Valletta: Streets of History:

Documenting the Process of Developing a Location-Based Game in the area of Maltese History and Culture

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ABSTRACT

Playing Maltese History is a project funded by Malta Arts Council involving the research for and development of a mobile AR game about the cultural history of Malta titled *Valletta: Streets of History* (Bewitched Mitches 2023), officially released in March of this year. As a concept, it was conceived in an effort to bridge the gap between historical research and detective games; or rather to make the profound connections between the two practices explicit. The design of the game attempts to simulate the process of conducting archival research by situating the player in the role of a detective-historian who unearths details from Maltese history and culture, which are not generally foregrounded in the textbooks. The game invites the player to trace these events in actual locations by means of geolocation mechanics and AR elements. It additionally employs more traditional methods of ludic engagement, like puzzles and scoring games, which are thematically adapted to reflect the historical content of the game. In this paper, the development team first analyses the research supporting the project by highlighting the affinities between historical research and detective games. In the second part, we document the process of development from conceptualisation and funding application to research and implementation up to dissemination. In this, we aim to contribute to the theoretical discussion around game design methods and approaches, especially within the context of historical games, as well as providing a practical example of game development and distribution for other interested game designers and academics.

Keywords

Historical games; game design; detective fiction; Maltese history; AR; educational games; cultural heritage

INTRODUCTION

Our project 'Playing Maltese History' is the product of both academic enquiry and industry practice. It started as an idea over three years ago and gradually took its final shape through collaboration and attempts to obtain funding. In April 2022, we managed to successfully secure a national grant and started on the actual research and development. The project concerns a location-based AR mobile game that facilitates and augments historical research for both recreational and educational purposes. Through the game, the player explores, uncovers, and playfully engages with selected episodes from Maltese history, heritage, and culture. Our chosen period, the 19th to early-20th century, falls within the so-called 'British period', when the predominantly Catholic Mediterranean islands of Malta were colonised. The game invites the player to assume the role of a modern-day historian/detective, who searches the national archive for lesser-known microhistories, placing them within the larger context; the coupling of historicisation with a link to the situated present invites comparison with our own contemporary context and prompts further reflection. The stories of the game are based on actual archival findings with additional fictional elements, such as NPC guides, which make the gameplay more engaging. This is one of the first AR games to deal with Maltese history, at least in outdoor public spaces. AR has found previous application in Maltese museums and heritage buildings (see for example: Barbara et al. 2023, on evaluating an AR experience implemented in the Sacra Infermeria museum). A recent game not restricted to a single heritage site, *It Happened Here: Stella* (Mighty Box 2022), is set in another old Maltese city (Senglea); however, it focuses on more recent oral history and memory presented as a choose-your-own type of adventure played out in auditory sequences rather than in AR (Carabott 2022).

The player of *Valletta: Streets of History* (Bewitched Mitches 2023) is prompted to topologically trace three stories by visiting historical locations, points, and/or buildings associated with each story in Valletta, the capital city of Malta. In these locations, the player uncovers historical and anecdotal information and tries to piece them together in order to unlock the next location and progress with the story in a 'treasure hunt' sort of experience. Each location is accompanied by original art inspired by the historical narrative that recreates the atmosphere of the bygone era. In appropriate locations, the game is augmented by means of AR that enables the player to experience a multimodal engagement with their environment, bringing history to the present. The experience is further enhanced by mini-games that the player can unlock throughout their gameplay. These mini-games are thematically inspired by each story and location and are designed accordingly.

The historical aims of the game are twofold: the player learns about history; and conducts historical and archival research while they explore and interact dynamically with Maltese history, heritage, and culture. The game is intended not only for history aficionados and heritage industry practitioners, but also for tourists, and teachers who can use the application with their students for a more fun and interactive way to teach them those parts of history that may not always be included in textbooks. The game's main purpose is to disseminate historical information to the player and educate them in a recreational way about Maltese past and culture.

The intended outcome has another aspect. Besides the development and release of an original cultural heritage application, the design and research of the game fall within a wider spectrum of historical game studies questions pertaining to the interplay between historical research and gameplay. In particular, our game may function to demonstrate that detective games are able to engagingly not only simulate but also facilitate historical and archival research. It could be noted that digital games have "a long history of using archival material" (Hartman et al. 2021, giving the example of the Discovery Modes in *Assassin's Creed: Origins* and *Odyssey*). Games offer an opportunity for players to become invested in historical research; uncover facts; cross-examine sources; apply critical thinking to the material; and exercise their induction and deduction skills. They make this process accessible because they can simulate *in situ* research and investigation that may not otherwise be equally accessible to non-officials or non-experts. Players can gain access to primary sources and experience first-hand what historical research entails, developing thus their critical thinking and digital literacy skills.

While there are many commercial games that position the player in the role of a detective, they tend to lack rigorous historical research and to follow fictional storylines loosely based on actual events. On the other hand, so-called serious games that concern cultural heritage and history tend to focus primarily on learning outcomes using game mechanics in a limited and secondary manner. In our game, we wanted the player to have access to real archive documents and learn about real stories, albeit in a partially fictionalised version. This enables us to show the connection between historical research and detective gameplay more strongly and succinctly. It also allows us to appropriate generic game mechanics, like AR and puzzle games, to simulate the practice of research for targeted events and applications while maintaining a recreational value. As such, our game aims to bridge the gap between design for fun and design for education offering a balanced middle-ground. Both our research framework and our development and design process are described in the following two main sections. Finally, we also refer to the process of conceptualisation and funding as a success story for acknowledging game design as a valid research project in and of itself.

