

Note: This is a rough English translation of the original Dutch version.

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Wargames

History in and of (computer) wargames



*1. Image of characters from the computer wargame Verdun
from <http://www.giantbomb.com/verdun/3030-43245/>*

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‘Ever since words existed for fighting and playing, men have
been wont to call war a game.’

Johan Huizinga¹

¹ Johan Huizinga, *Homo Ludens, A study of the play-element in culture* (London, 1949) 89.

Index

Preface..... 3

1. What are wargames? Definition and categorization..... 5

2. History of wargames..... 11

3. History in computer wargames..... 20

4. Reviewing a computer wargame’s historical realism..... 41

Conclusion..... 44

Bibliography..... 48

Appendix

I Images and pictures..... 50

II Game list..... 51

III Internet page overview..... 53

IV Transcripts interviews commercial companies..... 54

V Transcripts interviews institutes..... 68

Added CD-ROM

I Sound recordings of depth interviews

II Digital version of thesis

Preface

For more than 3000 years wargames or war simulations have been a training tool for the army and an entertaining pastime for the public. What started with sand tables and board games has evolved to advanced computer and communication systems that offer a worldwide training- and entertainment portal. Before the computer age it were mainly the strategic and operational level of warfare that were being trained with simulation games. With the advent of the computer and its graphical possibilities the tactical level also made its entrance into war gaming. Alongside the training possibilities for the army, wargames serve as entertainment for the public for quite a while now. The so-called commercial 'serious' wargames regularly simulate reality in a proper way. Just as the wargames intended for training within the army, these commercial wargames have gone through a development from simple check like games through more in-depth board games to present-day complex 'mass-multiplayer' computer games. By playing wargames the player can learn aspects of military history in another way than reading books or watching television or a movie. Due to the interactive character of wargames the understanding of a certain military situation can be enhanced in comparison with non-interactive media such as books and television.^{2 3} To what extent the acquired knowledge of history is correct, is the question. Though it can be said that wargames do offer the opportunity to simulate a military historical event. By the advent of computers, which graphically have become ever more powerful, it has been made possible to pass on military history in a visual way that has ever more resemblance with the reality of that military past. Wargames reach an ever growing audience. Nowadays there are millions of players (military and civilian) worldwide, who are playing games (board games and computer games, as for training as for entertainment) that have something of a military-historical character. Due to this development the importance of wargames as a medium to pass on military history is becoming ever bigger and bigger.

The focus within this thesis will be mainly on computer wargames. That is not because history in other wargames such as board- and card games have already been fully examined. The focus here is on computer wargames because hardly any (till non) research has been done in this field in spite of the computer with her animations and computing power having more ability to pass on history through games than, for example, board- or card games. Because millions of people play computer games with a military historical character, it is useful to ask the question how the developers come to the historical information to create these games. The military-historical awareness of all these players is being affected by playing computer wargames with historical elements. One of the reasons why so little academic attention has been given to the relation between wargames and military history is a general prevailing prejudice about 'play' and 'game'. These would be frivolous and childish. The term 'wargame' itself gives the uninitiated, the impetus for the idea that its practitioners reduce the tragic sacrifices of armed conflict to a form of entertainment. Many war gamers are quite reticent about their activities. There are several prominent writers on military history who are war gamers but do not mention this in their published works.⁴ In general games suffer from a deep-rooted perception of childishness which is characterized by the strikingly scant attention and low esteem the modern computer games industry gets from the media. This in despite of the games industries turnover being larger than that of the movies industry.⁵ Through these prejudices it is therefore understandable that the much more specialized niche activity of war gaming within games has been academically

² For the complete interview with Frank Nack of the UvA see appendix V pag.75.

³ For the complete interview with van der Hulst and van Dijen of TNO see appendix V pag.68.

⁴ Philip Sabin, *Simulating War, studying conflict through simulation games* (London 2012) xix.

⁵ See <http://libertygalaxy.com/video-games-now-gross-82-billion-more-than-hollywood-movies/> (Internet, 9-1-2015).

neglected and misunderstood.⁶ What has been written by serious wargame authors like Martin van Creveld, C.G. Lewin and Philip Sabin on the relation between wargames and military history is on other forms of wargames such as board - and paper wargames but hardly on computer wargames.⁷ This field of research is thus a new one and therefore no methods exist to see how high the historic realism of a computer game is. This paper therefore proposes, in chapter four, an assessment tool with which the historical realism of a computer wargame can be assessed. Besides this tool chapter 1 will give a definition and categorization of wargames to get a better picture of what wargames actually are and how they can be classified.

