experiences of the audience, which may have been connected to seemingly unrelated events and resulted in negative or positive responses to the same data.

- Would you say nostalgia could have negative effects on the public? Why? Or why not?

Answer: Yes, the reasons are complex and different for everyone; there is, at the moment, no clear distinction between the reasons why or why not.

- Have feelings of nostalgia ever swayed how you create displays in museums?

Answer: Consciously, no, subconsciously, and in hindsight, yes.

- What effect do you believe nostalgia has on the visitors of museums?

Answer: Unpredictable.

- Are there any particular techniques or methods you use to organise museum displays to provoke specific emotions in the visitors?

Answer: At times, no; at times, yes, but not as part of the core planning and it is accidental.

- Were there any instances throughout your work when visitors were either very happy or offended and angry due to how a museum display was designed? It can be related to someone else's work, not necessarily your own.

Answer: Yes, every time.

- According to you, what factors affect the emotive provocation of a museum display or exhibition?

Answer: Subjective to the environment, audience, single personal experience, moment in time, and cultural proximity.

- Do you have a standard aim or direction regarding the emotions your displays in museums should provoke?

Answer: No standard, but most of the time, a general aim in a specific direction; its effectiveness is unpredictable.

- How did you attempt to provoke emotive reactions in your digital work? Did you have a specific pattern, method, or technique?

Answer: Yes, always, but dependent on the audience, the topic, and the culture.

- When recreating environments digitally, do you feel, or purposely use, nostalgia as an emotional trigger?

Answer: No, but after thinking about it, there is a constant presence, even subconsciously.

- Did your digital work, or anyone else's that you observed, ever create a situation where the users were unhappy or angry at digital work? If so, could you explain why you would change your design or keep it as it is?

Answer: It may vary; the audience rarely reacts unhappily or angrily, but surprisingly the archaeological community does, mainly out of fear and the need for precision, even where it is impossible.

- How do you measure the success of your digital work concerning emotive reaction?

Answer: Audience emotive reaction.

- Have you ever encountered methodologies to create specific emotive reactions in archaeology? If so, which ones have you employed and why?

Answer: No, but each researcher has developed some ways of provoking emotion without it being the aim of the process.

- What is your view on nostalgia when discussing emotive reactions from colleagues, the public, or even yourself when working on emotive projects?

Answer: Rarely considered, at times encountered out of context and not placed in levels of importance.

- Have you ever worked on analysing or provoking negative emotions? Do you think this area should be researched? Why?

Answer: It is a dangerous area to approach, and it should be approached, but it is riddled with issues; some researchers have approached this area, but not as a focus, and have attempted to stay away or change it to the positive every time.

- Were there instances where you came across negative emotive topics in your research but did not pursue the topic? Could you give me some examples?

Answer: Yes, at times, accidentally and then only observed it, did not pursue it.

- Can nostalgia create powerful negative emotions? Do you think it's good or bad? Why?

Answer: Nostalgia can and does. It is a complex topic to approach, and it is neither good nor bad. It can be either good or bad, depending on the subject matter and the situation, making it entirely subjective.

- What range of emotions have you observed in your work? Are there predominant emotions constantly appearing?

Answer: Wide range and no constant.

- Do you have methods to provoke negative emotive reactions such as terror, anger and resignation in your work? If not, do you think there should be space in research to deal with negative emotions in archaeology, and why?

Answer: In most cases, there are no specific methods, as negative emotions are avoided if possible. The instances where it has been done on purpose were in terms of computer games and not entirely related to study or archaeology.

The interviews resulted in a change of vocabulary as the traditional view was concentrated more towards the precision and limitation of the use of digital design, and the discussions during the interviews more towards the emotional reactions of the researchers and their audience, a very different approach compared to the expected one.

The surprising result of the interviews about playing the game was a feeling of frustration from several of the testers, going beyond the expected few triggers and manifesting in other areas and situations where frustration and impatience was not expected at all as shown in chapters 6 and 7.

Another crucial point was the theme expressed in the game was the one of frustration and the feeling of hopelessness which were targeted at the attempt towards erasing and controlling emotions viewed as negative subjective triggers and, at times, even hiding the nature of the research to avoid arousing such emotions from the audience. For example, the antipathy towards letting the audience know that archaeologists interpret their findings and that those interpretations may often be wrong as explained by Dr. Watterson and Dr. Poller in chapter 3 when archaeologists were annoyed at the fact that this interpretation would remove people's trust in their expertise.

Another detail that triggered a strong response was the use of invisible walls and the avoidance of uncertainty or the complete rejection of emotional interpretation and storytelling from mainly adult audiences and researchers, opting for a more decisive one-directional interpretation that focused on precise yes or no answers, without a 'maybe', or any kind of interpretative or emotive storytelling attachment, only a pure and set mechanical reconstruction.

Both Dr Schofield and Dr Watterson clearly stated the above in their respective interviews documented in Chapter 3, and it was further confirmed when this transparent wall principle was integrated into the game; users such as Mr. Finkelstein were not only confused by the transparent aspects of the first scene, like most of the other users, but even went to the extent of interpreting the things that were left transparent in the wrong way. This is fully documented in Chapter 7.

The transparent walls issue was important, not only because it showed a fundamental flaw in archaeological work which pushed towards obscuring possibilities and removing

immersion from the reconstructions, but because it also muted and censored the use of emotive storytelling in order to adhere to the emphasis on precision and technicality of archaeological work that has been advocated to avoid the pitfalls of colonialism of the past.

The overall feeling projected by the interviews was coincidentally negative. It was associated strongly with frustration, the frustration of not being able to use the artistic abilities of the digital archaeologist to show different aspects of history, or take advantage of the strong connection between storytelling, cinematography, gaming, and stylised depiction.

The frustration related to not being able to show the emotive history of humanity but being limited to precision and subjective facts, and also to having archaeologists with this focus expecting unrealistic results from digital archaeologists or designers simply because there was no understanding in the level and amount of work involved, as well as the intricate factors brought in by the multidisciplinary nature of digital design applied to archaeology that meant no single archaeological methodology was enough to fully grasp the way in which emotive artistic design is applied to other disciplines.

One clear example was the head archaeologist who expected to have a reconstruction completed in hours instead of days and asking at the end of a project to change what they considered to be a small detail, but which technically would have taken double the time the project had been active for and due to the limitations would have been unapplicable to the intended interpretative role.

With no time, there is no detail, no emotion, there is no realism when talking about human development; with no immersion in the storytelling, there is no understanding of the past, especially by the audience, which may not be knowledgeable in the selected topic; and with no admission of self-subjectivity in terms of interpretation, regardless of how much an archaeologist may think they are entirely ethically objective, there is no trust in their interpretation. The misconception of purity and perfection cannot be present in human nature. All these issues may be mitigated by implementing multidisciplinary approaches to digital archaeology, but all of the above must be dealt with before this step can be taken.

8.3 Investigating other areas of study strongly influencing emotive work in digital archaeology

The above conclusions resulted in a need to research various areas outside of archaeology in the hope of creating an emotive, thoughtful, and effective narrative attached to digital archaeological projects. Therefore, the study delved into areas such as nostalgia, negative emotive triggers, cinematography, creative writing, game design, archaeogaming, serious games and emotive studies. This resulted in some answers to the question of what techniques from other areas of study and practical skills could be utilised to help in the emotive aspect of research while still being a low skilled digital designer and programmer or having no specialized digital skills.

There were several interesting narrative concepts that were integrated within the archaeo game, such as the emotive aspects of prose and dialogue through triggers, which was modified from the random version in Dear Esther (Briscoe 2012), to a more controlled direct version that would ensure linear storytelling with the same emphasis on emotions. There was also an attempt to target immersion (Ermi & Mäyrä 2005, 1-14), through engaging puzzles and objectives, which was a strong trigger towards having stronger reactions to the emotions targeted such as nostalgia and complex emotions with negative connotations.