THEORETICAL BACKGROUND AND RESEARCH

Education

In recent years, we have seen the development of serious games that engage with historical research, primarily in the area of cultural heritage (Kontiza et al. 2020), which promote accessible learning and education with recreational elements. There are also mobile applications that use gameplay, gamification, and/or virtual reality (VR) or augmented reality (AR) to engage visitors in museums and historical sites and provide them with a more compelling and participatory experience (Goodlander 2009). While serious games have indeed proven conducive to their intended learning outcomes (Andreoli et al. 2017; Bellotti et al. 2012), they exhibit certain disadvantages. They are usually designed as part of a specific educational project and are thus often discontinued after they have fulfilled this purpose, becoming unavailable. By 'serious games', we here understand games that are primarily designed for education, and which are free of charge in comparison to commercial games with educational elements. In such games, the ludic elements, the parts that make a game recreational, are often limited. This may result in participants quickly losing interest and in low replayability – once the lesson has been taught there is no reason for the player to want to play the game again. Carlo Fabricatore (2000) argues that games designed with the explicit aim of education often reduce the game angle to focus on content-learning, a practice which results in a missed opportunity to exploit the full potential of games as a medium. Our project aims to bridge the gap identified above: build a game that balances out its recreational and educational goals – balancing "fun" and "usefulness", as Haugstvedt and Krogstie (2012) advise on the design of AR mobile applications for conveying historical information and cultural heritage.

In fact, the opposition between 'recreation' and 'education' may be overstated. Research has shown that even games designed to be primarily recreational can indeed foster learning and interest players in certain subjects and/or historical places and periods (Kee et al. 2009; Gee 2005; Williamson Shaffer 2006; McCall 2011; Frode Hatlen 2012; Elliott and Kapell 2013). Stephanie Fisher observes that players outside the classroom "already use these games to learn history" (Fisher 2011, 72), making games "a point of entry to play with the past" (McCall 2018, 416). While our game is site-specific and centres on historical research and cultural heritage based on archival research, and therefore exhibits certain limitations and constraints, it is designed to promote recreational engagement. The AR mechanics, logic puzzles, and mini-games enhance players' involvement with history and heritage in a ludic manner, while geolocation enables spatial exploration and wandering.

Our game contributes to historical research and engagement by also evoking intangible cultural heritage. As Jonathan Barbara (2020) has argued, although many games, most notably the *Assassin's Creed* series (2007-), provide 'accurate' digital recreations of tangible cultural heritage, such as buildings, cityscapes, and artefacts, it is much rarer for a game to be able to capture the intangible cultural heritage. Roders and van Oers (2011) define intangible cultural heritage as practices, representations, expressions, knowledge, and skills that are recognised as part of cultural heritage. Barbara (2020) makes the argument that intangible cultural heritage supplements and helps us

understand better how tangible cultural heritage was used. This also results in designing more engaging cultural heritage applications and games.

In our game, the game mechanics reflect the process of historical research and bring into the forefront cultural practices and lived experiences rather than simply facts, dates, and historical figures. Maltese cultural heritage and history become the leitmotif of the game experience and not simply the backdrop or cultural flavouring as in other games, e.g. *Tom Clancy's Splinter Cell: Conviction* (Ubisoft Montreal 2010) and *Chronicles of Mystery: The Scorpio Ritual* (City Interactive 2008). We were able to achieve this through a series of design choices: by equating the role of the detective assumed by the player with that of a historian, by giving the player access to actual primary sources we have secured through proper archival research, by enabling gameplay based on the results of this research, and by asking the players to visit and explore primary locations. The rationale for and effects of the above are further explained in the following subsections.

Player as Detective-Historian

John Scaggs notes an analogy between the work of the historian and that of the fictional detective, particularly in the ways they sift evidence for relevance and interpret the clues (Scaggs 2005, 122-3). Roger Caillois (1983, 3) compares the detective to an "actual investigator": "A detective in a novel uses his ingenuity to answer the same traditional questions that an actual investigator puts to himself: who? when? where? how? why?". These are also questions we tackle; although our 'why?' does not merely imply the individual's motive, usually so conveniently isolated in a traditional detective novel, but rather also includes the socioeconomic conditions that led to the events. Caillois goes on to note moreover that the crime "must be enigmatic" and seem impossible (3), with the 'how' taking centreplace; our cases however, deal mostly with the ordinary, and the localised situating 'when' and 'where' are foregrounded, with the contextualised 'why' being another foregrounded concern that is partially addressed, though not wholly resolved (having regard to the complexity of contextual factors and historical processes).

Even more pertinent to our purposes, Caillois suggests that the detective novel becomes more clearly a game when it abandons its novelistic structure and gives the reader direct access to the clues, "the raw materials" (10). It thus makes the reader the detective while dispensing with the mediating investigation narrative – thus too, revealing the detective genre's "true nature" (and also telling us something about the detective novel itself). An example of this would be where the reader is tasked with opening a kind of evidence 'dossier' or case file, "filled with police reports, the depositions of witnesses, photographs of finger-prints, railway tickets, bits of hair, matches, bloodstained pieces of cloth picked up at the scene of the crime". The reader may be invited to deduce the perpetrator's identity based on their perusal and analysis of the evidence, with the solution contained in an envelope. Caillois (10) reminds us that this is the approach adopted in *Murder Off Miami* by Dennis Wheatley and J.G. Links (1936).

"At this extreme point", Caillois (1983, 10) tells us, "it is not a tale but a game, not a story but a problem." Bernard Suits (1985, 212) concurs that the more "stripped down" the detective story is, the more closely it approximates a game. Giving the reader more direct access to the clues would be an attempt to minimise the mediating narration and the story of the investigation, in favour of making the story of the crime more directly perceptible to the reader (Todorov 1977, 46). However, while our game requires the player's presence on-site and encourages the player to directly access historical evidence by providing photographs of actual archived documents (though the clues are also offered as text prompts), we do not seek to eliminate reminders of mediation. We include the mediating investigator (the detective-historian) player character. Moreover, by emphasising the historical displacement and distance, we maintain our insistence on the embedding and overlaying of space and time, and the defamiliarisation arising from this convergence in its interweaving of the familiar with the unfamiliar – which we hope will act as a prompt to reflection.