The problem with the relationship between wargames and history is that it is not clear to what extent these games convey military history which has been based on scientifically sound methods. It is also not clear what aspects of history, game developers think are important to portray historically realistic in their games and how they do this. To solve this problem the main question of this thesis has to be answered: what are the historic elements that appear in computer wargames based on? In other words:

what are the sources of information that computer wargame developers use to add historical content to their games?

This main question is being supported by the following sub-questions. How and what kind of historical information is processed in computer wargames? What is it exactly that game developers do to get the historical information together which is needed to make the game? What can be historically correctly or historically realistically reproduced in a computer wargame and what aspects of the past are problematic to use in a game? How do game developers deal with this? How is dealt with coincidences and the irrational, chaotic and illogical aspect of warfare? What more activities take place in the game world that can increase the military historical realism and awareness? In addition there will be examined whether wargames have a didactic value which is an interesting side question if it turns out that sound historical information can be found in games.

To answer these questions chapter two will examine the history and development of wargames. A comparison will be made between the wargames before and after the advent of the computer. Chapter three mainly describes where the historical information that is being used in wargames comes from. The chapter also checks whether computer wargames have didactic value. For this work different methods of research are being used. Besides study of literature wargames themselves serve as a source. In addition there have been held interviews with software companies and other wargame developers. Also interviews with museums, the ministry of defence and educational institutes have taken place. Together these interviews form the primary source of information to answer the main question of this thesis.

The purpose of this study is to make clear what wargame developers do (and did) to make their games historically realistic. The visual and game depth possibilities are ever more better due to technological innovations. Besides, an ever growing audience plays wargames.⁸ These millions of people are playing wargames in which they are presented an image of certain aspects of military history. It is time to see what computer wargames exactly are, how the history of wargames has evolved and how the alleged historical realism in wargames is achieved.

⁶ Sabin, *Simulating War*, xx.

⁷ Martin van Creveld, *Wargames from gladiators to gigabytes* (Cambridge 2013) and C.G.Lewin, *Wargames and their history* (Oxford 2012) and Philip Sabin, *Simulating War, studying conflict through simulation games* (London 2012).

⁸ See <http://www.gamesindustry.biz/articles/2014-11-11-game-industry-growing-four-times-faster-than-us-economy-esa> (Internet, 16-2-2015).

1. What are Wargames? Definition and categorization

To clarify which games this thesis discusses this chapter will give a definition of wargames. Several categories will be given which make it possible to make a distinction between wargames. It is valid to use the word wargame for both board- as computer games which also will be done in this thesis. The definition of wargames is a tricky one but it is not impossible. Games, wargames, simulations and 'serious' games are all terms that are being used, but are being differently interpreted by various authors. However there are elements within the different wargame definitions that have comparison (that crop up time and time again?).

According to military-historian Martin van Creveld a game can only be considered as a wargame if there is a certain interaction between two parties. In his opinion strategy is an art which tries to reach goals while there is presence of an opponent which can think and act. The opponent tries to reach his own goals while he tries to recognize, predict and counter the goals of his opponent. It is all about the interaction between those two parties who face each other. If this kind of interaction takes place then we are talking about a wargame according to van Creveld. He continues by saying that a wargame differs at two points from a real war. War is the continuation of politics, this is not the case with a wargame. Besides this real war does not have the artificial boundaries which wargames do have. It is striking that Creveld does not exclude the existence of real victims among the players of wargames. It is however his opinion that wargames try to limit violence and victims in one way or another compared to full-scale warfare. The result is that gladiator fights and duels also fall under his definition of wargames.⁹

C.G. Lewin, author of a recent work on wargames fails to give an explicit definition on wargames. He does however suppose that wargames offer a framework in which two or more people engage in a friendly, intellectual battle that is stimulating and exciting by its very nature. The qualities that are needed to play wargames involve thinking up front, creating a plan and execute it, resist hardship when a player is 'on the winning hand' and to be capable to cope with unexpected hostile developments in a resolute and calm way.¹⁰