There were some interesting basic concepts, such as the monomyth (the hero's journey) (Campbell 2004, 1-358) and how this concept was utilised in successful classical literature as well as in fantasy in books such as "The Fellowship of the Ring" (Tolkien 1991). The concept relied on a linear path of character development following a single, or group of characters, going through a happy beginning, followed by hardship, failure, recovery and success.

This was also combined with a McGuffin from the film industry using a special gem (Harmon 2012), famously used by directors such as Spielberg, and elements of emotive traps and horror included in a surreal semi-fantasy environment, as in movies by Hitchcock and books by King (Spielberg 1981, Lucas 1977, Verbinski 2003, Hitchcock 1963). All of these were concepts that in archaeology could have a significant impact on storytelling, adapting depictions to human emotion, as opposed to creating stale unemotional reconstructions with purely technical functions, such as the kitchen used for cooking by the servants and the utopic approach to telling the stories surrounding the archaeological data.

But the issue was still that tropes and emotive storytelling such as that seen in the classic cases mentioned above were too direct, too traumatic to be associated with reality. The emotive triggers were based on fantasy and assumptions such as the evil antagonist and the pure white-knight hero derived from colonial principles and embedded in movies. These principles and triggers reinforced subjective offensive issues instead of explaining them or immersing the user in exploring human nature through archaeology. Therefore, the lack of realism hindered the emotive connection which would otherwise be expected.

The above issue was the reason why other developments in more modern instances of such storytelling were investigated, including the inversion and chaotisation of the monomyth by Hammond, removing the repetitiveness of the cycle that assumed a linear character development or the integration of interactivity with the principles of horror and adventure expressed by King and Spielberg respectively (Spielberg 1981, King 1978, King 1982). The triggers created in terms of emotion by combining the above methods into a newly developed one, which would fully involve the user and the audience, were not explored to a certain extent in literature and not at all in archaeology.

At this point, the integration of game design became the centre of the study, showing that the different ways in which the further explored methods based on game design (Brown 2015, Wolf, 2002, 113-134, Therrien 2009, 26-45, Perron 2009, 121-140, Perron 2018, Kirkland 2007, 167-178), archaeogaming (Reinhard, 2017, 2018, 99-106, Rassalle 2021, 4-11, Livingstone et al. 2016, Graham 2022, Hageneuer et al. 2021, 631-642, Politopoulos Mol 2021) and serious games (Bogost 2010, Brathwaite & Sharp 2010, 311-329, Swain 2010, 217-235, Isbister 2016, Villani et al. 2018, 85-99, Shinkle 2008, 907-915, Przybylski 2010, 154-166, Laamarti 2014, 11-11, Frome 2007, 831-835, Järvinen 2008, 107-130, Hodent 2017, 2020, Swink 2008) allowed the emphatic and emotive direction of the game to develop effective triggers for emotions in the area of nostalgia and complex emotions when used by players of different cultural backgrounds and technical experiences in both archaeology and game design.

The results of the investigation in different interconnected areas used for storytelling showed that in complex environments such as archaeological data, the conclusion was that a simple reconstruction as done today was one of the least complex and least effective, as agreed by the interviewed researchers, as they constantly emphasised the distracting and immersion breaking (Ermi & Mäyrä 2005, 1-14, Przybylski 2010, 161) nature of transparent walls, the focus on objects and mechanical interpretation and the speed of development, as opposed to slower paced artistic development which led to much more

effective results with users closely culturally related to the environments, animals and people reconstructed, as in the example given by Dr Watterson during the interview.

The level of success or failure recorded in the effectiveness of the game in the task of provoking specific emotive responses was not based on economic factors such as profit or industry-based criteria, but was based on the following criteria:

- Did they make people think about a particular social or political topic?
- Did they provoke an emotive response and was the response the one expected or different?
- What is the value of this result? (Bogost 2010, 81-92).

The criteria were used every step of the way through the analysis, coming to the conclusion that some of the triggers delivered the expected result at times, while others did not and each of the reasons behind success or failure were fully explained in chapter 7. As for the value of the result, the conclusion in this chapter extracts the several results obtained and evaluates them.

The game style chosen for the game development was point & click adventure game that have been recently successfully used in archaeogaming (Rassalle 2021, 4-11) and in precedence have been a part of gaming history permeating with nostalgia (Jensen 1993, LucasArts 1992, LucasArts 1991, Revolution Software 1996) as opposed to some other options that were described, such as walking simulators (Grabarczyk 2016, 241-263, Koenitz 2017, 1-28, Kagen 2022, 1-28, 45-63, Carbo-Mascarell 2016, Colthup 2021, Ruberg 2020, 632-652, Zimmermann & Huberts 2019, 29-50).

This was deliberately done also in order to enable the designer to make a game without having to delve in any type of programming and either use readymade assets and objects or simply place his own objects and characters in the game with the most minimal need for experience in game development. in the game due to the identified easy to use tools in Unity and Blender (Blender 2021, Unity 2021).

In terms of recreating an emotive archaeological environment filled with storytelling elements, point & click was the way to go for this project, as it allowed users to follow a character, who would reach out in unpredictable ways to the environment. The character could be given a sympathetic story or be made an offensive emotive trigger to produce negative emotive reactions using the puzzle mechanics described in the literature to make sure the workability of the game did not remove immersion but enhanced it with both

emotive triggers, environmental, architectural and religious designs (Brown 2015, Brown 2018, Wolf, 2002, 113-134, Robb 2015, 166-180, Bozdog 2020, 23-47).

This type of game also employed a writing technique that allowed for the presence of offensive and controversial issues without causing too many ethical problems, which were sarcasm and self-criticism. The presence of a third voice as a critical narrator seamlessly interacting with the characters would allow the characters to do things not accepted by society today, and show that the author did not approve, or that society didn't, all the while allowing the user freedom to act outside the boundaries of society and, as a result, give a more authentic image of the inner emotive and ethical nature of the user, removing all of society's strings (LucasArts 1992, Jensen 1993, Revolution Software 1996, LucasArts 1991).

The above was a characteristic were a core feature for the success of a research aimed at provoking and observing reactions to emotive triggers which are negative or complex, and some triggers which have a strong presence in nostalgia, whether for older times, for specific events or personal nostalgia triggered by personal experiences and therefore with a strong subjective nature, something that can be true also for the other negative emotions, as the research in the previous chapters showed.

The point that has been concluded to the objective illustrated above is that gaming technology presented the researchers with a new interactive function to use to their advantage in understanding and studying difficult emotive reactions that are considered negative. Still, it could not have been possible without the inclusion of game design techniques, creative narrative design within archaeogaming, and serious games experimentation, something that may not have been directly developed with specific emotions in mind, but that has been trying and has often succeeded in provoking particular emotions.

8.4 Integrating emotive results from interviews with intra-subject methods to create a test archaeogame intended for the investigation of the effects of negative emotions and nostalgia present in archaeology and among users of archaeogames

The interviews with the authors of emotive study research produced several theoretical premises that needed testing and verification; this data can be further observed in Chapter 3.

In terms of answering the question about how far nostalgia and complex emotions are present within the archaeological interpretation and how they influence the interpretative outcomes by the archaeologists and by the audience, there were several factors involved that gave substantial results, with some significant evidence found in chapters 3, 7 and 8.

Some of the most prominent hypothesis developed were the concept of the mystery being the driving factor that made users want to continue playing the games within the historical concept from Dr. Tringham's discussion in Chapter 3; the issue with the use of transparent walls carrying the risk of removing immersion, and creating theoretical assumptions about what the archaeologists wanted to show, as described by Dr. Watterson and Dr. Schofield in Chapter 3.

The issues with interconnection between the storytelling, the facts and the subjectivity of the creators of digital designs, archaeologists and users themselves, the ethical sensitivity of users, and the appropriate way of representing controversial points without pushing towards a subjective idea; and, overall, the sincere thoughts of users, designers and archaeologists, which may be different from what is officially written down or expected by the academic environment and the public.