Given the affinity between games and detective fiction, it is no surprise, then, that detectives (and detective stories) have long figured in ludic form. It would be unfeasible to list every detective game that has been released: suffice to say, by way of example, that Sherlock Holmes, arguably the most

famous of fictional detectives, has been the subject of both board games (*Sherlock Holmes: Consulting Detective* (Sleuth Publications 1981)) and digital games (the *Sherlock Holmes* franchise (Frogwares 2002-)), among others.

Clara Fernández-Vara (2018) argues that the tropes of detective fiction give shape and form to gameplay in two primary ways. First, following Tzvetan Todorov (1977), she points out that detective stories establish a dual structure in which two temporal levels are interwoven, with the past-tense story of the crime and the present-tense story of the investigation closely tied together. Games that adopt this structure task the player with spatial exploration as a means of uncovering and piecing together a story that has already happened, and that the player is unable to change or affect. In this way, as Marie-Laure Ryan notes, games that create an "embedded narrative" structure – which "covers any attempt by the player to reconstitute events that took place in the past" (2005) – even if they are not explicitly themed as detective stories, cast the player as a de facto detective facing a mystery to be solved.

Secondly, Fernández-Vara writes, detective stories can also provide "behavioural scripts" for players to follow (2018). Thanks to a generic cultural familiarity with the tropes of what a detective does and how they behave, players can easily step into the "ludic subjectivity" (Vella 2016) of a detective with an awareness of how they are expected to act. This dual structure of a detective story – insofar as an archival scholar can be considered a detective, at least – fits the objectives of a historically-focused game which invites the player, as an individual situated in a contemporary context, to uncover historical sequences of events they are unable to affect. Given the focus of an AR game on inviting exploration of, and new perspectives on, physical spaces – in our case, the city of Valletta – the detective-story-as-game was also a useful approach because of its capacity to highlight "how spaces can pose a hermeneutic challenge," such as by "navigating urban space as a detective" (Fernández-Vara 2018). A limitation of our game as it currently stands is that the player "follows" a predetermined investigative trail, rather than "working" as a detective who leads the investigation; apart from some notable exceptions, this is a potential still relatively untapped in many so-called detective games, as noted by Bjarke Alexander Larsen and Henrik Schoenau-Fog (2020).

Library as Story Hub

The detective-historian character seems to bear a natural association with the library. Laura Marcus, writing about film, notes that: "Scenes in libraries (frequently involving searches through newspapers or legal documents) condense the processes of research and investigation and come to stand for the hermeneutics of the film as a whole" (Marcus 2015, 215). Given that the focus on such archival research was the foundation for our project, we made the choice to foreground the National Library of Malta as a central hub and starting point for each of the game's three stories. This choice was not only taken for reasons of convenience – the National Library building is centrally located in Valletta – but also to foreground the archive itself, and to underline the player's positioning as an archival researcher. The National Library was in fact a point of return for the researchers on our team, and the player thus gains an insight into the research process by retracing our steps.

The library is a location that opens onto other paths. Libraries in games have likewise traditionally been starting points for paper trails, clues, sources for backstories that give insight into motivations, etc. The library's functionality in terms of genre and game thus converges with its use as a primary archival resource for historians. Games have moreover used archives in different ways, and to different ends. For example, contrasting *Call of Duty* (*CoD*) games with *Valiant Hearts* (Ubisoft Montpellier 2014), Hartman, Tulloch, and Young (2021) note that *Valiant Hearts* doesn't simply "use" archival material as *CoD* does, but also makes the historical archive part of its structure – with history being more than "simply background content to be witnessed", becoming in addition "a space for exploration and reflection". They point to interactivity with the archive as a condition for public history to arise.

As they comment, "Archives are central to practices of public history. Be it museum, gallery, library or other form of collection, archives are the configuration and instantiation of the logics of public history." Curation occurs within a cultural context, connected to the local and public aspects of history, in our case also linked to the library as a physical location. As John P. Wilkin (2015, 237) argues, "a library's

collection is not owned solely by the library, but by the society or culture that has collected it and put it in the library in the first place. We own the collection as a culture, and we must attend to it as a culture." The library and archive is, in its (ongoing) social and cultural function, a repository that safeguards heritage; in our game, it holds significance as a heritage institution, but also as a source of more individualised stories (no less part of our heritage) – preserved in the pages, though sometimes submerged in the official account (hence, requiring some 'detective' work to extract and trace). This function of the library has a public interest dimension, and the interactivity with the archive in our game invites the public to participate in historical practices.

Primary Sources

Accessing primary sources is one such practice. Our game gives players disciplinary training and insight into the work of professional historians – simulating the method, not simply the content. Our game simulates various aspects of historians' methodology: archival research; narrativisation; and contextualisation in terms of longer-term social processes. This supports its educational potential. In Catherine Alexander's words: "the unmediated encounter with unique primary source material can be exciting and inspirational and, for some, the first insight into research method" (2003, 154). The 'source method' is a tried and tested pedagogical approach to history education, in Malta as elsewhere (Vella 2020). While our game is not 'unmediated' (for one thing, our selection frames the material), it provides access to primary materials that the general public might not be aware of; moreover, we deliberately decided to include the National Library (Bibliotheca) as a prologue location/stories hub, in order to guide the player to a repository of such primary materials, where they may also be directly accessed; we indicate the source and locations of any primary materials used, whether in the Bibliotheca or other archives. Additionally, private collections would often not be accessible to the general public, so in some cases our game provides the only access to unique sources (see, for example, Figure 1).