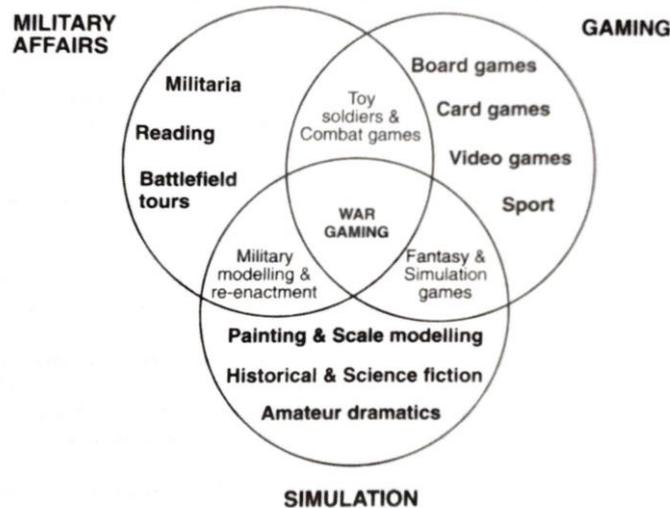
James Dunnigan, which can be considered as one of the leading designers and commentators in the field of board wargames since 1960 and who is a military-political analyst, once said: 'A wargame is a combination of play, history and science. It is a paper time machine. It is in its core an enhanced form of Chess.'¹¹ Peter Perla is an analyst in service of the United States Navy. His integrated study of professional and recreational wargames provides a good theoretical overview of the entire genre. He gives a scientific definition of wargames: 'A wargame is a war model or –simulation in which no activities of real military forces occur and where the sequence of events, affects, and is affected by, the decisions made by the players who represent the opposing sides.'¹² Philip Sabin is professor of strategic studies at the Department of War studies at Kings College in London. He prefers to call wargames 'military simulation games'. In his point of view wargames are the centrepiece of three areas of interest: military affairs, games and simulations. Figure 2, hereunder shows how Sabin positions war gaming within these three areas;

⁹ Creveld van, *Wargames*, 2-4.

¹⁰ Lewin, *Wargames*, 9.

¹¹ James F. Dunnigan, *The complete wargames handbook, how to play design and find them* (w.p. 1992) 12.

¹² Peter Perla, *The Art of Wargaming* (w.p.(V.S.) 1990) 164.



2. Relationship of war gaming compared to other recreational activities
 from Philp Sabin, *Simulating War* (London 2012) 3.

Sabin says: 'these military simulation games are based on the military capabilities of a number of recent or historical opponents. They include a certain amount of research that makes it possible to show the main relevant characteristics. An attempt is being made to simulate aspects of a real or imaginary conflict with certain military forces while attention is being given to accuracy or 'realism'. This occurs in the form of a game that players can win or lose by taking decisions that doesn't necessarily have to be the same decisions which would have been taken by real commanders.' Sabin continues by stating that wargames (military simulation games) exists out of two main elements. The first comprises of an underlying mathematical model of reality. This model aims to be a simulation of the battlefield, the deployment and possibilities of the military forces and the elapse of time during the confrontation. This will create a synthetic experimental environment that mirrors certain key elements of the actual range of possible outcomes and course of the armed conflict in question. Sabin does not mention it explicitly in his definition but within the mathematic model of reality of good wargames what also should be taken into account is coincidence, the illogical, the chaotic, the unexpected and the irrational. An 'element of chance' should be added to the algorithms to achieve this. Suppose that the values of, for example, attack and defence power of units are fixed in the game. In addition to these factors, the system can, for example, throw a dice to decide the influence of uncertain factors. The dice can, for example, decide that the weather is bad at a roll of 1 or 2 and that the weather is good at a roll of 3, 4, 5 and 6. As result, at a roll of 1 and 2, the attacker gets a 'penalty' on his attacking power because sight is reduced at bad weather. This dice could also being used for other illogical, chaotic, unexpected and irrational things. According to Sabin the second main element of wargames consist of a changing set of active decisions that are taken by one or more of the players to control the simulated actions of the warring parties and to react to the changing course of the conflict. The goal here is to perform to the maximum in terms of the given artificial victory conditions that have been determined to reflect the real degree of success or failure as they are present in the real conflict. Also in this set of active decisions, there is a place for the illogical, irrational, chaotic, unexpected and chance because the player as a human being takes these factors into account, consciously or unconsciously when making his decisions. This definition of wargames by Sabin shows the potency of wargames as a source of insight into armed conflict. It is the combination of the mathematical modelling and the input of active human decision-making that reflects the dual nature of war as a

set of physical realities of force and power possibilities that only come to live by the cross-influential strategies of the warring opponents that, as in reality, not necessarily have to be rational and thus having to be as expected.¹³

