HANDHELD HISTORY

EXPERIENCING THE SECOND WORLD WAR THROUGH MOBILE APPS

RICHARD VAN DER BIJL

MASTER THESIS

ERASMUS UNIVERSITY ROTTERDAM

HANDHELD HISTORY

EXPERIENCING THE SECOND WORLD WAR THROUGH MOBILE APPS

Name: Richard van der Bijl

Student Nr.: 322836

E-mail: rvanderbijl@live.nl

Address: Polderlaan 69b2

               3074MC Rotterdam

Preface

'I LOVE DEADLINES. I LOVE THE WHOOSHING NOISE THEY MAKE AS THEY GO BY.'

(Douglas Adams - The Salmon of Doubt)

Four years of lectures, seminars and workgroups. Four years of texts and articles, papers, and of course deadlines. All of these years eventually contributed to this final product. From a study in communications to a study in history, it all comes back in this final thesis about historical apps. What seemed like a brilliant idea at first ('Great, there is literally nothing published on this topic yet!') turned out to be a slightly less brilliant idea at the moment I actually had to carry out research: finding the right literature, research question and apps to research made up for kind of a rough start. Together with the tendency to actually want to read and describe literally everything concerning my subject, and a lot of activities next to studying, this resulted in this thesis being finished much later than eventually planned.

Despite this delay, I was lucky to have Laurie Slegtenhorst as a supervisor who kept supporting me. I'm not sure if she got paid any extra for supervising my thesis, because she sure earns it. She had to be my supervisor for a longer period than planned, and did so next to her many other functions at the university. My special thanks goes out to her patience and helpfulness over the past year. I would also like to thank the other pleasant staff members at the Erasmus School of History Culture and Communication, who advised and supported me in writing this thesis, especially Robbert-Jan Adriaansen, Maria Grever, Kees Ribbens and Hester Dibbits. Besides them, I have also enjoyed the encouraging support of some great fellow students and friends, and the beverages they brought along during various study sessions.

Last but quite the opposite of least, I would like to thank my parents for supporting me over the past years, mentally, financially, and in all other positive adjectives imaginable. Time to move on to the next chapter.

Richard van der Bijl

Rotterdam, 30-06-2016

Abstract

Over the past decade the world has seen the rise of smartphones and mobile apps, covering all sorts of subjects, including history. This research aims to make a start in illuminating how such apps represent history, by showing how the Second World War (WWII) is represented through popular and museum-related mobile applications, and why this is done in this particular way. It examines these questions by investigating two groups of apps: five of the most popular WWII-related apps and three WWII-apps related to Dutch museums and institutes. Combined these eight cases cover a range of apps on one of the most popular historical subjects. Main focus points in analyzing these representations were the narrated stories, including the perspectives and different aspects on WWII that were given through the apps. These were related to the concept of remediation in order to show the motivations and rules dictating these representations.

It was found that the five popular apps present themselves as being authentic and highly immersive. Games turned out to be most popular applications in the app stores. In these games third-person shooters present WWII through Allied eyes, in which it appears one man (or ship) has the power to decide the outcome of the War. In this category of mobile games the outcome of history is fixed: events unfold in a linear sequence through the actions of users. Although strategy and simulation apps diverge from this pattern, all five apps are mainly focussed on the military aspects of the war. Military tools can be bought and upgraded, in these highly commercialized games. Apps related to museum turned out to be aimed immersive experiences as well, but contrary to popular apps they do so by providing information at historical sites. Stories are told mainly from an Allied perspective, and through personal accounts. Multimedia and location-technologies are used to enhance visitor experiences.

Overall these representations of WWII can be related to the theory of remediation. Visitors and users long for an immersive experience of this historical episode. Apps contribute to this demand by offering a mixture of authentic multimedia, engaging elements and the possibility to engage in stories at the exact place where the events took place. The narratives and images they present to their users build upon existing (popular) historical material, ensuring familiarity (and thus popularity and engagement) among their users. The story of WWII through apps largely remains the same as that one found in comparable media, apps rather form an extension to the existing network of representations. Their power lies in their possibility to deliver a story that can be personalized, accessed in shorts bursts and on the spot.

Keywords: *World War II, Second World War, WWII, Popular history, Mobile apps, Remediation, Representation, Smartphones, Heritage, Historical Culture*

Table of Contents

1. Introduction: Why we cannot look away from mobile screens

When the alarm rings, you swipe to the right on your screen and stay in bed to check your agenda for today. During breakfast your phone shows if there are any traffic jams and if you can get to work without delays. Many people will recognize these morning rituals, as we have become ever more dependent on our smartphones. Mobile phones are used all day long, leading people to sometimes totally forget to pay attention to their physical environment. It seems some of us have become 'Smombies', as the European youth-word of the year refers to smartphone obsessed persons.[1]

Since the first iPhone was launched in 2007, the use of smartphones and their mobile applications (apps) has become mainstream in most parts of the world.[2] Huge amounts of useful, and arguably less useful apps have been developed from that moment on: including apps covering history. In spite of the huge popularity of mobile phones and apps, not much has been published on historical apps yet. Historians should face this massive growth and start to think about the consequences these new possibilities could have for their discipline. As Astrid Erll rightly points out, the character of a (new) medium to a great extent influences its representations.[3] Therefore, research into history and historical representations cannot do without research into this new media and its capabilities.

Hence, this study aims to contribute to efforts made studying this new media phenomenon, by explaining *how the Second World War is represented through popular and museum-related apps, and why this is done in this particular way.* Given the huge variety of histories represented through apps, the Second World War (WWII) is a perfect subject to demarcate a smaller and more specific group of apps. Enough apps on this subject are available, while this war is one of the most popular historical episodes nowadays.[4]

In this research, eight carefully chosen cases (or apps) will be analyzed. This sample

---

[1] Smombie is short for "Smartphone zombie", See: Der Spiegel, "Jugendwort Des Jahres 2015: Smartphone + Zombie = Smombie," *Spiegel Online*, November 13, 2015, http://www.spiegel.de/schulspiegel/smombie-ist-jugendwort-des-jahres-a-1062671.html.

[2] "Smartphones" were already known in 2005, but the iPhone was to first to reach a huge public and can therefore be seen as a breakthrough in mobile technology. See: Gerard Goggin, *New Technologies & the Media* (UK, 2012), 36.

[3] Astrid Erll, *Memory in Culture*, Palgrave Macmillan Memory Studies (Houndmills, Basingstoke, Hampshire ; New York: Palgrave Macmillan, 2011), 122.

[4] Commissie Versterking Herinnering WOII et al., "Versterking van de Herinnering WOII," March 27, 2015, 2–4; Kenniscentrum Oorlogsbronnen, "De Nederlandse Belangstelling Voor de Tweede Wereldoorlog" (Amsterdam: TNS NIPO, May 2015), 15.

consists of popular apps and apps linked to museums and institutions. This research provides insight into the way in which they represent WWII as well as the underlying rationale. In what follows, a rather large (but possibly still incomplete) amount of concepts concerning representation is provided. This is due to the broad range of topics discussed in this thesis, since it deals with two different categories of apps. These theoretical explanations are followed by a historiography on some of the same theories, and most of all the way in which they are used in other research. Chapter two and three are empirically, showing how the war is represented in popular apps (Chapter 2) and apps related to museums and institutions (Chapter 3). The fourth chapter further relates these apps to remediation in order to lay bare the 'why' behind apps, as well as to show in how far these representations are unique for apps. The fifth chapter concludes this thesis, providing an extensive answer on the research questions.

1.1 *Historical culture: concepts on the crossroads of history and media*

As opposed to for example books or paintings, apps are available in many forms, ranging from games to e-readers and navigation programs. Hence, dealing with something as comprehensive as apps pushes this research to a theoretical position that goes beyond the mere study of history. Because of its topic this research is located at the intersection of game-studies, media-studies and research on history and heritage. This logically involves the use of a wide range of concepts from these disciplines. Some of these might appear far from historical, but are indispensable, since the medium is highly related to the message it accommodates.[5] Historical concepts are of course involved as well in order to comprehend and analyze the contents of these apps.

In what follows, apps will first of all be further defined, after switching to representation as a way of approaching them. Given the interactivity of some of the apps, scholars hold opposing views on how to regard such representations: as games or rather as narratives? A further look into discussion will shed light on how this research deals with this debate. Finally, the idea of remediation has a key role in this research and will be discussed in the last paragraphs.

---

[5] Adam Chapman, "Privileging Form Over Content: Analysing Historical Videogames," *Journal of Digital Humanities* 1, no. 2 (2012): 42.

Mobile applications: apps

Apps have restructured online processes and have had huge impacts on the way we think about and deal with information. Huge commercial processes surround these pieces of software which have structured large parts of the chaos of the internet for us.[6] Despite their huge impact, different definitions circulate about what an app exactly is, partly due to rapid technological changes surrounding this market.

However it is undebatable that the word 'app' is an abbreviation of the word 'application'. Applications used to be known as pieces of software, designed to perform certain tasks and to deliver output. While this definition still applies, applications got more and more related to mobile phones. These programs were no longer solely built to perform tasks on computers and notebooks. Instead of being run on those devices, applications became more and more associated with smartphones, since the amount of apps and app-usage explosively grew since 2008. Accordingly, the old function and use of an 'application' changed. According to Scolari et al., an app has now become an interface which 'connects the users with the contents' to which it links.[7] An app can thus be seen as a purposely designed filter, through which specific content (decided by the design of the application) can be exchanged.

Other more specific definitions are often used as well. However, apps, their stores, and mobile devices are evolving rapidly. As a consequence, too narrow definitions get outdated rapidly. For example, Fagerjord's proposition to define an app as 'an application distributed through an integrated, monopolistic outlet' is already outdated by the arrival of the Windows and Google Play stores and the possibility to install unofficial apps.[8] For this reason an app is here defined in a broader definition, following the Oxford Reference stating an app is 'a software program on a smartphone or tablet computer that carries out some useful function'.[9] This definition seems narrow enough to work with in this research, but does not exclude

---

[6] Pelle Snickars, "A Walled Garden Turned into a Rain Forest," in *Moving Data: The iPhone and the Future of Media*, ed. Pelle Snickars and Patrick Vonderau (New York, 2012), 159, 160; Carlos Alberto Scolari, Juan Miguel Aguado, and Claudio Feijóo, "Mobile Media: Towards a Definition and Taxonomy of Contents and Applications," *International Journal of Interactive Mobile Technologies (iJIM)* 6, no. 2 (2012): 30; Chris Anderson and Michael Wolff, "The Web Is Dead. Long Live the Internet," *WIRED*, August 17, 2010, http://www.wired.com/2010/08/ff_webrip/all/.

[7] Scolari, Aguado, and Feijóo, "Mobile Media: Towards a Definition," 30, 35.

[8] Anders Fagerjord, "Toward App Studies" (Internet Research 13.0, University of Salford, 2012), 4 (presented at Internet Research 13.0 at the University of Salford, 2012); Scolari, Aguado, and Feijóo, "Mobile Media: Towards a Definition," 31, 35, 36.

[9] Darrel Ince, "App," *Oxford Reference*, accessed January 10, 2015, http://www.oxfordreference.com/view/10.1093/acref/9780191744150.001.0001/acref-9780191744150-e-4443?rskey=IX5QOn&result=5#.

possible new app-features or the fact that some apps can also be played on tablet devices.

One final remark on mobile applications, is that formally apps are off course not 'media' in themselves. They are primarily software, but since the content ('information and experiences') of the hardware (a mobile phone or tablet) is so intrinsically bound to the software and vice versa, they are sometimes called media as well in this software.[10] The focus of course will be on the content of these mobile media, but especially given the dependence of apps on their hardware, technological features have to be considered as well in this research.

A popular past

Analyzing historical representations and media has its roots in the rise of mass-media and a growing overall interest in history. There is a general consensus that from the 1970's on, an information revolution took place in most (Western) countries. Televisions appeared in most living rooms, through which history had the opportunity to reach vast audiences. Since the 1990's this revolution got further empowered by the rapidly increasing amount of internet users. Characteristic of the internet and other new media was their enormous reach. A huge public could be reached, but even more important new media brought along the fading of traditional roles in the creation and consumption of history.[11] The huge, participating public gained access and power in the process of making history because of these developments.[12]

The democratization of history made sure that the public got a voice in deciding which histories were to be written, shown and remembered. In turn, this caused the legitimacy of the professional historian to erode, as history became more accessible for a broad public through all sorts of channels. No longer was history mainly something to talk or write about for the elites, instead the past increasingly became something to actually enjoy: it became a form of entertainment and something to engage with.[13] This democratization of history has led to the emergence of what Kees Ribbens calls a *popular historical culture.* This popular historical culture consists of all popular representations of history, and the way in which they emerge and are used by the public. Characteristic of this popular historical culture are the blurred boundaries

---

[10] Scolari, Aguado, and Feijóo, "Mobile Media: Towards a Definition," 31.

[11] Anna Reading, "Memory and Digital Media: Six Dynamics of the Globital Memory Field," in *On Media Memory*, ed. Motti Neiger, Oren Meyers, and Eyal Zandberg (Basingstoke, 2011), 245.

[12] C.B. Schulz, "Becoming a Public Historian," in *Public History: Essays from the Field*, ed. J.B. Gardner and P.S. LaPaglia, 2004, 29–32; P. Mooney-Melvin, "Professional Historians and the Challenge of Redefinition," in *Public History: Essays from the Field*, ed. J.B. Gardner and P.S. LaPaglia, 2004, 11–15.

[13] Schulz, "Becoming a Public Historian," 34–38; J. Carman and M.L. Stig Sørensen, "Heritage Studies: An Outline," in *Heritage Studies. Methods and Approaches*, ed. M.L. Stig Sørensen and J. Carman (London and New York, 2009), 17–19.

between fact and fiction, and a massive audience. Furthermore, this form of history is often a leisure product in which fictive elements are widely spread. History in this form serves as a popular subject for many successful movies and games.[14]

Because of these media-developments history seems to have become commercialized as well. History, memory and heritage seem to have become mixed up in and terms like 'experience' 'play' and 'relive' have become key terms in this atmosphere.[15] Museum and heritage institutes constantly search for a surplus on other museums and have to anticipate on the public and its demand for exciting histories.[16] Logically, this commercialization has been subject of debate for a few decades. Historians fear such representations and experiences could be too spectacular, distracting from educational goals. This tension between education and engagement is exemplified in an article in Dutch newspaper *de Volkskrant.* A new virtual reality experience is discussed, which offers a tour through the Sobibor destruction camp, raising questions on whether such images do not harm the reality of what the camp was really like[17]

Representations in historical culture

Reflecting the abovementioned changes in how history is presented, in the Netherlands Maria Grever and Kees Ribbens have argued for studying more than just histories. Instead, the impact of histories on the public can tell us more about the (popular) culture as a whole.[18] This infrastructure as a whole can be labelled as 'historical culture'. According to Maria Grever this concept includes all infrastructure through which societies and people are connected to history, including media, museums, narratives and even immaterial processes such as traditions.[19] Studying historical cultures thus entails adopting a meta-perspective on history, by looking not just at histories but also at the social and economic conditions in which they are embedded.

---

[14] Kees Ribbens, "Strijdtonelen. De Tweede Wereldoorlog in de Populaire Historische Cultuur," *Tijdschrift Voor Geschiedenis* 127, no. 2014 (2014): 85, 86, 97–99; Erik Meyer, "Problematische Popularität? Erinnerungskultur, Medienwandel Und Aufmerksamkeitsökonomie," in *History Goes Pop. Zür Repräsentation von Geschichte in Populären Medien and Genres*, ed. Barbara Korte and Sylvia Paletschek (Bielefeld, 2009), 274.

[15] Rob van der Laarse, *De Oorlog Als Beleving: Over de Musealisering En Enscenering van Holocaust-Erfgoed* (Amsterdam, 2010), 9; Ribbens, "Strijdtonelen," 90–94; Maria Grever and Carla van Boxtel, *Verlangen Naar Tastbaar Verleden: Erfgoed, Onderwijs En Historisch Besef* (Hilversum, 2014), 12.

[16] Ian Baxter, "Means Maketh the End : The Context for the Development of Methodologies to Assess the State of the Historic Environment in the UK," in *Heritage Studies. Methods and Approaches*, ed. M.L. Stig Sørensen and J. Carman (London and New York, 2009), 17–19; Ribbens, "Strijdtonelen," 95.

[17] Yannick Verberckmoes, "N(i)et Echt," *De Volkskrant*, March 3, 2016.

[18] Ribbens, "Strijdtonelen," 97.

[19] Maria Grever, "Fear of Plurality. Historical Culture and Historiographical Canonization in Western Europe," in *Gendering Historiography: Beyond National Canons*, ed. Angelika Epple and Angelika Schaser (Frankfurt/New York, 2009), 53–55.

Such research eventually appeared in the United States and Great Britain in the 1970's.[20]

It is in the light of these developments that studies into representation entered the stage in historical research. This term can entail a broad range of topics and is applicable to many disciplines. Representations are literally everywhere, and involve the relationships between languages, signs, and meanings. Cultural studies can for example be interested in how people interpret signs from paintings and how a sitting dog became a common symbol for loyalty.[21] Historians often embrace this concept to analyze and criticize the objectivity and truth of historical narratives and media, and is thus relevant for this research.[22]

Eventually, all history can be seen as a way of representing the past.[23] However in this research, attention is especially paid to the (rapidly) changed infrastructure in the form of apps, in combination with historical narratives represented through this medium. This means a basic concept of representation (as 'depicting' or 'portraying' something) is put to use in analyzing these apps as part of the historical culture.[24] Within studies into historical discourses, this means the narratives, perspectives and aspects of stories are often scrutinized.[25] This can cause problems in the case of studying apps however, since some offer multiple narratives and interactive content in which choices have to be made. Scholar in game-studies have tried to unravel these problems, taking different stances on these problems, as will be discussed in the historiography of this research in the next subchapter.

Authenticity and place

As explained, new media and the demand for historical experiences have shifted scientific attention to (popular) historical culture. Part of the set of concepts related to this culture is authenticity. Whereas objects themselves may be labelled as authentic, generally referring to the origins of an object and to the fact that the object is not counterfeited, this word actually

---

[20] Barbara Korte and Sylvia Paletschek, "Geschichte in Populären Medien Und Genres: Vom Historischen Roman Zum Computerspiel," in *History Goes Pop. Zür Repräsentation von Geschichte in Populären Medien and Genres*, ed. Barbara Korte and Sylvia Paletschek (Bielefeld, 2009), 11–12.

[21] Stuart Hall, ed., "The Work of Representation," in *Representation. Cultural Representations and Signifying Practices* (London, 2011), 16–19.

[22] William Uricchio, "Simulation, History, and Computer Games," in *Handbook of Computer Game Studies*, ed. Joost Raessens and Jeffrey Goldstein (Cambridge, Massachusetts, 2005), 332–33.

[23] Ibid., 331, 332.

[24] Hall, "Representation," 16.

[25] See for example: Pieter De Bruijn, "Bridges to the Past. Historical Distance and Multiperspectivity in English and Dutch Heritage Educational Resources" (Dissertation, Erasmus University, 2014); Geerte M. Savenije, Carla van Boxtel, and Maria Grever, "Learning About Sensitive History: 'Heritage' of Slavery as a Resource," *Theory & Research in Social Education* 42, no. 4, 516–47; Grever and Boxtel, *Verlangen Naar Tastbaar Verleden*.

refers to experiences as well, since understanding something to be authentic depends on the knowledge and background of the beholder. As an example, a simple chair can still invoke a sense of authenticity when the consumer is told that it belonged to Amadeus Mozart. The other way around, one of Mozart's chairs is not authentic to people who are not aware that the chair belong to the famous composer or who have no clue as to who Mozart is. In other words, authenticity is mainly a construct, depending on (historical) knowledge.[26] Given the dependence of authenticity on the knowledge of the users, the context of the object or representation is one of the most important cornerstones of authenticity. It provides the knowledge needed to fully grasp the power of a place, representation or object. Without it, user need to draw from their own knowledge, or the authenticity will remain 'hidden'.[27]

Besides longing for authenticity, a clear urge to visit historical places can also be discerned in popular historical culture. Jay Winter described this interest as the 'spatial turn', referring to the amount of historical trails and their visitors, which are both rapidly growing.[28] The historically places and buildings visitors want to travel to, should provide these tourists a feeling of contact with the past of such places. Such tours are often accompanied by rituals and commemorations, as well as elements to make them more engaging; offering experiences of the past. Great amounts of scholarly as well as political attention have since been paid to this topic.[29]

These feelings of contact with the past exist in the same way as the experience of authenticity: they are constructions where knowledge is key in experiencing the past in such

---

[26] Sharon Macdonald, *Memorylands: Heritage and Identity in Europe Today* (London, New York, 2013), 117–22, 126–33; Thomas Weber, "Erinnerungskulturen in Medialer Transformation. Zum Fortgesetzten Wandel Der Medialität Des Holocaust-Diskurses," in *Mediale Transformationen Des Holocausts*, ed. Ursula von Keitz and Thomas Weber (Berlin 2013), 43; Angela Schwarz, "Wollen Sie Wirklich Nicht Weiter Versuchen, Diese Welt Zu Dominieren?," in *History Goes Pop. Zür Repräsentation von Geschichte in Populären Medien and Genres*, ed. Barbara Korte and Sylvia Paletschek (Bielefeld, 2009), 27, 28; E. Kingsepp, "Immersive Historicity in World War II Digital Games," *HUMAN IT* 8, no. 2 (2006): 69–73.
[27] van der Laarse, *De Oorlog Als Beleving*, 26, 27.
[28] Jay Winter, *Remembering War. The Great War between Memory and History in the Twentieth Century* (London, 2006), 17–51; van der Laarse, *De Oorlog Als Beleving*, 14; J.T. Sparrow, "On the Web: The September 11 Digital Archive," in *Public History: Essays from the Field*, ed. J.B. Gardner and P.S. LaPaglia, 2004, 400; G.W. McDaniel, "At Historic Houses and Buildings: Connecting Past, Present and Future," in *Public History: Essays from the Field*, ed. J.B. Gardner and P.S. LaPaglia, 2004, 234–35.
[29] See for example: Weber, "Erinnerungskulturen in Medialer Transformation," 23; Macdonald, *Memorylands*, 188–91; van der Laarse, *De Oorlog Als Beleving*, 9, 14–17; Irit Dekel, "Mediated Space, Mediated Memory: New Archives at the Holocaust Memorial in Berlin," in *On Media Memory*, ed. Motti Neiger, Oren Meyers, and Eyal Zandberg (Basingstoke, 2011), 267; Commissie Versterking Herinnering WOII et al., "Versterking van de Herinnering WOII," 2–4.

places.[30] Memory scholar Eviatar Zerubavel has explained this experience by the concept of mnemonic bridging. This refers to feeling 'pseudo-physical contact' with the past, by being at the same place where events have unfolded in the past. According to Zerubavel and other scholars in the field of heritage, this has the potential to create a feeling of actually travelling in time.[31]

Remediation: engagement from a media perspective?

On the subject of changing and new media, one cannot do without mentioning the names of Jay David Bolter and Richard Grusin. These two media scholars successfully described the processes involved in the development of new media by using the term 'remediation', in their equally titled book.[32] Central to their idea is the ever-present drive to adapt and refurbish representations through new media, to better fit changing demands and goals. All new developed media therefore present themselves as improvements compared to older media. In this complex process, new media import always import certain characteristics of other existing media. Remediation can thus be defined as the representation of one medium in another, in which part of (the content of) the old medium is still visible. Or in other words: 'the logic by which new media refashion prior media forms'.[33]

As an example, mobile phones have become bigger, flatter and smarter, but still include the characters of the first phones: an antenna, buttons (albeit they are now digital) etcetera. However, from this example it can also be deducted that remediation is far from a linear process. New devices are not necessarily better on all aspects, compared to older media. They can also be adapted to be cheaper, or more portable. Before bigger smartphones got introduced, the trend was actually to possess a smaller phone that was more convenient to carry around. Rather than being linear, remediation is a more dynamic process, in which media undergo changes

---

[30] J. Carman and P. Carman, "The Intangible Presence: Investigating Battlefields," in *Heritage Studies. Methods and Approaches*, ed. M.L. Stig Sørensen and J. Carman (London and New York, 2009), 292; De Bruijn, "Bridges to the Past," 33–37.

[31] Anders Fagerjord, "Between Place and Interface: Designing Situated Sound for the iPhone," *Computers and Composition* 28, no. 3 (2011): 255–63; Mary-Catherine E. Garden, "The Heritagescape: Looking at Heritage Sites," in *Heritage Studies. Methods and Approaches*, ed. M.L. Stig Sørensen and J. Carman (London and New York, 2009), 288; Eviatar Zerubavel, *Time Maps, Collective Memory and the Social Shape of the Past* (Chicago, 2003), 37–43; Barbara Kirshenblatt-Gimblett, *Destination Culture: Tourism, Museums, and Heritage* (California, 1998), 135–38; De Bruijn, "Bridges to the Past," 93, 161; Macdonald, *Memorylands*, 160–66.

[32] J. David Bolter and Richard A Grusin, *Remediation: Understanding New Media* (Cambridge, Massachusetts, 2000).

[33] J. David Bolter and Richard A. Grusin, "Remediation," *Configurations* 4, no. 3 (1996): 339; Bolter and Grusin, *Remediation*, 2000, 273.

depending on the demands at a certain place and time. In other words: remediation is goal-oriented.[34]

In terms of goal-oriented remediation, Botler and Grusin observed that new media are often aimed at increasing immediacy. By this, they mean the apparent disappearance of the medium. At the same time the opposite often happens because of this longing: multiple media are used actively in order to reach this goal. A 4D-cinema exemplifies this strange situation: an abundance of media (smoke effects, vibrating chairs and special glasses) is used in order to make a movie as realistic as possible. Hence, immediacy is always pursued through the logic of hypermediacy: using more and more new media in order to create experiences that appear to be real. Bolter and Grusin call this the 'double logic' of remediation.[35]

Another influential theory comes from Henry Jenkins, arguing that online and offline media tend to cooperate and influence each other more and more, speaking of a 'convergence culture'. According to this theory, information and technologies are more and more merged into single devices. Whereas telephones and computers used to be totally different categories of devices, these two are now unified in the form of smartphones. [36] The idea of convergence does not exclude the idea of remediation, in fact both can go hand in hand in their race for more immediate and useful devices. In this research however remediation is a more useful concept, since this concept can also be applied to the contents and narratives of new media.

Remediating history and historical content

Whereas Bolter and Grusin coined the theory of remediation from a media perspective, the term has since then also been applied to the field of history. Astrid Erll and Ann Rigney have related the dynamics of remediation to those of memory studies. They first of all concluded that remediation is a. necessary process in the conservation of memories. In order to sustain and continue the mediation of memories, the media through which they get passed on have to adapt

---

[34] David Wertheim, "Remediation as a Moral Obligation: Authenticity, Memory, and Morality in Representations of Anne Frank," in *Mediation, Remediation, and the Dynamics of Cultural Memory*, ed. Astrid Erll and Ann Rigney (Berlin; New York, 2009), 159, 166; Larissa Hjorth, "Domesticating New Media. A Discussion on Locating Mobile Media," in *Mobile Technologies: From Telecommunications to Media*, ed. Gerard Goggin and Larissa Hjorth (New York, 2009), 148–49.

[35] Bolter and Grusin, "Remediation," 1996, 314; Hjorth, "Domesticating New Media," 151–52.

[36] Henry Jenkins, *Convergence Culture: Where Old and New Media Collide* (New York, 2006); Magdalena Rotsztejn, "Mobile Entertainment Applications and Their Impact on Leisure Patterns amongst UK Young Adults" (Master Thesis, Erasmus University, 2010), 11–14; Gunnar Liestøl, "Situated Simulations: A Prototyped Augmented Reality Genre for Learning on the iPhone," *International Journal of Interactive Mobile Technologies (iJIM)* 3 (2009): 24; Encyclopaedia Britannica Online, "Media Convergence," *Encyclopaedia Britannica*, n.d., accessed December 18, 2015.

as well.[37] Floppy disks and even CDs for example seem to slowly disappear from the digital domain. In order to preserve memories on them, they need to be remediated as well. The way in which this is done changes along with the available possibilities to do so: to for example a USB-stick or on a cloud server.

Relating this again to history, the options to preserve and mediate memories have improved over the last decades. Audio-visual techniques have opened up new ways of doing so, according to the logics of remediation. Videos and sounds can now be added to such memories, using new digital technologies. All these innovations are aimed at creating more immediate mediations, eventually creating a 'transparent window on the past'.[38]

However, such remediations are still aimed at the infrastructure through which the past is mediated. Concerning the message, Rigney has described that –again- these two are heavily intertwined. New ways off shared authorship and access to the internet by large groups of individuals with a passion for history have come to remediate the contents of history as well. Websites like Wikipedia and amateur websites are remediating the tradition of history as a finished product in the form of a book written by an academic. Through these new dynamics, Rigney shows, historical narratives and content is undergoing changes as well.[39]

1.2   Historiography: apps in different disciplines

Borrowing from the field of media and history, plenty of theories and concepts are at disposal for this research. Conversely, the amount of research on historical representations through apps is negligible. With few exceptions, research is mostly aimed at the consequences of history as something popular, or at historical representations through media other than apps. Studies into apps often concern just the technological functions of apps. In this historiography, the rare findings and debates are lined out. First of the debates concerning history and new media are lined out, followed by inquiries into apps and their characteristics. The final part will deal with research   into   location-based   apps,   including   some   historical   subjects   as   well.

---

[37] Astril Erll and Ann Rigney, "Introduction: Cultural Memory and Its Dynamics," in *Mediation, Remediation, and the Dynamics of Cultural Memory*, ed. Astrid Erll and Ann Rigney (Berlin; New York, 2009), 4.
[38] Ibid.
[39] Ann Rigney, "When the Monograph Is No Longer the Medium: Historical Narrative in the Online Age," *History and Theory* 49 (2010): 106–16.

New media and history: a debatable combination?