Sam Wineburg studied the possibilities of learning by examining "the differences between history as traditionally taught in school and as practiced by historians" (Elliott and Kapell 2013, 15; Wineburg 1991), by giving them different historical source materials. Wineburg concluded that this approach actually helped students learn to think like historians, more than a fact-based approach would have (Williamson Shaffer 2006, 31). The direct (albeit in our case digitally mediated) access to primary materials seems to incentivise, engage and excite students – initiating them into certain skills associated with professional practice, and fostering a deeper familiarity with the materials and their use as evidence. Jeremiah McCall's (2011, 15) experience as an educator confirms this: "All of these questions [that students came up with after playing *Rome: Total War*, in class with McCall] have been the subjects of research and writing by professional historians; when presented with a game, these students were able to pose the kinds of questions that experts in the field do." Like Adam Chapman (2016, 173), we believe that games can "offer structured access to types of historical practice."

Since our primary sources revolve around individual microhistories, there is also a personalisation at work, as we discover the practical impact of certain policies and social conditions on affected persons. James H. Billington (2015, 261) makes a (perhaps over-optimistic) claim for humanisation as an effect of exposure to primary sources: "primary documents of knowledge and creativity humanize the study of history and culture." As a design choice, this following of an individual's story was a way of framing and streamlining our narrative – however, while leaving room for encounters with other stories in passing, as well as reflections on surroundings (tangible and intangible heritage), etc.

Via the AR elements and the mini-games, the player's engagement with Malta's past and present is further facilitated in ways that augment the physical, for example by the player's interaction with objects that for preservation reasons they cannot actually touch or with buildings that have not withstood the passage of time and no longer exist.
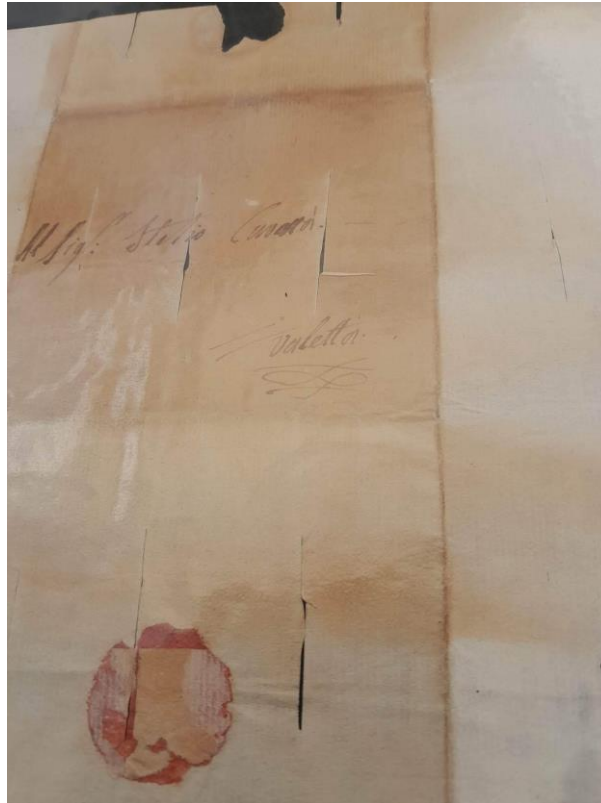
Figure 1: From a private collection: Letter disinfected by slitting (collection of Giovanni Bonello)

Primary locations: The City

In the spirit of psychogeography, we decided to adopt an approach to city exploration that is not limited to the city centre, though this is our starting point. We follow the active centres and city rhythms of a different time (for example, places that were important to the Jewish community at the time; streets that would have been busy conduits for comings and goings but have now fallen into relative disuse; etc). This comes close to the situationist idea of "a renovated cartography" (Debord 1955), which in our case takes the form of an alternative map of the city – pinned onto the existing map, but highlighting places that have since fallen into the background; as in the situationist approach (Debord 1955), we aim to turn the player's steps away from habitual routes. We draw the player's attention to places on the periphery of Valletta's newly teeming gentrified bustle, or prompt the player to view central attractions in a new light. Understanding the past "on its own terms" (which Hartman et al. 2021 see as key to "historical empathy") is not fully achievable (we maintain awareness of our own positioning and its differences, as well as similarities), however our game attempts to give the past its own space(s) – quite literally.

In effect, the city space becomes comparable to a museum (only one that is a less controlled space, and not a space apart) that can be meaningfully interacted with. As in a museum, there may be a direction and sequence that one is guided to take – but one can always diverge, linger longer at a particular exhibit, site, or artefact; meander back to previous spots, etc. The player follows a series of clues that prompt them to traverse the city from location to location. Depending on the player's relation to Valletta – whether they are, say, a lifelong resident or a first-time tourist – the clues will draw on their existing knowledge about the city, but might also require them to look up information they might not already know – such as, say, consulting a map of Valletta to locate a street that breaks from the grid-based plan most of the city follows.

It has long been an accepted truism of urban studies that individuals navigate the complexity of city space by forming what Kevin Lynch referred to as an "environmental image," a kind of cognitive map that "limits and emphasizes" what enters the individual's perception and awareness based on their own interests, orientations and purposes (1960, 6). By structuring practices of wandering and exploration in relation to the physical city space, the game also invites players to shift their environmental image of

the city, foregrounding in their awareness elements and dimensions of the city they may not otherwise have paid attention to.

Walking is not simply an empty filler between locations, but central to the experience, as the players find their own way around the city, and the AR anticipates and supports this:

> In much AR Art, walking (as a strategy of embodiment) is crucial to the participant's experience of an AR Artwork. Indeed, the work presupposes a participant who is willing to move around a series of nodes, finding, tracking, and pausing, before moving on. This participant's exploratory situation differs markedly from that of the conventional art gallery, where a viewer needs only approach an experience. AR Art demands an extra level of effort from the participant. Yet, this effort pays off by adding to a heightened aesthetic, critical engagement, and experience of the work. (Wright 2014, 5)

As Mochocki (2021) notes, location-based AR heritage games may also offer a particularly apt convergence of the affordances of digital games with those of physical heritage sites – including "object-related authenticity" of the site, "activity-related authenticity" of embodiment, digital augmentation, and ludic challenges – which work together to enhance the experience of tangible heritage. The use of a handheld device, as in our game, enables mobility along with site-specificity (Nisi et al. 2008; Haugstvedt and Krogstie 2012), and facilitates the exploration of public space (Wright 2014). Though the route between points is up to the player, the set locations divert their paths from the standard tourist trail. The actual design choices and process of development are further described in the following sections.