On the matter of terminology in this study; the terms 'game' and 'simulation' will be used interchangeably. This is being done because this study sees wargames as an intrinsic mix of these two technics. Some authors draw a hard line between these two concepts. They use 'simulation' for detailed stand-alone systems that truly mimic real processes without the need of human intervention. 'Games' are far more unpredictable and heuristic activities.¹⁴ According to this definition wargames are rather 'games' than 'simulations'. However, many authors believe that 'simulation games' can be seen as a hybrid concept because a wargame is a simulation of war and a simulation of war is being played in a wargame. A number of scholars use the alternative term 'serious game' to reduce the stigma (as being childish) that is being associated with games. This however would imply that by definition recreational wargames are 'not serious'.¹⁵ Schlenker and Bonema say that it is the challenge: '(...)for researchers and students to emphasise that games can be seen as a useful tool for the development of theories and testing hypothesis. They are experimental vehicles, not isomorphic simulations of the real world and also not merely the frivolous efforts of researchers to revive their childhoods playful moments.'¹⁶ Therefore, they use the term 'serious game'. Sabin uses the more hybrid descriptive term: 'military simulation games'.¹⁷ Dunnigan says: "A wargame is a playable simulation. A conflict simulation is another word for wargame which omits the laden terms 'war' and 'game'.¹⁸

The definition of a wargame that is being used in this body of work is mainly based on Sabin's one. His definition is the most comprehensive of all definitions mentioned and it also is very applicable to computer wargames. Wargames are military simulation games in which an attempt is made to simulate, in a realistic way, the military powers of opposite parties in which the players can make decisions that lead to winning or losing the game. The goal of the gamer who plays can be didactic or pure entertaining. In contrast to Crevel'd's definition it is here assumed that in a wargame there are no real casualties and all the violence is fictional. The following work assumes that a wargame is a simulation of a conflict with losers instead of victims. Duels, gladiatorial combat, Knight tournaments and the like fall outside the definition of wargames here. However, in this thesis the term wargames is taken more broadly than Sabin's definition. This is because Sabin's starting-point is that wargames are a simulation, which in the definition of this work does not necessarily has to be the case. In this text it is not only about portraying a certain battle, operation or campaign as exactly as possible but it is about all games that contain military-historical aspects that have a certain level of realism. Games that are no simulations still can include military-historical aspects.

A wargame models a battle or a war. Therefore, to be complete, the term 'model' has to be explained. Willerd McCarty's view on models is used: "By nature a model is a simplified and therefore fictitious or idealized representation that usually has an improvised form. Think of the term "tinker toy " model which is being used in

¹³ Sabin, *Simulating War*, 4.

¹⁴ B.R. Schlenker en T.V. Bonoma, 'Fun and games: The Validity of Games for the Study of Conflict', *Journal of Conflict Resolution* 22/1 (z.p. 1978) 7-38. Jan H.G.Klabbers, 'Terminological Ambiguity: Game and Simulations', *Simulation & Gaming* 40/4 (w.p. 2009) 446-463.

¹⁵ Sabin, *Simulating War*, 4-5.

¹⁶ Schlenker en Bonoma, 'Fun and games', 32.

¹⁷ Sabin, *Simulating War*, 5.

¹⁸ Dunnigan, *The complete wargames handbook*, 236.

physics to suggest accurate play, relative coarseness, and a heuristic purpose.¹⁹ The way in which most scientists, (military) officers and defence specialists model war is by using the spoken and written word. By creating images or ideas in the mind of the listener or reader only a few aspects of the actual human experience and tragedy that war comprises are being passed on. Whether it is for primary sources, such as reports of military units and memoirs, or for secondary sources, such as historical works, or for analytical work, such as military doctrine manuals, they are all different collections of words that model war from the creators perspective, just as mathematical models, movies and war games can do on their own individual way.²⁰ Sabin says: 'Wargames bring together operational research and game theoretical approaches for conflicts by creating a mathematic model of the reality. The operation of this model depends on the decisions taken by competitive players.'²¹

Now that the terminology of wargames and model has been made clear there will be made a classification of wargames in general and a classification of computer wargames in particular.