This was a core issue present in all interviews with the researchers in Chapter 3 and was confirmed by the testers of the game in Chapter 7, as shown below in the following charts Fig. 48, 49, 50 extracted from Chapter 7.

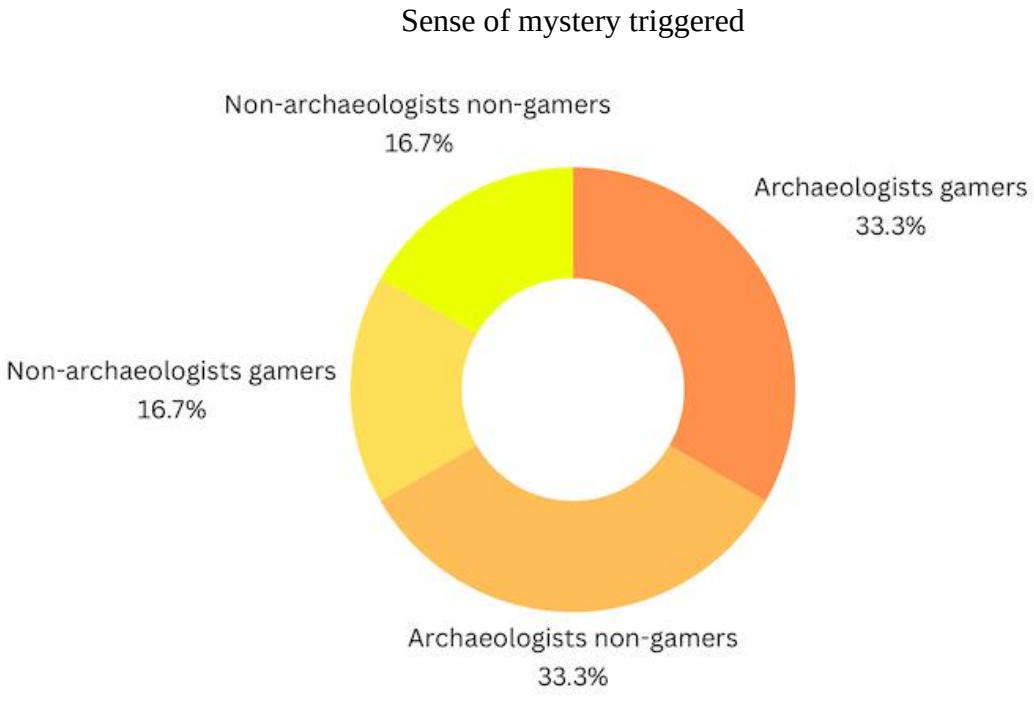


Fig. 48 Sense of mystery triggered.

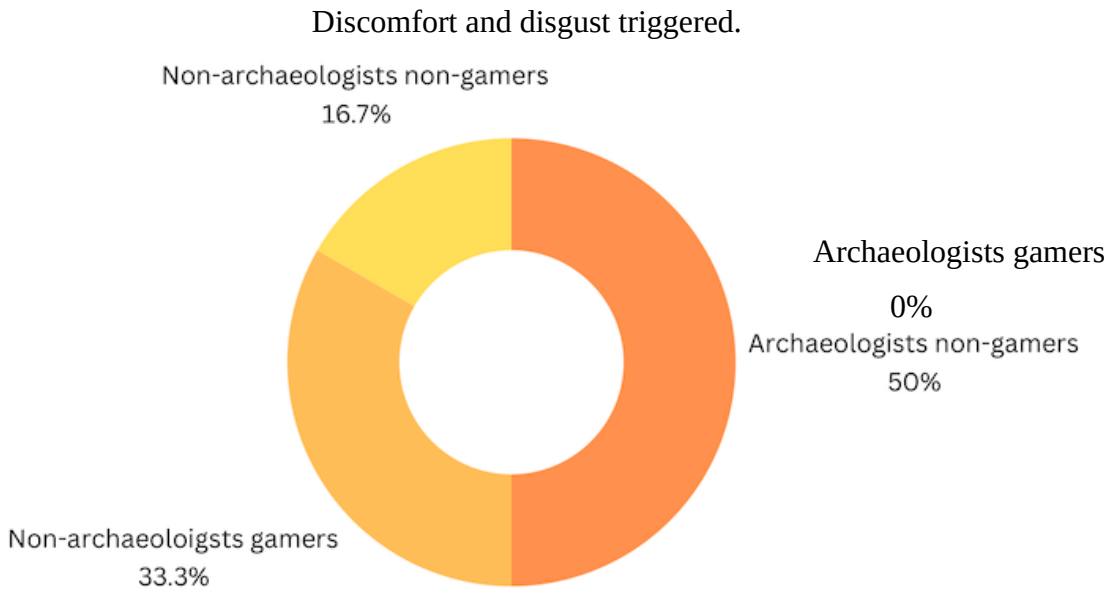


Fig. 49 Discomfort and disgust triggered.

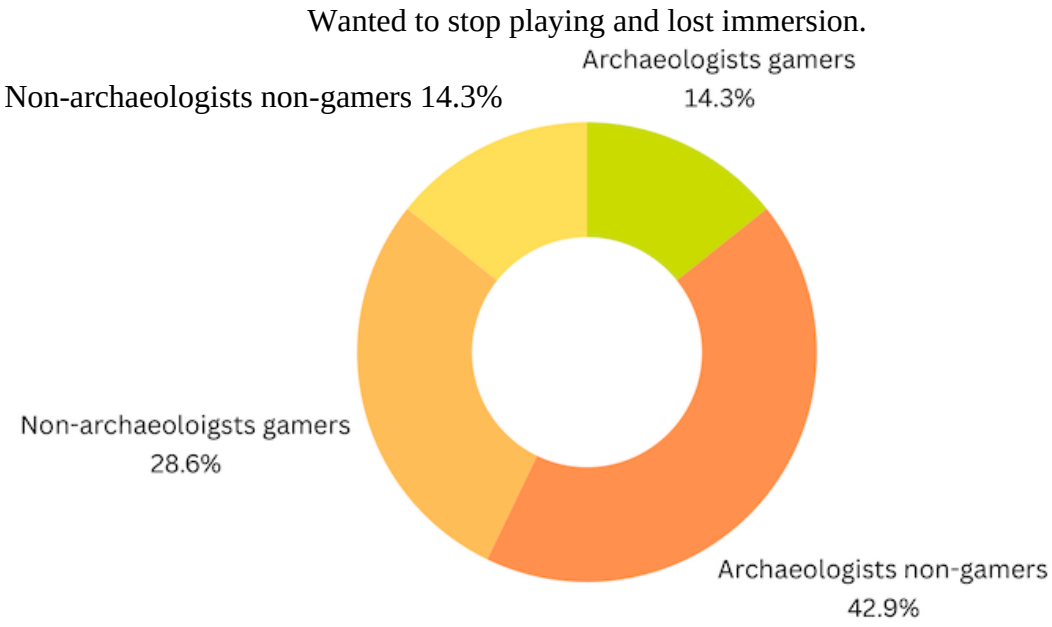


Fig. 50 Wanted to stop playing and lost immersion.

The above were the more significant questions derived from the interviews and the literature, and many other minor theories were integrated to be tested within the archaeogame to prove or disprove them, all explored in detail in Chapter 3.

The results were unexpected, as the theoretical framework expected some regularity. Given the assumptions of morality and etiquette in academia, one would almost expect a mathematical systematic reaction to emotive triggers. Instead, in nearly every instance, the game resulted in an opposite or utterly different reaction for unexpected reasons. Many

other theories and questions arose from the more unexpected reactions, making the result a series of further questions instead of a definite answer.