PROCESS OF DEVELOPMENT

After a failed attempt at getting funding, we decided to take action to ground our request in an example, demonstrating what could be done. Some of the team (as Bewitched Mitches 2021) created and launched the small game "Burn the Witches" at the Cultural Heritage Game Jam, which served as a pilot for the *Valletta: Streets of History* game. This smaller-scale implementation was designed to test our idea. It sufficed to show that the project would be feasible and had potential for further expansion, and strengthened our next funding proposal. The current game, having a more extensive form and diversified gameplay (including the AR features and the mini-games) would have been impossible to develop without funding from the national Arts Council Malta, which enabled us to gain access to required resources. Unfortunately, many equally exciting projects fail to take off due to the lack of institutional and funding support.

The first three months of the project were devoted to archival and desk research. The development phase followed next and covered the largest part of the project, six months in total. The development was divided into four interconnected subareas: design, narrative, programming, and art. Four of us undertook the research, design, and writing, three did the programming, and we had one artist for all the sprites and UIs. Despite this division based on expertise, all groups worked in close cooperation and constant communication so that the end game would be a smooth experience. In the following sections, we go through each phase of development in more detail, highlighting particular aspects of interest.

Archival and Desk Research

Given our game's premise, a lot of attention was given to first carrying out extended archival and historical research, including both primary and secondary resources. There were a couple of pragmatic constraints that informed our research process. With Malta being so rich in history, we decided early on to limit the time period we would be researching for practical reasons. We chose to focus on the 19th to the early 20th centuries due to the accessibility of the archives: there was more material to peruse and the language of the documents was predominantly English or Italian. Prior to that, the official language of the archives was Latin. This limited not only our own ability to research the primary sources, but using such primary sources would also have diminished the readability of the materials within our game since we could not assume a familiarity with Latin on the part of most of our players, with our game targeting a general audience.

The researchers visited three archives, consulted private collectors, perused the available material, and collected the necessary primary sources on which the gameplay and narrative of the game was based. The search for and selection of primary sources was historically rigorous, supplemented too by desk research where we consulted the work of historians. We also kept an eye on the suitability of the material to be used in building an engaging interactive narrative appropriate for the game in development. The methodology of our research was primarily based on the standard scientific method of archival research, namely studying the historical documents (Kaplan 1990; Ramsey et al. 2010; Ventresca and Mohr 2017). Given that part of the archive is not properly catalogued, our research methods de facto made use of editorial as well as archival skills to find the best sources available for our intended use.

After an initial period of familiarising ourselves with the existing material, we decided on three thematic areas: poverty, the 1813 plague, and the Jewish community. We further refined our selection based on the following criteria, that the primary sources:

1.   Be interesting and engaging enough to be adapted into a story

2.   Be accommodating to interactive elements, for example contain at least an agent, an action, and a process

4.   Concern microhistories and relatively unknown parts of the Maltese history

5.   Contain elements or traces of cultural heritage, intangible cultural heritage included, showing that the microhistories are embedded in socioeconomic and political processes as "history from below" (E.P. Thompson 1966), not isolated or decontextualised.

Design

Having gathered and selected our resources, we moved on to the designing process: turning the primary material into a game. Design involved deciding about the game actions and the progress of the game: the locations the player would visit, how and why they would interact with the AR elements of the game, what the mini-games would be, and how they would fit into the narrative and setting of the game. The design workload revolved around two main areas: firstly, the gameplay in the form of location-hunting and secondly, the interweaving of AR and mini-games. The first part concerned the storylines, the choice of appropriate locations within the map of Valletta, the spatial design of the 'treasure hunt' as the archival mystery that would link one location to the next, and the writing, which focused on highlighting interesting historical and archival facts about each location while also including clues and hints for the players to solve each storyline quest. The second part was devoted to the design of mini games that would be thematically cohesive with each story and location, as well as the inclusion of elements using AR technology that would augment player experience.

Narrative Design

The archival research provided the basis for the game's storylines but narrativisation was achieved via additional partial fictionalisation that respected the character of the original timeline and tried to convey and recreate the life and scene of that period. Our game design can accommodate a multitude of stories and locales, but we started with three:

-   the execution of Antonio Borg, who broke quarantine regulations in the midst of the plague that ravaged the island in 1813 (see Peresso 2018); this story gives an insight into quarantine practices, such as the 'Lazzaretto' (quarantine centre – see Galea 1966; Cassar 1987) and the methods erroneously believed to be efficacious in the disinfection of letters (see Bonnici 1984; Cassar 1987, 372; also: Giovanni Bonello's private collection, some items from which feature in the game – for example, slitting of letters shown in Figure 1).
-   the story of Isidoro Mifsud, a young servant who stole from the household he was working in, to support his brother: "mio fratello [...] piangeva perche aveva fame" ["my brother was in tears because he was so hungry" – our translation] (see also: Pullicino 2016, 32). For context, we also included an encounter with a petitioner to the authorities, demonstrating the effects of the

criminal justice system on poverty at a later stage in the punishment process – for this, we included the plea of a widowed mother discovered in the records, asking for early release for her son from prison, because she had been "thrown into the greatest state of poverty" (her request was dismissed). Working with location, we direct the player to a flight of steps near the docks, which used to be packed with people begging for food and money (Bonello 2013).