Lewin and Sabin distinguish three main categories of wargames:

- Boardgames
- Games that are played with model soldiers on a table top
- Computergames²²

The focus of this thesis will be on computer wargames. So far there has been relatively little research into the relation between computer wargames and history despite the fact that millions of people are playing this category of wargames. Thomas B. Allen and Perla write about the interwoven development of professional and recreational war gaming. Dunnigan, Richard H. Berg, Jon Freeman, R.A. Martin and Nicholas Palmer are primarily interested in playing and designing board wargames. There are dozens of works written about simulating tactical battles with model soldiers, for example, by H. G. Wells in *Little Wars* and the works of Donald Featherstone and Paddy Griffith²³. Philip Sabin focuses primarily on wargames as a new means for research and education in the field of strategic studies. Ed Halter writes mainly about the relationship between wargames and military culture.²⁴ Sabin and Creveld offer the most recent insights into the matter of wargames.²⁵ Despite these publications on wargames the research to the third category, computer wargames, is very meagre. It seems that most authors are not computer gamers themselves (with the probable exception of Halter and Sabin). Of all wargame authors, Sabin writes the most on computer wargames as a means to pass on military history. Sabin, however, has the point of view that computer wargames as a tool for the study of war have a number of practical and theoretical limitations compared to board wargames. He therefore focuses mainly on board wargames. He is of the opinion that the majority of computer wargames focus more on entertainment than on realistic war simulation. According to Sabin most computer wargames are no more than digitized versions of board wargames. Another of his objections is that to use new computer games, up-to-date hardware has to be obtained while old computer wargames cannot be played any longer because they are operating on an old system. Also he does not see

¹⁹ McCarty, W, 'Modelling: A Study in Words and Meanings', in S. Schreibman, R.G. Siemens and J.A. Unsworth, *A Companion to Digital Humanities* (Oxford 2004) 255.

²⁰ Sabin, *Simulating War*, 13.

²¹ Ibidem, 101.

²² Lewin, *Wargames*, 213. Sabin, *Simulating War*, xviii-xix.

²³ H.G.Wells, *Little Wars* (w.p. 1913). John Curry, *Donald Featherstone, War Games Battles and Manoeuvres with Model Soldiers: The Book That Launched Modern Wargaming* (w.p. 2014). Paddy Griffith, *Napoleonic Wargaming for Fun* (London 1980).

²⁴ Ed Halter, *From Sun Tzu to Xbox* (New York 2006).

²⁵ Sabin, *Simulating War*, xx.

advantage in the offer of information for educational purposes of computer wargames in relation to board wargames. His mayor objection is that computer wargames are less accessible than board wargames. According to Sabin the rules of a board game can easily be changed while technical expertise is required to change the rules of a computer game²⁶ Almost all of these objections to the computer wargame vis-à-vis the board wargame can be parried. The majority of computer wargames is indeed focused on entertainment but that does not mean that those who are focused on realistic war simulation are worse than board wargames. There are many computer wargames that are similar to board wargames but these games have, in general, more depth than the board games and are better playable due to the automation of a number of aspects of the game concerned. An example of this is the computer wargame *Hearts of Iron*.²⁷ Besides this there are certainly computer wargames that are very different than board wargames but still include military historical aspects like *Combat Mission* and *Verdun*. These kind of tactical wargames are impossible to make on a board but they do contain military history.²⁸ By its computing power and graphical representation a computer can offer more, faster and better targeted information than a board game can do. Finally, there are relatively a lot of computer war games on the market that can be changed by the player himself. Indeed some knowledge of computers is required to do that but to change the rules of a board game also requires the knowledge of how to make board games, since adjustment of the rules changes the core of the game system. Sabin is right when he says that adequate hardware has to be acquired to play computer wargames which is more expensive than playing board wargames. Computer wargames are better suited for passing on military history than board games if only because of the much larger graphic capabilities of the computer compared to a board.

The word ' computer ' is interpreted broadly in this work. It is about games (software) that can be played on home computers (hardware), such as the PC, Xbox, iPad etcetera but also on computers that have been made exclusively for a unique wargame. Think of a museum or a defence department that can have its own specific hard- and software. There are several ways to divide computer games (in general) in categories.²⁹ In the context of this work, however, it is especially useful to make a categorization within the genre wargames themselves. A couple of good attempts have been made already.