One initial discovery amongst users was the lack of patience and complete disregard for text and immersive storytelling as supported by game industry leaders. This was observed in many cases in Chapter 7; more text and more content did not mean more involvement and immersion at all. In fact, most users, regardless of their background, ignored extra content, avoiding unnecessary characters or objects, exploring only the limited necessary interactions, and either did not read at all, or ignored the storytelling text. This result occurred for many reasons, including the technical lack of spoken dialogue. Everything was written, but it the result still goes against commercial games' claims of immersion, such as "Skyrim", which has thousands of words in thousands of books, which the company claimed would result in impressive immersion.

Furthermore, choices developed through text and conversation did not work at all possibly due to the lack and weakness of interconnection between the puzzles and the conversations themselves, proving that the game and narrative design theory needed to be implemented more fully within conversations, but resulted in being only fully implemented in puzzles involving objects and the environment (Smith & Worch 2010, Ermi & Mäyrä 2005, 1-14, Brown 2015, Brown 2018). Some of the users were expected to be more immersed in the storytelling due to their professional capacity. It was expected, for example, that archaeologists would dedicate time to checking the veracity of statements in the game, to try to understand and investigate the environment thoroughly and get emotionally involved with the game through total immersion in the storytelling provided in the text. However, the majority ignored it, and asked for a skip button, as in the example of Mr Juckette in Chapter 7, or did not remember any of the text. They barely understood the story in terms of reading, as with Miss Mazloumi in Chapter 7.

This result was surprising because it also went against the basic principle of providing enough information for the audience to make an educated assumption or be guided through the experience; it could have been a matter of personal choice and lack of interest in the content, but some users even claimed that they just "wanted to get on with it," (Miss Mazloumi) which dismisses the ethical professional behavior described in the archaeological study, which may be due to the lack of importance given to the gamification of archaeological content.

This result did not vary very much, with only a couple of exceptions, and was not dependent on experience with gaming or being an archaeologist. Given a larger pool

sample, there may have been more logical explanations behind this behavior. Still, the fact remains, users do not like reading, and their level of patience decreases exponentially within minutes of the start.

One more expected result was the difference in approach to gaming between gamers and non-gamers, as observed by Dr Kasten and Dr Poller, who were on opposite sides between gamer and non-gamer in archaeology in Chapters 6 and 7. The adaptation level to the controls was exponentially faster for gamers, and some of the non-gamers did not immerse themselves in the game due to their difficulty with the controls and understanding the reasons why they were playing and what the aim was. This made it hard for them to engage emotionally, and the result was a mechanical confusion which resulted in a substantial lack of results in emotive data.

Others quickly adapted and engaged with the game, emotionally reacting to many triggers, and the motivation to continue playing, although not connected to the content of the text, was linked to a theoretical phenomenon mentioned by Dr Tringham during her interview in Chapter 3, the mystery effect.

The mystery effect was a challenging one to obtain; it was a combination of motivation, such as reaching a goal to proceed to the next area, a subtle backstory that left cliffhanger events at the end of every scene, such as a dubious end to a main character, an unknown object in need of further explanation, and an unfinished phrase. This effect resulted in most users wanting to continue the game until the end and showing a willingness to continue if it was to be extended further.

A surprising concept that permeated the interactions by the users was a detachment from reality which was very specific to the ethical and moral sense of most of the users, save two who were culturally proximate to some of the aspects of the game. In the majority of cases, the users seemed to have an, at times, overly logical application of skills to the game, trying things with the only aim being to get to the next stage, without any thought whatsoever of the ethical implications, as shown in Chapters 6 and 7.

Some prominent examples were the destruction of cultural heritage, allusions to Black Lives Matter in the form of protests in front of virtual statues, or even cultural misappropriation, which was evident all over the game, with objects being stolen to be sold by a merchant, the main character collecting objects to keep as personal keepsakes, and the apartment scene being littered with archaeological artefacts stolen by the family of the main character.

The level of empathetic and ethical attachment and display went even further in the scenes involving the enslaved people; in Chapters 6 and 7, the majority of the users did not immerse themselves in the story, they just commented on the over-the-top cruelty displayed, did not read or remember most of the dialogue and were pushed more by the mystery effect than by an empathetic connection with the suffering protagonist going towards her death by the end of the scene. In one instance, one of the users commented on his curiosity about what would happen if he purposely made her do something dangerous, that ought to result in heavy punishment or death, an opportunity given by choosing the worst replies to the nobles when serving them food or wine.

The behavior and comments in this section showed a lack of empathy by the users that almost morphed into cruelty. This is not to say that this showed inhumane behavior by the participants, but it does show that it was because they all considered this a consequence-less exercise, allowing them to do things they would hopefully not do in real life. The conclusion of this particular result may reflect a desensitisation to cruelty and unethical behavior, which is common, if not encouraged, in non-archaeological media and should be closely monitored as a possible side effect of using such technology in archaeology, though not to the extent of prohibiting it, as that would result in another strict prohibition of emotive expression which this research advocates against.

This aspect contradicts the overall environment in digital reconstructions in archaeology, which attempt to avoid negative emotions and negative situations, for fear of offending some parts of society. There is a strong focus on creating rules and control systems for technology to prevent areas of ethical conflict, as explained by several of the authors interviewed in Chapter 3.

Some of the core research is given in Chapter 2, with some ethical information being drawn from interviews with authors. However, those same authors, when playing the game, then completely ignored ethics, or had no interest in areas of emotional depth, even when given the option to experience them, begging the question of the sincerity of such behavior; would archaeologists still behave following the ethical standards developed throughout the century if given the option to be care-free? It is a philosophical and theoretical question that may need further investigation in future work.

As mentioned above, two users who were in closer contact with the history being told and culturally closer to it had a very different reaction; they fully engaged with the emotional aspects, felt angry or upset, and at other times, happy, experiencing a sense of familiarity in some of the environments. Good examples of this were Miss Mazloumi and Mrs.

Finkelstein in their observations in Chapters 6 and 7, showing that cultural proximity has a robust polarising effect on experiences in reconstructed environments with emotive storytelling.

An unexpected aspect of this reaction was the emotive response in some areas. Instead of feeling distressed, uncomfortable, or angry in some scenes, the users felt a familiarity, like feeling at home in their own country (Mrs. Finkelstein, Chapter 7), and to a certain extent, a sense of nostalgia, despite the scenes being depictions of slavery in the ancient past.

This result opens up the research to more questions, as there seems to be no logical connection to the sense of nostalgia. This sense manifests in situations when it logically should not, as in this example, when it is felt during a depiction of a very harsh slavery environment, and the same things may be triggered by familiar scenes at home, or while working in one's home country, suggesting a need to provoke and study subjective reactions and behavioral responses to negative emotive triggers, and to attempt to understand if there is any point in trying to regulate such emotive ethical issues or attempt to block subjectivity when recreating virtual historical environments.

Throughout the interviews and questionnaires from different users, there was an increasingly chaotic level of reaction from each participant; such events can be seen in Chapters 6 and 7 and are depicted in the graph below; this was related to the subjective nature of memory and the users' experiences. Some of them associated things that would be considered bad, or environments that would have been uneasy to explore for archaeologists, as cheerful and enjoyable experiences.

At times, while taking advantage of the lack of consequences to experiment with the limits of the negative experiences they could make the characters suffer, there was no thought given to the various issues embedded in the game: the colonialism rhetoric, the blatant disregard for rules by the characters, the subtle comments of the cat and the narrator representing the sarcastic accusing voice telling the main character, and by extension, the player, that what they were doing was wrong and unethical and they should have stopped.