- the story of a Jewish woman, Ondina Tayar, who battled the odds to become one of the first women to graduate as a pharmacist from the University of Malta in 1933. Ondina's story allows the player to traverse through the personal hardships and achievements of the Tayar family as they establish themselves in Malta. This personal story sheds light on the experiences of the general Jewish community in Malta as they try to live an ordinary life while living in a primarily Catholic country.

Our game aims to cover parts of Maltese history that are not widely discussed or known. In so doing, our players have the opportunity to uncover and learn more about underrepresented groups and minorities. As already discussed, our project also contributes to and participates in curation, which in Wilkin's words, "is sometimes seen as the creation of truths, or at least as work that transcends bias. Yes, we select, and thus show bias, but a core tenet of collection development is acknowledging and surmounting bias" (Wilkin 2015, 238). Recognising that selection is inevitable and never neutral (White 1980), we decided to select in a way that highlights the marginalised. For example, in the Jewish community story, we included the forbidden romance between a Jewish boy and a Christian girl. While showing that both communities used religion to forbid the youths from dating people outside of their faith, we also contextualised the story within the cultural and historical milieu, highlighting the hardships that the minority Jewish community faced on an island where the dominant institutionalised religion is Christianity.

The sources themselves guided our selection, in our alertness to the inscribed traces of movements towards forgetting/forgetfulness. For example, in the course of our research, we came across a photograph (Borg 1985, 31) where Ondina Tayar, the heroine of the Jewish story, was one of a minority of women amongst a group of pharmacists, her face in shadow. This seemed to mirror and reinforce the dearth of local cultural representations of Jewish women, in a way that disturbingly literalised the invisibility. Ondina's story was found by chance as we were conducting research on the other stories. To mirror this accidental discovery, the player protagonist finds the photograph 'by chance' as they are looking for information about another topic. Like Ondina in her photograph, the history of the Jewish community in Malta, especially that of women, is lost among other parts of history which have traditionally been given more importance.We chose to work with this to bring her story into the light.

A similar example was found in the archives concerning the quarantine story. In the Government Gazette of the time, the initial victims of the 1813 plague were referenced by full name and address. Suddenly, however, in the midst of all those names and surnames, there is a vague mention of "una ragazza negra", a black girl (*Giornale di Malta* 1813, 288, Italian in the original, see Figure 2). The anonymity of a person of colour and the use of their skin colour as a means to identification, a discerning feature in a predominantly white population, is an open act of racism. We chose to keep this reference verbatim and have the player become critically aware of it. In a 'zebra puzzle' sort of game, the player is required to trace the origins of the spreading of the plague in Valletta to unlock a certain location. To do this, they have to put in chronological order various cases and also match correctly to each case a name, surname, date of symptoms, and address from a drop down menu. The absence of a name and surname for the black girl becomes glaringly obvious since the player will have no such values in the drop down menu, unlike all other cases. Staying true to our educational aims, we have also included a separate game screen, where we comment on the incident and our choice and ethical responsibility while including the original source for the player to read.
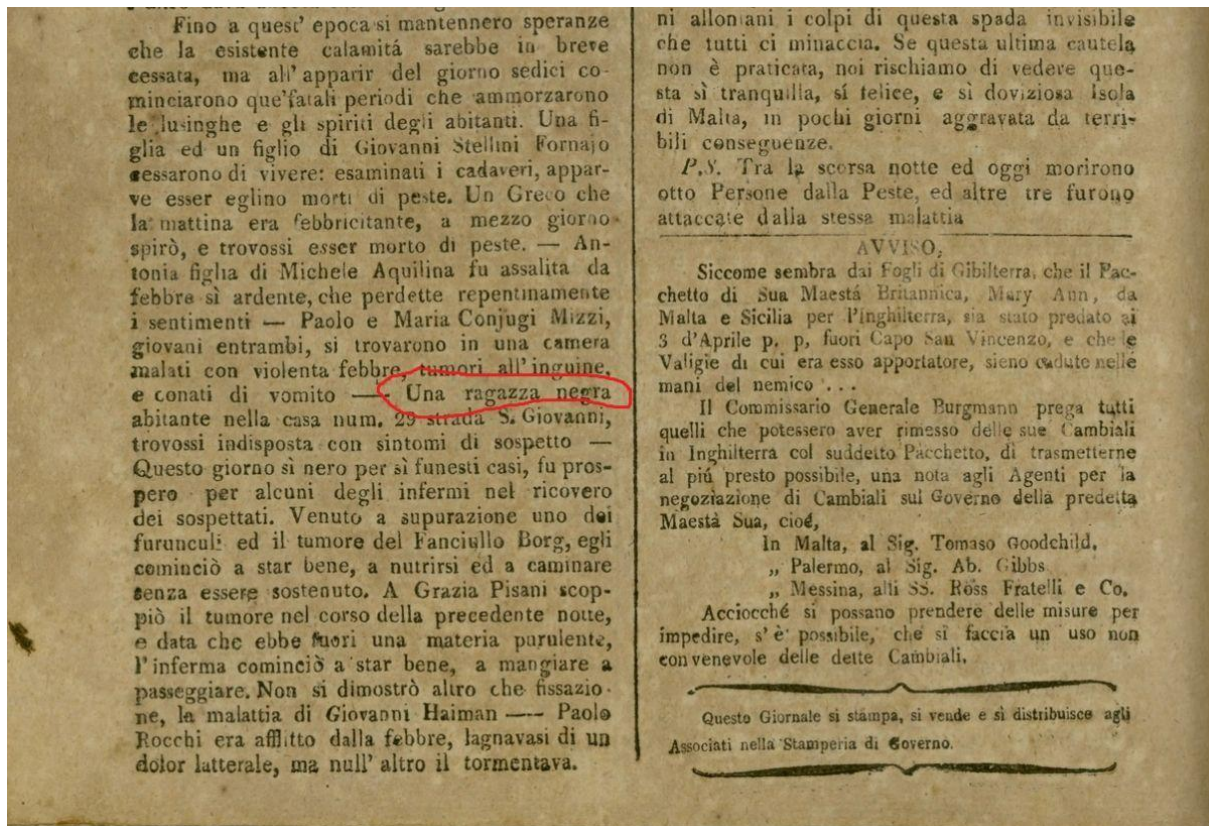
Figure 2: *Giornale di Malta* 1813, 288. National Library.