While consensus exists over the changes that occurred by new media and accordingly the rise of popular history, debate focusses on the effects of such representations. While modern representations have their strengths in visuals and engagement to move people towards history, the question is whether this results into more (or less) historical thinking.[40] Television for instance often seems to be just a showcase of historical highlights without any context; caused by limited broadcast and production time.[41] Television does thus not seem fit for historical complexity, but on the other hand watching television could stimulate further reading on the topic. McDaniel called this 'informed imagination', with which he refers to the necessity of a rich contextual framework to exist next to dramatic and fictional histories. In this way people are at least aware of the right historical contexts to which they can relate partly fictional representations.[42] Stefan Brauburger and Chris Vos add to this, that without adding pieces of drama or emotions, histories would not be interesting for a massive audience at all: such elements are thus necessary for the greater cause of making history and its lessons available for a bigger audience.[43]

Other fears are, as Thomas Lutz claims, that the memory and lessons of the Second World War are getting more and more decontextualized, with the possibility of lifting the War out of the historical context in which it was embedded. [44] On the other hand, he disagrees with notions of history as being used increasingly as a cosmopolitan lesson; as a European history in which the framework of the nation is abundant. According to Lutz history is getting more and more arranged in a postmodern style, with topics that fit with the ideas of individuals. Focus in history teaching should therefore not be on a universal story, but on how different nations create and maintain their own different narratives on this history.[45]

---

[40] Ibid., 106, 107; Weber, "Erinnerungskulturen in Medialer Transformation," 28.

[41] T. Downing, "Bringing the Past to the Small Screen," in *History and the Media*, ed. David Cannadine (London, 2004), 19; I. Kershaw, "The Past on the Box: Strengths and Weaknesses," in *History and the Media*, ed. David Cannadine (London, 2004), 120,121.

[42] McDaniel, "At Historic Houses and Buildings," 249–51.

[43] Stefan Brauburger, "Fiktionalität Oder Fakten: Welche Zukunft Hat Die Zeitgeschichtliche Dokumentation?," in *History Goes Pop. Zür Repräsentation von Geschichte in Populären Medien and Genres*, ed. Barbara Korte and Sylvia Paletschek (Bielefeld, 2009), 205–6; Chris Vos, *Bewegend Verleden. Inleiding in de Analyse van Films En Televisieprogramma's* (Amsterdam, 2004), 191.

[44] Thomas Lutz, "Der Zunehmende Zeitliche Abstand Zur Verfolgungsgeschichte Der NS-Zeit. Folgen Für Die Historische Bildung an Authentischen Orten," in *Die Shoah in Geschichte Und Erinnerung. Perspektiven Medialer Vermittlung in Italien Und Deutschland*, ed. Claudia Mueller, Patrick Ostermann, and Karl-Siegbert Rehberg, 2014, 184.

[45] Ibid., 190–94.

Subsequently, these developments also affect institutions aimed at education. Here, a tension between education and entertainment has existed since the first museums.[46] As De Bruijn has pointed out, museums consistently try to immerse consumers into history, by using techniques and in some cases by viewing events through just one perspective.[47] Amit Pinchevski seems to agree with these concerns, stating new technologies and 'over-identification' with victims is a risk in the field of heritage indeed. However, he points out that the opposite could also apply. Since we consume an abundance of violent media-images, we might have become partly insensible towards violent and horrifying representations. New media and technologies at that point would cause shocking images in heritage to be just one of the many media doing so. Instead of empathizing with victims, visitors would in this case merely 'gaze' upon such representations.[48]

The problem of historical games

As mentioned in the previous subchapter, together with television and internet history is often represented through games as well. The analysis of games as historical representations has grown over the last decades, along with the amount of gamers and revenues from this industry worldwide. For scientists however, games have caused a series of theoretical problems. While some games seem to focus on an immersive narrative, others seem to gain their success through gameplay and immersive and competitive mechanisms. Games can thus clearly be different from the media historians used to work with. A closer look at the debates on ludology and narratology should provide insight into these changes and debates. Knowledge of this debate is deemed necessary as a guidance into the explanation narratives in interactive apps in the following chapters.

In order to understand the mentioned tensions between games and narratives, it is necessary to provide a quick overview of the fierce debates that rage between theorists of this subject. On the two extremes here, are the *narratologists,* and the *ludologists.* Narratologists cling to the view that almost everything can be regarded as a narrative. From one's own life to books; humans are storytellers and this is visible in almost all representations. All those stories

---

[46] Hendrik Henrichs, "Een Zichtbaar Verleden? Historische Musea in Een Visuele Cultuur," *Tijdschrift Voor Geschiedenis* 117, no. 2 (2004): 230.

[47] De Bruijn, "Bridges to the Past," 34, 35.

[48] Amit Pinchevski, "Archive, Media, Trauma," in *On Media Memory*, ed. Motti Neiger, Oren Meyers, and Eyal Zandberg (Basingstoke, 2011), 261.

can be analyzed by looking at their plot.[49] This plot is composed of a series of events, goals and other information that was drafted by its narrator. The influential French scholar Paul Ricoeur further argued, that through understanding how such a plot is configured, means to understand how the mind that created that particular plot works. The creative process in which the narrator tells his or her story can thus give away on which ideas or identities the story is based.[50]

So far, this concept of narrativity seems useful in studying apps. Generally, this is the case as long as stories consist of a clear and fixed plot. It is exactly this where the problems with (video) games and interactive apps occur though. Games, according to Chandler and Munday, can be defined as 'a certain activity associated with play…which is contextualized and structured according to certain rules and social conventions (and typically, goals and winners)'[51]. Returning now to the mentioned conflict between game and narrative, it becomes clear that it is exactly the aspect of 'play' in the definition of games that sparks the debate between narratologists and ludologists. While books and television shows have a fixed and linear story, games can entail almost the opposite of this delineation. Since games need a certain amount of play and freedom, it is no longer the author who decides the exact plot or narrative of the game. The story becomes a shared product, a story created by the player through the options provided by the developer(s) of the game.[52] In this debate the ludologists emphasize the role of play and game-elements in analyzing games and thus overshadowing the meaning of narrative elements in their objects of study. They tend to reject the method of studying games as mainly a narrative, while instead focusing on the rules that determine the games.[53]

Although this might seems problematic in studying apps as a representation of a narrative, a possible solution comes from the hand of Craig Lindley. Although game-rules and narratives are hard to separate or mix, Lindley proposes to dissect games into different layers, in which each layer has its own characteristics. The levels of gameplay, narrative during levels and higher narrative levels can be distinguished. During the gameplay, simple tasks have to be

---

[49] Craig Lindley, "Story and Narrative Structures in Computer Games," in *Developing Interactive Narrative Content: Sagas_sagasnet_reader*, ed. Brunhild Bushoff (München, 2005), 9.

[50] P. Ricoeur, *Time and Narrative I* (Chicago and London, 1983), ix–xi.

[51] Daniel Chandler and Rod Munday, "Game," in *A Dictionary of Media and Communication* (Oxford; New York, 2011), http://www.oxfordreference.com/view/10.1093/acref/9780199568758.001.0001/acref-9780199568758-e-1073.

[52] Lindley, "Story and Narrative Structures in Computer Games," 8,9.

[53] Daniel Chandler and Rod Munday, "Ludology," in *A Dictionary of Media and Communication* (Oxford; New York, 2011), http://www.oxfordreference.com/view/10.1093/acref/9780199568758.001.0001/acref-9780199568758-e-1581; Jan Simons, "Narrative, Games, and Theory," *Game Studies* 7, no. 1 (2007), http://gamestudies.org/0701/articles/simons; Uricchio, "Simulation, History, and Computer Games," 333.

performed, like finding treasures or eliminating enemies. During each level, these actions make sense in order to reach the final goal of the narrative of that level. In turn, all of these levels are linked by the highest narrative structure. This highest level gives meaning to the actions during the game, but can indeed be separated for analysis. Games can thus be ranked on the amount of narrative or ludic elements they contain. For example, famous classic games like Tetris or Pong mainly exist of game-rules. The goal of the game is to hit or drop as many blocks as possible.

On the other side of the spectrum we can find the games that are played mainly for their narrative. These games consist of a lot of cutscenes, during which the player has no influence: the producer's narrative has to be followed. Most games however tend to be somewhere in the middle between a movie and a pure game, as can be seen in Figure 1. Much like Lindley, in this research a distinction will be made between gameplay and narrativity, in order to show to what degree it is the player or developer decides about the narrative of the game, and since play is one of the key elements which separates (mobile) games from movies and other media.[54] Furthermore, distinguishing between different game levels also offers the opportunity to take a more neutral position in the ludology-narratology question, by analyzing both layers and in the end attempting to assimilate them as a whole.
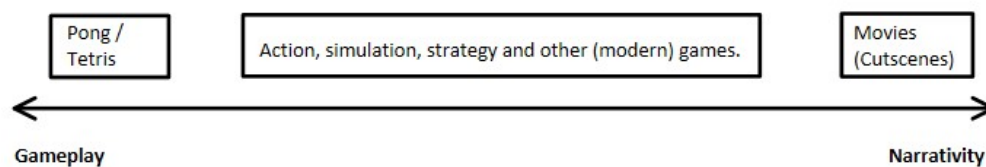
Figure 1: Between game and narrative (adaption of a model by Craig Lindley)[55]

Remediation: theorizing towards apps?

Returning from games to apps, the field of media studies is concerned with interactivity and apps as well, albeit from another perspective. Scholars from this field look into the changing characteristics of such new media and the possibilities this creates. These studies indeed look specifically into the subject of apps.

---

[54] Jerome De Groot, *Consuming History: Historians and Heritage in Contemporary Popular Culture* (London, 2009), 143.
[55] Craig Lindley, "The Semiotics of Time Structure in Ludic Space As a Foundation for Analysis and Design," *Game Studies* 5, no. 1 (2005).

One of shifts in this field of media studies is the change in the notion of an 'open internet'. Originally the internet seemed to be an open and accessible place for users all over the world. Anders Fagerjord and Pelle Snickars have rightfully described how app stores have proven to be the opposite. App stores decide for a large part which apps are allowed into the stores and which are not.[56] They dictate the rules on which apps are allowed and which are not, based on their content and topic. Furthermore, creating apps might be seen as an extra barrier for users to participate on the internet: they are way more difficult to develop and maintain than regular websites. Besides, a large part of the profits goes to the facilitators of the stores.[57]

Whether apps are constraining us in our internet use or not, they seem to fit in with our desire for personalization and simplification. Websites have been transformed to fit our current technologies and desires through these apps, following the logics of remediation. While Bolter and Grusin wrote their book on remediation, smartphones and apps were not invented yet. However their theory certainly fits the development of apps. Scolari et al have developed another theory, built upon the original idea of remediation, but aimed it specifically at apps. While apps have remediated all sorts of media and content, their theory deploys three categories of apps, classified by the rate of adaption compared to older media and content for mobile apps. Using the terms 'specific', 'adapted' and 'non-adapted' content, Scolari et al. try to classify apps in a different manner than the usual classification on the use or purpose of apps that the app stores and other scholars use. By classifying apps on their degree of remediation, they avoid problems that arise by classifying apps in categories.[58] 'Specific content' or apps, entails content that was specifically made for mobile devices. 'Adapted content' is transformed content from another medium, to be better distributed through a mobile device. The third category concerns the 'non- adapted content', including content from other media that has not been transformed but is simply displayed through an app.[59]

In addition to this categorization, Feijóo et al. describes a likewise system, using a categorization of 'adapted', 'repurposed', 'specific', and 'augmented' apps. This last category is also useful in this research. Apps of the category 'augmented', according to Feijóo et al. are

---

[56] Fagerjord, "Toward App Studies," 2; Snickars, "A Walled Garden," 160–62.

[57] Kurt Wagner, "Could the Browser Eventually Kill Apps?", *Fortune*, November 14, 2012, http://fortune.com/2012/11/14/could-the-browser-eventually-kill-apps/; Goggin, *New Technologies & the Media*, 35,36,58-61; Anderson and Wolff, "The Web Is Dead. Long Live the Internet."

[58] Heidi A. Campbell et al., "There's a Religious App for That! A Framework for Studying Religious Mobile Applications," *Mobile Media & Communication* 2, no. 2014 (n.d.): 160; Rotsztejn, "Mobile Entertainment Applications," 57–60.

[59] Scolari, Aguado, and Feijóo, "Mobile Media: Towards a Definition," 33, 34.

'contents … that use the additional and specific properties of mobile systems to increase the value and interest of the information for users.'[60] Examples of such contents are for example location-based apps and their content. Such apps provide customized information based on the GPS-location of a smartphone.[61] This distinction thus useful in the sense that it can separate apps that are just websites in a new form from apps as a whole new medium: it can show in which ways apps distinguish themselves from other media.

Despite the different applications of the theory of remediation, there is a clear consensus as well. Whatever medium is taken into consideration, all remediations are certainly not linear processes and are all goal oriented, as explained in the previous section of this research. These goals are described by various scholars, among who Andrew Richard Schrok. In his work he analyses mobile media in general and also provides the affordances and limitations of apps compared to other media. He concludes that portability, availability, locatability, and multimediality are the most important affordances of apps and mobile phones.[62] He furthermore points out that these affordances may be inherent to the possibilities of apps and smartphones, this does not mean they are actually used in the right way. Affordances have to be triggered by users and their choices and are thus subject to the agency of an app's users. His statement however is not fully taken into account in this research, given the difficultness of investigating this and the ease of use apps deliver.[63]

Heritage and location technologies

Despite the lack of research into historical apps, location-based apps and heritage have been (separately) researched, partly due to the growth in popularity of such technologies and of visiting places. While not particularly concerning WWII, the process of turning meaningless 'space' into 'place', is yet visible throughout (Western) countries. Reference points are used in this process to show visitors where important buildings are located, or where important events took place. They provide the context needed to create engagement, a function that is partly being supplemented by context aware apps or audio devices. Without such context, most

---

[60] Ibid., 34.
[61] Liestøl, "Situated Simulations," 24.
[62] Andrew Richard Schrock, "Communicative Affordances of Mobile Media: Portability, Availability, Locatability, and Multimediality," *International Journal of Communication* 9, no. 2015 (n.d.): 1230, 1238, 1239.
[63] Ibid., 1231–33.

battlefields would be just empty areas or fields, as J. and P. Carman and Van der Laarse have pointed out.[64]

Bearing in mind the need to inform people about places, A. de Souza e Silva and J. Frith have argued that due to these changes places have become more dynamic. More and more information attached to places is getting digital, and thus can easily be changed. Places can thus change, along with the information and images that are linked to them.[65] Moreau and Alderman have come to about the same conclusion in conducting their research on a 'Graffiti House' in the USA, a remnant of the Civil War. According to them, with the right contextual information, such landscapes indeed connect time and space, as was also proven by K. O'Hara and T. Kindberg in a similar research. Both research outcomes fit with the current desire for tangible history, and can trigger memories and connections with history.[66] This can also be done in a more game-like atmosphere, as was done in a game designed for students. In this game, the city space was transformed into a game board, and again, a fictional layer was put on top of the physical reality. De Souza e Silva describes how this, in combination with location based devices, connected past and present in a new way.[67]

Apps and representations of history

In the foregoing chapter developments, theories and debates on various topics relating to the subject of this thesis have been discussed. As a last historiographical remark, J. Wetzel and M. Eble have indeed written about representations of WWII on the internet, and did this based on results that appeared after entering different search terms (most of these turned out to redirect surfers towards Wikipedia, and not to apps). [68] There is however still a huge difference between the internet in general and apps, and thus between both studies and this research. Apps do not contain huge amounts of unsorted information, but are small programmes which have already

---

[64] De Bruijn, "Bridges to the Past," 36,37; van der Laarse, *De Oorlog Als Beleving*, 26,27,64; Carman and Carman, "The Intangible Presence," 298, 304.

[65] Adriana de Souza e Silva and Jordan Frith, *Mobile Interfaces in Public Spaces: Locational Privacy, Control and Urban Sociability* (New York, 2012), 9.

[66] Terri Moreau and Derek H Alderman, "Graffiti Heritage: Civil War Memory in Virginia," in *Geography and Memory*, ed. Owain Jones and Joanne Garde-Hansen (Basingstoke, 2012), 153,154; Kenton O'Hara and Tim Kindberg, "Understanding User Engagement with Barcoded Signs in the 'Coast' Location-Based Experience," *Journal of Location Based Services* 1, no. 4 (December 2007): 267.

[67] A. de Souza e Silva, "From Cyber to Hybrid: Mobile Technologies as Interfaces of Hybrid Spaces," *Space and Culture* 9, no. 3 (2006): 272, 273.

[68] Juliane Wetzel, "Das Lernen Über Den Holocaust via Internet. Möglichkeiten Und Fallstricke," in *Die Shoah in Geschichte Und Erinnerung. Perspektiven Medialer Vermittlung in Italien Und Deutschland*, ed. Claudia Mueller, Patrick Ostermann, and Karl-Siegbert Rehberg, 2014, 213–14; Michael Eble, "Content in Context: Perspektiven Vernetzter Multimedia-Inhalte Zur Vermittlung Historischer Erinnerungen," in *Mediale Transformationen Des Holocausts*, ed. Ursula von Keitz and Thomas Weber (Berlin, 2013), 451–76.

filtered their information for their users.

In spite of the abundance of theories from different fields, the combination of a research into apps and historical representations (of WWII or in general) has not been studies yet. This research is aimed at combining the insights and theories from different fields of research. Insights from studies into history, heritage, communication and gaming should help answering the main question of this research.

1.3   *Method: relating representations to the affordances of apps*

One of the challenges of exploring a new phenomenon is the lack of examples and proven methods from other studies. Such is the case with inquiries into the combination of mobile applications and historical representations. As an underexposed topic, this research has quite some obstacles to cross, and therefore mainly draws from research on websites in general and media studies.

Studying representations of all WWII apps would be a huge task. In order to narrow this down, this research answers the question how WWII is represented through popular and museum-related mobile apps. A selection of five of the most popular apps was created, together with three of the most popular apps about WWII that are related to Dutch museums or institutions. This choice of scrutinizing two different app-categories (and probably two different approaches to representing WWII) offers a more complete perspective on representations about this period in history. It provides an analysis of popular and massively downloaded (game) apps. The latter have millions of downloads and are mainly used for entertainment purposes. Contrary to this category are the more 'serious' apps introduced from the heritage- and educational field. These apps count significantly less downloads, but can still reveal useful information on how such organizations deal with this new medium.

In order to answer the main question in a structured manner, this research will first answer how WWII is represented in popular apps. Attention will be paid to the narrative, aspects and perspectives used in these apps, completed by possible other notable issues. This chapter will be followed by a chapter answering the same questions for the selected apps from the field of museums and institutions. To answer the remaining part of the twofold main question, the fourth chapter will show why the war is represented in this way, and how this can be related through apps. This is done using theories of remediation and by using the results of a small survey I sent out before.

Selecting a sample

For the purpose of creating a decent sample, the apps that were chosen were subject to a strict set of rules. A whopping three million apps can be found in the two popular app stores of Google and Apple alone. The Amazon App Store, Windows Phone Store, and BlackBerry Market offer an additional million apps.[69] Given the relatively small share of devices using these stores, this research will first be limited to apps available in Google Play and iTunes.[70]

When it comes to sifting out the 'historical' apps, a theme such as 'World War Two' appears to be a clear demarcation. In the world of apps though, such distinctions between different topics and categories turn out to be more complex. While some apps leave no doubt concerning their subject, such as the *World War II Weapons Gallery* app,[71] others provide stories and facts ranging from the ancient Greeks to the end of the Cold War.[72] Selections based on covered time-periods are not the only difficulty here, since the question of which apps are actually about the Second World War remains. While it might seem absurd to relate an app like *Army vs. Zombie* to the history of the Second World War, a closer look makes clear that it's developers argue otherwise, by claiming to have based their story on 'Hitler's immortal zombie army' during the Second World War.[73]

Even harder to tackle is a problem inherent to modern searching methods on the internet. While a logical selection process would be to analyse some of the most downloaded World War II apps, researchers would be confronted with the fact that such universal rankings do not exist. Specific and personal search results are shown for each search query in an app store. Outcomes are based on personal internet history (through cookies), location, and many other factors embedded in Google's secret search optimization algorithms.[74] Searching the Google Play store

---

[69] Statista, "Number of Apps Available in Leading App Stores as of July 2015," *Statista*, accessed November 3, 2015, http://www.statista.com/statistics/276623/number-of-apps-available-in-leading-app-stores/.
[70] Over 90 percent of all apps are installed on Android and iOS devices, See: Deborah Lupton and Gareth Thomas, "Playing Pregnancy: The Ludification and Gamification of Expectant Motherhood in Smartphone Apps," *M/C Journal* 18, no. 5 (2015), http://journal.media-culture.org.au/index.php/mcjournal/article/view/1012; J.J. Videla Rodríguez, M. García-Torre, and M.J. Formoso Barro, "Content and Interactivity of the Mobile Apps Launched by Spanish Television Channels," *Revista Latina de Comunicación Social*, no. 71 (2016): 558–59.
[71] ColorMoon Games, "World War II Weapons Gallery," *Itunes Preview*, accessed October 2, 2015, https://itunes.apple.com/us/app/world-war-ii-weapons-gallery/id463741828?mt=8.
[72] Banjen Software, "Today in History," *Google Play*, accessed October 2, 2015, https://play.google.com/store/apps/details?id=com.banjen.app.DayInHistoryWidget.
[73] NBRO Co., Ltd., "Army vs Zombie," *Google Play*, accessed October 14, 2015, https://play.google.com/store/apps/details?id=com.grizzle.ArmyVsZombie.
[74] Google, "Algorithms," *Google Inside Search*, accessed October 29, 2015, http://www.google.com/insidesearch/howsearchworks/algorithms.html.

will thus lead to different results for each user, even if they use the same search commands.

Hence, with these impediments a 100 percent accurate method of selecting some of the most popular apps for analysis is impossible. Most people find their apps through direct searches in their store, and these results are trimmed according to their algorithms.[75] To be as accurate as possible in selecting popular World War II apps, a set of rules was applied to the results from searches for popular World War Two apps. A list of various WWII related search terms was used (See: Appendix 1) to generate a small database of search outcomes.[76] For further selection a set of rules was then applied to this database. The following rules should maximize the representability of the sample of apps as being popular and appreciated among their users.[77]

- Apps have to have a rating of four out of five stars or more.
- Apps have to be downloaded more than one million times.
- Apps have to specifically deal with the Second World War.
- Apps have to be available from both iTunes and Google Play.
- Apps have to be available in English.
- Apps have to appear in the first 25 results that appear for one of the search terms.
- Apps have to appear in the search results of more than two different used keywords.

By applying this set of conditions, the following five apps were selected for this research:

- *Brothers in Arms 3* [78]
- *Frontline Commando: WWII* [79]
- *Sandbox Strategy & Tactics* [80]
- *Warship Battle:3D World War II* [81]

---

[75] MobileDevHQ, "How Users Find Apps," 2014, http://www.mobiledevhq.com/resources/white-paper-how-users-find-apps.

[76] Part of these search terms were also used by Eble in his research on the representation of the Second World War through Wikipedia and in a Dutch report reviewing the interest in WWII in the Netherlands, See: Eble, "Content in Context," 455; Kenniscentrum Oorlogsbronnen, "De Nederlandse Belangstelling Voor de Tweede Wereldoorlog," 17–19.

[77] A method also partly used by: Glenda A. Gunter et al., "Language Learning Apps or Games: An Investigation Utilizing the RETAIN Model," *Revista Brasileira de Linguística Aplicada*, 2016, 8–11.

[78] Gameloft, "Brothers in Arms 3," *Google Play*, accessed October 14, 2015, https://play.google.com/store/apps/details?id=com.gameloft.android.ANMP.GloftA3HM.

[79] Glu, "Frontline Commando: WW2," *Google Play*, accessed October 14, 2015, https://play.google.com/store/apps/details?id=com.glu.dd2.

[80] HeroCraft Ltf, "Sandbox: Strategy & Tactics," *Google Play*, accessed October 14, 2015, https://play.google.com/store/apps/details?id=com.herocraft.game.free.stww2_sandbox.

[81] JOYCITY Corp., "Warship Battle:3D World War II," *Google Play*, accessed October 14, 2015, https://play.google.com/store/apps/details?id=com.joycity.warshipbattle.

- *Weaphones WW2: Firearms Sim* [82]

In addition to searching apps through app stores, there are of course other ways of getting in touch with World War Two apps. Recommendations from friends and relatives and prior knowledge of brands and museums also play a part in how users find their apps.[83] For this reason a second method of selecting apps is used here, in order investigate apps released in cooperation with museums as well. The popularity of WWII-themed museums has increased in the Netherlands over the past decades, and not only the number of visitors has grown significantly, but the amount of modern techniques used in this field as well.[84] Quite some museums have decided to amplify their collection by using mobile apps, making them an interesting topic for research as well. For practical reasons though, research had to be limited to Dutch museums and apps only. The set of rules used to select popular apps had to be adapted as well, since these apps are significantly less downloaded. Thus for this part of the research, another small database was compiled (See: Appendix 2). The following three apps were derived from a further selection based on the popularity of the museums, and the popularity of the apps themselves, according to the app stores:[85]

- *Anne's Amsterdam* (Anne Frank Foundation / Anne Frank House)[86]
- *Liberation Route* (Liberation Route Europe)[87]
- *Picture War Memorials (*Dutch title*: Oorlogsmonumenten in Beeld*) (The Netherlands Institute for Vision and Sound / National Committee for 4 and 5 May)[88]

This makes up for a total selection of eight of the most popular Second World War related apps, available for the majority of mobile devices. As mentioned before, a lot of other apps are available and new apps are released at a high pace, making it impossible to create a 'perfect'

---

[82] OranginalPlan, "Weaphones WW2: Firearms Sim," *Google Play*, accessed October 14, 2015, https://play.google.com/store/apps/details?id=air.com.oranginalplan.weaphonesww2.

[83] Romel Ayalew, "Consumer Behaviour in Apple's App Store" (Master Thesis, Uppsala University, 2011), 82, uu.diva-portal.org/smash/get/diva2:476799/FULLTEXT01.pdf; MobileDevHQ, "How Users Find Apps," 4–6.

[84] Commissie Versterking Herinnering WOII et al., "Versterking van de Herinnering WOII," 2–4.

[85] Nationaal Comité 4 en 5 mei, "Oorlog in de Klas. Aandacht Voor de Tweede Wereldoorlog in Het Primair En Voortgezet Onderwijs" (Veldkamp, May 2014), 18.

[86] Repudo, "Anne's Amsterdam," *Google Play*, accessed October 14, 2015, https://play.google.com/store/apps/details?id=com.repudo.tours.

[87] Stichting Liberation Route Europe, "Liberation Route Europe," *Google Play*, accessed October 5, 2015, https://play.google.com/store/apps/details?id=com.liberationroute.europe.

[88] Nederlands Instituut voor Beeld en Geluid, "Oorlogsmonumenten in Beeld," *Google Play*, accessed October 14, 2015, https://play.google.com/store/apps/details?id=nl.beeldengeluid.oorlogsmonumenten&hl=nl.

sample of apps, but the applied criteria should ensure that representative popular and heritage apps were chosen.

Structure: how and why – from representation to specific remediation

As a start these two groups of apps will be subdued to the question how the Second World War is represented. In line with research of McCall, emphasizing the necessity to view representations in the context of their medium, specific types of apps and their workings are described, followed by empirical and exploratory research and analysis of their content.[89] In order to provide a more systematic vantage point and overview for further analysis, findings were processed in a scheme (which has been adapted during research in order to capture what was deemed important) (See: Appendix 3 to 10).

Merely analysing representations of the war through apps would still leave the main question unanswered. The second part of this thesis is therefore devoted to how these representations can be related to apps: why are they represented in this particular way. Relating remediation to apps in specific involves finding a method able to reveal what part of the remediation is specific for apps. For example lots books and magazines have been released as apps, but they often remain a literal copy of their offline relatives. Images are copied directly to a mobile screen, hardly altering representations, making apps not that much renewing after all. In order to know how apps are related to representations of the Second World War, the unique features of mobile apps need to be identified and applied. Representations can then be placed within a framework of unique app features, clarifying the relation between the infrastructure and the content of these war representations and answering why this is done in this way.

---

[89] Jeremiah McCall, "Historical Simulations as Problem Spaces: Criticism and Classroom Use," *Journal of Digital Humanities* 1, no. 2 (2012): 47–52.

2.   Popular apps and their representation of the Second World War

Running and shooting from behind crates in the streets of war-torn Paris, and leading the Dutch army to the domination of Europe. Through a range of mobile apps, users around the world can immerse in many of such war stories. With millions of downloads these histories of the Second World War seem to be relived and recreated on mobile phones on a daily basis. This chapter will focus on the Second World War in the most popular apps available on this topic. A sample of five of the most popular apps is used to explain how the war is represented through popular mobile apps. The fixed set of aspects of representation will be applied to *Brothers in Arms 3, Frontline Commando WWII, Sandbox Strategy and Tactics, Warship Battle 3D WWII* and *Weaphones WWII Firearms Sim.* This chapter therefore starts by looking into the narratives presented by these apps, including the perspectives, covered periods of time and aspects of the war, while the final sub chapter addresses differences and similarities between the apps.

2.1   Before representation: apps on their shelves

As mentioned, the app stores nowadays consist of millions of apps. This means that, just as in regular markets, the app stores are a place where developers want to 'sell' their products. In the case of app stores, this sale can be regarded as a download, despite the fact that in this case al lot of the products seem to be free. Free or not, users still need to be convinced to download and use the app. The first step in this process is to make sure that users get confronted with an app. The selected apps on World War II have presumably done a great job when it comes to this point; as described before, they were most likely to appear to people looking for World War II related apps. The second step also takes place before pressing the 'download'-button and comes down to the description of the app. Developers get the option to add a page of information to describe the possibilities and qualities of their app. Returning to the metaphor of the physical market this is the place where the retailers get their chance to describe their ware or to wrap them in a suitable packaging. This paragraph looks into these descriptions from the app stores to see how these software products are packaged and promoted in the stores. In doing so, this paragraph also provides a quick introduction to the actual subject and content of the apps.