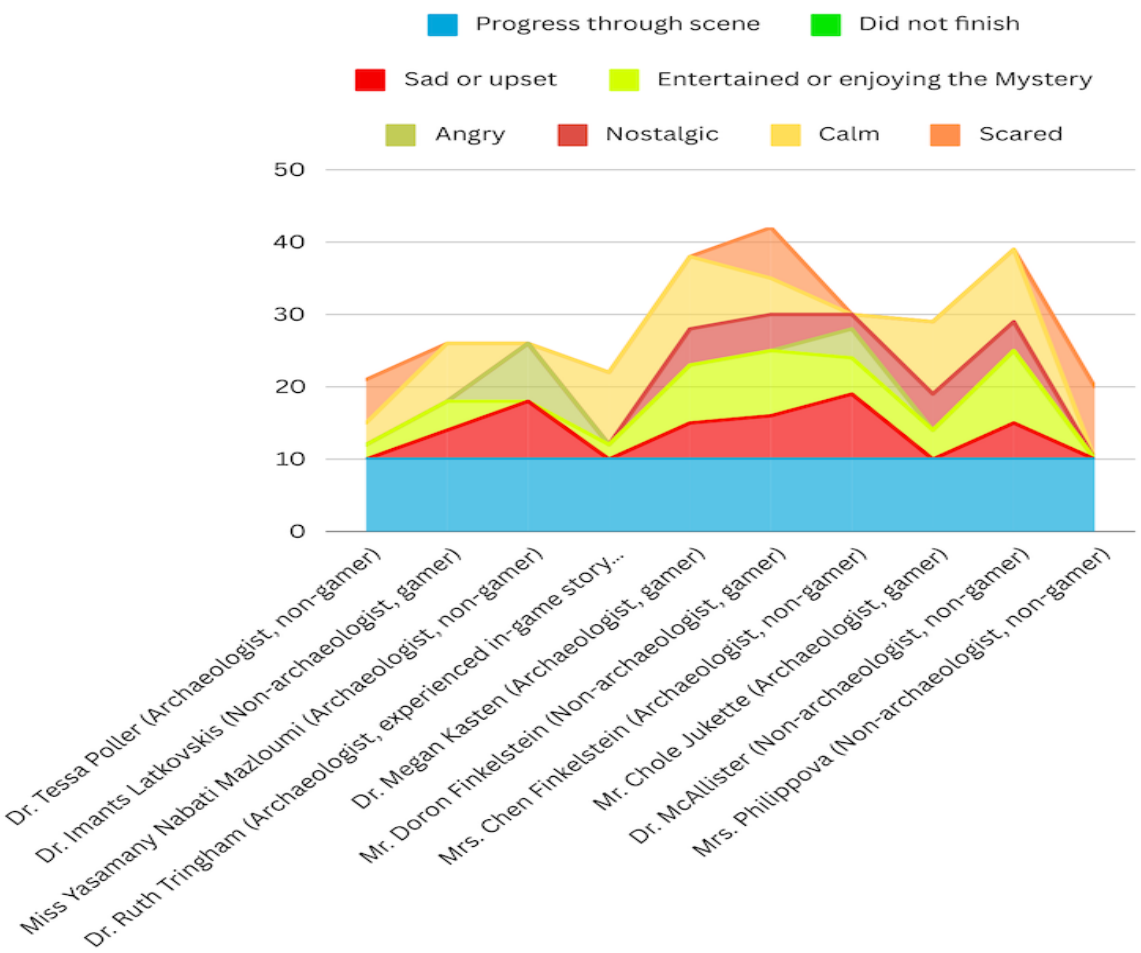


Fig. 51 Comprehensive example of motive responses per user and levels of reaction.

There may have been two issues at play in this context; the first is that the freedom to do whatever one wanted with no repercussions may have allowed the users to get rid of the ethical boundaries of culture and see what would happen if they didn't follow them; the second, which may need to be contemplated despite the moral challenge it presents, is that just like in "Avatars, Monsters and Machines" (Morgan 2019), the users managed to express themselves as they would if the social norms allowed it, the analogy being users making avatars looking like ogres and fantastic beings in the earlier research.

There is an underlying tendency up to this point, that queries the artificial fact-based scientific hardline created in archaeology in the last century. The question is whether it is necessary, and what its positive effects are on the subject itself. In a world where now it is possible to recreate environments and experiment on them in terms of emotions, ethical standards, morality, and societal rules, is it still an appropriate standard to attempt to create limiting rules that may not even be relevant or applicable within weeks as the technology keeps on evolving faster?

One clear example of the consequences of this concept is “The London Charter”, and its successor, the “Seville Principles” (The London Charter 2009, Seville Principles 2017), which that showed how the ageing process made rules such as the ones expressed in the above outdated at an ever-increasing speed, with the result in recent years that such rules would not make any difference, or would even slow down progress with no beneficial results, focusing on the ever-present obsession with precision over emotive expression.

8.5 Can a person with no programming or design background produce an archaeogame to trigger specific emotions?

The above question was a prominent issue throughout the experiment and was interconnected with all the other topics discussed by this research, hence having a section of this concluding chapter dedicated to it.

The archaeogame was developed to experiment on and provoke specific emotions, combining several techniques from both archaeogaming (Reinhard, 2017, 2018, 99-106, Rassalle 2021, 4-11, Livingstone et al. 2016, Graham 2022, Hageneuer et al. 2021, 631-642, Politopoulos Mol 2021), serious games (Bogost 2010, Brathwaite & Sharp 2010, 311-329, Swain 2010, 217-235, Isbister 2016, Villani et al. 2018, 85-99, Shinkle 2008, 907-915, Przybylski 2010, 154-166, Laamarti 2014, 11-11, Frome 2007, 831-835, Järvinen 2008, 107-130, Hodent 2017, 2020, Swink 2008) and current game design with immersive narrative (Smith & Worch 2010, Ermi & Mäyrä 2005, 1-14, Brown 2015, Brown 2018), and inserting them into an archaeological material culture defined context to remove the barriers that made archaeology immune to emotion, and see the effects that such a combination would result in regardless the level of digital skills of the archaeologist involved in the process.

In the previous sub-chapters, the discussion was mainly aimed at observations and hypothesis developed during the experiment. Still, at the end of the analysis, one significant aspect seemed to permeate through negative emotions, nostalgia, and the ability of users to perceive emotions. This was the narrative storytelling, but not in the general sense; the specific way in which narrative storytelling has been developed in archaeogames and to entice the sense of mystery and provoke the emotions in a controlled manner to extract the particular emotion intended.

The design of the game was strongly based on the narrative and puzzle design aspects, but this was not a arduous task that required high levels of programming skills, the entire

design was carried on by assessing and identifying various add-ons and shortcuts to completely avoid programming. This was done by utilizing first of all Unity, which was a free game engine, this tool was chosen first of all for its easy accessibility and secondly for the wide variety of processes it could deal with without resorting to monthly or yearly payments (Unity 2021).

Although Unity still would require programming skills and a level of design expertise to function in an ideal way, the process was shortened and completely eliminated investing in some addons from the Unity Market store, where there was a wide variety of programs easily inserted into the base program to substitute the skills that I lacked in programming. With a simple keyword search, such as visual scripting or adventure creator, I quickly accumulated several addons to Unity that allowed me to simply design a game using phrases such as ‘Make the player pick up the object’ or ‘Make the roof collapse’.

The entire process was successful given the decisively working game with no game breaking bugs and by adding digital designs I made in Blender (Blender 2021) another free program used to design objects, environments and characters, I was able to create a living world in which to place the emotive triggers designed through the game design techniques learnt from the literature available (Smith & Worch 2010, Ermi & Mäyrä 2005, 1-14, Brown 2015, Brown 2018).

The design process then became a simple narrative exercise, where I had to create strong enough emotive triggers built out of logical and development from the literature and place them against the interactions performed by the selected users, to compare against the expected emotive reactions.

The applied techniques in order to obtain the immersion described in the literature (Ermi & Mäyrä 2005, 1-14, Przybylski 2010, 161) were interconnected with the nostalgic narrative embedded in the puzzle mystery-inducing emotive stories inspired by games such as “Heavens Vault” (Caracciolo 2022, 29-47) in terms of archaeogaming and “Monkey Island 2” and “Gabriel Knight”, and also, to a certain extent, “Discworld”, a game that combined the satirical writing of Terry Pratchett with this same system (Jensen, 1993, Revolution Software 1996, LucasArts 1991, 1992, Perfect Entertainment *et al.* 1999) in terms of compelling narratives that attract the attention of players, enhancing their immersion within a fictional world (Bozdog & Galloway 2020, 789-808).