As the above examples show, we predominantly focus on an individual, yet we also draw attention to surrounding socioeconomic and political contexts; and we focus on individuals who do not fit the traditional institutionalised mould, "which appears frequently in museums" where "[i]ndividual historical agents (regularly Carlyle's Great Men), are often the subjects of exhibitions which seek to appeal to the public's interest in celebrities" (Holmes 2020, 108). In this, the personal story (to some degree fictionalised) and the historicising-contextualising converge for greater effect (and greater affective charge – see LaRell Anderson 2019, 188). This is also reflected in our writing style. We chose to adopt the first-person present tense so as to enhance the player's identification with the historian/detective and the player's perception of the game as a series of real-time events. Just like the historian character, the player visits different locations in Valletta and learns archived information. We also chose to develop a diegetic double hint system. If the player gets stuck as to where to go next, they get a descriptive hint which points them in the right direction. If they still fail to find the answer, a second hint gives away the solution. To provide the hints in a diegetic manner, we designed two NPCs incorporated within the story: a University history professor-cat who knows all things archival and aValletta stray cat who has access to unique places a normal human would not.

Mini-games and AR

The mini-games are designed to thematically enhance the engagement of the player with the story, adding a flair of playfulness and replayability to the experience while enabling the player to further reflect on and make use of the historical information gained throughout the game. The player is able to control their level of engagement with the story, with the mini-games being an optional element. Each playthrough follows a mandatory storyline, but the stories include additional content and exploration opportunities. It would then be up to each individual's choice whether to follow them or not; for example, reading further archival entries and visiting additional locations.

Sky LaRell Anderson (2019) proposes ways to make contextual information available as lore, which "by definition, is not invasive. It exists on the edges of both storytelling and interactivity in order to provide context and emotional engagement, and it has untapped potential to improve games with goals

outside of entertainment." On this basis, LaRell Anderson suggests that "serious games of all types, including education games, can include contextual information through text descriptions or collectible items" (193). We chose to do this in the Poverty Story mini-game (catching crumbs and coins thrown by more privileged passers-by), where a description of the coin *'ħabba'* ("represent[ing] in value about one-fifth of the smallest coin in any other monetary system in Europe", and "the smallest denomination to circulate in the whole British Empire", minted "exclusively for Malta", Bonello 2013; see Figure 3) is offered upon completing the mini-game, whatever one's score – which regardless of the number of coins, always turns out to be pitifully low. Loosely inspired by the principles of abusive game design (Wilson and Sicart 2010) – though without the antagonistic foregrounding of the dialogic relation between player and designer that Wilson and Sicart's original conception implies – the design, which turns even the player's triumph at getting a high score into an anticlimactic disappointment, reflects the unfairness of the socioeconomic conditions being depicted: you cannot 'win' your way out of poverty.

Figure 3: The 'ħabba' coin. Art: Aphrodite Andreou.

In another apt example from the Jewish story, a mini-game combines an AR model of what the Tayar residence used to look like, the original building long demolished, with the creative element of recreating Ondina Tayar's actions, making it a true AR experience. Taken from the retelling written by Aline P'Nina Tayar (2000), the player acts as young Ondina getting into mischief when trying to blow out the candles of the Christians participating in the procession of Good Friday. The player should try to blow out as many candles as possible while avoiding Ondina's father, who is keen to prevent her from doing so in order to protect their image in front of the Christian community. This lets the player see the personal and playful in the child-like side of the story where they discover Ondina's character. At the same time, the design presents to the player the implications of such seemingly trivial actions for the Jewish community as a whole.

Programming
Programming focused on the development of the mechanics of the game: the location-based system, the AR elements, and the mini games. It also covered the playtesting phase, including debugging and fine-tuning. There were three programmers working on the project, finding the middle ground between the designers' ideas and a functional and optimised application. Delivering a bug-free end-product with no clunky points was of utmost importance and the prime focus of our operations as a team.

One of the biggest challenges arose when implementing AR technology. Unlike projects which are set within a confined interior space (e.g. see the project referenced in Barbara et al. 2023), we could not rely on QR codes to trigger our AR elements. QR codes demand a physical surface to be laid on and

we could not ensure that our QR code stickers would not be removed by passers-by or the weather. We chose instead the approach of projecting an AR model of our points of interest, e.g. Tayar's residence mentioned above or a recreation of a 19th century brigantine, based on how they used to look back in the time when our stories take place. This was overlaid on top of the model of the present site, in order to give the players a view of how these points looked back then, as well as their difference now, [dis]connecting the past and the present. This is not an easy procedure to implement and then perfect, because the size of the models had to align with the present size of each building or object we wanted the AR model to be projected onto. Additionally, we had to ensure that the models were angled and positioned correctly at all times so that they could be projected onto each point of interest.

The game was developed in Unity. Unity has, in the last few years, incorporated tools for AR development for all operating systems. This helped us to develop the project in a short period of time. However, implementing AR in the platform is not as straightforward as it might sound. Even though most contemporary smart devices can support AR technology, each device has certain specifications. We had to make sure that the correct AR libraries and assets were used in order to achieve the correspondence of our AR system with the technology of most smartphones. We therefore used specific AR + GPS Location and Online Maps assets, tweaking the final code to our preferences. Thus, we could overlay the 3D models on the specific locations as well as showing the locations that the user needed to visit and their bearing vis-a-vis the player's position (see Figures 4, 5).