Potential players of the first app, *Frontline Commando World War II,* are invited to 'join the war for Europe'. *Frontline* follows an American soldier starting at the Battle of the Bulge that is about to begin, and eventually has to lead the Allies to the ultimate 'victory in Berlin'.

The app promises to deliver exciting campaigns, with challenging and skill-testing missions, through which Europe has to be saved. The objective of saving Europe is further stated out with the goal of clearing 'war-torn streets and rural villages of Axis invaders', and to take down the deadliest, high-profile World War II enemy officers.' At last, the app promises immersive and high-quality environments, which make users really experience the Second World War.[90]

Similar to this app is *Brothers in Arms 3* also offers an adventure during the period after the invasion of Normandy. Fighting as Sergeant Wright, the app promises to deliver an exciting adventure, in which promotions, extras and upgrades are of essence. Through this system, the app offers shooter action, excitement, astonishing ('console-like') visual effects, and freedom of movement during the different missions.[91]

Warship Battle 3D: World War II is described as an action game, revolving around the naval campaigns during the Second World War. The game consists of a set of missions, each inspired by likewise naval clashes that took place during the war. The ships that can be used during the game are made to look like authentic vessels of this era. According to the description, the objective is to steer them to glorious victory, in a game-world that consists of high quality 3D graphics. Furthermore potential users can expect fast-paced naval battles and customizable ships, weapons and parts. The game is free to download and play, and requires no network connection in order to be played.[92]

Opposite to the previous three apps, *Sandbox Strategy & Tactics* is promoted for the possibility to actually abandon historical restrictions and to lead the Allies or Axis forces, or even a single country to victory during the Second World War. Its main selling point is the option to recreate and alter history, or the freedom to choose not to. According to the developers, this means endless replayability, in which it is up to the player to choose who to attack, and with what armies and resources the war can be won.[93]

The fifth app is another odd one out, since *Weaphones Weapon Simulator World War II* is, as the name suggests, a simulator of WWII weapons. The app should redefine what a first-person shooter is, and is designed to let users truly experience what it is like to load, charge, clear and shoot a firearm. Iconic firearms from this period can be shot in a safe way, and several options can be turned on or off. Smoke, flashes and sound effects should make the weapons in

[90] Glu, "Frontline Commando: WW2 App."
[91] Gameloft, "Brothers in Arms 3 App."
[92] JOYCITY Corp., "Warship Battle:3D World War II App."
[93] HeroCraft Ltf, "Sandbox: Strategy & Tactics App."

the app appear as realistic and authentic as possible.[94]

Given the way in which these apps present themselves, each of the apps promises to deliver a certain form of authenticity. Ranging from a promise to deliver images authentic landscapes to authentic weapons and battles. Furthermore, the quality of their graphics should contribute to those feelings, according to these descriptions (See: Appendix 11)

2.2   *Narrativity in third-person shooter apps: the frontline as a shooting gallery*

Regarding the friction between gameplay and narrativity as discussed in the historiography of this research, there is an apparent distinction between to be made between the five selected popular apps. Looking at the narrative structures of the apps, there are three apps that consist of a clear pre-fixed narrative and a fixed plot. These are *Warship Battle 3D: World War II, Frontline Commando: WW2* and *Brothers in Arms 3*. All three are so called third-person shooter games (TPS), and in this case oblige the player to follow the fixed storyline created by the developers of the apps. On the highest level, they do not leave any possibilities to alter the greater story. Since this structure is fixed in these apps, it can be regarded as a historical narrative. That means that for this purpose the agency and actions of the users on the gameplay level will be temporarily disregarded.

Figure 2: Docked Hms. Bulldog at the main menu of Warship Battle 3D: World War II

Examining these apps on this highest level can unravel the views behind the representations of the Second World War through popular apps. Since these plots can reveal

---

[94] OranginalPlan, "Weaphones WW2: Firearms Sim App."

the underlying ideologies and perspectives of an app a brief overview of the three storylines set out in these apps is indispensable. First of all *Warship Battle* takes its users back to a naval dock in an unknown place. Movement of cranes can be seen, and steam is coming from the exhaust pipes on top of the HMS Bulldog, the ship's name according to the text in the top left corner of the screen, see <u>Figure 2.</u> After deciding to go to battle, only one mission can be selected and the user takes the plunge into the Battle of Taranto, in the Mediterranean Sea in 1940. The user immediately gets control over the ship, which has to be steered towards the enemy ships that have to be destroyed in order for the player to advance to the next level. No information is given on why the ships have to be destroyed, but after this first mission the game progress develops through more of such episodes and missions. Each time, five or six separate missions add up to a complete episode, and thus a complete sea battle. The app consists of seventeen episodes in total, these episodes can be considered to shape the greater narrative, in which gameplay has no influence. After finishing the first episode, sixteen more have to be cleared in order to completely clear the game. These episodes all take place between 1940 and 1945, except for the last episode of the game, which refers to the missions during the Korean War in 1950.

The second shooter takes us back ashore, to the front of the Battle of the Bulge that is about to begin. As soon as *Frontline Commando: WW2* starts, the camera moves away from a group of Allied forces. Immediately, a group of German soldiers is shown, quartered in what seems to be a typical Belgian town. Another instant later a firefight emerges, in which all of the Allied soldiers seem to get killed, except for one. By controlling this soldier, the player has to kill the German soldiers that were responsible for this slaughter. The game then switches from game-modus to movie modus and in the meanwhile automatically advances to a new place for cover. During the game, the soldier continues to perform such combat actions during different missions. After completing enough missions, the game advances to the next 'region' where the fighting continues. In each region, the player receives orders from an Allied commander and a local resistance leader. In this way, the player has to fight his way through similar levels against different backgrounds, which are each only unlocked after finishing a previous set of missions. From the Bulge, the soldier advances to Germany (October 1944) and Italy (January until May 1944). The game does not include an 'end' to the story, but instead hops from mission to mission and region to region, while following a soldier during these different campaigns in the liberation of Europe from National-Socialism.

As opposed to the previous two third person shooters the third app, *Brothers in Arms 3D,* immediately carries its players away into a scenery including a big castle between green pine trees. The game starts off with a cut-scene, showing a soldier sitting down against a dead

tree, at the side of a brook. During a movie-like scene, the soldier tells that the War seems to have almost have ended, and he has been through so much that he decided to start writing in case he dies, and to forget about this period for when he might get back home. The movie then stops quite abrupt, and this same soldier is now hiding behind some crates with a fellow American soldier. The soldier the user is about to control asks his companion if their ready. 'Sure am, Sarge'. From that moment the user gets to control the combatant and has to shoot the Germans soldiers in order to complete the first mission. When the first French missions are all won, the game continues its story with another episode in France. Here French resistance fighter Rachelle Dubois has to be rescued, before the story moves from France to Italy. During this campaign in Italy, a new adversary appears embodied in the form of German general Herst who commands his troops at the battle of Monte Cassino. Following this adventure in Italy is the fourth episode in this quite extensive storyline in the town of Falaise, back in France in 1944, until part 5 starts in the city of Paris in August 1944. The sixth chapter starts in Beauvechain, Belgium, on the 23rd of September, where the American traitor Sam Foster has to be killed, for reasons of leaking secret information. Finally the story advances to the North, to a weapon production centre, near the city of Trier (Germany) in February 1945. Following the soldiers in their next mission in Aalborg (Denmark) in March 1945, General Herst, who had escaped at Monte Cassino, reappears. During this final chapter the player gets his revenge on this fictional German officer.

Next to this clear 8-part narrative, *Brothers in Arms* seems to have been extended afterwards by its developers, to include extra missions. While the game seems to have finished with the death of General Herst in the eighth chapter, a ninth chapter is actually continuing the story. A shift back in time takes the player to the 9th of March 1944, in Cherbourg, France. During these missions the player has to retrieve stolen art during different missions in the harbour of the city. Finally the app also includes an African Campaign, consisting of just one separate episode. This campaign starts on the 18th of March, 1943 in the area of El Guettar, Tunisia. Most of the Germans there had already fled at that moment, and it is up to the player to 'take out the remaining garrison'. The Americans are thus again fighting against the Germans, but the user is playing with another main character, of whom no background information is given as was the case with the sergeant during the first eight chapters. As soon as all the German soldiers here are killed, the game comes to a second end.

The one-way road to victory: gameplay level in narrative apps

In the previous paragraph the higher narratives and game-narratives of three popular third-person shooter apps were posited. This upper layer consists of the sum of the game and episode level narratives and their cutscenes and representations. All of the separate missions pile up to a greater narrative, from which the plot of the game can be deducted. Analyzing the three apps on the level of possible game-actions makes clear that the previously described higher narratives are in fact the only possible narrative outcomes that can be realized through these apps, as explained in the following paragraphs.

First of all this notion is observable while navigating one of the many frigates during a mission in *Warship Battle 3D: World War II*. After an explanation is provided on how to steer the ship, the location of the enemies that have to be eliminated are marked as red dots on a radar at the bottom of the screen. The destination for which the player is set is also shown here. In order to reach this place, the player is guided by a trail of silver-translucent dollar signs. Whilst being free to set sail in any direction, each map eventually has borders, which cannot be crossed. Returning to combat then, the ship automatically shoots at targets ashore. Other ships have to be shot by the player, or Allied ships have to be defended. Only when these conditions are met will the level proceed. The missions can only end when the player's ship has been sunk or the objectives are met.

This same principle is true for *Frontline Commando*, in which the player is even less free to move around. The movement of the soldier is controlled by the app, by using video intervals between battles. The player is only expected to shoot, choose between which object to hide, or decide to use a power-up. It is only after a wave of targets is eradicated that the next wave appears and has to be shot. After eliminating enough targets, the enemy surrenders or is wiped out and the game is finished.

Conversely, it appears that *Brothers in Arms* grants much more freedom to its players when it comes to the level of gameplay. Here, just as in the other two apps, progress is only possible through meeting fixed objectives such as killing enemies or reaching points. The difference on the game-play level opposed with *Frontline Commando* though, is the fact that during gameplay, there is the possibility to freely walk around in any direction. Although the levels are restricted and small, as is the case in *Warship Battle*. If the levels do not follow a trail delineated by the surroundings, the player gets warned for being 'out in the open'. A timer provides a few seconds to get back to the game before you are deadly wounded, as can be seen in figure 3. In the end there is just one logical path that can be chosen, and which triggers the

next wave of enemies to wipe out. As with so many games, the easiest way to clear the game is simply by following the logical path through which the system guides you.[95]

Figure 3: Players have to stick to a route (Screenshots from Brother in Arms 3D)

All in all it is evident that these three third-person shooter apps are highly structured. The highest narrative level is under no influence of either the separate game-narratives, in the form of missions, regions or episodes, or the gameplay actions. There are in other words, no possibilities to alter the highest narrative of the story. When looking at the agency of players at the middle level, the only manner to influence the narrative here is to die and not succeed. While advancing on the single path that has to be followed, the player can choose in which way to walk, or shoot and which weapons to use. This all happens on the gameplay level though, not on the level of the story that is told through the episode or narrative. Killing enemies in another order or with another gun, does not change the overlying story. For example, in *Frontline Commando,* the Battle of the Bulge has to be won by the Allied forces in order to advance to the next episode that constitutes to the higher narrative. Whatever the players actions might be, the mission will always end only when the set goal is achieved. In this way, developers can (and indeed do) program the fact that only a victory for the Allied forces, or a new attempt to achieve this in case the soldier dies, concludes the episode.[96]

Hence, since the actions of players do not have any influence on the higher narrative, this makes up for fixed outcomes of history. Players are forced to re-enact the histories as they are programmed by their developers. At the same time, these apps offer the illusion of control: the illusion that the actions and performance on the game-level actually do matter after all.

---

[95] Lindley, "Story and Narrative Structures in Computer Games," 12.
[96] Lindley, "The Semiotics of Time Structure," 16, 17; De Groot, *Consuming History*, 134–36.

Which is of course an illusion, since the high narrative remains unaffected. It is this illusion, this feeling of agency on the course of history, which is at the core of storytelling games, such as these third-person shooter apps.[97] This is underscored by the fact that players simply cannot refuse orders during the game. Refusing to eliminate an enemy simply results in the inability to advance to the next level. In the same fashion hiding and waiting behind cover or running away from a battle will not affect the game-world either, since no new actions are programmed to happen after such actions. The game world will infinitely stay still, or repeat previous actions until the users follow the orders of the programmers.

This fixedness in these popular third-person shooter apps thus provides a slightly odd image of the Second World War. Fact is that the course of history is open to a huge variety of possibilities. History does not know an ultimate goal, while these three apps serve us with a linear and highly teleological war.[98] In this teleological view on history, the Second World War knows only one obvious outcome. This is an outcome towards which the player has to work, manifested through a set of goals that have to be reached. Only by following the pre-programmed route can this fixed outcome of history be reached. The events that lead to this goal all derive from choices made by the developers and companies behind the software. All three analyzed third-person apps thus present us with a view on history which is, in the words of Jerome de Groot, 'tightly organized and inflexible'.[99]

Creating a plot? Narratives in strategy and simulation apps
While the three third-person shooters showed restricted freedom of movement and a clearly pre-fixed high level narrative, the remaining two apps differ from this in their promises. *Sandbox Strategy & Tactics World War II* indeed offers a more open game-structure, providing the player with more possibilities to manoeuvre through the story in their own way. *Weaphones WW2: Gun Sim Free* instead focusses on the exact working of Second World War Guns. This means providing an overview of the high-level narrative of these app is somewhat irrelevant or even impossible. Therefore a brief summary of the game mechanics and a look into the contents is given in order to be able to grasp what these apps are about.

The name of *Sandbox Strategy & Tactics World War II* pretty much covers what this app is all about. Sandbox focusses on strategic military movements during WWII and grants the player the possibility to create a new narrative of the Second World War each game. An

---

[97] De Groot, *Consuming History*, 136.
[98] Simons, "Narrative, Games, and Theory," 1.
[99] De Groot, *Consuming History*, 134–36, 139.

optional tutorial to grasp the basic rules of the games is offered through the main menu. Once the game starts an overview of the map is given from a bird-eye perspective. Small images representing troops are shown on this map, varying from infantry to artillery. Regions on the map can be occupied by sending enough troops there to defeat the enemy holding the area. When those enemy armies are destroyed the player gains control of the area, including the resources produced here. The goal of the game is different for each country: all countries have a set of missions to be carried out. These missions vary per country, ranging from 'destroy Spain' or 'conquer twelve German territories' to 'destroy six American submarines'. The game is won when the given goal is reached, but players can also choose to play on and try to achieve the total domination of Europe.

Totally different from this strategy game is the *Weaphones Gun Sim World War II* app. The word 'sim' here is an abbreviation for simulator. Simulation games lack a straightforward narrative and in addition are often not fully concerned with gaming-aspects either. The fun in such programs does not come from meeting objectives and achievements or following a story, but from the mere act of simulation itself. Simulations can thus be seen as 'representation of the function, operation or features of one process or system through the use of another.'[100] In this case the app simulates the operation of World War II guns. In case of the Weaphones app this means a WWII weapon is represented on the screen of the mobile phone, including the weapon's name and some extra information. The user is prompted to choose between following a tutorial or starting to shoot the gun right away. The first prepares us for the latter by leading to a view of the area around the trigger of the gun and providing instructions on how to take the safety off. The next step shows that swiping upwards on the screen raises the magazine into the gun, while the third step shows how to cock the gun. Bullets can also be pushed into the chamber by tapping on top of the phone, just like a user were to put real bullets in a gun by pushing them in from above. Finally the trigger can be squeezed to start firing the gun. While a bullet flies away from the chamber a shot can be heard. On the bottom of the screen, a counter indicates the number of bullets left in the magazine. Once empty, the magazine can be released and the process can be repeated. In addition some settings can be toggled, for example smoke effects and automatic reloading can be configured, as well as adding a bayonet to the gun. Failing to follow the exact steps in the process realistically results into the gun not working. The apps offers about six guns and two grenades that can be fired or thrown in the simulation.

---

[100] Lindley, "Story and Narrative Structures in Computer Games," 10; Uricchio, "Simulation, History, and Computer Games," 333.

Despite the big differences between these two apps, for the purpose of this research, both apps are categorized as popular apps lacking a fixed narrative. Actually *Sandbox* can be regarded as quite the opposite to the third-person shooters, with a focus on the historical process, instead of the narrative. Whereas the TPS apps were clearly teleological, this apps seems to leave room for different interpretations of history. Players are free to make whatever move they like, and every historical outcome tends to be possible, thereby delivering their promise to be able to rewrite history. The emphasis in the app is on historical processes, yet a set goal or world domination has to be reached to win the game. The scientific advances within the game also contribute to a sense of goal-orientated history. Weapon upgrades and other military advances all follow a 'technology tree'. This means that in order to unlock the next branch of the tree, the previous item has to be unlocked, as can be seen in figure 4. Players have to follow a given order of technological progression, making the historical process less contingent than it appears to be at first sight[101]
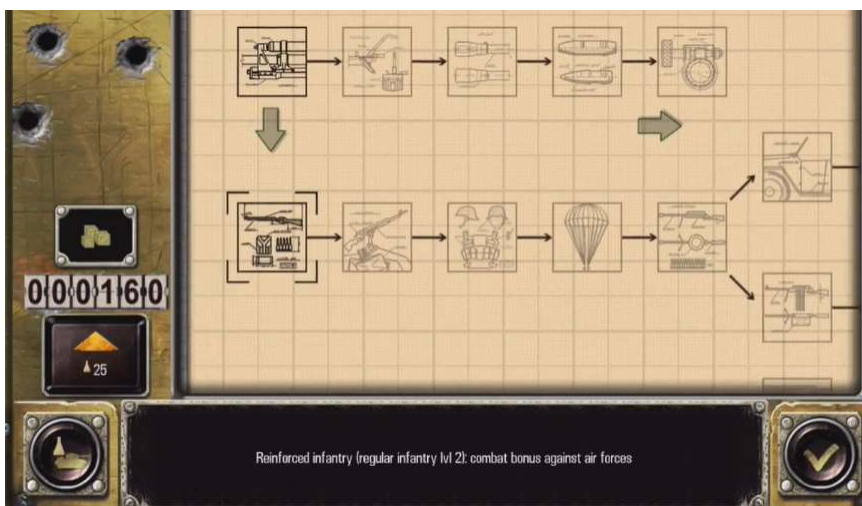
Figure 4: Technological teleology in the 'tech-tree' of Sandbox Strategy and Tactics WWII

At the same time *Weaphones* is almost impossible to categorize, as it lacks a narrative, but also lacks the freedom offered in the strategy app.[102] The gun will not work if the correct steps are not followed. There is only one way to achieve the act of firing the simulated gun.

---

[101] De Groot, *Consuming History*, 141; Claudio Fogu, "Digitalizing Historical Consciousness," *History and Theory* 48, no. 2 (2009): 117.
[102] Uricchio, "Simulation, History, and Computer Games," 335, 336.

2.3   *Western perspectives*

Where the previous paragraphs have dealt with how apps present themselves, and the ways in which they confront us with their visions on WWII, this part will shift towards their content. Now embedded in knowledge of game- and narrative studies from the previous paragraph, a more balanced insight into these representations can be accounted for. One of the most striking empirical findings here is that these apps tend to represent a western vision on history. This is revealed through several aspect of these games, ranging from periodization, to a focus on certain topics and aspects of their stories.

Periods of representation

Clearly, each of the selected apps has its own game-rules and tells its own story. Choosing such topics is common practice for historians, and app developers have to cope with this problem of selection as well. Some of these choices might have far-reaching consequences, including the temporal scale the narrative spans. This is due to the important notion that historical periods are constructed by humans, and are therefore always subject to change. While some of those temporal frames might appear unchangeable, even such commonly accepted divisions in time are products of a cultural and intellectual consensus.[103] Following this argument, periodizations are also related to the culture or country in which a historical narrative was created. Markers such as the start of World War II thus also depend on this particular context. To Americans for example, the battle of Pearl Harbor might be an important signifier, while citizens of France, Poland or the Netherlands will probably think of the invasion of Poland or even their own country as a logical vantage point for a narrative about the war.[104]

This concept of stories being embedded in their social context is also clearly applicable on apps, especially the third-person shooters. Warship Battle makes up for the best example here. The episodic structure of this app takes the player through time starting in 1940 and lasting until 1945 during the course of sixteen episodes. This last episode is immediately followed up by another though, taking place in 1950 and labelled as 'Korean War'. While for most European citizens the defeat of Nazi-Germany in 1945 marks a logical end to WWII, the national context provides an explanation for this extra episode. Warship Battle was developed by the Joycity

---

[103] D.R. Kelley, "Ideas of Periodization in the West," in *The Many Faces of Clio: Cross-Cultural Approaches to Historiography; Essays in Honor of Georg G. Iggers*, ed. E.Q. Wang (New York, 2007), 21–25.

[104] Maria Grever, "Geen Identiteit Zonder Oriëntatie in de Tijd. Over de Noodzaak van Chronologie," *BMGN - Low Countries Historical Review* 124, no. 3 (2009): 446–48.

Corporation, a company developing apps founded and still stationed in South-Korea.[105] Here tensions did not end after Berlin was occupied by the Allies. Tensions with the North almost immediately occurred, making the intertwining of this conflict and WWII. Here Van den Akker also points to the fact that it is mainly the (chosen) end to a story that provides that same story with its meaning and significance.[106] From a Korean perspective, this sea battle in 1950 is a continuation of a fight against (another) evil that started a decade before. The chosen ending here reveals the vision of the developer on the events that led to this particular endpoint.[107] Finally, the company's location also provides a logical explanation for the app's focus on the Naval Battles in Asia; with twelve out of seventeen episodes taking place here.

App	Period	Remarks
Warship Battle	1940-1950	Starts with the Battle of Taranto, ends with the battle of Okinawa. Goes through 16 episodes. Korean developer.
Frontline Commando	1944 (December) -1945 (January)	Starts with the Battle of the Bulge, ends in Italy. Chronological within chapters, temporally scattered between chapters.
Brothers in Arms	(1943) 1944 (June) - 1945 (March)	Starts in Normandy and ends in Aalborg, before returning to France (1944) and Tunisia (1943) for two extra missions.
Sandbox Strategy	1938 - 1946	Does not start at a specific battle and crashes after 1946.
Weaphones	N/A	Uses weapons from World War II, no specific dates or periodizations are used.

Figure 5: Periodizations in popular World War II related apps.

Whereas *Weaphones* is not narratively structured it simply show weapons from a certain period, *Sandbox Strategy* starts each new game in January of the year 1938. A periodization that does not fit in with popular Western narratives on World War II. Whereas 1933 or 1939 seem to be more logical watersheds in this story, and explanation for this periodization can again be found in the location where the app was developed. Sandbox was made by a developer from Russia and for unknown reasons starts in January 1938. This might have to do with the fact that the Soviet Union was already at war with Japan in 1938, or with the tensions around the Munich Agreement later that year.[108] On the other hand, since Sandbox offer a very open

---

[105] JOYCITY Corp., "Company Introduction," *Joycity*, n.d., accessed December 23, 2015.
[106] C. van den Akker, "Het Verwachte Einde. Tijd, Geschiedenis En Verhaal," in *De Ongrijpbare Tijd*, ed. M. Grever and Jansen, 169–72, 176–78.
[107] Ibid., 180,181.
[108] http://nationalinterest.org/feature/the-almost-war-1938-1939-russia-japans-nearly-forgotten-13956

structure which is not particular about the course of history, this date might as well have been randomly chosen. Tensions in Europe were already very high during this year, and Sandbox provides the opportunity to even alter the moment the war broke out. In theory the app should allow the player to continue the game infinitely until world domination or defeat is reached. In practice though, the app crashes after 1946 over and over again during each game.

The other two apps, *Brothers* and *Frontline*, were created on European and American soil and also clearly refer to a periodization of the war that fits with their location.[109] Both start their tale after the point where D-Day has started; *Frontline* at the Battle of the Bulge in December 1944 and *Brothers* in June, just after D-Day. Both apps focus mainly on the on the final and decisive battles during the last years of the war. A reasonable vantage point for Americans and Europeans, since it marks the start of the full-scale land combat in Europe, and the start of their success against National Socialism. Produced by GLU and Gameloft, two of.

Perspectives

Besides the periodizations, similarities between perspectives from which the war is viewed can be discerned. Brother in Arms and Frontline Commando both consist of just one narrative, viewed through the eyes of one protagonist. In both these games, events are viewed upon from over the shoulders of this avatar. Warship Battle use the same principle but allows the use of different ships to complete the narrative. Sandbox strategy and Weaphones allow the possibility to use different armies and guns.

Again, the three third-person shooters clearly deviate from the other two apps when it comes to from which perspective they represent WWII. By looking over the shoulders of a US Army soldier in Europe, Brothers in Arms and Frontline Commando both reveal an American perspective on the war. Performing combat actions through the characters of a U.S. army captain, and in the case of Brothers in Arms a sergeant, both apps clearly make users view the war from an Allied perspective. According to De Bruijn, this 'character focalisation' engages players even more with the past. Character focalisation refers to the fact of witnessing a narrative through the characters participating in that story. Viewing events in this way often leads to compassion and increased emotional involvement or even a sense of identification with the narrating character.[110] In this case the chosen American perspectives lead to an increased

---

[109] Glu, "About Glu," *Glu.com*, accessed December 17, 2015, www.glu.com/about; Gameloft, "Spanning the Globe," *Gameloft*, accessed January 19, 2016, http://www.gameloft.com/corporate/company/mission.
[110] De Bruijn, "Bridges to the Past," 203; De Groot, *Consuming History*, 133,134.

identification with American soldiers during WWII. The apps encourage their players to identify with an Allied account of the war through their chosen focalisation. Thomas Fischer also points out that witnesses' accounts tend to be experienced as trustworthy.[111] Brothers in Arms reflects this notion through a storyline involving the soldier's diary, making the story of this fictional 'witness' even more credible.

At the same time, this immersion here is dangerous for the other perspectives on this history. At the battle of Falaise for example, British, Canadians and Polish soldiers are not mentioned at all. Actually, it were the Canadians and Poles that were fighting between these days, as General Bradley had ordered the Americans soldiers to pull back after their last attack.[112]

While the focalization might be on the Allied avatars, other actors are in fact involved in the apps' storylines. During Frontline Commando's adventure local resistance has to be assisted and the Americans cooperate with Allied army officers in order to defeat the Germans. Brothers in Arms' Sergeant Wright on the other hand only has the support of his 'brothers' during the missions. Although a French resistance fighter (the fictive person Rachelle Dubois) appears after the first mission, she is merely positioned as the lover of Wright. This lack of alternative perspectives and focalizations besides the Allied ones does not diminish the fact that some attention is being paid to those characters, although in different manners. In Brothers in Arms, the German enemies are not merely targets to be shot. When they have not noticed the American forces around yet, groups of German soldiers can be heard talking about the weather, or how much longer the war will last. Although these small talks are not subtitled, as opposed to the conversations between American soldiers, this does give the Germans in this app a more human appearance. Still, the Americans remain the soldiers to perform actions in order to reach freedom, they make up for the characters with agency in this tale. The Belgian and French resistance, and some other Allied commanders might be mentioned; they are merely the recipients of actions of the Americans.[113]

Albeit the Allied view is dominant, by following the sergeants thoughts through his

---

[111] Thomas Fischer, "Ereignis Und Erlebnis: Entstehung Und Merkmale Des Zeitgenössischen Dokumentarischen Geschichtsfernsehens," in *History Goes Pop. Zür Repräsentation von Geschichte in Populären Medien and Genres*, ed. Barbara Korte and Sylvia Paletschek (Bielefeld, 2009), 197.

[112] Dan Van der Vat and Peter Christopher, *D-Day: The Greatest Invasion: A People's History* (Vancouver, 2003), 168, 169; Hubert Essame, *Patton as Military Commander* (Conshohocken, Pennsylvania, 1998), 182.

[113] James Wertsch, "Struggling with the Past: Some Dynamics of Historical Representation," in *Cognitive and Instructional Processes in History and the Social Sciences*, ed. Mario Carretero and James F. Voss (Hillsdale, N.J, 1994), 328–32.

diary players are still confronted with some difficulties during war time. Following a more contemporary vision on the war, Brothers in Arms shows that good and evil cannot always be easily separated.[114] In one of its missions, Sergeant Wright has to eliminate a fellow American soldier who has leaked secret information to the Germans; the same soldier had saved his life a few months ago. This confronts players with the moral dilemmas of personal relations and following orders during wartime through the thoughts of Wright. The actual dilemma does not take place however. In the same movie-scene the sergeant carries out his orders, in spite of his compunctions. The app still shows a clear contrast with *Frontline Commando*, by including such 'grey' characters or dilemmas. The latter maintains a clear good-bad dichotomy and provides no depth regarding the feelings or dilemmas soldiers faced during the war. *Frontline* assures the player that shooting all the Nazi's is the best solution; the fictional Belgian resistance leader 'Sophie Mertens' supports this by stating that a reconnaissance mission 'doesn't mean they (the Germans) have to live'.

Although a similar shooter, Warship Battle lacks a narrative context in its missions. The game starts in 1940, referring to the Battle of Taranto, but refrains from providing further information on why and between who this naval conflict was. The titles of episodes and goals however, make clear that the Allied perspective highlighted again. Famous German ships such as the Bismarck and the Yamato have to be destroyed in order to reach victory. The app makes users follow the historical path that ultimate leads to a defeat of the Axis forces. However, since the game lacks further information on these ships and battles, it is up to the user's knowledge of WWII to recognize the episodes storylines. The contradiction here is that Warship Battle shows a difference between the focalised object and the representation of this focalized object. As players advance through the game, they gain the possibility to fight with an ever-increasing range of ships, indifferent of their history as an Allied or Axis ship. Due to this system, the 'Bismarck' can be chased and sunk by the Japanese 'Yamato', but also by the famous U.S. Warship 'Iowa'. In other words, the focalised object should always be an Allied ship, given the missions that have to be completed within the problem space of the game. Hence, destroying Allied ships is impossible and no progress is made unless the Allies win the battle. In the app however, the same Allied story can be performed by making use of German or Japanese ships. Players thus perform their actions within a framework of Allied victories that have to be accomplished, with focalisation being inferior to the broader perspective. According to the

---

[114] De Bruijn, "Bridges to the Past," 147–50.

dichotomy between 'game' and 'narrative' the absence of a historically accurate sea battle leaves room for these alterations of history and focalisations through other ships.