The above techniques were successfully employed in many areas of the game despite the low level of ability in both game design and programming I possessed, showing the possibility of low skilled digital designers to produce effective archaeogames.

Following the principles of immersion and puzzle designs of a simple nature extracted from some of the examples in the literature such as the cup puzzle that relied on simple positions differences to arrive to a conclusion about the task to perform (Smith & Worch 2010), I attempted to recreate the emotive triggers developed in Dear Esther (Briscoe 2012) connected to objects, adding an extra layer of interaction.

The puzzle/emotive design was based on the emotions behind simple objects and simple acts in everyday life recreated through the overly complicated stories that the user has to go through to obtain seemingly mundane objects, the user has at the same time to pay attention to little details when having conversations and obtaining clues from the environment, otherwise it is impossible to solve the puzzle, this therefore forces environment immersion, regardless of the attention deficit, or even the interest and connection to the environment of the users; they become part of the environment and put themselves in the shoes of the main character as they are still being pushed by the sense of achievement and completion of having solved the mystery.

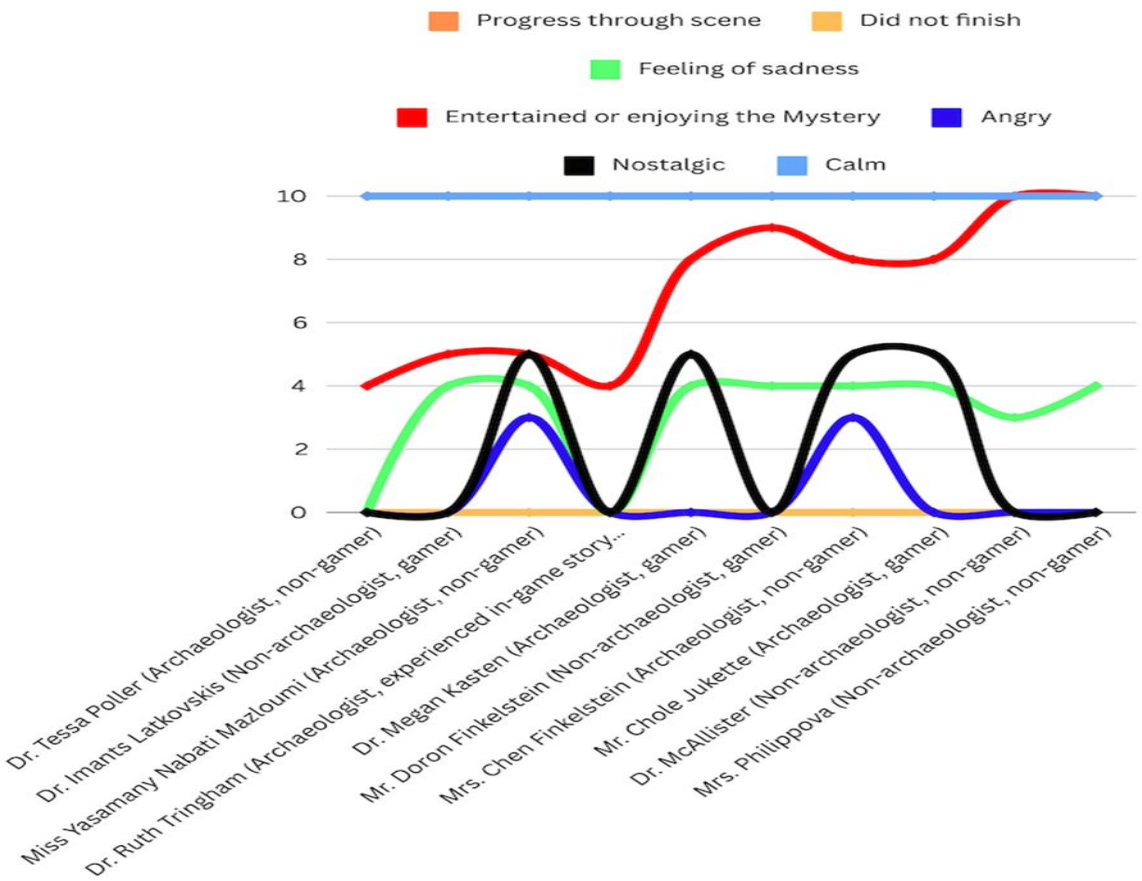


Fig. 52 Emotive responses per user and levels of reaction showing the subjective nature of the results.

The interesting observation I recorded during the process of designing puzzles and comparing the narrative filled game with the archaeological reconstructions currently using digital technology, was that archaeology had a tendency towards moving away from the process of immersion by creating invisible walls as described by Dr Watterson and Dr Schofield who gave clear examples delineating the issue in their experience, and giving overly complicated dry explanations with no emotive inclusion and an overemphasis on precision, which did not give much importance to the direct story, and ignored entirely the little side stories required for immersion as described above.

This made it impossible for users to get attached to, or immerse themselves in the environment, and, as a result, even understand the environment the archaeologist intends to portray, the only issue was that due to the lack of experience and time to investigate further, some triggers were not well designed compared to the needed level, as for example the lack of immersion in conversations such as the one with the seller shown as a 0 interaction in the graph in Fig. 53.

The archaeogame in this research has experienced and attempted to fix the above-mentioned issues in archaeology, avoiding the major issue of lacking skills to develop a game which could be one of the main barriers faced by archaeologists who may want to take part in attempting to develop emotive archaeogames. At the same time, it has attempted to recreate the interconnected storytelling and emotive environments of the 90s games to create a strong sense of nostalgia; in some cases, especially in terms of cultural proximity, it has been substantially successful.

Some other factors may have influenced the results beyond the level of skills in programming and design, such as the subjectivity of emotive responses due to different experiences and different cultural backgrounds of simple personal preferences as shown in the chaotic result in the graph found in Fig. 52, which is typical of qualitative research.

Some of the more instinctive reactions were observed even in the least connected users, showing behavior beyond what they would have reasonably done in real life. However, in other cases, the emotive response was still random, unpredictable, or did not happen at all, which shows that there is still a long way to go in re-integrating emotion in archaeology and storytelling.

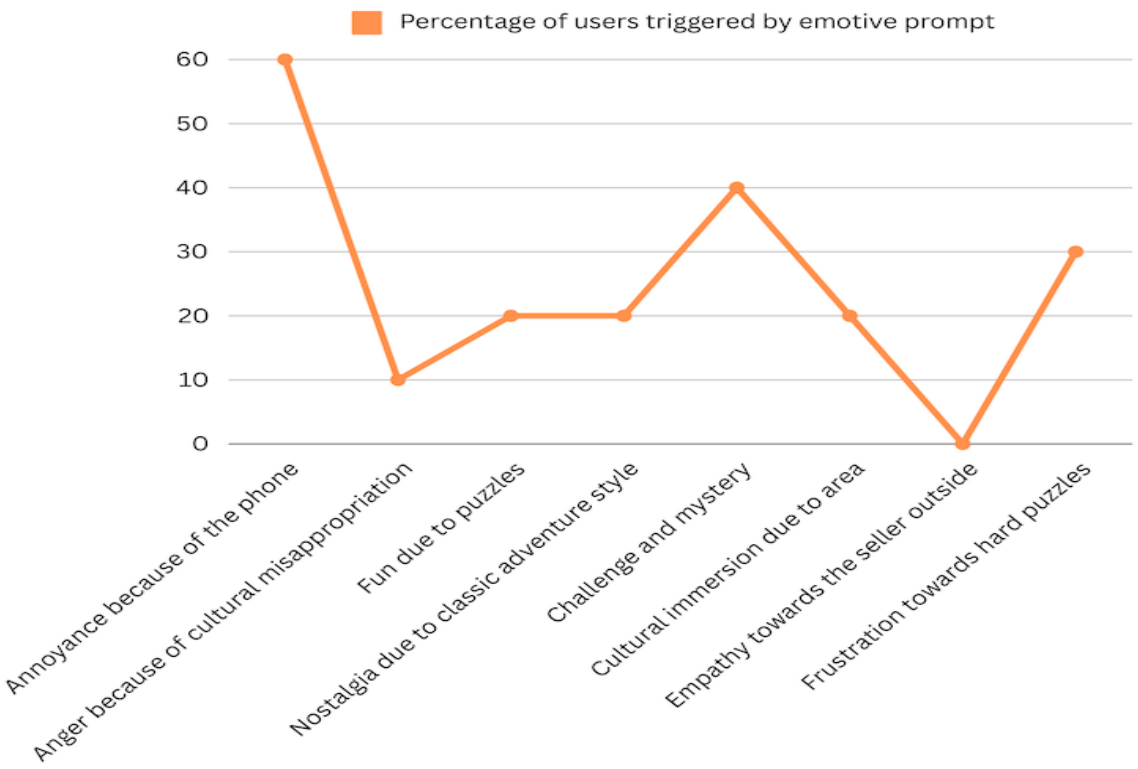


Fig. 53 Percentage of effectiveness of triggers despite my level of digital skills.