Last but not least, when programming a game, the usual procedure is to implement parts and then playtest them along the way. In a location-based game like ours, playtesting becomes more challenging since it requires the team to move to each location that needs to be tested and to interact with the specific points of interest that have AR support. Even if in the earlier stages of the development we could playtest with the geolocation turned off, the final versions of the game required our real-time and in-situ testing of the application.
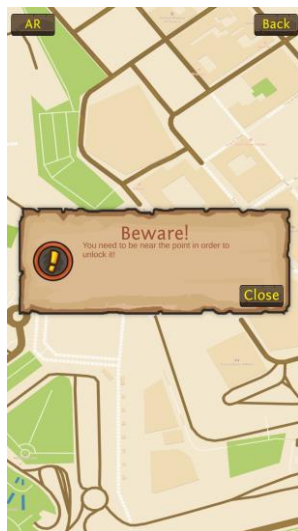

Figure 4: The message when the player tries to continue the game before having reached the right location.
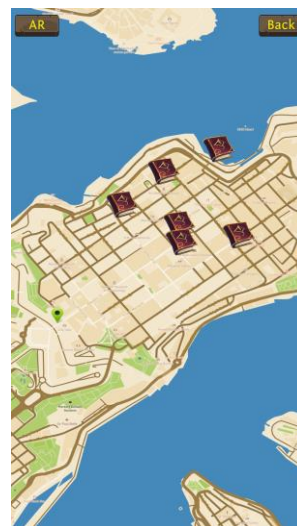

Figure 5: Our game map with books showing the points of interest after the player has unlocked a whole story.

Art

The art-related work concerned the game interface: UI texts, backgrounds, 2D illustrations, mini-games assets, and AR models. One of the first questions to be decided when determining an appropriate art style for our game was: how 'realistic' should the visual style of a game referring to and describing actual historic facts be? Other questions raised were: which parts of the stories should be illustrated and with what level of detail? – all while having to find dated photographic references that were not

copyrighted. Another added difficulty was how to approach and capture the essence of places that are presented in the stories both as memories, and fragments of the past but also as contemporary locations that the player can visit and experience for themselves.

The art style that we opted for diverges from realistic depictions and resembles impressionistic studies (bearing a relation to realism, but particularly working with the capturing of light and/or glimpse of space) of landscapes delivered in a more direct expressionistic way (where the artist's touch and style are more marked), since the main goal was to capture the identity and feeling of each place along with each part of the stories, and not to be limited by harsh realism. This was achieved by having the illustrations take the form of an assemblage of various journal entries (see Figure 6), painting drafts and sketches among scribbles, doodles, and notes. The level of realism differs from entry to entry, as if all the UI(s) of our game were created as notes: some of them are supposed to portray photographs, therefore a more detailed style is used, while others are hand-drawn notes for maps, adopting a rushed, amateur style. The found documents give us a glimpse into someone else's exploration. The palette used is primarily focused on earthly yet quite saturated tones and colours, so that it could successfully convey the muted colour combinations encountered in the stone of traditional Maltese buildings while capturing the light changes that someone could observe throughout the day and through the years. The scenes depicted are far from static; even when there are barely any passers-by pictured in the illustrations, there is a constant sense of movement. It is an attempt to capture the essence of a place, creating a feeling of continuity and fluidity that runs through how it was, how it is and how it will be in the future.

Figure 6: Early draft of the "journal". Art: Aphrodite Andreou.

The locations are protagonists in our game – they become the narrators that guide the players through history along with key items from each story. The NPCs and any figures are depicted in a similar style, almost as if they are extensions of the landscapes, and they serve a more complementary yet not insignificant role. Every member of our team at one point has lived on this island, and developing a game about the history of the places we experienced, at one point or another, daily, makes our process more personal. The illustrations are not mere depictions of historic events but parts of our own unseen stories as well; the views from our houses, our pathways to work, the square and the coffee place where we used to meet, the road that we took when we forgot our umbrellas, this makes every "journal entry" have a multidimensional character adding to the feeling that in every place that you walk by there is something more to be discovered.

CONCLUSION

Our mobile AR game offers an alternative way of engaging with history. It has been designed to foreground locations, individuals' stories, and social history. Public participation is a crucial component – the game takes place in public spaces, follows stories of persons lacking significant political power (thus making the experiences feel less remote), and gives players access to local history and cultural heritage. This article provided documentation of the research and development process as well as a discussion around the interdisciplinary theoretical frameworks that shaped our design choices, drawing upon: historical game studies; literary theories of detective fiction placed in relation to game studies approaches; the relationship between detective fiction and historiography; social history; heritage studies; games in education; urban exploration.

In terms of plans and potential for future development, the in-game library of stories can be open-ended, continuously updated with new stories based on further research. Moreover, in a future iteration of the game we could aim to more dedicatedly explore the game's potential for counterfactuality. The stories to be uncovered have already taken place, and we limited counterfactuality in this instance, deciding to focus instead on interweaving the archival approach with the implementation of AR. However, we are considering later allowing investigation to take diverging paths towards different readings and understandings of the past, as well as accommodating more speculative reflection – underlining historiographical uncertainty as well as contingency in history.

As we move forward, we hope to add a more inclusive interface, e.g., localisation in other languages and voice-over for hearing-impaired people, provided we acquire further funding. We have also laid the groundwork for future collaborations, for example with heritage organisations such as Heritage Malta. Finally, commercialisation or seeking avenues for commercial sponsorship could also be an option to explore. Given that the game's development was funded through a public grant and heritage is of public interest, we believe it is important that the game remain freely accessible and downloadable, with no in-game charges, microtransactions or locations with an entrance fee. However, avenues of commercialisation that do not interfere with this remit – such as advertisements of medium and small local independent businesses, e.g. traditional eateries or local artisans, which can be highlighted on the game's proprietary map more effectively in comparison to global maps – are possible as a means to fund the game's continued development, even if the game is to remain a non-profit initiative.

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