Sabin for example mentions;

- Real-time strategy games
- Real-time first person combat simulator

He does not, however, mention more categories.³⁰ Creveld also has made a good attempt by distinguishing two main groups of computer wargames;

- Games on operational and strategic level.
- Games (shooters) on the tactical level.

The basis of his subdivision is that at the second category players have to aim a weapon and pull the trigger, which is not the case at the first category. The distinction is in the games nor in the real world absolute. Creveld also says that this is a 'common way' for classifying these kind of games what indicates that, according to him, it

²⁶ Ibidem, 23-27.

²⁷ *Hearts Of Iron series* (Paradox Interactive 2002-2015)

²⁸ See for example the computer wargame series *Combat Mission* (Battlefront 2000-2014) and *Verdun* (Blackmill games, M2H game studio 2015).

²⁹ See for example <http://www.contentedwriter.com/know-the-different-types-of-computer-games/> and <http://nl.wikipedia.org/wiki/Computerspelgenre>.

³⁰ Sabin, *Simulating War*, xix.

is a common classification.³¹ Creveld's two levels are useful but have to be broadened. In wargames it is important how the course of time has been regulated because this results in different game experiences. It can be done in two ways. 'Real-time': the simulated time passes on continuously until the game is over. 'Turn-based': the game is divided into a cycle of successive turns of the opponents until the game is over. These ways of processing time are mainly present with games on the operational- and strategic levels. Games on the tactical level, 'shooters', are almost always 'real time'. The 'camera perspective' of shooters, however, can differ: 'first person'; the game is played from the first-person perspective, or in other words, from 'the eyes' of the game figure or 'third person' from the third person perspective with a camera hanging, as it were, above the game figure. A simulation of a soldier in first person would be more realistic than in a third person game. The categorization of computer wargames that is being used in this work is:

1. Computer wargames on operational/strategic level.
 - Real-time based
 - Turn based
2. Computer wargames on the tactical (shooting) level.
 - First person shooter
 - Third person shooter

The dividing lines are, however, in some games vague. There are wargames where can be played on strategical, operational and tactical level, for example in *Rome 2 Total War* and there are shooters in which with both first person and third person camera perspective can be played as in *War Thunder*.³² Nevertheless the here above mentioned classification can serve as a guideline and will be used in this work to categorize the games that are being discussed so that the different computer wargames can be displayed in a concise manner.

Finally it should be mentioned here that the outcome and the course of a (war) game can be divided in two main groups. Games in which there is only one possible outcome such as *Call of Duty*, where you play from mission to mission to reach the end of the game (beating Germany), are games with 'linear' gameplay. Within this type of game it is possible to match the game story and outcome with the historiography. Besides these games there are (war) games with a so-called 'open ended' game play where the outcome can be variable. These kind of games addresses the 'what-if' scenarios and they can make it clear that the historical outcome was one of the in theory many possible outcomes.

Wargames are military simulation games in which an attempt is made to simulate, in a realistic way, the military powers of opposite parties in which the players can make decisions that lead to winning or losing the game, all of which is done within a model of reality. This thesis addresses wargames that include 'historical' elements. The focus will be mainly on computer wargames. To get a better understanding of how these computer wargames came into existence the next chapter will treat the history of wargames in general.

³¹ Creveld van, *Wargames*, 247.

³² *Rome 2 Total War* (Creative Assembly, Sega 2013) and *War Thunder* (Gaijin 2012).

2. History of wargames

'In the whole range of human activities, war most closely resembles a game of cards.'

Carl von Clausewitz³³

This thesis mainly covers computer wargames, but this chapter is also on wargames that existed before the computer age. This history is relevant because the older ways of war gaming can be seen as the conceptual ancestors of today's computer wargames. Board wargames are the first attempts to create a game within a simulated environment. The 'hardware' consisted of the board and pieces which, for example, were made out of wood or stone and the "software" consisted of the game rules. When a contemporary gamer walks with his game-character through a complicated three-dimensional world this is in a sense a technological upgrade of an aristocratic gamer from the renaissance who moves his pieces on a chess board.³⁴