Including a broad range of weapons from different countries and lacking a narrative, the Weaphones app does not highlight any perspective at all. Without any clear missions the only objective is to fire the different weapons. The app does not pick a side for which the player has to fight, but rather offers a simulation of weapon usage. Players are 'themselves' while they handle the digital guns and grenades, and are not viewing events through fictional characters. While Sandbox Strategy does allow for users to control troops, the app lets the player alter history, as promised in the app's text in the stores. This means no pre-programmed narrative is used and all nations involved in WWII in Europe and Asia are 'playable'. Although each country has its own objectives, the player is free to choose a country to play with. Opposed to the third-person shooters this strategy games represents the world as a tactical map, viewed from a birds-eye perspective. Looking on the warzones from above and able to control the chosen army. Referring to the juxtaposition of game and narrative again, this app reveals no background information or motives for conquering other countries at all. The emphasis is on the game structures and mechanism instead of a story. Sandbox offers freedom in making (up) unique stories within its representation of World War Two and allows for the player to choose a preferred banner to fight under.

2.4   *Which Total War? – Different aspects of WWII in popular apps*

This subchapter relates to the fact that WWII was irrefutably a 'total war'. In short, this means it involved more than just clashes between different militaries: all resources in an economy were aimed at winning such a war. Attacks were not only planned on enemy armies, but rather on their whole economy and society.[115] A feature which is far from being reflected through popular apps.

Combat is what counts

A few minutes of interaction with each of the five popular apps indisputably leads to the conclusion that these apps focus primarily on military aspects of history. With Weaphones

---

[115] Berthold Molden, "Vietnam, the New Left and the Holocaust: How the Cold War Changed Discourse on Genocide," in *Memory in a Global Age*, ed. Aleida Assmann and Sebastian Conrad (Basingstoke, 2010), 82; H.A.M. Klemann, "Totale Oorlog En Het Thuisfront. Een Inleiding.," in *Thuisfront. Economie En Oorlog in Europe in de 20e Eeuw. Niod-Jaarboek*, ed. H.A.M. Klemann and D. Luyten, vol. 14 (Zutphen, 2003), 9.

concentrating on military equipment, the other four apps immerse the player into the act of combat itself. This becomes evident through the earlier discussed perspectives; players get their look into the War as either a soldier, a warship or as general, overlooking the battlefield. When regarded in terms of McCall's problem spaces though, a clear military-mindedness can also be discerned.[116] In order to advance through the different levels, players need to improve themselves and their characters in order to solve increasingly difficult 'problems'. By looking at what these problems and the proposed possible solutions are, the developer's vision on the war can be laid bare.

Within the popular apps, these problems turn out to be all completely war- and combat-related. In each game app (thus excluding *Weaphones,* as a simulation) enemy soldiers, vessels and armies get stronger and stronger. The only solution to this problem is upgrading and extending the (amount of) soldiers, ships or firepower, as can be seen in Figure 6. Military development is the best and only way to defeat enemies and form the main engine of the game's progress. In the third-person shooters, possible choices all revolve around weapons and gaining and edge during confrontations: choices within the story itself cannot be made since it is pre-fixed. While Sandbox allows for certain choices to be made, here too the developers have chosen to highlight that wars are fought between soldiers only. While there are multiple roads to achieve it, the eventual goal of this app remains the domination of another country or the world. Diplomacy, economics, morale and food-supplies: none of them play in part in this war and countries can only make progress through their military actions.[117] Leading to the conclusion that Sandbox Strategy is representing history as 'a process of aggressive military actions'.[118]

---

[116] McCall, "Historical Simulations as Problem Spaces," 47–52.
[117] Uricchio, "Simulation, History, and Computer Games," 335.
[118] De Groot, *Consuming History*, 141, 142.

Figure 6: Frontline Commando prompts users to upgrade their weapons in order to defeat stronger enemies

In line with this argument, popular apps do not seem to reveal the relation between WWII and the lives of civilians. Popular apps present us with a simplified and mainly military version of the war. This applies to a lesser extent to *Brothers in Arms* and *Frontline Commando*, where at least civilian casualties are briefly mentioned. Respectively during the battle at Monte Cassino and Aachen, and elsewhere as members of the local resistance. Civilians are thus involved in combat as well, but only as resistance fighters, and never as 'normal' people living their lives, or as collaborators. During the battles a city like Paris, and farms are all uninhabited: only soldiers have the agency to decide the outcome of the war. *Warship Battle* even goes so far as to show no humans at all, ensuring playing the game sometimes feels like engaging in a battle between radio-controlled boats, as can also be seen in the empty shipyards of the game, as can be seen in Figure 2.

Furthermore, in all of the popular apps, the Holocaust is nowhere to be mentioned. Whilst being one of the popular elements in World War II history, this attention is far from being reflected in these games. Moreover, this tends to the case in most WWII-games, which all emphasize combat actions.[119] According to Kingsepp, this can be explained by the idea that the history of National Socialism has become a myth on its own. In this vision stories from the War in games have become their own reality. In this 'hyperreality', military actions have always prevailed: the Holocaust does not fit into this other world of heroes, villains and flying

---

[119] Weber, "Erinnerungskulturen in Medialer Transformation," 23; Macdonald, *Memorylands*, 191, 199; Stephanie Fisher, "Playing with World War II: A Small-Scale Study of Learning in Video Games," *Loading...* 5, no. 8 (2011): 79.

bullets.[120] As De Groot also points out, this game world is 'rarely peaceful' and is always linked to different teams shooting each other.[121]

Another reality of the war?

Another feature of these apps fits well within this hyperreality of the war. *Warship Battle* lacks visibility of any people at all, and the soldiers in Sandbox Strategy are merely pawns. Throughout all these popular apps there seems to be not a lack of people and emotions, but rather a lack of suffering. If enemy soldiers are around and get shot, they shortly scream once and drop dead immediately afterward. What these apps serve is a censored and plastered version of WWII. This becomes apparent not only through the lack of (suffering) people, but also in for example the Battle for Monte Cassino in *Frontline Commando*. While suffering from harsh conditions and cold temperatures, the app shows Italy as we now it know: a nice and sunny place for a holiday. In reality many soldiers were freezing to death, and complaining about mud, snow and the freezing colds.[122]

Moreover, the edges are taken off the war in another way which is related to the medium itself. Since it immediately catches the eye and contributes to a plastered version of the war it is discussed here. Apps need to be downloaded through the stores of Google and Apple, companies which repel unwanted apps from their shelves.[123]According to their regulations swastika banners, bracelets and flags are left out of the game, since they are related with hate and racism. While movies and other media can indeed make use of such symbols, despite their charge, the app store does not differentiate between racist expressions and historical content. Here a swastika is a hateful symbol, despite the historical context. App developers have found a workaround by using Maltese crosses instead of swastikas on the same recognizable red and white banners of the Nazi party. Developers combined the symbolic powers or the red and white banners with another typical German-affiliated symbol, since the famous iron cross medals had the same shape. Brothers in Arms, Frontline, and Weaphones use these modified symbols in order to still maintain a realistic image of the past. By using such recognizable symbols, these alterations fit within their hyperreality of the war. Following the same logic, *Sandbox*

---

120 E. Kingsepp, "Fighting Hyperreality With Hyperreality: History and Death in World War II Digital Games," *Games and Culture* 2, no. 4 (2007): 371.
121 De Groot, *Consuming History*, 133, 134.
122 Peter Caddick-Adams, *Monte Cassino: Ten Armies in Hell* (Oxford ; New York, 2013), 102.
123 Snickars, "A Walled Garden," 167–69.

anachronistically used the old (black, white and red) German flag to mark German troops during games; a flag that introduced in 1870 but was abandoned as soon as Hitler came into power.[124]

Brave men

As briefly shown popular TPS apps tend to present history from the perspective of a (single) Western soldier. What is striking here is that in these stories individual soldiers (or ships) are attributed huge amounts of agency in deciding the course of the war. Sometimes the main character gets some help by Allied player, but the agency of one man influencing or even deciding the course of the war seems to be a main attribute of these third-person perspective apps. These braveries are inflated to even greater proportions by portraying the enemy as a source of pure evil. All enemies are permanently called Nazis, Krauts, or even 'Nazi vermin' in *Frontline Commando.* In addition, the protagonist in *Frontline* and *Brothers in Arms* seem to have extra (personal) motives to hate their German enemies. At the start of the game, both apps introduce an unnecessary murder on Allied soldiers which has to be avenged throughout the game. This pure evil is personified through different cruel (fictional) enemy officers such as Wilhelm Grueber (*Frontline)* and General Herst (*Brothers in Arms).* The apps relate them to actions that involve eliminating innocent people, such as in the Battle for Aachen, where 'bombs are created to hurt innocent women and children' (*Brothers in Arms).* This idea of a single brave soldier fits with an 'existential neoliberal' vision on history, in which one soldier can change the course of history and deliver freedom to those suffering. [125]

Although emphasizing the importance of single soldiers in the infantry, one could also notice that the protagonists in *Brothers in Arms* and *Frontline Commando* are both male soldiers. Given the historical reality and the problem spaces of the apps this is hardly surprising: women were not allowed to fire guns at the front of the war in the British and American army, making it problematic to have them do so in World War II shooter games.[126] It would be historically inaccurate to depict women in army uniforms shooting German soldiers. What is problematic though, is the fact that women are systemically being represented as passive objects in these two apps, as well as in *Warship Battle 3D.* Women here tend to be objects to 'gazed upon' by male gamers: they are passive receivers and objects, shaped by the deeds of the brave heroes.[127] *Brothers in Arms* confronts us with Rachelle Dubois, who has to be rescued from

---

[124] Hajo Holborn, *A History of Modern Germany: 1840-1945* (Princeton, 1982), 202.

[125] De Groot, *Consuming History*, 134–36.

[126] Gerard J. De Groot, "'I Love the Scent of Cordite in Your Hair': Gender Dynamics in Mixed Anti-Aircraft Batteries during the Second World War," *History* 82, no. 265 (1997): 82, 93.

[127] Daniel Chandler and Rod Munday, *A Dictionary of Media and Communication* (Oxford; New York, 2011), 248.

German captivation during the second chapter of the game. *Brothers in Arms* does mention her as resistance fighter, but throughout the app her role is solely to be rescued. She is the object to which male protagonist Wright writes to; 'Wait for me Rachelle. Our sunrise awaits', reads Wright's letter, symbolizing Rachelle's passive role of waiting until the war is over (Figure 7).

Figure 7: Captain Cole Wright instructs his lover to wait for better times, and for him to return.

Besides placing women in passive roles, neglecting their huge contributions to the War efforts, *Warship* and *Frontline* present us with an image of women as sexual fetishized objects for men to gaze upon. Both apps fit within a tradition which allots female characteristics to women even when engaged in jobs considered masculine.[128] *Warship Battle* reflects this notion by showing the only person in the game as a female sailor in a Navy uniform, with an emphasis on her female body shape, emphasizing her framing as a female in a masculine job (Figure 8). An even clearer example of this role of women in the representation of World War II is given through *Frontline Commando*. Here different pictures of revealing pin-up-like women are shown sitting on bombs or holding machines guns, during the loading screens of the app (Figure 9). In the other two apps, no such practices appeared, but again in *Sandbox* the soldiers and possible partisans are all male (pawns). Concluding, within these five apps women indeed contribute to the War effort, but mainly as objects for men to fight for. The women active in the resistance are overshadowed within the same apps by their function as an object for male gamers to gaze upon, and as an object for the male protagonist to rescue. None of the apps shows the war from a female perspective.

---

128 De Groot, "'I Love the Scent of Cordite in Your Hair,'" 73.

Figure 8: A female sailor instructs the player at the start of a mission in Warship Battle 3D

Figure 9: Pin-up girls and weapons during the loading screens of World War II Frontline Commando

2.5   *Money wins Wars*

When looking beyond the content and representations in these apps, the question rises how it is possible that apps can be downloaded for free. All five apps can be downloaded costless, but use a common principle called 'freemium'. This business model refers to the words 'free' and 'premium', and is based on the premise that immersed users are likely to spend money on extras and advanced features of the product after they have downloaded it (for free). [129]

Premium / freemium

Popular history apps make use of this freemium model by having nudging users into spending money to unlock certain features, customizations, virtual goods and other extras.[130] These extras can be purchased either by buying fictive in-game currencies or by directly paying

---

[129] Charles Zhechao Liu, Yoris A. Au, and Hoon Seok Choi, "Effects of Freemium Strategy in the Mobile App Market: An Empirical Study of Google Play," *Journal of Management Information Systems* 31, no. 3 (2014): 327, 328; Daniel Chandler and Rod Munday, "Freemium," *A Dictionary of Social Media*, January 1, 2016, http://www.oxfordreference.com/view/10.1093/acref/9780191803093.001.0001/acref-9780191803093-e-512.

[130] Tyson McCann, *The Art of the App Store: The Business of Apple Development* (Hoboken, N.J, 2012), 146–48.

in a real currency. Such in-game currencies come under different names, and can be earned by playing the game as well, as can be seen in Figure 10. These currencies bring us to the 'premium' part of this model, since they can be used to alter historical representations in these apps.

App	(Obtaining) In-game Currency	Used for
Frontline Commando	Warcash: gameplay, gold Gold: real money, gameplay (scarce)	Weapon upgrades, energy, special weapons, grenades and extra's
Brothers in Arms	Dog Tags: gameplay, real money Medals: gameplay, real money Valor Points: gameplay (scarce), medals	Weapon upgrades, energy, special weapons, grenades, tanks, new brothers, extra's
Warship Battle	Dollar: gameplay, gold Gold: real money, gameplay (scarce)	Ship upgrades, energy, special ships, airstrikes repairs and extra's, removing advertisements
Sandbox Strategy	Resources / Crates: gameplay, real money	Extra troops, extra save slots, remove advertisements
Weaphones	Real money	Extra weapons, remove advertisements

Figure 10: In-game currencies in popular WWII apps

As mentioned all five apps can be played without spending any money on them. When money is used to enhance gameplay though, it appears this can influence the experience of the game in two different ways; one mainly concerning the appearance and the other influencing the game's difficulty. Transactions influencing the appearance and historical representations can be made in all the apps. Most important here for users is the removal of any apps shown during the use of the app. All apps offer this possibility of an 'ad-free' experience, where games do not pause for advertisement video or they remove banners during the game and menus.

The mentioned paid adaptions are of little impact concerning progress made during the game. Such upgrades can be bought as well, and although the principles of freemium gaming do not alter the problem spaces themselves (the problems to be solved remain the same, enemies will still have to be eliminated) they do affect the way in which these problems are to be solved. This is palpable in various ways, first of it is linked to the time needed to complete the games. *Brothers in Arms, Frontline* and *Warship* each make use of an 'energy bar'. Starting missions costs an amount of energy and results into waiting time when the bar is depleted. Payments can take away this waiting time and refill the amount of energy instantly, making it possible to start

new missions faster. Players who do not want to pay for 'new energy' will have to wait for the energy to refill according to the timers set by the developers. This also goes for mandatory updates on weapons, in order to start missions: waiting times are built in and again can be skipped by payments.

Clearly, money has a positive effect on wars, and progress can even be further enhanced by purchasing extra weapons or troops. *Sandbox* offers the option to simply buy extra resource, allowing for extra troops to be placed each turn. *Frontline Commando, Brothers in Arms* and *Warship Battle 3D* also allow for extra grenades, healing kits or support attacks and push the boundaries of history even further by introducing fictional weapons into their gameworlds. As an example, *Frontline* offers the possibility to electrocute German troops with a 'Zeus T-1', while a modern version of the famous Flying Dutchman can be sent out to a modern sea fight in *Warship Battle*, shown in Figure 11. These customizations are mainly aimed at making the game easier: weapons have extra power, and supplies such as grenades and rockets also make it easier to eliminate enemies. From a historical perspective, adding such objects to the past 'flattens history and removes it otherness', according to J. de Groot.[131] Investing in these apps thus leads to a more powerful position in a more-unrealistic game, and faster progress through history. Realistically here, money wins wars, and those with money have the power to alter history. History in popular apps appears to be a highly commercial commodity.

Figure 11: Fictional weapons in Frontline Commando WWII and Warship Battle 3D: WWII

---

[131] De Groot, *Consuming History*, 10.

2.6   *Authenticity and engagement within a popular hyperreality*

As previously discussed, merely looking at errors and flaws in historical representations in games contributes little to a meaningful debate on this topic.[132] In the previous paragraphs representations have therefore been discussed in relation to problem spaces or a wider context. This paragraph however will still point to some historical flaws in popular apps, in order to reveal how a sense of historical authenticity and time travel can still be created, despite these flaws. In order to grasp this, a brief explanation of the concept of authenticity is necessary, after which the apps can be related to this concept.

Authenticity in games

Historical games and apps in general endeavour to present an authentic and realistic experience of the period they represent.[133] While *Weaphones'* might simulate guns to the very last detail, this does not necessarily appeal to people. Laymen might just see an old gun, while experts might recognize gun details as a form of authenticity.[134] Demands and opinions of the public, in combination with the place of an object in a network of authenticity, meanings and culture also contribute to this fluid definition.[135]

In the case of games a context is often not directly provided. No signs informing players on what is unfolding on their screens are provided. These games thus rely on historical knowledge of users to grasp their intentions of authenticity. According to Kingsepp that knowledge to a large extent relies on other (popular) media representations. Television and movies, but also books and other games are frequently consumed historical representations nowadays.[136] Hence in order to provide authentic experiences, developers are pushed to use, and refer to, elements from other popular media on WWII, to create a gaming experience appealing to its public and their understanding of authenticity and the war.

Following the logic that app-developers want to present a representation of the past that fits with their consumers ideas of that past, these apps are designed according to contemporary conventions about the past.[137] As shown these conventions are partially based on popular media,

---

[132] McCall, "Historical Simulations as Problem Spaces," 49–53.
[133] Kingsepp, "Fighting Hyperreality With Hyperreality," 373, 374.
[134] Kingsepp, "Immersive Historicity," 73.
[135] Macdonald, *Memorylands*, 117–22, 126–33; Weber, "Erinnerungskulturen in Medialer Transformation," 43; Schwarz, "Wollen Sie Wirklich Nicht Weiter Versuchen, Diese Welt Zu Dominieren?," 27, 28.
[136] Kingsepp, "Fighting Hyperreality With Hyperreality," 371.
[137] De Groot, *Consuming History*, 9.

but also on archival materials.[138] According to Kingsepp these developments have created a 'hyperreality' of the history of WWII: a 'mythical epoch' in which fact and fiction about the war can exist next to each other.[139] This dimension explains how factual flaws are not necessarily a problem to how a gamer experiences the realism of the app. A broad range of stores and flaws can be projected within this historical framework, without disrupting and this hyperreality.[140] They are rather building stones, contributing and refashioning this 'historical' and entertaining dimension even further.[141]

In practice, the analyzed apps show quite some historical errors or impossibilities indeed. For example in *Brothers in Arms* a castle in Cruelly in France has to be taken over. There actually is a castle in this tiny French town; the chateau de Cruelly. However on the 12th of June, the day the mission starts, this castle was already occupied by British and Canadian forces. The castle was already taken at the 7th of June and was immediately put to use as a radio broadcast tower by the BBC.[142] What we see here is that the history of this region is to a large extent correctly represented, except that some of the details are incorrect. The location, the battle for the castle, and the general surroundings do appear to be real however. Using such true details contributes to what Ankersmit describes as a 'reality effect'. Because details are the opposite of histories as large narratives and interpretations by professional historians they seem more real. These unimportant details (or 'notations' as Ankersmit calls them) seem innocent and very pure compared to large and artificial narratives of historians. Therefore they are more associated with historical reality.[143]

All popular apps prove to express these 'realities in details'. *Frontline* deploys quotes of Winston Churchill and Dwight Eisenhower, which also contribute to a sense of realism.[144] At the same time, *Warship Battle* does not provide a narrative context to its battles, but through the names of famous battleships and aircraft carriers still pursues a reality effect. Furthermore, *Frontline, Brothers in Arms, Weaphones* and *Warship* as well make use of a lot of simulated details and objects related to period in which their missions take place. Typical guns like the

---

138 Fischer, "Ereignis Und Erlebnis," 196, 197; Lindley, "Story and Narrative Structures in Computer Games," 12.
139 Kingsepp, "Immersive Historicity," 73–75.
140 De Groot, *Consuming History*, 143.
141 Fisher, "Playing with World War II," 180.
142 Nigel Hamilton, *Master of the Battlefield: Monty's War Years 1942-1944* (New York, 1983), 630.
143 Frank R. Ankersmit, *The Reality Effect in the Writing of History; the Dynamics of Historiographical Topology*, Mededelingen Der Koninklijke Nederlandse Akademie van Wetenschappen, Afd. Letterkunde, N.R., 52,1 (Amsterdam, 1989), 17–21.
144 Fogu, "Digitalizing Historical Consciousness," 118.

'Sturmgewehr 44' and M1 Garand, accompanied by vehicles such as Sherman- and Tiger tanks entice users into an authentic experience and a feeling of time-travel.[145] These details are not explicitly mentioned in *Sandbox Strategy*, but the little figures on the map do resemble troops from the WWII-era.

Hence to create an appealing image of historical authenticity, popular apps rely on historical details as well as representations from other media. The use of such triggers of authenticity and the (commercial) necessity to comply with these needs also manifests itself in the use of stereotypes in different aspects of the game. *Frontline* and *Brothers in Arms* each take place in the final years of WWII in different parts of Europe. Multiple stereotypical backgrounds are used in these apps, borrowing from popular culture representations. For example the apps' missions at Monte Cassino occur in a sunny village with canals and old squares, instead of showing the harsh reality of soldiers dying from the cold (See: Figure 12) A few missions later in March 1945, *Brothers'* shows the northern light at Aalborg, Denmark: something highly impossible to occur during this time of the year, excellently showing how stereotypes are used to create a sense of historical locations. Names of the fictional characters in these apps further highlights this pattern by using typical names such as the Belgium family name 'Mertens' or the American and Italian commanders 'Shaw' and 'Turiano'.

Figure 12: The sun is shining in a typical Italian village during the battle of Monte Cassino in the Brothers in Arms app

---

[145] Kingsepp, "Fighting Hyperreality With Hyperreality," 368, 369; Kingsepp, "Immersive Historicity," 69–73.

Engaging games

Besides using authenticity, popular apps also use game-mechanics to make their apps more immersive. Solving problems, reaching goals and advancing through levels, all of these elements engage users and makes sure they keep on playing these games. These techniques are often employed in third-person shooters, together with a well-balanced relation between immersive cutscenes and cinematic effects.[146]

Sandbox Strategy however, gains a large part of its engagement through the popularity of alternative histories. Lots of people have thought about how the world would look like if the Nazi's had won the war. This app offers the possibility of altering such histories, and to play with those fantasies. This way of engaging therefore reaches out to the urge of thinking about 'what if' scenarios.[147]

2.7   *Conclusion: representations of WWII in popular apps*

Concluding this chapter should start with the observation that in fact all popular apps are representing WWII in the form of a game or simulation. Within this genre, some differences are visible as well. Considering the narrative of these apps, there are clear difference between the immersive third-person shooters and simulation and strategy games. However, these difference are merely concerned with the amount of freedom to create a story. Zooming out on these apps, a clear set of stereotypes on bravery, landscapes and characters is employed, in order to create a settings that should have maximum appeal to the public and their idea and expectations of history and historical games.

Key element in this setting is the focus on military aspects and authentic attributes referring to the WWII-era. While *Brothers in Arms* and *Frontline Commando* might reveal some affection for the lives of common people, action is what eventually drives these games. Weapons that look as authentic as possible, in combination with uniforms and landscapes try to take users back to a past in which they can shoot mindless Nazi's. From a commercial aspect, fictional elements can be added to these histories: in the hyperreality of popular WWII representations such weapons seem to be no problem for gamers.

Events in this app are not only relating to the knowledge and preferences of possible

---

[146] Lindley, "The Semiotics of Time Structure," 13; De Groot, *Consuming History*, 136.
[147] Uricchio, "Simulation, History, and Computer Games," 330–36; Gavriel David Rosenfeld, *The World Hitler Never Made: Alternate History and the Memory of Nazism* (Cambridge & New York, 2005), 2–6, 10–12, 31–33.

downloaders, but also seem to be firmly grounded in the vision of the developer. The narratives in the TPS apps are clearly related to the countries from which these apps come from and in turn try to seek connection with the market longing for exactly such narratives. Resulting in Teleological, nationalist one-dimensional stories, which lack to provide a complete image of the war. In short popular apps represent WWII as a mainly military and male-led western story. Popular apps about the Second World War are an extensions to the range of popular media which construct and maintain the partly fictional hyperreality of WWII media products.

3.   Museums and apps

 Compared to the popular history apps, museums fall short in terms of downloads. As discussed in the 'method' section of this work, museum related apps are unable to compete against the millions of downloads of popular (game) apps. Still, museum-related apps are an interesting category for historians to study: museums are useful sources of information for different audiences, and research into their apps could provide knowledge for heritage professionals as well.[148] Furthermore this chapter contributes to a further understanding of the differences between these 'serious' apps and the more popular games. This chapter starts with an overview of the three different apps and the organizations to which they are affiliated. After these three cases are briefly discussed, an analysis of their contents is given. Finally this chapter looks into the different ways in which these apps transform places and provide authentic experiences.

3.1   Museums, institutes, and the presentation of their apps

In general, app store searches for World War II related search terms do not result into a wide range of museum related apps. Games and other apps turn out to be far more popular in terms of search results and downloads (See: Appendix 1). People are more likely to be introduced to the apps of museums and institutes through relatives or museums. Yet downloading apps invariably goes through an app store. Descriptions in these stores are less likely to be the first confrontation with a museum app for many users. This subchapter will therefore shed some light on the museums these apps are affiliated with, in order to place the apps in a broader context.

Liberation Route Europe
Browsing the app store looking for museum apps, one thing becomes clear from their descriptions: these apps want to deliver an extra experience to World War II heritage. The three apps in this research are no exception to this logic of heritage tourism.[149] Each of the three selected apps are stored under the category 'travel and local', since their information is arranged based on a user's location. History is no category in the app stores, so these apps will have to

---

[148] Kenniscentrum Oorlogsbronnen, "De Nederlandse Belangstelling Voor de Tweede Wereldoorlog," 8.
[149] van der Laarse, *De Oorlog Als Beleving*, 26; Meyer, "Problematische Popularität?," 271.

be filed for their under education or travel. The Liberation Route Europe project is one of the organizations which has launched its app in the latter category. Their *Liberation Route Europe* app was launched in France on the 6th of June 2014, and contributes to the project's goal; to increase the visibility and accessibility of this part of European history.[150] As part of the project it supports linking various WWII-related locations and museums into an international remembrance trail. The project hosts (educational) events and tours, and has placed almost 200 audio stones at significant historical locations, while the app shows more than 300 locations on its map.[151]

According to its description, the app offers a journey through history, by following the paths the liberators of Europe took during WWII. It does so by showing important locations of the war in Europe, separately or connected in one of the fourteen storylines.[152] Users of the app are welcomed by a brief instruction, explaining the different functions the app offers: visiting historical places, reading stories and biographies and offline use. The app works by showing nearby historical locations and museums, which can be visited (See: Figure 13). Storylines are also included in the app, consisting of a list of locations connected through a shared narrative or mission, such as 'the Rhineland Offensive' or 'Operation Market Garden'. The app supports the English, Dutch, German, French and Polish language, although not all audio is available in French and Polish, and audiostones can only be found in the Netherlands (See: Appendix 8).[153]

---

[150] LiberationRouteEu, "Introduction to the Liberation Route Europe," *Youtube*, accessed April 6, 2016, https://www.youtube.com/watch?v=O1a3irki1VY.
[151] Stichting Liberation Route Europe, "Liberation Route Europe," *Liberation Route*, accessed March 3, 2015, http://liberationroute.com/liberation-route-europe.
[152] Stichting Liberation Route Europe, "Liberation Route Europe App."
[153] Stichting Liberation Route Europe, "Discover the History," *Liberation Route Europe*, March 1, 2016, http://liberationroute.com/discover-the-history.
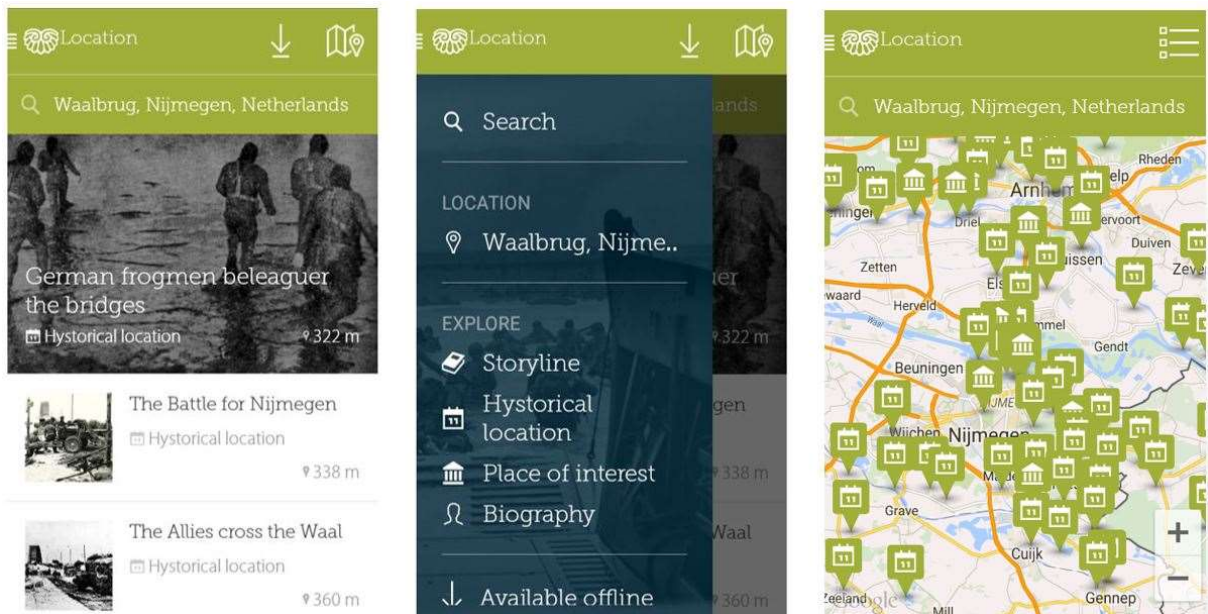
Figure 13: The Liberation Route app offers an overview of different historical locations (Screenshots from the Liberation Route Europe app)

Picture War Memorials

Comparable with the Liberation Route app is *Picture War Memorials (PWM),* an app also aiming to make visits to WWII heritage more vibrant and accessible, and to keeping memories alive.[154] This app was launched back in 2010 by the National Committee for 4 and 5 May and the Netherlands Institute for Sound and Vision. The National Committee is in charge of the commemorations of WWII. For this project it has joined forces with the Institute for Sound and Vision, a Dutch institute boasting a huge media archive. The combined archives were further complemented with media from the NIOD institute for War- Holocaust- and Genocide and the National Archives; resulting in a final app with over 200 media-enriched (Dutch) monument entries, and an open access database of 3500 war monuments through the website linked with the project.[155]

Viewing this database through the app again leads to a brief introduction including the

---

[154] Johan Oomen, Maarten Brinkerink, and David van Toor, "Picture War Monuments: Creating an Open Source Location Based Mobile Platform," in *Proceedings*, ed. J. Trant and D. Bearman (Museums and the Web 2011, Philadelphia, 2011).