8.6 Results

Through the processes involved in this research, the interviews targeting many aspects of emotive study, game design, archaeogaming, serious games, narrative design, cinema, literature, psychology, sociology, and the questioning of the direction in which archaeology has been going till now, a wide variety of important information has been extracted, giving more clarity to the limited studies involving emotions such as nostalgia, and more complex emotions such as the negative ones listed throughout this study.

As a result of the vastness of such an investigation, many questions have inevitably been raised. They will lead to further analysis on a topic of which researchers have barely scratched the surface. Following the realisations within this research, the main conclusions are:

- Archaeology has been distancing itself from human emotion, going towards hard science and removing the human factor in what is essentially a human science, thereby risking the removal of its reason to exist. This can be clearly understood by examining the data shown in Chapters 2 and 3 and the interviews with the researchers investigating the unwritten emotive factors they experienced.

- Archaeological reconstructions contain many features that further block the expression and triggering of emotion. This point is supported by many statements throughout the interviews with authors such as Dr Watterson and Dr Schofield in Chapter 3, and many emotional complaints made by the testers of the archaeogame through Chapters 6 and 7.

- Negative or as some of the researchers named them, complex emotions, have traditionally been avoided due to their ethical difficulties. They are possible to recreate in the digital world, but research does not focus on them due to fear of mistakes. This point is visible from the beginning of the research in Chapter 2 and is intrinsically found in many of the interviews conducted and explained in Chapter 3.

- Nostalgia, a multifaceted emotion, permeates all situations when working with emotive triggers in archaeology and gaming. It is an area of study that needs much more work done, as it may hold the key towards recreating the past with functional emotive triggers. This complex emotion is present in every aspect of this research, from the very beginning in Chapter 2 when talking about its presence in many case studies, to the media industry and game industry in Chapter 4, and it is referenced in all the interviews with both researchers and game users in Chapters 3, 5 and 6.

- The sense of mystery and solving such mystery is unequivocally a driving factor towards keeping users interested in exploring archaeogaming and reconstructions in archaeology. It should be integrated into all methodologies to make them more effective. This theoretical concept was first coined during the first interview with Dr Tringham in Chapter 3 and was further tested when interviewing both the same researcher and other users after experiencing the archaeogame in Chapters 6 and 7.

- Specific triggers or situations do not guide emotions but are entirely subjective to the user; something that may make one person angry may make someone else very happy, etc. But irony and comedy seemed to have been good polarizing factors decreasing the feeling of uncomfortableness and allowing the experiencing of complex emotions within a bearable level. This aspect was clear from the results and comments of users in Chapters 5 and 6.

- There is little evidence that cinematographic experiences or high levels of graphics enhance the emotive reaction from users; on the contrary, some games that have low-level graphics have received better emotive reactions, possibly due to more time and skills being dedicated to the development of the narrative, which takes less equipment to create. There is a need for further investigation in this area. The data accumulated in Chapters 6 and 7 show clear evidence of this disconnection between graphics and emotive experience.

- The effects of audio, music, sound, and voice were evident in some interviews, as the users expressed the need for more voice acting to get better immersion. Some reacted in extreme ways to sounds and music that was out of place or annoyingly high-pitched. The conclusion came from the almost unanimous opinion of all the users testing the archaeogame in Chapter 6.

- The results from the interviews and the working game with several narrative and emotive functions and triggers developed for this research is proof that there is a possibility for archaeologists with little to no skills in digital design or programming to produce games that to some extent can trigger emotive reactions and display aspects of archaeological material culture combined with complex academic debates all the while displaying an attractive and entertaining narrative to immerse the user. The entire project was developed by a field archaeologist with very limited design skills and no programming skills, and the development and design has been shown and explained throughout as an example of tasks to perform in order to replicate the experiment.

- There is still a long way to go in this research, and it needs to be continued, as the experts in this area are very few and are customarily limited by the constraints of artificially created archaeological rules developed to dampen risks at the expense of losing its core function as an investigator in the study of humanity. This underlying concept touches all the chapters on a deep level, as the reason behind this research's need was the effect that this division between humanities studies and hard-science archaeology has created.

The research represented in this dissertation has barely scratched the surface of a much larger corpus of study; while classical archaeology concentrates on facts, precision, and creating more and more rules to control subjectivity and give the dry facts to society, there is another side to archaeology that has been purposely ignored, and only now is it possible to go back to it and re-discover it. With the help of digital technology and the introduction of multidisciplinary studies, it is possible to bring back humanity to a subject that has been limited to hard science despite its obvious origin in emotions and human behaviour, based on subjective interpretation, complex emotions, mistakes and a constant presence of nostalgia which triggers its study.

The use of digital archaeogaming has proven in this research that many tools at archaeology's disposal are being ignored for fear of mistakes, fear of dealing with ethically difficult topics, and fear of showing society that no matter how objective archaeology claims to be, there will always be a level of subjectivity driven by human emotion. Such topics should be better understood and studied, not ignored, and hidden.

There are vast opportunities at the end of this study to spread the research towards the effect of sound and speech on digital emotive archaeology, the utility of rules and regulations to control how digital assets are used for interpretation in archaeology, and a much more comprehensive study on the emotions that enforce the need for archaeological research, the emotions that archaeologists feel, and the ones that are hidden and why they are hidden.

Such concealment runs the risk of eliminating a large and important part of what the nature of archaeology and history is: a study of the human emotions that drove humans towards performing the feats that are recollected in history and documented by archaeology.

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Appendix

9.1 Interviews transcripts dataset DOI

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https://doi.org/10.5281/zenodo.8189283
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9.2 Consent form example

CONSENT TO PARTICIPATE

AGREEMENT TO THE USE OF DATA

[Archaeogame testing interviews and academic interviews]

I understand that **Luca Ottonello** is collecting data in the form of video or telephone interviews for use in an academic research project at the University of Glasgow.

I have read the information sheet outlining the project and its methods and had the opportunity to ask any questions arising from that.

I consent to participate in the interviews on the following terms:

1. I can leave any question unanswered.
2. The interview can be stopped at any point.

I agree to the processing of data for this project on the following terms:

1. The use and storage of research data at the University of Glasgow reflects the institution's educational/ research mission and its legal responsibilities in relation to both information security and scrutiny of researcher conduct.
    a. As part of this, under EU legislation (General Data Protection Regulation [GDPR]), I understand and agree that the 'lawful basis' for the processing of personal data is that the project constitutes "a task in the public interest" and that any processing of special category data is 'necessary for archiving purposes in the public interest, or scientific and historical research'.
    b. I understand that I have the right to **access** data relating to me or that I have provided and to **object** where I have reason to believe it has been misused or used for purposes other than those stated.
    c. Project materials in both physical and electronic form will be treated as confidential and kept in secure storage (locked physical storage; appropriately encrypted, password-protected devices and University user accounts) at all times.
2. Interviews will be transcribed, and the recordings will be deleted when the dissertation is submitted.
3. In the case that the discussion in the interviews may have a bearing on my previous published work and other outputs, I understand that my comments may be cited by name. All other names and materials likely to identify individuals will be redacted.