[155] Nationaal comité 4 en 5 mei, "The National Committee for 4 and 5 May," *Nationaal Comité 4 En 5 Mei*, accessed November 6, 2015, http://www.4en5mei.nl/english/the_national_committee_for_4_and_5_may; Nationaal comité 4 en 5 mei, "Oorlogsmonumenten in Beeld," accessed November 6, 2015, http://www.4en5mei.nl/herdenken-en-vieren/oorlogsmonumenten/oorlogsmonumenten_in_beeld.

features of the app. The app demonstrates that it adds context to existing monuments in the form of videos, audio files and texts. All archival materials can be accessed on the spot to make visits to monuments more exciting. Users can also participate in improving the app by adding their own photos to these places. An image of the app is provided in <u>Figure 14</u> below.[156]
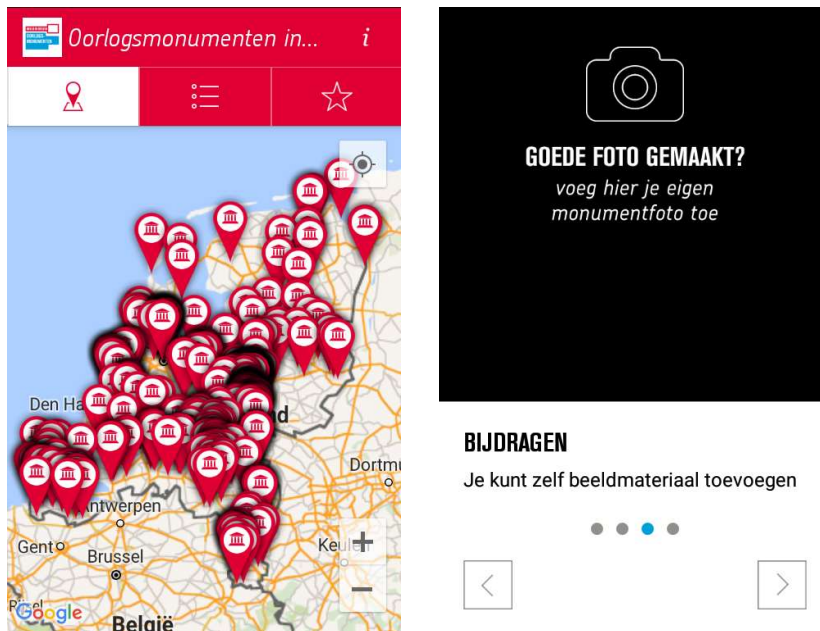
Figure 14: Picture War Monuments shows the locations of monuments and offers the possibility to add photos to them

Anne's Amsterdam

Probably the most famous account of the war is the story of Anne Frank. Her life is inextricably connected to the city of Amsterdam and its history; the city hosts the famous annex where Anne went into hiding. Besides this famous place, Amsterdam is also related to other parts of her youth. Anne lived in another house before war broke out and went to school just like everyone else. These significant places from Anne's life are integrated into the project called 'Anne Frank's Amsterdam', of which the *Anne's Amsterdam* app in this research is part. The Anne Frank foundation received this app as a gift from Repudo, a software company specialized in digital items that can be picked up in the physical world.[157]

Despite the fact that the app seems to be focused on Anne's story, the app describes that it aims to show the impact of the occupation on daily life in Amsterdam. Users can explore this by walking through present-day Amsterdam. Stories and media on how the city was like

---

[156] Nederlands Instituut voor Beeld en Geluid, "Oorlogsmonumenten in Beeld App."
[157] Repudo, "Anne's Amsterdam App"; Anne Frank Foundation, "This Site," *Anne Frank*, accessed February 5, 2016, http://www.annefrank.org/en/Subsites/Annes-Amsterdam/Floating-Pages/This-site/.

during WWII are added to chosen physical locations. Through a quest for 30 items, placed on the app's map of Amsterdam, the city and its war history can be explored. All items can be picked up by simply approaching them with the app and GPS function switched on. Once an object is found, the stories and media related to the location can be viewed. All media is stored in a digital album and can be shared with friends. (See: Figure 15)
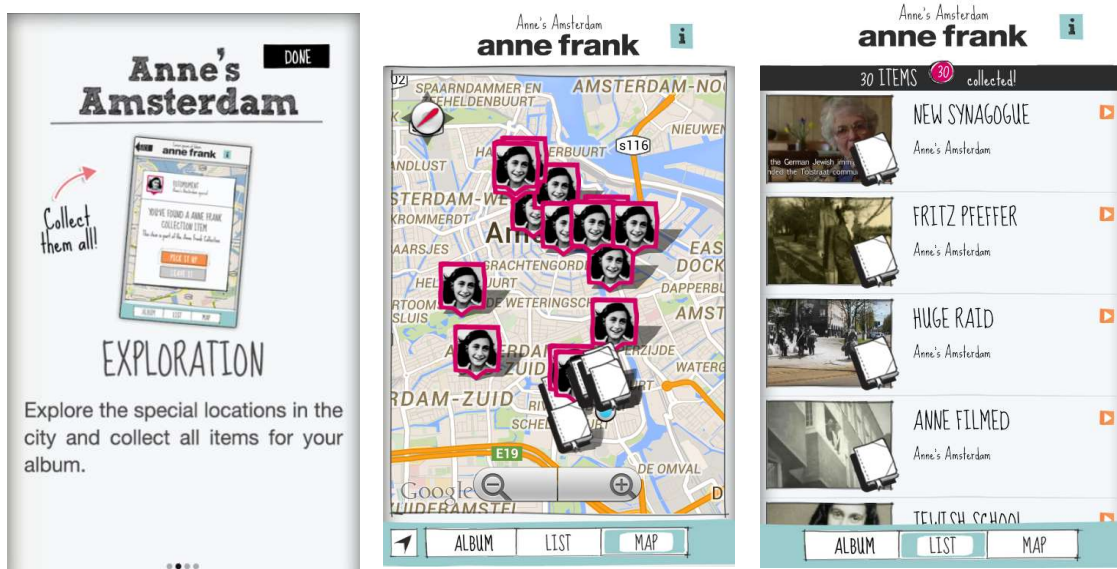
Figure 15: Anne's Amsterdam lets users explore the city and collect items for their album

3.2 *Narratives in museum apps – highly personal*

Although related to centres of knowledge, Google's Play Store categorizes all three apps under the denominator 'travel and local', rather than education. (See: Appendix 1) Whilst offering a wealth of information about war related topics, users are encouraged to travel to physical locations in order to fully experience the app. The apps do so in different degrees, slightly comparable to the previously discussed freedom in games. On one side of the spectrum *Anne's Amsterdam* literally requires users to be at an exact place in order to reveal information about that spot. Information in the other apps can be consulted anywhere, although *Liberation Route* additionally offers 'fixed' narratives, related to certain episodes or themes in history, such as the storyline 'Market Garden'. *PWM* does not offer such options, leaving monuments and stories unstructured for users to explore.

Despite the freedom to visit monuments from home, we can assume these apps are also used as they were intended to be used: on location. This results into a new way of presenting history. Consumers are not bound to follow a specific sequence, they are enable to create their

own narratives and gather information in their own pace and order. Of course fixed routes are available in the Liberation Route app, but all three apps do not explicitly force users to visit places in a given order. De Souza e Silva refers to this process as 'walking as remixing': users can construct their own stories by the way they stroll through streets.[158] Relating this to historical narratives leads to the active construction of scattered narratives. *PWM* proves to be a perfect example, by offering fragments of stories, which can be 'read' in any order. While these stories are still anchored in time: place and time are provided through the app and the monument itself.[159] What does change is the perspective or orientation of visitors, within the frame created by the app's developers. Each location contains its own (short) narrative, but users are in charge of deciding which places (not) to visit. Authority in creating a comprehensive narrative is thus partly moved to users and their individual taste and walking patterns. In this way historical apps allow for a 'remixing' of different stories into versions preferred by users.[160]

Integrating more than museums?

 Resulting from a convertible narrative, in which users assemble their own story is the difficulty of analyzing such stories. Overall though, *Liberation Route Europe* is clearly forging an international remembrance narrative of WWII. Rather than focusing on national frames for remembrance, the foundation reveals a pan-European war narrative, by linking trails throughout Europe. Liberation Route Europe is also eager on mentioning hard-won European freedoms and frames WWII as something specifically European rather than referring to individual countries and their war stories. Ethnologist Sarah Macdonald calls such projects 'transcultural', since they aim to transcend national cultural differences by using shared values.[161] Liberation Route employs the values of peace, democracy and freedom as typical European values as can be read in their Foundation Charter. The charter specifically underscores the importance of a 'common transnational vision' combined with international reconciliation, and emphasizes 'European Citizenship values'.[162] In this ideological use of history, stories are cast into a larger

---

[158] de Souza e Silva, "From Cyber to Hybrid," 272, 273.
[159] Grever, "Geen Identiteit Zonder Oriëntatie in de Tijd," 445–49.
[160] Rigney, "When the Monograph Is No Longer the Medium," 115; F. Behrendt, "The Sound of Locative Media," *Convergence: The International Journal of Research into New Media Technologies* 18, no. 3 (2012): 289; O'Hara and Kindberg, "Understanding User Engagement," 266–68.
[161] Macdonald, *Memorylands*, 162–64; Stichting Liberation Route Europe, "Liberation Route Europe."
[162] Liberation Route Europe, "Liberation Route Europe Foundation Charter," accessed May 6, 2015, http://liberationroute.com/media/1336585/Liberation-Route-Europe-Foundation-Charter.pdf.

narrative of a (European) struggle against non-democratic, oppressive elements in its territory.[163]

Such histories of a united Europe are inextricably linked to contemporary goals of a united European Union. Here the past is used in an ideological and political way, creating and supporting a present European identity. The project is in a way legitimizing the existence of the European Union by providing it with a shared history.[164] Not only is the chairman of the European Parliament (Martin Schulz) the main patron of the project; the foundation even receives financial support from the EU.[165] This leads to on the one hand a very much universal story of the liberation of Europe, which can be adopted by all countries. On the other hand, the European agenda and current international relations cause distortions in important facts about the Liberation as well. The Soviet Allies are not mentioned in their role of defeating National Socialists, but rather as new enemies of freedom. This is reflected by the app's statement that 'ultimate liberation' only came about in 1989, when the Soviet Union started to collapse. At the same time the Liberation only starts in Normandy, neglecting the importance of for example the famous battle of Stalingrad in pushing back the German forces.[166]

This history of European unification, a struggle towards democracy and the role of the Soviet Union as oppressor is perfectly exemplified in the project's storyline about Gdansk.[167] Director of the LRE-project Victoria van Krieken has not excluded a future Eastern liberation route however, but admits the difficulties and sensitivities of creating such a trail.[168] For now

[163] Macdonald, *Memorylands*, 170, 178–83, 188, 189.

[164] Ulrike Sommer, "Methods Used to Investigate the Use of the Past in the Formation of Regional Identities," in *Heritage Studies. Methods and Approaches*, ed. M.L. Stig Sørensen and J. Carman (London and New York, 2009), 103–6; Macdonald, *Memorylands*, 166, 206; Savenije, van Boxtel, and Grever, "Learning about Sensitive History," 518; Klas-Göran Karlsson, "Processing Time - On the Manifestations and Activations of Historical Consciousness," in *Historicizing the Uses of the Past: Scandinavian Perspectives on History Culture, Historical Consciousness and Didactics of History Related to World War II*, ed. Helle Bjerg, Claudia Lenz, and Erik Thorstensen, Time - Meaning - Culture (Bielefeld, 2011), 138–40.

[165] Stichting Liberation Route Europe, "Financial Support," *Liberation Route*, accessed March 3, 2015, http://liberationroute.com/financial-support; LiberationRouteEu, "Introduction to the Liberation Route Europe."

[166] Stichting Liberation Route Europe, "Liberation Route Europe App."

[167] Liberation Route Europe, "Gdańsk during the 20th Century," *Liberation Route Europe*, accessed April 1, 2016, http://liberationroute.com/poland/storyline/gdansk-during-the-20th-century.

[168] Victoria van Krieken, Victoria van Krieken over Liberation Route Europe, November 26, 2014, http://dewijzenvanhetoosten.nl/actueel/victoria-van-krieken-over-liberation-route-europe/.

the trail can be remixed in any way possible, but the destination will remain a peaceful and democratic EU. Contemporary goals and identity politics dominate the narrative of the route.[169]

War Monuments in a national narrative?

Contrary to the *Liberation Route,* the *PWM* app remains strictly within the boundaries of the Netherlands. Working from an existing database of Dutch monuments, the database provides separate stories to each monument in its database. The app only contains war monuments according to the definition of the National Committee 4 and 5 May. As a result it contains stories of the persecuted, civilians, merchant-ship personnel, resistance fighters and Dutch and Allied soldiers. The monuments are complemented by stories that surround peace monuments and war cemeteries.[170] For practical reasons, the developers were restricted to this national database, resulting in an app that only views the war from a Dutch perspective.[171]

No overarching narrative is used in the app, the app simply presents all monuments in its database. There is no storyline or route connecting different places as is the case with the Liberation Route. Besides lacking such a narrative, little attention is paid to for example the German perspective on the war. German, and other diverging stories that do not comply with the range of the Committee's definition of a war memorial, are simply left out of the app. The program contains a selection of the monuments in the database, and does not add any other monuments to this existing source of information. Even though a variety of witnesses, ranging from soldiers to civilians, tell their story trough the app, the topic of the app prevents *PWM* from putting forth more diverse stories.

The focus on Dutch memories is for example highlighted in the monument for the Birma-Siam and Pakan Baroe railroad. This monument has been erected solely to remember the victims from the Kingdom of the Netherlands. Besides these Dutch victims, thousands of other people have died in the construction of these rail track. Neither the app nor the website mentions these perspectives however.[172] Remembrance through this app is clearly done within a Dutch framework and from a Dutch perspective.

---

[169] Garden, "The Heritagescape," 270–76, 284–86; Willem Frijhoff, *De Mist van de Geschiedenis. Over Herinneren, Vergeten En Het Historisch Geheugen van de Samenleving* (Nijmegen, 2011), 39–41.

[170] Nederlands Instituut voor Beeld en Geluid, "Oorlogsmonumenten in Beeld App."

[171] Oomen, Brinkerink, and van Toor, "Picture War Monuments."

[172] Nationaal comité 4 en 5 mei, "Arnhem, Birma-Siam En Pakan Baroe Spoorwegen Monument," *Oorlogsmonumenten in Beeld*, accessed January 4, 2016, http://www.4en5mei.nl/herdenken-en-vieren/oorlogsmonumenten/monumenten_zoeken/oorlogsmonument/837/arnhem%2C-birma-siam-en-pakan-baroe-spoorwegen-monument.

Anne's story

Compared to the European and national scale of the other two apps, *Anne's Amsterdam* is concerned with an ever smaller region. The app mainly reveals the Frank and Van Pels families' stories in the city of Amsterdam. Just as in the other two apps, users free to decide the order of their tour. Regarding the narrative of this app, *Anne's Amsterdam* is positioned between the two other apps. While the app does not provide a literal story line, the themes are obviously connected to each other through the person of Anne Frank and the city of Amsterdam. The route in this app can be freely chosen, by walking through the city while picking up pieces of information, relating Anne's history to the location at which the item is found.

Each of them relates the personal information belonging to the chosen place to a bigger picture of the war-period. Through these personal stories, the app actually contains information about more than just Amsterdam. Viewed from one of the family members or friends' perspective, the app reveals information about the period of 1933, a year before Anne moved to Amsterdam, until 1952; the year in which Otto Frank moved out of Amsterdam. The latter is related to the address of Miep and Jan Gies, who helped the Frank family in their hiding. This story is partly told by a witness (Miep) but also mentions the liberation of Auschwitz and the problems of returning to the Netherlands. Through the testimony of Miep, the insecurity about what happened to relatives is also told: 'I didn't hand Anne's writings immediately on his arrival, as I still hoped, even though there was only a slight chance, that Anne would come back....'[173]

Personal stories

Noticeable in all three apps is their way of narrating WWII by adding personal stories to the bigger picture. This can be related to the aforementioned tendency to immerse users into stories by this focalization through a personal narrator.[174] The storylines in each app regularly zoom in to personal levels, rather than using descriptive storylines. Such eye-witnesses have a lot of potential impact and are trusted to a high degree. Off course the downside of this approach is their subjectivity and selectivity in which events they choose to talk about.[175]

While *Liberation Route* might be focussed on the Allied perspective, they have also added German witnesses to a few of their audio files. In Nijmegen for example, the story of a

---

[173] Repudo, "Anne's Amsterdam App."

[174] Erik Somers, *De Oorlog in Het Museum: Herinnering En Verbeelding* (Zwolle, 2014), 298–301.

[175] Lutz, "Der Zunehmende Zeitliche Abstand Zur Verfolgungsgeschichte Der NS-Zeit.," 195.

German diver on a mission to blow up a bridge is followed, as if it was told by a German soldier.[176] *PWM* also includes such personal stories, but again, just form a Dutch perspective. While the website has incorporated a German cemetery into its database, this place does not contain any extra information and is not included into the smaller database of the *PWM* app.[177]

While *Anne's Amsterdam* might be the zenith of a personal WWII account, the app does lack any perspectives other than those related to the Frank family and the people that helped them. Germans are depicted in some of the photo's the app, but no events are viewed through their eyes.

3.3   *The power of place and authenticity*

In their search to enrich visits to historical places, apps use more than eyewitnesses' accounts only to immerse visitors. In general there is a tendency to provide visitors with the sense that they are experiencing (the authenticity of) a place.[178]Location-based apps are perfectly capable of satisfying such desires, by actuating mobile phone technologies. Doing so has a number of consequences for the visitor's experience, as will be discussed in the following paragraphs.

'At this place…' - Mixing past and present

Surrounded by farmland, a deserted country road and a picnic bench lies a big grey stone. Attached to it is a green-white Liberation Route sign. Without this boulder, the crossroad of the Koeveringsedijk and the Molenweg would be quite an ordinary one, but in this case the presence of sign turns the farmland area into a place of memory (See: Figure 16). Spots such as the one in Koevering are perfect examples of the fact the memory, and memorials as well, need media in order to function. Without accompanying texts or media, heritage locations remain ordinary fields or buildings. Media references to the histories that unfolded at these locations or to which histories they refer are needed.[179]

---

176 Liberation Route Europe, "German Frogmen Beleaguer the Bridges," *Liberation Route Europe*, accessed April 1, 2016, http://liberationroute.com/the-netherlands/historical-location/german-frogmen-beleaguer-the-bridges.

177 Nationaal comité 4 en 5 mei, "Ysselsteyn, Duitse Militaire Begraafplaats," *Oorlogsmonumenten in Beeld*, accessed July 19, 2016, http://www.4en5mei.nl/herdenken-en-vieren/oorlogsmonumenten/monumenten_zoeken/oorlogsmonument/1762/ysselsteyn%2C-duitse-militaire-begraafplaats.

178 Garden, "The Heritagescape," 288.

179 Macdonald, *Memorylands*, 152; Savenije, van Boxtel, and Grever, "Learning about Sensitive History," 518; Frijhoff, *De Mist van de Geschiedenis*, 39; Erll and Rigney, "Introduction," 4–5.

Figure 16: An audio spot at Koevering marks what was known as 'Hell's Highway'

Clearly, memorials and places need media, in whatever form, to remind visitors of their significance. These can be digital or inscribed in monuments, the basic principle remains that visitors need to be aware that a monument is actually a monument. New media technologies have added a new way of doing so, by providing this information on the spot, and sometimes as extra information only available on the internet or through an app. Where physical indicators used to designate places of significance.[180] All three apps have projected a digital layer of information over the physical world. This layer of information has the potential to blend together what is present and what is past: the tangible present and the digital past can get partly intertwined.[181] Of course, such experiences will still variate among different users, depending on their knowledge, background and interests.[182]

What happens in these apps is what Zerubavel has called the concept of mnemonic bridging. This refers to the feeling 'pseudo-physical contact' with the past, through a sameness of place.[183] This sensation of being in touch with the past through a shared location is reflected

---

[180] Carman and Carman, "The Intangible Presence," 292, 298, 304, 310.
[181] Bo Kampmann Walther, "Towards a Theory of Pervasive Ludology: Reflections on Gameplay, Rules and Space," *Digital Creativity* 22, no. 3 (2011): 138–40; Marianne Halblaub Miranda and Martin Knöll, "Stadtflucht. Learning about Healthy Places with a Location- Based Game," ed. Judith Ackermann, Andreas Rauscher, and Daniel Stein, *Navigationen Zeitschrift Für Medien- Und Kulturwissenschaften* 16, no. 1 (2016): 102, 103; Oomen, Brinkerink, and van Toor, "Picture War Monuments."
[182] De Bruijn, "Bridges to the Past," 36–38.
[183] Zerubavel, *Time Maps*, 37–43.

through for example the *Liberation Route app.* While standing in Arnhem at bank of the Rhine River, the Liberation Route app explains:

> "You are standing at the end of the Rijnkade, on the North side. You see the bridge and the Groenewoud gardens. During the war, the bank on this side of the Rijnkade and the whole are behind it were completely raised. Between the war memorabilia, there a benches with a view of the river Rhine and the bridge. But this location is mostly memorable because the Arnhem Bridge turned out to be a bridge too far for the Allies." [184]

Such texts pointing to tangible places have proven to be attractive for visitors due to this sameness of place, as they are able to provide the illusion of temporarily travelling back to the past. A constancy of place is thus often applied in heritage trails and locations, making the past as present as possible.[185]

Whilst using the same principle of sameness of place, the three apps put this to use in different ways. *Liberation Route Europe* is using and at the same time creating places by adding physical and digital information to them. Audio spots are on the one hand placed at locations near existing monuments and traces. On the other hand, fields and forests are also transformed into memorials by adding physical signs, inscribing the place with (digital) information.

Following the three Dutch storylines, it turns out references to tangible traces are actually quite rare. Most references are aimed at rather abstract landscapes in general, contributing to what Van de Laarse recognizes as a wave of emerging 'memoryscapes'.[186] In the *Liberation Route* app, the transformation of the Reichswald into a digital memoryscape is a great example of how bare forests and fields can be turned into historically significant places by adding digital information (through an app).[187]

A similar strategy is applied by *Anne's Amsterdam*. The only difference being that the app is not using any signs at all. Placeholders are only visible in the digital world, and without the aid of the app people will probably pass by some of the locations without ever getting to know their significance. Despite the lack of markers, tangible places such as the Anne Frank house and the aforementioned house of the Gies family are used to project digital information.

---

[184] Liberation Route Europe, "A Bridge Too Far," *Liberation Route Europe*, accessed May 1, 2016, http://liberationroute.com/the-netherlands/historical-location/a-bridge-too-far (Transcript of audiofile).

[185] Fagerjord, "Between Place and Interface"; Garden, "The Heritagescape," 288; Zerubavel, *Time Maps*, 40–43; Kirshenblatt-Gimblett, *Destination Culture*, 135–38; De Bruijn, "Bridges to the Past," 93, 161; Macdonald, *Memorylands*, 160–66.

[186] van der Laarse, *De Oorlog Als Beleving*, 64.

[187] Terri Moreau en Derek H Alderman, 'Graffiti Heritage: Civil War Memory in Virginia', in: Owain Jones en Joanne Garde-Hansen eds., *Geography and Memory* (Basingstoke 2012) 153.

Van de Laarse recognizes this trend in many other European cities, where old Jewish quarters are re-created through memorials. There are no longer Jewish people living at these place, instead they continue to exist as memorial areas.[188]

Finally *PWM* does the opposite, by making use of existing monuments, and adding extra information to them. These monuments are already 'symbolically charged' media, and therefore need no further markers.[189] The existing monuments act as markers for the digital information added to these place. Because the project is tied to the database and list of the National Committee, the app is prevented from creating locations by itself. Instead it refashions existing places.

Mediated authenticity

In their search for visitors it seems that experience is the key feature of museums and their apps in representing the war. While authenticity used to be the main feature of museums, apps still rely on this attribute to convincingly address their message.[190] Essential here is the use of authentic sources. Although pictures taken during wartime are themselves mediations of the past, they do fire the imagination of visitors for their authentic qualities. *Liberation Route Europe, Anne's Amsterdam* and *Picture War Memorials* therefore each draw their images and videos from the sources of archives. Using photos from this period ensures that users forget that these images are simply older mediations of the same unreachable past. Just like the sameness of place concept, they offer an illusion of being in touch with a bygone past, even while being projected through new media.[191]

Less authentic but more related to authenticity through sameness of place are some of the photo's used in *Anne's Amsterdam.* While *Liberation Route* shows pictures of a location during the war, Anne's app makes it even easier to compare past and present situations, by showing the past and present literally collapsed into one photo. Scenes from the past are mixed together with pictures from the present. (See: Figure 17). On the one hand this creates what Ann Rigney calls an 'eternal present' in which chronology is shifted to the background by placing different eras into the same frame.[192] On the other hand, the contrast between the

---

188 van der Laarse, *De Oorlog Als Beleving*, 16.
189 Erll, *Memory in Culture*, 113.
190 Garden, "The Heritagescape," 273.
191 Erll and Rigney, "Introduction," 4; Schwarz, "Wollen Sie Wirklich Nicht Weiter Versuchen, Diese Welt Zu Dominieren?," 332; Fischer, "Ereignis Und Erlebnis," 196, 197; Weber, "Erinnerungskulturen in Medialer Transformation," 37, 38.
192 Rigney, "When the Monograph Is No Longer the Medium," 115.

pictures is clear by the black and white images placed in a colourful background. Another suggestion would therefore be that these images use the power of authentic images in combination with the aforementioned sameness of place. Their power lies not in the photographic material itself, but rather in the visual proof with authentic photo-material, that users are truly standing at the place where all this happened.

Figure 17: Anne's Amsterdam mixes past and present by editing them both into one photo

Sounds

Also in need of mentioning is the fact that *Liberation Route Europe* is the only app using sound effects in its representations. At different locations, the sounds of shootings and bombings can be heard, creating an atmosphere in which users are amidst the battle. This addition, certainly in combination with earphones could add a lot to the experience on the place. When surrounding sounds from the present are muted and extra sound-effects are added, this contributes to the delusion of experiencing a different time. According to Fagerjord and O'Hara and Kindberg, the use of such located sounds can stimulate the imagination related to a place, reaching a greater immersion than using text and photo's alone.[193]

---

[193] Fagerjord, "Between Place and Interface"; O'Hara and Kindberg, "Understanding User Engagement," 268.

Finally, it might seem *PWM* lacks the previously mentioned forms of authenticity. Whilst making use of sameness of place, the app does not always point to historically significant or authentic places, but instead it does so through the resurrected memorials for these events, which are not always placed exactly where battles happened.

Still the app wields a certain degree of authenticity. By using original and official sources, such as the National Archives and the NIOD database, the app still creates authenticity from its position within and relation towards this network of sources. Another form of authenticity in this app comes from another meaning of the definition, based on uniqueness. This authenticity is associated not so much to using older media, but is derived from the uniqueness of the monuments themselves. Special designs, such as the famous 'Destroyed City' from Ossip Zadkine grant these places their authenticity. The monument in itself is valued for it creativity and especially it uniqueness, the app can contribute to this by highlighting the memorial's artistic features.[194]

3.4 Conclusion

The three location-based apps are each aimed at providing unique heritage experiences to their users. For heritage institutions and museums, apps serves as another way of presenting their information, and enhancing this with more popular and engaging elements. Main technique in this process is the creation of a digital layer of information, enriching historically significant places with authentic multimedia on the spot. Each app has its own method, *Liberation Route Europe* marks important places with audiostones and signs, notifying visitors of the presence of additional digital information. These stones are placed near monuments, but also at places which would elsewise lack historical significance. The project is creating historical places and links them with immersive personal stories to support their narrative of a shared European struggle for freedom and democracy. A personal approach is used in order to get closer to readers and listeners.

A similar approach is used in *Anne's Amsterdam,* in which Anne Frank's life is related to different locations in Amsterdam. Quotes, from her diary, authentic photos and mixed pictures showing the past and present have to found in the digital game-layer the app has placed upon Amsterdam. Found objects provide an authentic experience of being at the exact same places where Anne and her relatives used to be. Finally *Picture War Memorials* like all three

---

[194] van der Laarse, *De Oorlog Als Beleving*, 200–202.

apps, adds personal stories and extra information and media to official war memorials. In order to create authentic experiences, the authority of the committees and institutes it is related to plays a big role. For its stories, the app is dependent on already existing tangible memorials.

# 4.	Remediation and affordances

Previous chapters were concerned with representations of WWII through apps. After looking at these representations, this chapter will be relating them to other media through the concept of remediation. First a short discussion of the working of remediation in combination with apps will be given so to comprehend the following subchapters. The second subchapter contains an overview of what, and how popular apps borrow their content from other media. Even more important in answering the main question of this research is if these representations show any significant differences in their representations which can be related to the fact that these stories are represented through this new way of presenting them. Can general patterns be discerned in the relations between popular history and its (unique) representations through apps? Or are they not so different from other media at all? Accordingly, the third part of this chapter will apply these questions to the three museum-related apps in this research.

## *4.1	The demand for apps*

The process of remediation occurs from shifting patterns of demands, as shown earlier in this research. New media and technologies are developed in accordance with these demands. Over the last decade this resulted into the onset of mobile technologies and apps developed for such devices. What becomes visible through apps is thus a representation which is guided by the features and limitations of this particular medium.[195] The content of paper books is confined by the fact that it cannot contain moving images, whilst television actually needs audio-visual material: programs containing solely textual information is not likely to attract much viewers. Each medium thus has its own rules, and understanding these is part of understanding the way stories are represented through them. In this case, grasping the demands and rules that steered the rise of mobile technologies and corresponding software applications, helps understanding why and WWII is remediated into apps.

Generally, new technologies are introduced to offer extra possibilities and options for potential customers and users. Following the logics of remediation, new features of apps will reveal these needs. Remediation is always goal-oriented, hence the remediation into mobile apps is purposely aimed at certain goals as well.[196] In short the goals of mobile applications are

---

[195] Erll, *Memory in Culture*, 114.
[196] Scolari, Aguado, and Feijóo, "Mobile Media: Towards a Definition," 34.

especially to accomplish fast and easy use, and to deliver personal and customizable information anywhere and anytime.

As a fenced-off area of the internet, an app takes it users fast and easily to the exact information they are looking for, without the distractions of the vastness of the internet. Speaking in terms of Snickars, apps are 'walled gardens' in a jungle of information.[197] In this garden, lots of information is left out on purpose, programming the app for a small set of tasks.[198] When for example someone is looking for war-monuments, using an app can turn out to be far more practical than filtering results from the internet.

Besides their affordance of delivering information fast and easily, mobile applications are particularly used for another feature. Being overly obvious, mobile applications are in fact 'mobile'. The combination of a phone and an app was designed for portability: they can be used and carried around anywhere. While laptops may have been designed with a similar purpose, mobile phones took mobility a step further, by reducing the hassles of short battery life and long start-up times.[199] Going even further, apps can not only be used at any location, but can also make active use of location technologies. Modern day smartphones are all equipped with GPS sensors to accurately pinpoint ones position on the globe.[200]

Finally, as mentioned, apps are also personal and customizable, and meant to be 'always on'.[201] Nowadays most people can be reached on their phones all day long, and some even during the night. Mobile phones brought along this always on mentality, but were at the same time designed for short periods of use. Being always on means apps can be used during a bus-ride, while waiting for a friend and even in company of that same friend. They are often used in short periods of time, lasting less than 10 minutes. App designers will have to keep this in

---

[197] Snickars, "A Walled Garden," 159, 160; Schrock, "Communicative Affordances of Mobile Media," 1236; Anderson and Wolff, "The Web Is Dead. Long Live the Internet"; Liu, Au, and Choi, "Effects of Freemium Strategy in the Mobile App Market," 327.

[198] Anderson and Wolff, "The Web Is Dead. Long Live the Internet"; Harmeet Sawhney, "Innovations at the Edge. The Impact of Mobile Technologies on the Character of the Internet," in *Mobile Technologies: From Telecommunications to Media*, ed. Gerard Goggin and Larissa Hjorth (New York, 2009), 106; Scolari, Aguado, and Feijóo, "Mobile Media: Towards a Definition," 29; Goggin, *New Technologies & the Media*, 35,36,58-60.

[199] Schrock, "Communicative Affordances of Mobile Media," 1236; Jason Kalin and Jordan Frith, "Wearing the City: Memory P(a)laces, Smartphones, and the Rhetorical Invention of Embodied Space," *Rhetoric Society Quarterly* 46, no. 3 (May 26, 2016): 203.

[200] Liestøl, "Situated Simulations," 24.

[201] Schrock, "Communicative Affordances of Mobile Media," 1236; Rotsztejn, "Mobile Entertainment Applications," 15; Videla Rodríguez, García-Torre, and Formoso Barro, "Content and Interactivity," 555; Virpi Oksman, "Media Contents in Mobiles. Comparing Video, Audio, and Text," in *Mobile Technologies: From Telecommunications to Media*, ed. Gerard Goggin and Larissa Hjorth (New York, 2009), 119.

mind whilst designing their apps, making them compatible for this task.[202]

Of course apps and mobile phones share a lot of other characteristics as well, such as their interactivity in contrast to books and movies. These features are not typical for apps though, since they do not distinguish them from for example computers games or internet in general. The combined list above is typical for apps and their potential in general. However it has to be remarked that differences between apps and mobile internet sites seem to be disappearing. Website are more and more adaptive and optimized for mobile phones. Far reaching personalization, offline availability, notifications, and simple and easy to access information are still examples of the differences though.[203] The following paragraphs will investigate to what degree popular apps are renewing compared to other media. The mentioned characteristics are indispensable in doing so, since they impact the representation of WWII in a way that is unique for apps.

4.2   Remediation in popular apps

In the past few hundred years media have gone through a lot of changes. What has always remained the same however, is that new media always changed in relation to other media. Newer media have always been varieties or adaptions of older ones, as shown earlier in this research.[204] The five popular apps in this research can also be traced back to earlier media, since they are all mobile games.

Game-apps: refashioning games and movies
Out of the five selected apps traces of remediation in *Sandbox Strategy* are easy to find. Sandbox and other comparable (war) games are all direct remediations of boardgames which exist since the early 1900's. These games became widely popular during the 1960's and 70', and they still are, with Risk as the best known example.[205] Third-person shooter games are more difficult to link to such games, since they are more concerned with immersive stories, shooting skills and graphics, as opposed to the rule-directed board games. Such games therefore have remediated movies and documentaries instead.[206]

---

[202] Liestøl, "Situated Simulations," 24; Statista, "Average iPad App Session Length by App Categories," *Statista*, accessed November 3, 2015, http://www.statista.com/statistics/202485/average-ipad-app-session-length-by-app-categories; Videla Rodríguez, García-Torre, and Formoso Barro, "Content and Interactivity," 554–55.
[203] Anderson and Wolff, "The Web Is Dead. Long Live the Internet."
[204] See: Chapter 1, Concepts, and: Erll and Rigney, "Introduction," 2–4.
[205] De Groot, *Consuming History*, 141–45; Fogu, "Digitalizing Historical Consciousness," 119–21.
[206] Fogu, "Digitalizing Historical Consciousness," 119–21.

Influential in the remediation of movies and documentaries into wargames are the highly popular series and movie *Band of Brothers* and *Saving Private Ryan.* According to Fogu and De Groot, games such as *Battlefield 1942, Medal of Honor* and the *Call of Duty* series are greatly influenced by these movies. Their developers picked up useful elements from these films and reappropriated them for their games' storylines and filming techniques as well. These remediations in turn can be regarded as the predecessors of the popular shooter apps.[207] *Brothers in Arms* clearly relates to the *Band of Brothers* series, and even shares the same name with Ubisoft's popular *Brothers in Arms* computer game from 2005. GLU, the company behind the *Frontline Command* app even remediates its own apps. The app 'Sniper X' is using the same 'hide and shoot' game engine with another theme projected over it, starring the actor Jason Statham. The press release on *Frontline Commando* even mentions it uses 'Glu's fan-favourite bullet-time feature' again.[208] As can be seen in figure 18, both games look very much alike.

Figure 18: GLU based the game-engine for 'Frontline Commando: WW2' (right) on that of other apps like 'Sniper X' (left)

Also borrowing from previous games are some of the game-elements, to ensure users want to keep playing. Just like so many games all selected apps consist of a main menu from which a set of options can be toggled, such as difficulty, sound and visual effects. This menu is a 'safe place' in-between missions, where time stands still as long as the users wants it to. Other game elements entail the principle of rewarding good aim in shooters, rankings and leaderboard for competition between players, and possibilities for gaining experience, levelling up and

---

[207] De Groot, *Consuming History*, 134–37; Fogu, "Digitalizing Historical Consciousness," 119–21; Lindley, "Story and Narrative Structures in Computer Games," 12.
[208] Glu, "Sniper X with Jason Statham," *Google Play*, accessed May 15, 2016, https://play.google.com/store/apps/details?id=com.glu.sniperx&hl=nl; Glu, "Lead the Allied Forces to Victory in Glu's Frontline Commando: WW2," *Glu - Recent News*, accessed May 15, 2016, http://phx.corporate-ir.net/phoenix.zhtml?c=207033&p=irol-newsArticle&ID=2035696.

unlocking new items, missions, treasures and levels. Finally all of the apps offer freemium-based gaming in which extra's or faster progress can be bought. This concept is also a remediation of games on other consoles, offering extras and premium content against payments. Ever since the internet these constructions were used. Whereas after-sales are normally taken care of by phone-calls or visits from company-representatives, apps and other media have remediated this into the freemium model.[209]

Popular apps: unique?

Considering the uniqueness of popular apps based on their contents, these apps do not offer that much new. Almost all of their contents can be regarded as remediations of other games and movies, to which they are inextricably connected. Developers of such popular apps fish in the same pond of popular culture for elements of their popular representations. The only exception to this is the censored content: movies and games on consoles allow more acts of violence on their screens, while apps are bound to the rules of app stores, prohibiting them from showing swastikas. On all others fronts, the representations of WWII through mobile apps do not seem to differ from other popular media representations.

The uniqueness of these apps does not seem related to how they represent history itself. The apps use the same bricks to build their games as found in other popular World War II games and movies. However, these apps do have unique qualities which are not directly related to representations. These concern the way in which these software pieces work in combination with the aforementioned affordances of mobile phone technologies. Remediations are always intentional and goal-oriented: new media are created to comply with changing expectations of its receivers. According to Bolter and Grusin, these desires mostly involve more immediate representations.

In the case of popular WWII-apps, remediation has actually not been fully aimed at immersion, even though the touch screen and controls make smartphones more immersive.[210] Instead WWII was remediated to match the affordances of mobile phones and the changing desires of consumers. The ultimate goal of these remediations is to meet the affordances of portability, mobility, availability and the high degree of personalization. World War II games were given a make-over in order to comply with these affordances. The remediation of popular media representations into mobile applications resulted into a version of the war which is

---

[209] Liu, Au, and Choi, "Effects of Freemium Strategy in the Mobile App Market," 327, 328.
[210] Hjorth, "Domesticating New Media," 145.

handheld, and can be taken anywhere. This echoes through in the fact that missions only last a few minutes. War games can be played in short bursts and on the go, and are designed for portability. Notifications can customized to remind players of their 'duty' to continue playing. Obviously this portability and mobility is impossible on many other gaming devices. To play the full *Brothers in Arms* game, requires a console and a television or a computer, and even using a laptop during a bus-ride is highly unpractical. These games were not designed to be carried around for spontaneous, short-lasting entertainment.[211]

Another reason for the development and the use of this history in mobile games is clear as well: there is money to be earned. The introduction of freemium gaming as a business model has been introduced in lots of apps, and has proven to be very successful.[212] The different currencies and game-elements shown in chapter 2 ensure that gamers get in the grip of achievements, developments and ranking, in order to get them to buy one of the many (a-historical) extra's offered through the apps. History in popular apps is a highly commercial activity.

Finalizing this subchapter, the three popular third-person shooter apps clearly mimic other popular (linear) media such as movies and games for other consoles. The apps have used building blocks from popular war movies, and remediated them into problem-solving stories: games. The linearity of the books and movies from which they borrow their contents remains however. Users still have no chance to cause alternative outcomes of the app, except of course for *Sandbox Strategy.* Shooter apps turn out to be just somewhat more interactive and portable remediations of the movies on which they are based, with the difference that developers can now earn money while the player goes through the remediated book.

4.3   *Remediation in apps of museums and institutes*

Whereas popular apps turn out to be almost copies of popular historical representations, this paragraph is concerned with museums and their apps. It delves into museum apps in relation to other historical representations and other information available through the museum. The affordances given in the first part of this chapter provide insight into the process of the

---

[211] Brian Rejack, "Toward a Virtual Reenactment of History: Video Games and the Recreation of the Past," *Rethinking History* 11, no. 3 (2007): 420–22.
[212] Anthony Wing Kosner, "Apple App Store Revenue Surge And The Rise Of Freemium App Pricing," *Forbes*, accessed June 13, 2016, http://www.forbes.com/sites/anthonykosner/2015/01/11/apple-app-store-revenue-surge-and-the-rise-of-the-freemium/#222d72f375c8.

remediation of WWII from a perspective of museums and offer part of the answer why WWII is represented in its particular way through apps.

Remediating content: a new wrapping?

An answer to the question why museums represent WWII through apps is at first sight not very complicated. A small scale research, including a questionnaire sent to different of these institutions, shows that the main motivation behind the idea of launching an app is the drive to keep their information and materials as accessible as possible. Eight of the twelve respondents mentioned they wanted to remain accessible (See: Appendix 13).

Given this reason, apps mainly use their apps to convey the exact message they spread through their website. The *Liberation Route* and *PWM* apps are both a remediations of their own websites, with the advantage of providing extra mobility and portability: the assets of mobile phones. Both projects draw from their own, already existing, sources of information to present their information in a new way; respectively a full website and an open database.[213] The apps mainly serve as an extension to the website and the project, and provide more direct and easier access to useful information for visitors. Both apps are perfect examples of the theory of remediation, since they incorporated lots of the characteristics (colours, layout, and font) of the websites they have refashioned.[214] Apps are in other words part of a larger network of media of an institution or museum.[215] The Liberation Route Project is the leader in this strategy, as it cooperates with other war museums, and has even managed to organize a travelling exposition through Europe with its partners under the name 'Routes of Liberation'.[216] Because the *Liberation Route* app is part of a large network of media and activities this improvise the authenticity and trustworthiness of the app. The power and credibility and the trust in the truthfulness of the app also depends on the museums, websites and other media to which the app refers. Museum related apps gain their credibility through this network. The same goes for the other two apps: Anne Frank is related to an internationally known foundation, while Picture War Monuments is part of the National Committee for the 4th and 5th of May[217]

In the case of Anne Frank, a long process of remediation is actually visible. Her diary

---

[213] Oomen, Brinkerink, and van Toor, "Picture War Monuments."
[214] Erll and Rigney, "Introduction," 4, 54–56; Bolter and Grusin, *Remediation*, 2000, 14, 15.
[215] Videla Rodríguez, García-Torre, and Formoso Barro, "Content and Interactivity," 554.
[216] Routes of Liberation, "Routes of Liberation: European Legacies of the Second World War," *Routes of Liberation*, accessed April 1, 2016, http://routesofliberation.com/.
[217] Weber, "Erinnerungskulturen in Medialer Transformation," 33–34, 40–48.

has already been remediated several times, into movies, musicals and even comics. Besides, she and her father even edited the contents of the book during and after the war.[218] Wertheim argues the modern remediations involve more than just commercial interests. He claims that is the story does not get remediated, it will eventually disappear from our memories. Like copying VCR-tapes to DVD's, we should keep on renewing Anne Frank's story through newer media. By constantly adapting the story it can be kept relevant. *Anne's Amsterdam* is one of these products that has to help to keep Anne's story alive, in what Wertheim calls a 'moral remediation'.[219] Referring again to the questionnaire in Appendix 13, the outcomes seem to confirm the existence of these motives. According to their developers, museum- and educational apps were not designed for profits.

Interesting here as well, is that Liberation Route Europe does not hesitate to use elements from popular culture and mainstream media in order to preserve and spread their story. The app is multiplying archival material and photos by using example an image of the movie 'A bridge too far' between authentic images. These images are recognizable for most viewers and sparks their interest. By using popular images, the interest for the authentic ones remains.[220]

4.4   Museums and the affordances of apps

Compared to other media, apps offer advantages and technological solutions in a period where museums and history are asked to deliver engaging content. They do so by offering information on-the-spot, and personalizing heritage tours. Immersion is reached in various ways as well.

Location: the advantage of apps

The use of GPS sensors can be seen as one of the main improvements for new smartphone or app contents.[221] Each of the three museum apps makes full use of these technologies, by showing the position of users on the map. In comparison: the three websites lack this function. Here visitors have to search in different ways, mainly by keywords or a manual search query in a map. [222] Apps made this process fairly easier, by rewriting easy to access maps with real-time

---

[218] Wertheim, "Remediation as a Moral Obligation," 160–66.
[219] Ibid., 159–67.
[220] Erll and Rigney, "Introduction," 4.
[221] Scolari, Aguado, and Feijóo, "Mobile Media: Towards a Definition," 29–32.
[222] Ron van Lammeren, Martin Goossen en Arend Ligtenberg, 'Interactive location-based services: problems and perspectives on the example of a cultural site', *Journal of Location Based Services* 4 (2010) 106.

information attached to the locations and have added to the experience of visiting historical locations.[223]

Walking tours 2.0

Since the introduction of apps as guides on heritage trails, users have the choice to visit or not to visit places and decide their own routes.[224] Of course this offers an advantage over traditional battle tours where visitors are 'forced' to listen permanently to a tour guide. This new technique can thus lower the threshold for undertaking such tours. Users can create their own tours, with these apps granting mobility and freedom. All three apps can be used without guides and stimulate this idea of following a heritage trail.

Albeit it has been discussed earlier in this research, the possibility of using apps during a tourist walk, is that they have the potential to immerse users into history. While walking tours have existed for over centuries, an app such ass Anne Frank really upgrades this concept to 'version 2.0'.[225] The app introduces game elements to unlock information and multimedia, possibilities which only became widely available by the increased possibilities and use of smartphones. Also possibilities that have proven to make visits to location more exciting.[226]

Consequently, the *Liberation Route* makes use of this technique in another way, in order to make visits more engaging. Instead of using game-elements, the listening stones create a hypermediacy which should eventually lead to a more immersive windows on the past. The listening stones contain phone numbers, to make sure that the audio files can also be heard by people who do not own a smartphone. Of course they will only realize their full potential with a smartphone. The Liberation Route allows for a combination of experiencing a sameness of place, supported by images and sounds. Audio fragments re-enact situations from the past, which took place at the locations where the user is standing. The situated experience of all media working together in this place could ultimately provide the immersive illusion that no media are apparent at all and that the user is actually in the past.[227]

[223] De Groot, *Consuming History*, 98; Kalin and Frith, "Wearing the City," 224.
[224] Schrock, "Communicative Affordances of Mobile Media," 1236, 1237.
[225] van der Laarse, *De Oorlog Als Beleving*, 14.
[226] Halblaub Miranda and Knöll, "Stadtflucht," 103; Hjorth, "Domesticating New Media," 146.
[227] Weber, "Erinnerungskulturen in Medialer Transformation," 45–47; Erll and Rigney, "Introduction," 4–5.

5.   Conclusion

The question how WWII is represented through popular and museum- and institution-related apps turned out to be a very broad but important research question. A new medium offers or forces representations to adapt to its possibilities and affordances Research into this subject is essential, but still in a pioneering phase. Combined with the wide range of apps and their topics, this made research rather difficult.

Keeping up with the trend
The last decades have seen an interest and a growing demand for immersive experiences of the past. Excitement, visiting historical places and being entertained is what the modern world of popular history and heritage is all about. From what apps promise in their descriptions, they should fit right in with this trend: both the popular and the museum-related apps.

The launch of historical games that can be played in short bursts, has found a lot of players through the app stores. In these apps, history as presented as their downloaders like to get it served to them: recognizable. The target audience of these games derives its historical knowledge mainly from other popular historical products. Full computer games like *Brothers in Arms* and famous movies like *Saving Private Ryan* are at the core of the third person shooter apps that are now being released on mobile phones. As a result, World War II in these games is represented in a rather mainstream and Western way: a war in which one (male) hero can save Europe from evil Nazi's and the protagonist is either a British or an American soldier. Developers of such apps benefit from delivering what these consumers want and deliver this in order to make a profit out of it. Representations of WWII through popular mobile apps are not very different from other popular representations, and by exploiting the freemium possibilities of apps they pursue the same commercial goals as other popular media.

While expectations for the less popular apps (the apps related to institutions and museums) might be that this category is totally different from popular apps, the opposite turns out to be true, at least on a lot of aspects. Despite the differences these museums have also aimed for a broader audience, and dived into the world of immersion and excitement as well. The location-based apps they offer consist of short text, enriched with audio, video and even game-elements. With this new tool in their medium-toolkit, these organizations reached out to the public by remediating their own collections. The same information is published in apps, in order to preserve their message for future generations, and at the same while to keep up with modern times and the competition with other museums. Although these apps are not directly

aimed at making profits, they are sure aware of the fact that they need to keep their information accessible and exciting, and apps are used as one of the tools to do so.

Mobile apps, are they that new?

Representations through mobile apps appear to be quite similar to other historical representations. The same stories are told and remediated, and often the same imagery is used. So do apps not offer anything new et al, what is the reason thousands of them are still being download each day, wat distinguishes them?

Media studies have shown that smartphones and apps have a certain set of qualities which are in favour in contemporary society. People have shown to want portable devices, on which they can always be online, and can receive all sorts of media. Returning to the title of the introduction: developers just could not look away from such demands. The medium dictates the message, so the message had to be made fit for this new medium.

In the case of museum-apps, this meant the information that was provided largely remained the same. By using location technologies however, apps can be taken onto tours, where they have the potential to create an illusion of direct contact with the past. Users get all the information they need right on the spot, and can imagine history was created there, with the assistance of (a combination of) audio-visual techniques. A unique combination of features, only possible with the help of modern smartphones and apps.

For game-apps nothing much has changed. Actually, contrary to the logics of remediation, they are played on smaller screens with less computing power. The traditional goals of remediation as a process delivering immersion and more media has been reversed in favour of portability and fast use. The Second World War is represented in a new way, in that it can now be played in short bursts and that it is always with you. The only difference apps have made next to these factors, is that Swastikas will no longer appear on your phone screen, due to the regulations of app stores.

Future research

Characterizing for this research was its explorative character; it has only probed into the subject. Conclusions cannot (yet) be extrapolated to 'all historical apps'. Furthermore, apps and mobile media are rapidly changing and new apps and updates are rolled out on what seems like a daily basis. Meaning that even now some of the apps from this research might have been changed and updated.

Realizing there are big difference between representations and impacts of apps, future research on the impacts of this new medium could prove to be very interesting. It would be

wrong to assume that research is complete once the message is analysed.[228] Further looking into these problems went beyond the scope of this research: it would require too much time, and be a too complicated and expensive method of data-collection, to record actual smartphone behaviour of a widespread group of individual users. A better understanding of this topic is of major importance, given the rich amount of possibilities in which apps could contribute to the field of heritage and education. Some of the outcomes of this analysis hopefully help in doing so, as plenty other historical (location-based) apps are likely to work according to the same principles. The amount of people owning smartphones is still growing, and there will always be a place for the past in this mobile future.

---

[228] Eilean Hooper-Greenhill, ed., "Culture and Meaning in the Museum," in *Museums and the Interpretation of Visual Culture* (New York, 2005), 4,5; W. Kansteiner, "Genocide Memory, Digital Cultures, and the Aesthetization of Violence," *Memory Studies* 7, no. 4 (2014): 406, 407.

6. Appendixes

Appendix 1: List of apps and search terms

Search Term	Relevant Apps (Google Play)	Category	Subcategory	iOS & Android	4 stars	1 million downloads
World War /	Warship battle 3D World War II	Games	Action	Yes	Yes	Yes
World War II /	World Conqueror 3	Games	Strategy	Yes	Yes	No
World War 2	World War II: Real Strategy	Games	Arcade	Yes	No	No
	Frontline Commando: WWII	Games	Action	Yes	Yes	Yes
	Sandbox: Strategy & Tactics	Games	Strategy	Yes	Yes	Yes
	Second World War Lite	Games	Arcade	Yes	No	No
	Strategy & Tactics: WW II Free	Games	Strategy	Yes	No	No
	World War II: TCG	Games	Simulation	Yes	Yes	No
	Weaphones WW2: Gun Sim Free	Games	Simulation	Yes	Yes	Yes
	Brothers in Arms 3	Games	Arcade	Yes	Yes	Yes
	Guns'n'Glory WW2	Games	Strategy	No		
	Battlefield WW2 Combat	Games	Action	No		
Tweede	1941 Frozen Front	Games	Strategy	Yes	Yes	Yes
Wereldoorlog	World War II Heavy Fighters	Books & Reference		No		
	Brothers in Arms 3	Games	Arcade	Yes	Yes	Yes
	Second World War Lite	Games	Arcade	Yes	No	No
	World War II Air Attack	Games	Simulation	Yes	No	No
	World War II Quiz	Games	Education	No		
	Tweede Wereldoorlog in Leiden	Education		No		
	World War 2: Tank Battles 3D	Games	Action	No		
	World War 2 Battlefield	Games	Strategy	No		
Holocaust	Holocaust Facts	Education		No		
	Holocaust Glossary	Books & Reference		Yes	No	No
	Visit USHMM	Education		Yes	Yes	No
	Holocaust Memorial Miami Beach	Education		Yes	Yes	No
	Holocaust Memorial Center	Travel and Local		Yes	Yes	No
	Zombie Holocaust	Games	Adventure	No		
	70 Voices	Education		Yes	Yes	No
	World War II Quiz	Education		No		
	Oshpitzin: A guide to the Jewish History	Travel and Local		Yes	No	No
	Biography of Adolf hitler	Books & Reference		No		
Adolf Hitler	Adolf Hitler	Entertainment		No		
	Kick the Hitler	Games	Casual	No		
	Adolf Hitler Videos	Media and Video		No		
	Quotes of Adolf Hitler	Entertainment		No		
	Beat the dictators	Games	Action	Yes	No	No
	Adolf Hitler Quiz	Education		No		
	Hitler Blaster – Shooting Bunny	Games	Action	No		
	Frontline Commando: WWII	Games	Action	Yes	Yes	Yes
	Sandbox: Strategy & Tactics	Games	Strategy	Yes	Yes	Yes
	Weaphones WW2: Gun Sim Free	Games	Simulation	Yes	Yes	Yes
Third Reich	Wargames of 1939	Games	Strategy	No		
	Biography of Adolf hitler	Books & Reference		No		
	WW2 German Medals	Education		No		
Anne Frank	Anne's Amsterdam	Travel and Local		Yes	Yes	No
	Dapper	Books & Reference		Yes	No	No
	Ondergedoken als Anne Frank	Books & Reference		Yes	No	No
	The Diary of Anne Frank	Books & Reference		No	Yes	No
Nazi	Frontline Commando: WWII	Games	Actie	Yes	Yes	Yes
	Biography of Adolf hitler	Books & Reference		No		
	Kick the Hitler	Games	Casual	No		
	WW2: Nazi Army Quiz	Games	Puzzel	No		
	Sandbox: Strategy & Tactics	Games	Strategy	Yes	Yes	Yes
	Beat the dictators	Games	Action	Yes	No	No
	Weaphones WW2: Gun Sim Free	Games	Simulation	Yes	Yes	Yes
	Frontline Commando: WWII	Games	Action	Yes	Yes	Yes
	Adolf Hitler	Entertainment		No		
	Battlefield WW2 Combat	Games	Action	No		
	Brothers in Arms 3	Games	Arcade	Yes	Yes	Yes
	World War II: Real Strategy	Games	Arcade	Yes	No	No
	Warship battle 3D World War II	Games	Action	Yes	Yes	Yes
War	Warship battle 3D World War II	Games	Action	Yes	Yes	Yes
	Brothers in Arms 3	Games	Arcade	Yes	Yes	Yes
	Frontline Commando: WWII	Games	Action	Yes	Yes	Yes
Bevrijding	Bevrijding Eijsden-Margraten	Travel and Local		Yes	Yes	No
	Oorlogsmonumenten in beeld	Travel and Local		Yes	No	No
	Bevrijding HDL	Entertainment		No	No	No
	Liberation Route Europe	Travel and Local		Yes	Yes	No
Liberation	x					

*Searches performed in November 2015

Appendix 2: List of museums/ institutes and their affiliated apps

Museum / Organisation	App	Downloads Play Store
Anne Frank Stichting	Anne's Amsterdam	10.000 - 50.000
Liberation Route	Liberation Route	5.000 - 10.000
Herinneringscentrum Kamp Westerbork	Westerbork Luisterpad	500 - 1.000
Beleefroutes *	Beleefroutes	10.000 - 50.000
Drents Archief *	Anno Drenthe	5.000 - 10.000
Joods Historisch Museum *	Joodse Huizen	1.000 - 5.000
Joods Historisch Museum **	Jewish Historical Museum	x
Nationaal Bevrijdingsmuseum 1944-1945 **	War Stories	x
Nederlands Instituut voor beeld en geluid *	Oorlogsmonumenten in beeld	10.000 - 50.000
* Not (directly) related to a WWII museum		
** Only availaible for iOS devices.		
*Searches performed in November 2015		

Appendix 3: Scheme of analysis Warship Battle: 3D WWII

NARRATIVE & REPRESENTATION (How) does the app:	
Present itself in the app stores?	Warship battle action game, missions inspired by historical naval clashes of World War II. Authentic World War II era vessels. Steer them to glorious victory. High quality 3d graphics, fast paced naval battles, customizable ships, weapons and parts, episodes based on real WWII naval battles, no network connection needed, free to play
Refer to specific points in history?	A ship laying in a dock is visible after starting the app. No date or year is mentioned or visible: the title of the app and the name and model of the ship (Bulldog) are the only indicators of the World War II era. After selecting 'battle', an overview of episodes is shown, from 1 to 17. Each of these episodes refers to a historical event, starting in 1940, with the 'Battle of Taranto', and finishing even after the Battle of Okinawa in 1945, with a 'Korean War' episode in 1950.
Structured narrative?	Yes, the players needs to play from episode 1 in 1940 to episode 17 in 1950. Each episodes consists of a few missions. The other option is to engage in a World War, in

	which some islands where historical battles took place can be conquered. Scores are registered and attributed to the countries from which the app is played. In this way, countries can conquer these fictional areas.
	Meanwhile, missions can be played again, and can be played on three difficulty settings: easy, normal and hard.
Create a sense of being in the past?	Besides mentioning the years of the missions, weaponry and ships from WWII are imitated. References to ships that actually existed during the war are made. The app also makes use of the names of real battles and simulates them with some recognizable details, such as an important ship, aircraft carrier or specific tactical movements during a certain battle.
Make use of persons and personal stories to engage its users?	A female sailor gives instructions on how some of the apps' functions work. She is the only human being to be seen throughout the app. No houses or other aspects of the war visible.
	The female sailor looks modern, young and attractive. Her female characteristics are clearly emphasized. The past is represented as a playfield for battleships, without any human beings suffering, it just shows shooting and sinking ships.
Provide the user with multiple aspects and perspectives on the story?	From the Allied perspective. The user steers a British boat and goes through the episodes from an Allied perspective. There is a possibility to use Axis ships in Allied missions. The battle of Taranto in the Mediterranean Sea for instance, can be fought with the Japanese ship Nagako. No context of this perspective or motivations for fighting the enemy are given though. The battles or fought without the involvement or suffering of persons, it looks more like a battle between remote-controlled boats.
	Axis forces are just seen as ships that have to be destroyed, and on the radar as red enemy dots, not as persons. Axis ships can be used to play for the Allied cause
	There are no persons or civilian consequences visible, the game purely focusses on the combat actions. No houses or people are shown.