4. Since I am opting to participate as a named participant, I may withdraw from the project at any time until its completion date without being obliged to give a reason. In that event, all records of my remarks will be destroyed immediately.
5. Project materials will be retained in secure storage by the University for ten years for archival purposes (longer if the material is consulted during that time). Consent forms will also be retained for the purposes of record.
6. The materials may be used in future research and be cited and discussed in future publications, both print and online.

ALL PARTICIPANTS -- TICK AS APPROPRIATE:

☐ I consent to take part in the above study and agree to be cited by name. I understand that I will be allowed to see and approve the use of my comments in pre-publication drafts of any outputs.

☐ I consent to take part in the above study and request to be anonymised.

☐ I agree to the terms for data processing outlined above.

☐ I confirm I have been given information on how to exercise my rights of access and objection.

Name of Participant: _____ Date: _____

Signature: _____

Researcher's name and email:	Luca Ottonello (l.ottonello.1@research.gla.ac.uk)
Supervisor names and emails:	Dr Rachel Optiz (rachel.opitz@glasgow.ac.uk) Dr Gareth Beale (gareth.beale@glasgow.ac.uk)
Department address:	Archaeology School of Humanities Gregory Building Lilybank Gardens University of Glasgow Glasgow G12 8QQ

Participant Information FAQ: Plain Language Statement	
Study title and Researcher Details	
Title:	Focussing on people in archaeology: Using game storytelling to provoke specific emotions in archaeological environments
Researcher's name and email:	Luca Ottonello (xxxxxxxxxx@student.gla.ac.uk)
Supervisor's name and email:	Dr Rachel Optiz (rachel.opitz@glasgow.ac.uk)

	Dr Gareth Beale (gareth.beale@glasgow.ac.uk)
Degree:	Ph.D.
Department address:	Archaeology School of Humanities Gregory Building Lilybank Gardens University of Glasgow Glasgow G12 8QQ UK

Invitation

You are being invited to take part in a research study based at the University of Glasgow. Before you decide it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part. Thank you for reading this.

What is the purpose of the study?

Archaeology has concentrated mainly on the precise recollection of facts, and in the reconstruction area, the buildings, landscape, and structures have been the main focus. The area with less research has been the narrative and emotional factors associated with historical storytelling.

The reconstruction area of archaeology has been steadily developing in the VR world, making it possible for archaeologists to give a relatively detailed visual representation of their findings, especially in conjunction with Lidar, Photogrammetry, and 3D CAD reconstruction. What this project is aimed at is the possibility of bringing the human agency into the reconstruction processes, integrating interactive narrative and emotive triggers to do so.

This research focuses on methods with which archaeologists may explore and distribute their understanding and interpretations of the human emotive factor in history. It focuses on character stories, contextual and cultural interactions, and creating an emotional reaction and attachment to historically reconstructed figures talking to us through the architecture.

For this research, emotion will be identified as any feeling that archaeologists attempted to portray when reconstructing a contextual environment and any feeling that the users of the proposed digital game environment may feel when triggered by the story being told.

The research will analyze the ways in which archaeologists attempted to visually show the narrative to the audience, how emotions have been integrated into the narrative, and how new and old technology may allow a portrayal of emotional interactions when recreating archaeological context.

Finally, this research will focus on negative emotional triggers through the archaeological game produced as an integral part of the study. This is because very little has been done in the area of research due to the controversial and stressful nature of the emotions involved. It means that during the use of the archaeological game, the users may be exposed to feelings such as anger, frustration, denial which have been created on purpose, and some of the story aspects may offend people, which will be done on purpose.

I believe that the fact that these emotions feel uncomfortable, and that the academic community tends to avoid such subjects out of the effect they have on themselves and the public is not an excuse to shun away from this area. As uncomfortable and debatable as the need for these emotions may be, there is still a scientific duty to archaeologists as scientists to explore and understand them so that they may even be controlled in the future and create a situation where conflict may be tactically avoided through their understanding.

Why have I been chosen?

- Academic participants: You are being approached because of your previous research and public engagement.
- General participants: You are being approached because of your expertise in areas of archaeology, emotion studies, interest in archaeogames, and game technology.

Do I have to take part?

You have the absolute right to refuse participation in this study without any consequences.
If you participate in the experiments and wish to withdraw later, please inform the researcher using the contact details. Depending on the schedule for processing your responses, this may or may not be possible. See below regarding anonymised responses.

What will happen to me if I take part?

This research comprises a range of different activities with different groups. Some parts will be based on interviews or survey responses. These will partly draw on participants' experience playing through a game environment reconstruction of a particular historical context.

- One group will be researchers working in the area of archaeology and reconstruction. Interviews will take the form of interviews lasting approximately 20 minutes relating to issues associated with their research as well as their views on the game environment. These will be conducted online/ via Zoom and will be recorded. This group will also be given the option to test the archaeogame but be classified as expert-named users unless explicitly requiring anonymity.
- The second group will be a combination of members of the public interested or aware of research in archaeology, emotion studies, interest in archaeogames and game technology, and researchers from the previous interviews, who will be asked to comment on their experience of the game play-through. This will be by means of semi-structured interviews. These will be conducted online/ via Zoom and will be recorded. The members of the public will be classified as anonymous unless explicitly asked to be named, and the researchers from the group above will be instead classified as expert-named users unless explicitly requiring anonymity; all the options regarding anonymity are available at the start of this form.

Will my taking part in this study be kept confidential?

- Responses from the members of the public will be anonymised unless explicitly required to be named as above.
- Responses from researchers will be cited by name, as the discussion here will be related to their publications and other outputs. Researchers who choose to take part in the testing of the archaeogame and interviews too will be cited by name as an expert group unless they explicitly require anonymity.

Note that assurances on confidentiality will be strictly adhered to unless evidence of wrongdoing or potential harm is uncovered. In such cases, the University may be obliged to contact relevant statutory bodies/agencies.

What will happen to the project data and the results of the research study?

Recordings of the experiments will be retained for analysis in the proposed PhD dissertation and resulting publications or other public domain outputs, such as conference presentations.

Who is funding the study?

Self-funded

Who has reviewed the study?

The study has been reviewed and approved by members of the College of Arts Research Ethics reviewer panel.
How can I access information relating to me or complain if I suspect information has been misused/ used for purposes other than I agreed to?
You can contact the researcher or their supervisor in the first instance if you have any concerns. If you are not comfortable doing this, or if you have tried but don't get a response, or if the person in question appears to have left the University, you can contact the College of Arts Ethics Officer (email: arts-ethics@glasgow.ac.uk). Where there appear to have been problems, you can – and indeed may be advised to – submit an 'access request' or an objection to the use of data. As part of the University's obligations under the General Data Protection Regulation (GDPR), participants retain the right to access and object with regard to the use of non-anonymised data for research purposes. 1. Access requests and objections can be submitted via the UofG online proforma accessible at: https://www.gla.ac.uk/myglasgow/dpfoioffice/gdpr/gdprrequests/#. 2. Access requests and objections are formal procedures not because we mean to intimidate participants into not raising issues but rather because the University is legally required to respond and address concerns. The system provides a clear point of contact, appropriate support, and a clear set of responsibilities. 3. Anyone who submits a request will need to provide proof of their identity. Again, this is not to deter inquiries but rather reflects the University's duty to guard against fraudulent approaches that might result in data breaches.
Contact for further information
See above for student and supervisor details.
If you have any concerns regarding the conduct of this research project, you can contact the College of Arts Ethics Officer (email: arts-ethics@glasgow.ac.uk).

9.3 Risk assessment table and questions DOI

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https://zenodo.org/records/10467445
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