Use any tokens of nationalism?	Some ship names are still being used on modern day ships. They are symbols of the nations and their armies, showing a discursive continuity with the past of the nation.
ENGAGEMENT AND IMMERSIVITY **(**How) does the app:	
Make use of sounds?	Sound of guns, bullets, torpedoes and explosions can be heard during the game. In the harbour there is relaxing music and the sounds of seagulls. After a mission heroic music can be heard.
Make use of images?	All images are drawn, but seem to be based on the original ships as much as possible, and carry the same names. No authentic photos are used in the game. Users can only recognize the ships or their names from other history media.
Make use of game-elements?	Mission have clear goals such as: 'destroy object A' or 'reach target B'. Quests refer to historical events. New ships, new guns, new levels and progress can be bought be a currency that is earned within the game. Real money can also be used to buy this currency. Ships gain experience after successfully completing missions. Ships increase their 'level' and therewith their statistics / power they have in the game.
Unreal elements?	- One ship, without support, destroys whole fleets during battles. - After taking damage, the ship remains fully functional until it sinks when it is totally damaged. - Japanese and German ships can be controlled for the Allied cause. - Unlimited ammo.
Advertisements and freemium elements?	The game is free. Adds are used during the game and sometimes pop ups appear for products within the game or external products. Adds can be removed by paying. Weapons and special features can be bought (faster) by paying.

Appendix 4: Scheme of analysis Frontline Commando: WWII

NARRATIVE & REPRESENTATION	

(How) does the app:	
Present itself in the app stores?	Join the war for Europe. History depends on you leading the Allied forces to Berlin and victory. Engage in historic warfare. Experience exciting WW2 campaigns. Challenging missions that will test your skills. Save Europe. Clear war-torn streets and rural villages of Axis invaders. Take down the deadliest, high-profile WW2 enemy officers. Choose your weapon of war and eliminate your targets. Stellar graphics and impactful environments. See and feel the action of WW2. You're on the frontlines of war. High-end immersive gameplay.
Refer to specific points in history?	The game starts by mentioning that you are about to be dropped at the Battle of the Bulge. The game takes place during this phase of the war and in every episode the period of time in which it took place is mentioned. This is all in 1944 and the first month of 1945.
Structured narrative?	Yes, the mission structure has to be followed, starting with mission 1 in 1944 in the Ardennes. During gameplay the American protagonist will automatically run to the next shooting position when all enemies are killed. If they are not killed, the player is stuck in the same position. The narrative is not chronological and missions can be played again. Each mission has to be finished in order to proceed to a next mission and thus to make progress towards the next episode/country.
Create a sense of being in the past?	Original costumes are used, as well as some original weapons or weapons looking like they stem from that period. Also the use of symbols like Maltese crosses, army costumes of the different enemies, and old houses and landscapes are used. The whole area is made to look like it is set in 1944. Landscapes and buildings fit with the country the mission is in. In every level, buildings are in rubbles and the town is partly wrecked and often smoking.
Make use of persons and personal stories to engage its users?	Yes, the player is playing as an American soldier and looks over his shoulders. 'Over-the-shoulder-shooter'. Personal instructors from different national resistance fighters, and US and British army officers. They have names to make it more personal. Besides that, offers to buy new weapons are made by young attractive women in pin-up girl style.

Provide the user with multiple aspects and perspectives on the story?	No, only the Allied perspective, in the form of British, French and Canadian and American officers. Next to these characters there are the local leaders of the resistance in Belgium, France and Italy. (Not in Germany)All events are viewed through the eyes of one soldier, a captain in the US Army, who represents 'you'. The camera is focused on his back, making you look over his shoulders. All events are from this third-person perspective, and officers talk to you personally as well. German soldiers are merely evil soldiers which have to be eliminated. Civilians cannot be seen during the game, however the destructive effects of the war for civilian lives is mentioned now and then in dialogues between officers and the soldier.
Use any tokens of nationalism?	Country flags and typical names are used for officers belonging to a certain country.
ENGAGEMENT AND IMMERSIVITY **(**How) does the app:	
Make use of sounds?	Gunshots and explosions, rain and machines. Heroic and exciting song in background (like in action movies) Enemies scream 'argh' when they die.
Make use of images?	No authentic images are used. Authentic quotes are used though. Images look authentic through uniforms and symbols, but they are newly created for the app.
Make use of game-elements?	Each mission exists of eliminating enemy forces as ordered by a commander. Quests refer to historical events, such as Italian soldiers hiding in a monastery in Monte Casino. New guns, new episodes and missions are unlocked by proceeding through missions.
Unreal elements?	- The soldier often operates on his own. - Fake swastikas. - Unlimited ammo. - Shooting range style; soldiers have fixed positions
Advertisements and freemium elements?	The game is free. Adds are used during the game and sometimes pop ups appear for products within the game or external products. Adds can be removed by paying. Weapons and special features can be bought (faster) by paying.

Appendix 5: Scheme of analysis for Brothers in Arms 3

NARRATIVE & REPRESENTATION (How) does the app:	
Present itself in the app stores?	Fight against brave soldiers around the world during WWII, play as sergeant Wright and go through an exciting adventure in the period after the invasion of Normandy. Get promoted, unlock extra's, upgrade weapons because a soldier is as deadly as his weapon, use your brothers' arsenal for tactical advantages, unlock and upgrade brothers, exciting shooter action, move freely, different missions like assault, sniper, siege and stealth, killcams with zoom possibilities on enemy soldiers, experimental weapons to destroy a whole army, astonishing visual effects and surroundings, day and night effects, console-like graphics, win prizes, temporary events, smartwatch support.
Refer to specific points in history?	The story starts on the 12th of June 1944, and after that refers to a specific point for each chapter and mission.
Structured narrative?	Yes, the player needs to play from mission 1 in June 1944 in the Ardennes and needs to unlock other missions and episodes. The narrative is chronological and is completed with fixed, movie-like animations. The chronology is disrupted by 'flashbacks' in which earlier missions have to be played. The soldier can walk around freely until he reaches the borders of the game, but in the end has to make a fixed, linear advance to the next position.
Create a sense of being in the past?	The period of time is mentioned before each episode and mission. The vehicles and weapons have the same names as those from World War II. The app refers to well-known battles such as Monte Cassino. Symbols of World War II, like uniforms, helmets and iron crosses are used as well as old looking towns and landscapes. The correct weapons names are used, such as an M1-Garand, Sturmgewehr 44 and Vergeltungswaffe.
Make use of persons and personal stories to engage its users?	Events are viewed through the eyes of American sergeant Cole Wright. He reads from his diary and has dialogues with his 'brothers in arms'. It is a game of 'personal revenge', in which he also falls in love with a French resistance fighter, Rachelle Dubois, writing her letters about being together again when the war is over. The game follows this soldier and his revenge against General Herst.

Provide the user with multiple aspects and perspectives on the story?	The game can only be played as an American soldier, except during multiplayer modus. Civilians are shown, but only as resistance fighters and during cutscenes of briefings, not in the game itself. Resistance has to be assisted and rescued.
Use any tokens of nationalism?	Flags and symbols of countries, evil Nazis.
ENGAGEMENT AND IMMERSIVITY **(How) does the app:**	
Make use of sounds?	Gunshots and explosions, rain, footsteps, planes and machines. Heroic and exciting song in background (like in action movies) which is different in Europe from Africa. Enemies are talking to each other before action starts and scream while they die. Brothers scream and talk to each other and often curse the Germans.
Make use of images?	No authentic images are used. Castle of Cruelly is used in the background to make the situation look real, but images are drawn.
Make use of game-elements?	Each mission exists of eliminating enemy forces as ordered by a commander. New weapons, episodes and missions can be unlocked by proceeding through these missions. Weapons and brothers in arms can also be upgraded, resulting in more power. Players can upgrade and develop their weapons, their brothers and their own player. The latter will result in more hit points and energy.
Unreal elements?	- Unreal Nazi banners and flags - No Italians or other Axis troops to fight against and only Americans as Allies. - Names of battles are correct, but the facts and events are unreal. There were no Nazi's in the castle of the first episode, at that moment the castle was used for BBC broadcasts by the Allied forces.
Advertisements and freemium elements?	The game is free. Adds are used during the game and sometimes pop ups appear, both can be removed by paying. Weapon upgrades can also be bought by real and in-game currency, as well as new brothers, experimental weapons, in-game advantages such as grenades can be bought, and VIP packages.

Appendix 6: Scheme of analysis Sandbox: Strategy & Tactics

NARRATIVE & REPRESENTATION (How) does the app:	
Present itself in the app stores?	Abandon historical restrictions, lead any army to WWII victory. Recreate history – or not. Endless replayability and uniqueness. Make your own history. Accurate maps of Europe and Asia – War is coming! 39 playable countries. Choose how to bring your enemy to their knees. Choose how to spend your resources, on your army or research.
Refer to specific points in history?	Yes, to 1938. This is not motivated but the war starts then in this app
Structured narrative?	No, the narrative starts in 1938, after that, the player decides. There is a lot of freedom in the game. Almost all countries are playable, and the player is free to make whatever move he or she wants in order to reach his goals. The game is over when that goal is reached but the player can also choose to play on for total domination of the world / Europe.
Create a sense of being in the past?	The period of time is specifically mentioned in the title of the app and is recognized through vehicles and weapons, as well as in the alliances shown on the map. The game starts in 1938. Time only passes after a move is made and finished. After every 'move' by the player and enemies, 6 weeks are added to the game time. Time progresses in big steps.
Make use of persons and personal stories to engage its users?	There are no persons involved, only military divisions. It does not engage users by personal affection but through game engines and the power of alternate history. Events are viewed from a birds-eye perspective.
Provide the user with multiple aspects and perspectives on the story?	All participating countries are playable, there is no good-bad context. The game is shown as military map and reveals only military aspects. Civilians are unseen, as well as other aspects of the war. Sometimes resistance fighters strike or start a small partisan army.
Use any tokens of nationalism?	Country flags and names for countries and regions are used. The regions on the map are clearly marked and recognizable
ENGAGEMENT AND IMMERSIVITY (How) does the app:	
Make use of sounds?	Gunshots and explosions, heroic music.

Make use of images?	No authentic images are used. In the trailer on the download page of the app some authentic photo-material is used.
Make use of game-elements?	Like the game of Risk. Clear areas with borders. Troops are marked by small logos / pins. New countries and missions to play can be unlocked. Each country has a set off different missions that have be completed to win new missions During the game research on weapons can be done.
Unreal elements?	- Movements go between provinces / countries. Hard borders. - Unable to move through allied territories. - Terrain has no influence on the war, as well as morale and the type of tank or infantry and other factors. - Wrong German flag
Advertisements and freemium elements?	The game is free. Advertisements are shown during the game and sometimes pop ups appear. Both can be removed by paying. Extra save slots to play multiple games at the same time can be bought as well, just like resources for advantages during the game.

Appendix 7: Scheme of analysis for Weaphones WW2: Firearms Sim

NARRATIVE & REPRESENTATION (How) does the app:	
Present itself in the app stores?	Experience the weapons of World War II, redefines first-person shooter, be part of it, experience what it is like to load, charge, clear and shoot a firearm. Live your gun fantasies and remain safe, iconic firearms from WWII, Customizable, authentic weapon mechanics, realistic smoke, recoil, flash and sound effects. All about realism. Interaction, authenticity, control, customizations.
Refer to specific points in history?	No, to WWII in general. The weapons are from different years.
Structured narrative?	There is no narrative, since this is a simulation game. The right steps have to be followed in order to get the weapons to work.

Create a sense of being in the past?	By using weapons from the period of World War II. Mentioning World War two in the title and in the names of weapons. Weapons are symbols for the time period.
Make use of persons and personal stories to engage its users?	No persons are shown in the app, only weapons. Engagement is created by operating the weapons in the right way, or they will not work. The right steps have to be followed.
Provide the user with multiple aspects and perspectives on the story?	Weapons from different countries are shown, Allies as well as Axis. No persons or perspectives are involved, the app solely provides a weapons simulator in which weapons are viewed from the side.
Use any tokens of nationalism?	Flags of the country in which the weapons was made.
ENGAGEMENT AND IMMERSIVITY **(**How) does the app:	
Make use of sounds?	Gunshots are heard during shooting, as well as other sound effects of the guns reloading or being emptied. Smoke and flash effects can be toggled on or off.
Make use of images?	The weapons are made to look realistic, some even contain damage or scratches, as if they were really used during the war. In the main menu, black and white photos are shown of soldiers carrying the weapons from the app.
Make use of game-elements?	The rules on how to operate the gun have to be followed, or the gun does not work. The user is free to shoot with any gun in any order desired.
Unreal elements?	Ammo is free and unlimited
Advertisements and freemium elements?	New guns can be unlocked by paying for the premium version of the game. Advertisements are shown.

Appendix 8: Scheme of analysis Liberation Route Europe app

NARRATIVE & REPRESENTATION (How) does the app:	
Present itself in the app stores?	Liberation Route Europe follows in the footsteps of our liberators. It connects milestones from our collective past/history with our lives today. Join us on a journey

	through modern European history in the knowledge that what we do today, will make a difference. - Read the stories about important events. - Visit the sites of important historical events - Listen to audio stories - Visit museums, memorials and cemeteries - Read people's personal stories. - Download information from this app and you'll be able to use it offline. Liberation Route Europe links regions of Europe that were liberated by the allied forces during WWII. The route starts in southern England and crosses into Normandy, France, on to Paris, the Belgian Ardennes; through into the Netherlands and cities like Eindhoven, Nijmegen and Arnhem; and across the German border into the Hürtgen Forest and on to Berlin. From there, it carries on to Gdańsk in Poland, where a democratic revolution led to the ultimate liberation of Central Europe in 1989, almost two generations later.
Refer to specific points in history?	Yes, storylines and stories refer to specific dates in history. The app includes a story of Gdansk in 1920 and 1989, but is mainly concerned with events between June 1944 and 1945.
Structured narrative?	The app offers different 'storylines' which can be followed. Users are free to create their own routes and visit separate spots.
Create a sense of being in the past?	The app uses archival photos and videos related to the texts displayed in the app. Audio files on locations are aimed at having users experience the past by using voice actors and recreating dialogues that could have taken place in the past. The app refers to the significance of certain places in history.
Make use of persons and personal stories to engage its users?	Voices and biographies of veterans of witnesses are used in the app. The texts are all narrated from a bird's eye perspective. The audio files are narrated in third person, as well as through the eyes of key figures or fictive persons by re-enactments. One of the biographies mentions fragments of diaries or quotes
Provide the user with multiple aspects and perspectives on the story?	Most texts and audio-files are narrated from an Allied perspective or a bird's eye perspective. German soldiers can be heard in some of the files as well. The impact of the war on civilians is also emphasized, as well as that of the Jews and their persecution. National resistance is only represented in a few texts.

Use any tokens of nationalism?	Shared 'European' values.
ENGAGEMENT AND IMMERSIVITY **(**How) does the app:	
Make use of sounds?	The audio files often use sounds of gunfire, bombs and vehicles, in combination with exciting background music. Voice actors recreate historical scenes.
Make use of images?	Archival footage is used, in some cases complemented by images from popular movies.
Make use of game-elements?	No objectives, goals and rewards are used.
Unreal elements?	No.
Advertisements and freemium elements?	The app directs users to museums, but no direct advertisements or pop-ups are used.

	Storylines	**Historical Locations**	**Audio spots**	**Places of Interest**	**Biographies**	**Total**
Great Britain	2	2	0	2	2	8
Netherlands	3	9	163	39	2	216
Germany	3	15	7	26	4	55
France	3	10	0	19	3	35
Poland	3	13	0	7	6	29
Belgium	0	0	0	1	0	1
Russia	0	1	0	0	0	1
Total	14	50	170	94	17	353

	Historical Locations	Of which are Audio Spots	Places of Interest (Cemeteries, Monuments, Museums, Memorials, Fortifications)	Biographies	Total
OMG	6	2	1	1	8
TRO	3	1	3	1 (same as TGCN)	7
TGCN	8	4	0	1 (same as TRO)	9

Appendix 9: Scheme of analysis for Anne's Amsterdam

NARRATIVE & REPRESENTATION (How) does the app:	
Present itself in the app stores?	Part of Anne Frank's Amsterdam. Explore the city of Amsterdam and discover what it was like during the occupation in World War II through photos, videos, personal stories and more. Map of Amsterdam with 30 items to find in historically relevant locations throughout the city. So you need to get there in person to "pick it up". Use your GPS to locate and collect the items. Album: You can collect 30 items connected to Anne Frank's story and create your own Amsterdam album. Items: Look through your album to see all the items which include: personal stories, unique photos and videos. Share: You can email items to yourself or share them with others. Anne Frank's Amsterdam project aims to connect the past to the present and shows how the occupation during World War II left its mark on the city and its people. This App is a gift from LBi and Repudo to the Anne Frank House.
Refer to specific points in history?	Yes, dates are provided within the app, and range from 1933 until 1950
Structured narrative?	No, users are totally free to discover locations on their own, there is no fixed order in visiting these places. The narrative is structured by locations.
Create a sense of being in the past?	Yes, by using old photos from archives and sometimes blending these with modern images, creating two periods of time in one picture. For example German soldiers can be seen marching through the present day Amsterdam.
Make use of persons and personal stories to engage its users?	Yes, stories from Anne's diary, but also from her father Otto and especially by Miep Gies, the women who helped hiding of the Frank family.
Provide the user with multiple aspects and perspectives on the story?	The story is told from the perspective of Jews, civilians during the war and resistance fighters. Experiences of soldiers are not included.
Use any tokens of nationalism?	No.
ENGAGEMENT AND IMMERSIVITY	

(How) does the app:	
Make use of sounds?	It does not use sounds
Make use of images?	It uses images from the war period, drawn from archives. These black and white pictures are sometimes blended with contemporary pictures of the same locations.
Make use of game-elements?	Yes, objectives need to be found in the physical world in order to unlock them on the digital map. Search and find principle, text and images will not appear and cannot be collected if the physical locations are not visited.
Unreal elements?	No.
Advertisements and freemium elements?	No advertisements are used, except for the mentioning of the company that created the app and the link with the Anne Frank house.

Appendix 10: Scheme of analysis for Picture War Monuments

NARRATIVE & REPRESENTATION (How) does the app:	
Present itself in the app stores?	Picture War Monuments enriches visits to important war monuments in the Netherlands with audio-visual material from archives. This material reveals commemorations and original statues through informative texts and media. The app provides insights into the history and stories related to war monuments in the Netherlands, and keeps them vivid and accessible for everyone, now and in the future. According to the National Committee 4 and 5 May, a war memorial is a sign that commemorates WWII for convicted, resistance fighters, persecuted, Dutch and Allied soldiers, and merchant-ship personnel. Peace monuments and cemeteries are also included in the database. In the Netherland over 3.500 war monuments have been erected since WWII, the National Committee started to map these monuments in 2001 and has created a digital database, which has become the national source of information on this topic. This application contains a selection of these monuments, and only shows the monuments of which historical media was found. The complete database can be found on the website. Celebrating the 70 years of Dutch freedom, the 2014 update is concerned especially with additions of material

	on this topic. New monuments will be added from September 2014 onwards. For more information on the liberation, the website can be consulted. (The app description is only available in Dutch, this is a translation by the author)
Refer to specific points in history?	Yes, it does so by mentioning specific dates related to the monuments to which it refers.
Structured narrative?	No, the app does not contain an overarching narrative. Each monument in the app has a digital story linked to it, but these separate stories are not linked to each other and can be visited in whichever order the user wants to visit them.
Create a sense of being in the past?	The apps shows archival material in the form of old photos and old video material related to the app. It also provides historical background information about the monument and the history related to it.
Make use of persons and personal stories to engage its users?	Some of the related stories are biographies and personal stories of veterans or witnesses.
Provide the user with multiple aspects and perspectives on the story?	Yes, through the monuments and the definition of the National Committee, the app shows civilians, convicted, resistance fighters, persecuted, Dutch and Allied soldiers, and merchant-ship personnel. The German perspective is only present in the form of one German cemetery, the app is aimed on national commemorations and memorials.
Use any tokens of nationalism?	The app is based on National monuments, and therefore it only includes Dutch monuments and stories related to these monuments.
ENGAGEMENT AND IMMERSIVITY **(**How) does the app:	
Make use of sounds?	The app does not make use of sounds, but does use video materials.
Make use of images?	The app uses photos of the monuments, and users can also add photos of the monument to the app. Some description include archival photo materials.
Make use of game-elements?	No objectives, goals and rewards are used.
Unreal elements?	No

Advertisements and freemium elements?	The app does not include advertisements or pop-ups, but it does refer to the website with the full database of monuments and more information.

Appendix 11: Keywords per category in popular apps related to World War II

Game	Keywords on: authenticity	Game-elements	Experience & Graphics	Heroism
Warship Battle	Inspired on WWII; Authentic vessels; Based on WWII episodes	Action game; fast-paced; customize your ship; steer them to victory	Quality graphics; steer them to victory, action	Steer them to glorious victory
Frontline Commando	Historical Warfare; WWII campaigns; war-torn streets and rural villages	Challenging; test your skills; Tesla-rifle	Experience; exciting; immersive; impactful; see and feel the action of war; join the war; great graphics;	History depends on you; joint he war; save Europe; take down deadly officers
Brothers in Arms	Invasion of Normandy, WWII battlefields	Experimental weapons; promote; upgrade; unlock; prizes; tactics; freedom to move;	Exciting; adventure; high quality graphics; action	Fight against brave soldiers;
Sandbox	Abandon historical restrictions; make or recreate history; accurate maps	Recreate history or not; choose how to win; abandon historical restrictions;		Lead your army to victory;
Weaphones	Authentic; iconic firearms; realistic;	customizable	Experience the weapons; engage; live your fantasies; interaction	

Appendix 12: Keywords per category in museum-related WWII apps.

App	Keywords on: Authenticity	Experience & media	Location
Liberation Route Europe	Personal stories, follow in the footsteps	Follow in the footsteps, journey through history, connecting past and present, visit sites, museums and important historical places, listen to audio, read stories, offline use on the spot	Follow in the footsteps, linking regions liberated by the Allies, journey through history, visit sites, museums and important historical places
Picture War Monuments	Archival material (audio and video), on the spot, using historical material, digital database	Enriches your visit, (background) info, vivid and accessible	Enriches visits on the spot, Dutch war monuments
Anne's Amsterdam	Historically relevant locations, part of Anne Frank's Amsterdam project, gift to Anne Frank House	Explore Amsterdam in the past, photos videos and personal stories at relevant locations, GPS to pick up items, find collect and share items on the map, social media	Historically relevant locations, GPS, Amsterdam

Appendix 13: Questionnaire 'Historical apps' and results

The following is a selection of a questionnaire which has been sent out to Dutch institutions and museums in the possession of an app in one of the app stores in May 2015. The Survey was sent in Dutch. The survey is followed by the answers provided, processed in a datasheet.

Vragenlijst 'Historische Apps'

1. *Wat is de naam van de door u uitgebrachte app?*

2. *Waarom was het uitbrengen van een mobiele app interessant voor uw organisatie?*

3. *Wat is volgens u de meerwaarde van een app, ten opzichte van andere media, zoals een website, een folder of een audiotour?*

4. *Wat is het doel van de door uw organisatie uitgebrachte app? (Meerdere antwoorden mogelijk)*

   Informeren   Educatie / Onderwijs   Amusement
   ` Commerciële overwegingen   Anders, namelijk:

5. *Op welke manier(en) probeert de app dit doel of deze doelen te bereiken?*

6. *In hoeverre bent u het eens met de volgende stellingen over uw app?*

   De app neemt de gebruiker daadwerkelijk mee terug in de tijd

Geheel mee oneens   Oneens   Neutraal   Mee eens   Geheel mee eens

   De app draagt bij aan het historisch bewustzijn van de gebruiker

Geheel mee oneens   Oneens   Neutraal   Mee eens   Geheel mee eens

Naam app	Reden app	Meerwaarde app	Doel	6.1	6.2
Oorlogsmonumenten in Beeld	Vernieuwing; Locatie & GPS	Toegankelijkheid; Informatie; Locatie & GPS; Beleving; Multimedia	Informeren; Educatie/Onderwijs; Zichtbaarheid en Bereik	Geheel eens	geheel eens
Lost in time	Commercieel; Beleven; Locatie & GPS	Multimedia; Locatie & GPS; Game-elementen	Educatie/Onderwijs; Amusement; Commercieel	Geheel eens	geheel eens
entoen.nu	Vernieuwing	Locatie & GPS	Educatie/Onderwijs;	Neutraal	Eens
Bevrijding Eijsden Margraten	Vernieuwing	Nieuw doelgroep; Multimedia; Informatie	Informeren; Educatie/Onderwijs; Amusement; Commercieel	eens	geheel eens
Rijksmuseum van Oudheden	Locatie & GPS; vernieuwing	Toegankelijkheid;	Informeren; Educatie/onderwijs	eens	eens
Autoroutes WO1 Westhoek	Locatie & GPS; Informatie	Beleving: Toegankelijkheid;	Informeren; Educatie/onderwijs	Geheel eens	geheel eens
Crime Scene	Vernieuwing; Beleven	Beleving; toegankelijkheid	Informeren; educatie/onderwijs;	eens	eens
De slag om de Grebbeberg	Informatie; Toegankelijkheid	Beleving; toegankelijkheid	informeren; educatie/onderwijs	Geheel eens	geheel eens
De stad geschonden	Informatie	Toegankelijkheid; Locatie & GPS;	Informeren; Educatie/onderwijs	eens	eens
Amsterdam 1850-1940	x	Toegankelijkheid; Informatie	Informeren; Amusement; Commercieel	Neutraal	eens
Stappen in de stad	Informatie; Toegankelijkheid	Multimedia	Educatie/onderwijs	Neutraal	eens
Historiek - Geschiedenis	Vernieuwing; Toegankelijkheid	Toegankelijkheid; vernieuwing;	Informeren; Educatie/Onderwijs	Geheel eens	geheel eens

Reden voor ontwikkeling	Meerwaarde van een app	Doel van de app	Terug in tijd	Bijdrage bewustzijn
Vernieuwing: 6 (11)	Toegankelijkheid: 8 (12)	Educatie/Onderwijs: 11 (12)	Geheel oneens: 0 (12)	Geheel oneens: 0 (12)
Informatie: 4 (11)	Beleving: 4 (12)	Informeren: 9 (12)	Oneens: 0 (12)	Oneens: 0 (12)
Locatie & GPS: 3 (11)	Locatie & GPS: 4 (12)	Amusement: 3 (12)	Neutraal: 3 (12)	Neutraal: 0 (12)
Toegankelijkheid: 3 (11)	Multimedia: 4 (12)	Commerciële overwegingen: 3 (12)	Eens: 4 (12)	Eens: 6 (12)
Beleven: 2 (11)	Informatie: 3 (12)	Zichtbaarheid/bereik 1 (12)	Geheel eens: 5 (12)	Geheel eens: 6 (12)
Commercieel: 1 (11)	Game-elementen: 1 (12)			
	Interactie: 1 (12)			

7. Bibliography

Akker, C. van den. "Het Verwachte Einde. Tijd, Geschiedenis En Verhaal." In *De Ongrijpbare Tijd*, edited by M. Grever and Jansen, 131–44, n.d.

Anderson, Chris, and Michael Wolff. "The Web Is Dead. Long Live the Internet." *WIRED*, August 17, 2010. http://www.wired.com/2010/08/ff_webrip/all/.

Ankersmit, Frank R. *The Reality Effect in the Writing of History; the Dynamics of Historiographical Topology*. Mededelingen Der Koninklijke Nederlandse Akademie van Wetenschappen, Afd. Letterkunde, N.R., 52,1. Amsterdam, 1989.

Anne Frank Foundation. "This Site." *Anne Frank*. Accessed February 5, 2016. http://www.annefrank.org/en/Subsites/Annes-Amsterdam/Floating-Pages/This-site/.

Ayalew, Romel. "Consumer Behaviour in Apple's App Store." Master Thesis, Uppsala University, 2011. uu.diva-portal.org/smash/get/diva2:476799/FULLTEXT01.pdf.

Banjen Software. "Today in History." *Google Play*. Accessed October 2, 2015. https://play.google.com/store/apps/details?id=com.banjen.app.DayInHistoryWidget.

Baxter, Ian. "Means Maketh the End : The Context for the Development of Methodologies to Assess the State of the Historic Environment in the UK." In *Heritage Studies. Methods and Approaches*, edited by M.L. Stig Sørensen and J. Carman, 85–102. London and New York, 2009.

Behrendt, F. "The Sound of Locative Media." *Convergence: The International Journal of Research into New Media Technologies* 18, no. 3 (2012): 283–95.

Bolter, J. David, and Richard A. Grusin. "Remediation." *Configurations* 4, no. 3 (1996): 311–58.

Bolter, J. David, and Richard A Grusin. *Remediation: Understanding New Media*. Cambridge, Massachusetts, 2000.

Brauburger, Stefan. "Fiktionalität Oder Fakten: Welche Zukunft Hat Die Zeitgeschichtliche Dokumentation?" In *History Goes Pop. Zür Repräsentation von Geschichte in Populären Medien and Genres*, edited by Barbara Korte and Sylvia Paletschek, 203–13. Bielefeld, 2009.

Caddick-Adams, Peter. *Monte Cassino: Ten Armies in Hell*. Oxford ; New York, 2013.

Campbell, Heidi A., Brian Altenhofen, Wendi Bellar, and Cho Kyong James. "There's a Religious App for That! A Framework for Studying Religious Mobile Applications." *Mobile Media & Communication* 2, no. 2014 (n.d.): 154–72.

Carman, J., and P. Carman. "The Intangible Presence: Investigating Battlefields." In *Heritage Studies. Methods and Approaches*, edited by M.L. Stig Sørensen and J. Carman, 292–315. London and New York, 2009.

Carman, J., and M.L. Stig Sørensen. "Heritage Studies: An Outline." In *Heritage Studies. Methods and Approaches*, edited by M.L. Stig Sørensen and J. Carman, 11–28. London and New York, 2009.

Chandler, Daniel, and Rod Munday. *A Dictionary of Media and Communication*. Oxford; New York, 2011.

———. "Freemium." *A Dictionary of Social Media*, January 1, 2016. http://www.oxfordreference.com/view/10.1093/acref/9780191803093.001.0001/acref-9780191803093-e-512.

———. "Game." In *A Dictionary of Media and Communication*. Oxford; New York, 2011. http://www.oxfordreference.com/view/10.1093/acref/9780199568758.001.0001/acref-9780199568758-e-1073.

———. "Ludology." In *A Dictionary of Media and Communication*. Oxford; New York, 2011. http://www.oxfordreference.com/view/10.1093/acref/9780199568758.001.0001/acref-9780199568758-e-1581.

Chapman, Adam. "Privileging Form Over Content: Analysing Historical Videogames." *Journal of Digital Humanities* 1, no. 2 (2012): 42–46.

ColorMoon Games. "World War II Weapons Gallery." *Itunes Preview*. Accessed October 2, 2015. https://itunes.apple.com/us/app/world-war-ii-weapons-gallery/id463741828?mt=8.

Commissie Versterking Herinnering WOII, Nationaal comité 4 en 5 mei, NIOD instituut voor oorlogs-, holocaust-, en genocidestudies, and Oorlogsgravenstichting. "Versterking van de Herinnering WOII," March 27, 2015.

De Bruijn, Pieter. "Bridges to the Past. Historical Distance and Multiperspectivity in English and Dutch Heritage Educational Resources." Dissertation, Erasmus University, 2014.

De Groot, Gerard J. "'I Love the Scent of Cordite in Your Hair': Gender Dynamics in Mixed Anti-Aircraft Batteries during the Second World War." *History* 82, no. 265 (1997): 73–92.

De Groot, Jerome. *Consuming History: Historians and Heritage in Contemporary Popular Culture*. London, 2009.

de Souza e Silva, A. "From Cyber to Hybrid: Mobile Technologies as Interfaces of Hybrid Spaces." *Space and Culture* 9, no. 3 (2006): 261–78.

de Souza e Silva, Adriana, and Jordan Frith. *Mobile Interfaces in Public Spaces: Locational Privacy, Control and Urban Sociability*. New York, 2012.

Dekel, Irit. "Mediated Space, Mediated Memory: New Archives at the Holocaust Memorial in Berlin." In *On Media Memory*, edited by Motti Neiger, Oren Meyers, and Eyal Zandberg. Basingstoke, 2011.

Der Spiegel. "Jugendwort Des Jahres 2015: Smartphone + Zombie = Smombie." *Spiegel Online*, November 13, 2015. http://www.spiegel.de/schulspiegel/smombie-ist-jugendwort-des-jahres-a-1062671.html.

Downing, T. "Bringing the Past to the Small Screen." In *History and the Media*, edited by David Cannadine, 7–19. London, 2004.

Eble, Michael. "Content in Context: Perspektiven Vernetzter Multimedia-Inhalte Zur Vermittlung Historischer Erinnerungen." In *Mediale Transformationen Des Holocausts*, edited by Ursula von Keitz and Thomas Weber, 451–81. Berlin, 2013.

Encyclopaedia Britannica Online. "Media Convergence." *Encyclopaedia Britannica*, n.d. Accessed December 18, 2015.

Erll, Astrid. *Memory in Culture*. Palgrave Macmillan Memory Studies. Houndmills, Basingstoke, Hampshire ; New York: Palgrave Macmillan, 2011.

Erll, Astril, and Ann Rigney. "Introduction: Cultural Memory and Its Dynamics." In *Mediation, Remediation, and the Dynamics of Cultural Memory*, edited by Astrid Erll and Ann Rigney, 1–11. Berlin; New York, 2009.

Essame, Hubert. *Patton as Military Commander*. Conshohocken, Pennsylvania, 1998.

Fagerjord, Anders. "Between Place and Interface: Designing Situated Sound for the iPhone." *Computers and Composition* 28, no. 3 (2011): 255–63.

———. "Toward App Studies." University of Salford, 2012.

Fischer, Thomas. "Ereignis Und Erlebnis: Entstehung Und Merkmale Des Zeitgenössischen Dokumentarischen Geschichtsfernsehens." In *History Goes Pop. Zür Repräsentation von Geschichte in Populären Medien and Genres*, edited by Barbara Korte and Sylvia Paletschek, 191–202. Bielefeld, 2009.

Fisher, Stephanie. "Playing with World War II: A Small-Scale Study of Learning in Video Games." *Loading...* 5, no. 8 (2011): 71–89.

Fogu, Claudio. "Digitalizing Historical Consciousness." *History and Theory* 48, no. 2 (2009): 103–21.

Frijhoff, Willem. *De Mist van de Geschiedenis. Over Herinneren, Vergeten En Het Historisch Geheugen van de Samenleving*. Nijmegen, 2011.

Gameloft. "Brothers in Arms 3." *Google Play*. Accessed October 14, 2015. https://play.google.com/store/apps/details?id=com.gameloft.android.ANMP.GloftA3HM.

———. "Spanning the Globe." *Gameloft*. Accessed January 19, 2016. http://www.gameloft.com/corporate/company/mission.

Garden, Mary-Catherine E. "The Heritagescape: Looking at Heritage Sites." In *Heritage Studies. Methods and Approaches*, edited by M.L. Stig Sørensen and J. Carman, 270–91. London and New York, 2009.

Glu. "About Glu." *Glu.com*. Accessed December 17, 2015. www.glu.com/about.

———. "Frontline Commando: WW2." *Google Play*. Accessed October 14, 2015. https://play.google.com/store/apps/details?id=com.glu.dd2.

———. "Lead the Allied Forces to Victory in Glu's Frontline Commando: WW2." *Glu - Recent News*. Accessed May 15, 2016. http://phx.corporate-ir.net/phoenix.zhtml?c=207033&p=irol-newsArticle&ID=2035696.

———. "Sniper X with Jason Statham." *Google Play*. Accessed May 15, 2016. https://play.google.com/store/apps/details?id=com.glu.sniperx&hl=nl.

Goggin, Gerard. *New Technologies & the Media*. UK, 2012.

Google. "Algorithms." *Google Inside Search*. Accessed October 29, 2015. http://www.google.com/insidesearch/howsearchworks/algorithms.html.

Grever, Maria. "Fear of Plurality. Historical Culture and Historiographical Canonization in Western Europe." In *Gendering Historiography: Beyond National Canons*, edited by Angelika Epple and Angelika Schaser, 45–62. Frankfurt/New York, 2009.

———. "Geen Identiteit Zonder Oriëntatie in de Tijd. Over de Noodzaak van Chronologie." *BMGN - Low Countries Historical Review* 124, no. 3 (2009): 438–51.

Grever, Maria, and Carla van Boxtel. *Verlangen Naar Tastbaar Verleden: Erfgoed, Onderwijs En Historisch Besef*. Hilversum, 2014.

Gunter, Glenda A., Laurie O. Campbell, Junia Braga, Marcos Racilan, and Valeska Virgínia S. Souza. "Language Learning Apps or Games: An Investigation Utilizing the RETAIN Model." *Revista Brasileira de Linguística Aplicada*, 2016, 1–29. doi:10.1590/1984-639820168543.

Halblaub Miranda, Marianne, and Martin Knöll. "Stadtflucht. Learning about Healthy Places with a Location- Based Game." Edited by Judith Ackermann, Andreas Rauscher, and Daniel Stein. *Navigationen Zeitschrift Für Medien- Und Kulturwissenschaften* 16, no. 1 (2016): 101–18.

Hall, Stuart, ed. "The Work of Representation." In *Representation. Cultural Representations and Signifying Practices*, 13–74. London, 2011.

Hamilton, Nigel. *Master of the Battlefield: Monty's War Years 1942-1944*. New York, 1983.

Henrichs, Hendrik. "Een Zichtbaar Verleden? Historische Musea in Een Visuele Cultuur." *Tijdschrift Voor Geschiedenis* 117, no. 2 (2004): 230–48.

HeroCraft Ltf. "Sandbox: Strategy & Tactics." *Google Play*. Accessed October 14, 2015. https://play.google.com/store/apps/details?id=com.herocraft.game.free.stww2_sandbox.

Hjorth, Larissa. "Domesticating New Media. A Discussion on Locating Mobile Media." In *Mobile Technologies: From Telecommunications to Media*, edited by Gerard Goggin and Larissa Hjorth, 143–57. New York, 2009.

Holborn, Hajo. *A History of Modern Germany: 1840-1945*. Princeton, 1982.

Hooper-Greenhill, Eilean, ed. "Culture and Meaning in the Museum." In *Museums and the Interpretation of Visual Culture*, 1–22. New York, 2005.

Ince, Darrel. "App." *Oxford Reference*. Accessed January 10, 2015. http://www.oxfordreference.com/view/10.1093/acref/9780191744150.001.0001/acref-9780191744150-e-4443?rskey=IX5QOn&result=5#.

Jenkins, Henry. *Convergence Culture: Where Old and New Media Collide*. New York, 2006.

JOYCITY Corp. "Company Introduction." *Joycity*, n.d. Accessed December 23, 2015.

———. "Warship Battle:3D World War II." *Google Play*. Accessed October 14, 2015. https://play.google.com/store/apps/details?id=com.joycity.warshipbattle.

Kalin, Jason, and Jordan Frith. "Wearing the City: Memory P(a)laces, Smartphones, and the Rhetorical Invention of Embodied Space." *Rhetoric Society Quarterly* 46, no. 3 (May 26, 2016): 222–35.

Kampmann Walther, Bo. "Towards a Theory of Pervasive Ludology: Reflections on Gameplay, Rules and Space." *Digital Creativity* 22, no. 3 (2011): 134–47.

Kansteiner, W. "Genocide Memory, Digital Cultures, and the Aesthetization of Violence." *Memory Studies* 7, no. 4 (2014): 403–8.

Karlsson, Klas-Göran. "Processing Time - On the Manifestations and Activations of Historical Consciousness." In *Historicizing the Uses of the Past: Scandinavian Perspectives on History Culture, Historical Consciousness and Didactics of History Related to World War II*, edited by Helle Bjerg, Claudia Lenz, and Erik Thorstensen, 129–43. Time - Meaning - Culture. Bielefeld, 2011.

Kelley, D.R. "Ideas of Periodization in the West." In *The Many Faces of Clio: Cross-Cultural Approaches to Historiography; Essays in Honor of Georg G. Iggers*, edited by E.Q. Wang, 17–27. New York, 2007.

Kenniscentrum Oorlogsbronnen. "De Nederlandse Belangstelling Voor de Tweede Wereldoorlog." Amsterdam: TNS NIPO, May 2015.

Kershaw, I. "The Past on the Box: Strengths and Weaknesses." In *History and the Media*, edited by David Cannadine, 118–23. London, 2004.

Kingsepp, E. "Fighting Hyperreality With Hyperreality: History and Death in World War II Digital Games." *Games and Culture* 2, no. 4 (2007): 366–75.

———. "Immersive Historicity in World War II Digital Games." *HUMAN IT* 8, no. 2 (2006): 60–89.

Kirshenblatt-Gimblett, Barbara. *Destination Culture: Tourism, Museums, and Heritage*. California, 1998.

Klemann, H.A.M. "Totale Oorlog En Het Thuisfront. Een Inleiding." In *Thuisfront. Economie En Oorlog in Europe in de 20e Eeuw. Niod-Jaarboek*, edited by H.A.M. Klemann and D. Luyten, 14:9–33. Zutphen, 2003.

Korte, Barbara, and Sylvia Paletschek. "Geschichte in Populären Medien Und Genres: Vom Historischen Roman Zum Computerspiel." In *History Goes Pop. Zür Repräsentation von Geschichte in Populären Medien and Genres*, edited by Barbara Korte and Sylvia Paletschek, 9–61. Bielefeld, 2009.

Liberation Route Europe. "A Bridge Too Far." *Liberation Route Europe*. Accessed May 1, 2016. http://liberationroute.com/the-netherlands/historical-location/a-bridge-too-far.

———. "Gdańsk during the 20th Century." *Liberation Route Europe*. Accessed April 1, 2016. http://liberationroute.com/poland/storyline/gdansk-during-the-20th-century.

———. "German Frogmen Beleaguer the Bridges." *Liberation Route Europe*. Accessed April 1, 2016. http://liberationroute.com/the-netherlands/historical-location/german-frogmen-beleaguer-the-bridges.

———. "Liberation Route Europe Foundation Charter." Accessed May 6, 2015. http://liberationroute.com/media/1336585/Liberation-Route-Europe-Foundation-Charter.pdf.

LiberationRouteEu. "Introduction to the Liberation Route Europe." *Youtube*. Accessed April 6, 2016. https://www.youtube.com/watch?v=O1a3irki1VY.

Liestøl, Gunnar. "Situated Simulations: A Prototyped Augmented Reality Genre for Learning on the iPhone." *International Journal of Interactive Mobile Technologies (iJIM)* 3 (2009): 24–28.

Lindley, Craig. "Story and Narrative Structures in Computer Games." In *Developing Interactive Narrative Content: Sagas_sagasnet_reader*, edited by Brunhild Bushoff. München, 2005.

———. "The Semiotics of Time Structure in Ludic Space As a Foundation for Analysis and Design." *Game Studies* 5, no. 1 (2005).

Liu, Charles Zhechao, Yoris A. Au, and Hoon Seok Choi. "Effects of Freemium Strategy in the Mobile App Market: An Empirical Study of Google Play." *Journal of Management Information Systems* 31, no. 3 (2014): 326–54.

Lupton, Deborah, and Gareth Thomas. "Playing Pregnancy: The Ludification and Gamification of Expectant Motherhood in Smartphone Apps." *M/C Journal* 18, no. 5 (2015). http://journal.media-culture.org.au/index.php/mcjournal/article/view/1012.

Lutz, Thomas. "Der Zunehmende Zeitliche Abstand Zur Verfolgungsgeschichte Der NS-Zeit. Folgen Für Die Historische Bildung an Authentischen Orten." In *Die Shoah in Geschichte Und Erinnerung. Perspektiven Medialer Vermittlung in Italien Und Deutschland*, edited by Claudia Mueller, Patrick Ostermann, and Karl-Siegbert Rehberg, 183–98, 2014.

Macdonald, Sharon. *Memorylands: Heritage and Identity in Europe Today*. London, New York, 2013.

McCall, Jeremiah. "Historical Simulations as Problem Spaces: Criticism and Classroom Use." *Journal of Digital Humanities* 1, no. 2 (2012): 47–56.

McCann, Tyson. *The Art of the App Store: The Business of Apple Development*. Hoboken, N.J, 2012.

McDaniel, G.W. "At Historic Houses and Buildings: Connecting Past, Present and Future." In *Public History: Essays from the Field*, edited by J.B. Gardner and P.S. LaPaglia, 233–55, 2004.

Meyer, Erik. "Problematische Popularität? Erinnerungskultur, Medienwandel Und Aufmerksamkeitsökonomie." In *History Goes Pop. Zür Repräsentation von Geschichte in Populären Medien and Genres*, edited by Barbara Korte and Sylvia Paletschek, 267–88. Bielefeld, 2009.

MobileDevHQ. "How Users Find Apps," 2014. http://www.mobiledevhq.com/resources/white-paper-how-users-find-apps.

Molden, Berthold. "Vietnam, the New Left and the Holocaust: How the Cold War Changed Discourse on Genocide." In *Memory in a Global Age*, edited by Aleida Assmann and Sebastian Conrad, 79–96. Basingstoke, 2010.

Mooney-Melvin, P. "Professional Historians and the Challenge of Redefinition." In *Public History: Essays from the Field*, edited by J.B. Gardner and P.S. LaPaglia, 5–21, 2004.

Moreau, Terri, and Derek H Alderman. "Graffiti Heritage: Civil War Memory in Virginia." In *Geography and Memory*, edited by Owain Jones and Joanne Garde-Hansen. Basingstoke, 2012.

Nationaal comité 4 en 5 mei. "Arnhem, Birma-Siam En Pakan Baroe Spoorwegen Monument." *Oorlogsmonumenten in Beeld*. Accessed January 4, 2016. http://www.4en5mei.nl/herdenken-en-vieren/oorlogsmonumenten/monumenten_zoeken/oorlogsmonument/837/arnhem%2C-birma-siam-en-pakan-baroe-spoorwegen-monument.

Nationaal Comité 4 en 5 mei. "Oorlog in de Klas. Aandacht Voor de Tweede Wereldoorlog in Het Primair En Voortgezet Onderwijs." Veldkamp, May 2014.

Nationaal comité 4 en 5 mei. "Oorlogsmonumenten in Beeld." Accessed November 6, 2015. http://www.4en5mei.nl/herdenken-en-vieren/oorlogsmonumenten/oorlogsmonumenten_in_beeld.

———. "The National Committee for 4 and 5 May." *Nationaal Comité 4 En 5 Mei*. Accessed November 6, 2015. http://www.4en5mei.nl/english/the_national_committee_for_4_and_5_may.

———. "Ysselsteyn, Duitse Militaire Begraafplaats." *Oorlogsmonumenten in Beeld*. Accessed July 19, 2016. http://www.4en5mei.nl/herdenken-en-vieren/oorlogsmonumenten/monumenten_zoeken/oorlogsmonument/1762/ysselsteyn%2C-duitse-militaire-begraafplaats.

NBRO Co., Ltd. "Army vs Zombie." *Google Play*. Accessed October 14, 2015. https://play.google.com/store/apps/details?id=com.grizzle.ArmyVsZombie.

Nederlands Instituut voor Beeld en Geluid. "Oorlogsmonumenten in Beeld." *Google Play*. Accessed October 14, 2015. https://play.google.com/store/apps/details?id=nl.beeldengeluid.oorlogsmonumenten&hl=nl.

O'Hara, Kenton, and Tim Kindberg. "Understanding User Engagement with Barcoded Signs in the 'Coast' Location-Based Experience." *Journal of Location Based Services* 1, no. 4 (December 2007): 256–73.

Oksman, Virpi. "Media Contents in Mobiles. Comparing Video, Audio, and Text." In *Mobile Technologies: From Telecommunications to Media*, edited by Gerard Goggin and Larissa Hjorth, 118–30. New York, 2009.

Oomen, Johan, Maarten Brinkerink, and David van Toor. "Picture War Monuments: Creating an Open Source Location Based Mobile Platform." In *Proceedings*, edited by J. Trant and D. Bearman. Philadelphia, 2011.

OranginalPlan. "Weaphones WW2: Firearms Sim." *Google Play*. Accessed October 14, 2015. https://play.google.com/store/apps/details?id=air.com.oranginalplan.weaphonesww2.

Pinchevski, Amit. "Archive, Media, Trauma." In *On Media Memory*, edited by Motti Neiger, Oren Meyers, and Eyal Zandberg, 253–64. Basingstoke, 2011.

Reading, Anna. "Memory and Digital Media: Six Dynamics of the Globital Memory Field." In *On Media Memory*, edited by Motti Neiger, Oren Meyers, and Eyal Zandberg. Basingstoke, 2011.

Rejack, Brian. "Toward a Virtual Reenactment of History: Video Games and the Recreation of the Past." *Rethinking History* 11, no. 3 (2007): 411–25.

Repudo. "Anne's Amsterdam." *Google Play*. Accessed October 14, 2015. https://play.google.com/store/apps/details?id=com.repudo.tours.

Ribbens, Kees. "Strijdtonelen. De Tweede Wereldoorlog in de Populaire Historische Cultuur." *Tijdschrift Voor Geschiedenis* 127, no. 2014 (2014): 85–106.

Ricoeur, P. *Time and Narrative I*. Chicago and London, 1983.

Rigney, Ann. "When the Monograph Is No Longer the Medium: Historical Narrative in the Online Age." *History and Theory* 49 (2010): 100–117.

Rosenfeld, Gavriel David. *The World Hitler Never Made: Alternate History and the Memory of Nazism*. Cambridge & New York, 2005.

Rotsztejn, Magdalena. "Mobile Entertainment Applications and Their Impact on Leisure Patterns amongst UK Young Adults." Master Thesis, Erasmus University, 2010.

Routes of Liberation. "Routes of Liberation: European Legacies of the Second World War." *Routes of Liberation*. Accessed April 1, 2016. http://routesofliberation.com/.

Savenije, Geerte M., Carla van Boxtel, and Maria Grever. "Learning About Sensitive History: 'Heritage' of Slavery as a Resource." *Theory & Research in Social Education* 42, no. 4 (n.d.): 516–47.

Sawhney, Harmeet. "Innovations at the Edge. The Impact of Mobile Technologies on the Character of the Internet." In *Mobile Technologies: From Telecommunications to Media*, edited by Gerard Goggin and Larissa Hjorth, 105–15. New York, 2009.

Schrock, Andrew Richard. "Communicative Affordances of Mobile Media: Portability, Availability, Locatability, and Multimediality." *International Journal of Communication* 9, no. 2015 (n.d.): 1229–46.

Schulz, C.B. "Becoming a Public Historian." In *Public History: Essays from the Field*, edited by J.B. Gardner and P.S. LaPaglia, 23–40, 2004.

Schwarz, Angela. "Wollen Sie Wirklich Nicht Weiter Versuchen, Diese Welt Zu Dominieren?" In *History Goes Pop. Zür Repräsentation von Geschichte in Populären Medien and Genres*, edited by Barbara Korte and Sylvia Paletschek, 313–40. Bielefeld, 2009.

Scolari, Carlos Alberto, Juan Miguel Aguado, and Claudio Feijóo. "Mobile Media: Towards a Definition and Taxonomy of Contents and Applications." *International Journal of Interactive Mobile Technologies (iJIM)* 6, no. 2 (2012): 29–38.

Simons, Jan. "Narrative, Games, and Theory." *Game Studies* 7, no. 1 (2007). http://gamestudies.org/0701/articles/simons.

Snickars, Pelle. "A Walled Garden Turned into a Rain Forest." In *Moving Data: The iPhone and the Future of Media*, edited by Pelle Snickars and Patrick Vonderau, 155–70. New York, 2012.

Somers, Erik. *De Oorlog in Het Museum: Herinnering En Verbeelding*. Zwolle, 2014.

Sommer, Ulrike. "Methods Used to Investigate the Use of the Past in the Formation of Regional Identities." In *Heritage Studies. Methods and Approaches*, edited by M.L. Stig Sørensen and J. Carman, 103–20. London and New York, 2009.

Sparrow, J.T. "On the Web: The September 11 Digital Archive." In *Public History: Essays from the Field*, edited by J.B. Gardner and P.S. LaPaglia, 397–415, 2004.

Statista. "Average iPad App Session Length by App Categories." *Statista*. Accessed November 3, 2015. http://www.statista.com/statistics/202485/average-ipad-app-session-length-by-app-categories.

———. "Number of Apps Available in Leading App Stores as of July 2015." *Statista*. Accessed November 3, 2015. http://www.statista.com/statistics/276623/number-of-apps-available-in-leading-app-stores/.

Stichting Liberation Route Europe. "Discover the History." *Liberation Route Europe*, March 1, 2016. http://liberationroute.com/discover-the-history.

———. "Financial Support." *Liberation Route*. Accessed March 3, 2015. http://liberationroute.com/financial-support.

———. "Liberation Route Europe." *Google Play*. Accessed October 5, 2015. https://play.google.com/store/apps/details?id=com.liberationroute.europe.

———. "Liberation Route Europe." *Liberation Route*. Accessed March 3, 2015. http://liberationroute.com/liberation-route-europe.

Uricchio, William. "Simulation, History, and Computer Games." In *Handbook of Computer Game Studies*, edited by Joost Raessens and Jeffrey Goldstein, 327–38. Cambridge, Massachusetts, 2005.

van der Laarse, Rob. *De Oorlog Als Beleving: Over de Musealisering En Enscenering van Holocaust-Erfgoed*. Amsterdam, 2010.

Van der Vat, Dan, and Peter Christopher. *D-Day: The Greatest Invasion: A People's History*. Vancouver, 2003.

van Krieken, Victoria. Victoria van Krieken over Liberation Route Europe, November 26, 2014. http://dewijzenvanhetoosten.nl/actueel/victoria-van-krieken-over-liberation-route-europe/.

van Lammeren, Ron, Martin Goossen, and Arend Ligtenberg. "Interactive Location-Based Services: Problems and Perspectives on the Example of a Cultural Site." *Journal of Location Based Services* 4, no. 2 (2010): 105–19.

Verberckmoes, Yannick. "N(i)et Echt." *De Volkskrant*, March 3, 2016.

Videla Rodríguez, J.J., M. García-Torre, and M.J. Formoso Barro. "Content and Interactivity of the Mobile Apps Launched by Spanish Television Channels." *Revista Latina de Comunicación Social*, no. 71 (2016): 522–69.

Vos, Chris. *Bewegend Verleden. Inleiding in de Analyse van Films En Televisieprogramma's*. Amsterdam, 2004.

Wagner, Kurt. "Could the Browser Eventually Kill Apps?" *Fortune*, November 14, 2012. http://fortune.com/2012/11/14/could-the-browser-eventually-kill-apps/.

Weber, Thomas. "Erinnerungskulturen in Medialer Transformation. Zum Fortgesetzten Wandel Der Medialität Des Holocaust-Diskurses." In *Mediale Transformationen Des Holocausts*, edited by Ursula von Keitz and Thomas Weber, 2013th ed., 23–54. Berlin, n.d.

Wertheim, David. "Remediation as a Moral Obligation: Authenticity, Memory, and Morality in Representations of Anne Frank." In *Mediation, Remediation, and the Dynamics of Cultural Memory*, edited by Astrid Erll and Ann Rigney, 157–70. Berlin; New York, 2009.

Wertsch, James. "Struggling with the Past: Some Dynamics of Historical Representation." In *Cognitive and Instructional Processes in History and the Social Sciences*, edited by Mario Carretero and James F. Voss, 323–38. Hillsdale, N.J, 1994.

Wetzel, Juliane. "Das Lernen Über Den Holocaust via Internet. Möglichkeiten Und Fallstricke." In *Die Shoah in Geschichte Und Erinnerung. Perspektiven Medialer Vermittlung in Italien Und Deutschland*, edited by Claudia Mueller, Patrick Ostermann, and Karl-Siegbert Rehberg, 211–22, 2014.

Wing Kosner, Anthony. "Apple App Store Revenue Surge And The Rise Of Freemium App Pricing." *Forbes*. Accessed June 13, 2016. http://www.forbes.com/sites/anthonykosner/2015/01/11/apple-app-store-revenue-surge-and-the-rise-of-the-freemium/#222d72f375c8.

Winter, Jay. *Remembering War. The Great War between Memory and History in the Twentieth Century*. London, 2006.

Zerubavel, Eviatar. *Time Maps, Collective Memory and the Social Shape of the Past*. Chicago, 2003.

8.   Primary Sources

Anne's Amsterdam – App: downloadable via:

https://play.google.com/store/apps/details?id=com.repudo.tours.

Brothers in Arms 3 – App: downloadable via:

https://play.google.com/store/apps/details?id=com.gameloft.android.ANMP.GloftA3HM.

Frontline Commando: WW2– App: downloadable via:

https://play.google.com/store/apps/details?id=com.glu.dd2.

Liberation Route Europe – App: downloadable via*:*

https://play.google.com/store/apps/details?id=com.liberationroute.europe.

Picture War Monuments (Oorlogsmonumenten in Beeld) – App: downloadable via:

https://play.google.com/store/apps/details?id=nl.beeldengeluid.oorlogsmonumenten&hl=nl.

Sandbox: Strategy & Tactics – App: downloadable via:

https://play.google.com/store/apps/details?id=com.herocraft.game.free.stww2_sandbox.

Warship Battle:3D World War II – App: downloadable via:

 https://play.google.com/store/apps/details?id=com.joycity.warshipbattle.

Weaphones WW2: Firearms Sim – App: downloadable via:

https://play.google.com/store/apps/details?id=air.com.oranginalplan.weaphonesww2.