Wargames are thousands of years old. In ancient times and in the middle ages they involve innocent recreational games in an often highly abstract form. In the 19th and 20th centuries the realism of the games, the applications, and the number of practitioners were getting larger. Nowadays, there is a huge range and variety of wargames that are played both by the public and by high ranking officials worldwide. Over time the games are changed, their number has grown and, for example, elements of chance and restriction on information are added. One of the most important developments was the introduction of the electronic computer which made it possible to play very complex games. The basic principle of wargames in these electronic games remained unchanged but by the recent appearance of cyber warfare it is likely that new forms of wargames will be developed in the future.³⁵

As early as in ancient time Greece and Rome there were already games being played that can be referred to as primitive wargames. Most likely the oldest game is *Petteia*. The Greek writer Julius Pollux has made a description of *Petteia* in the second century AD (although the game is probably much older). From his writings it becomes clear that two players re-enact a battle on a game board that has quite a size (8X8 or 12X8 fields). The many pieces/men/figures on the board move in the same way as the tower does in chess (horizontally, vertically, but not diagonally). 'Striking' the opponent is done by the interception method. This means that once a piece is enclosed on two opposite edges by pieces of the opponent one's piece is removed from the board. The aim of the game is to disable the opponent by removing all his pieces from the board or to make sure that he cannot move anymore pieces.^{36 37}

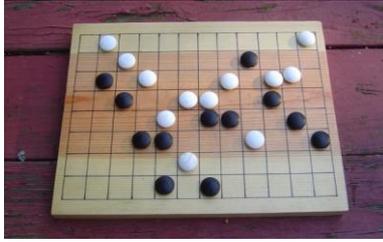
³³ Carl von Clausewitz, *On War*, revision and translation by M.Howard and P.Paret (Princeton 1976).

³⁴ Halter, *From Sun Tzu*, 7-8.

³⁵ Lewin, *Wargames*, 7.

³⁶ Ibidem, 15

³⁷ Zie <http://www.aerobiologicalengineering.com/wxk116/Roman/BoardGames/petteia.html> (20-5-2014).



3. Presumably the oldest wargame, *Petteia*, image

from <http://www.aerobiologicalengineering.com/wxk116/Roman/BoardGames/petteia.html>.

The Romans of ancient times played a wargame called *Latrunculi*. Marcus Varro (116-27 BC), one of the commanders of the armies of Pompey, wrote about it in the tenth book of his *De Lingua Latina*, but the game is probably much older. It seems that *Latrunculi* in general has the same rules and looks as *Petteia*. The difference is that an extra play piece with another form has been added to *Latrunculi*, this piece can be regarded as a 'king'. Some authors claim that the purpose of this game was to enclose the 'king' on all four sides. A number of *Latrunculi* play boards have been found in the forts along the Hadrian Wall in England. This justifies the assumption that Roman soldiers on this outpost have played the game recreationally. The anonymous author of *Laus Pisoni*, a work from the first century, describes the process of play of a variant of the *Latrunculi* game. He writes on game situations that nowadays can also be seen in wargames. His accounts of game situations are still valid for wargames of the present. He describes, for example, how a retreating piece, eventually strikes his pursuer. An auxiliary piece comes from behind to join the fight. This takes away the possibility of the opponent to strike the retreated piece. The roles are being reversed because the attacker himself is now being stricken.^{38 39} Because of the *Laus Pisoni*, it is clear that already in ancient times a board game was being used to visualize a modelled battle. In the imagination of a poem in the *Laus Pisoni* a couple of pieces on a board of squares are sufficient means to execute a cunning and challenging battlefield simulator. Full of excitement and sensation but without the bloodshed and misery. It is an early example on wargames that are made for entertainment, picture war in an idealized dramatic matter.⁴⁰

A wargame from the Asian antiquity that is still played today is *Go (Wei Chi)*. In appearance it looks a lot like *Petteia* and *Latrunculi* but the rules are substantially different. In this game the pieces are not moved but placed one at the time when the players are taking turns on the play board (17X17 squares). The purpose of the game is to surround separate - or groups of pieces of the opponent so that they can be struck. It is interesting to read in a long poem of Ma Rong written around 166 that *Go*: '(...) is modelled on our way of warfare. (...) On a game board an epic battle takes place where deployed soldiers meet their opponents.'. The poem deals with strategies for the game such as occupying the corners of the board to protect the flanks. Also the advice is being given to not strike eagerly the enemy soldiers because this could give the opponent time to break through the own line.⁴¹

Despite these references to actual warfare, these games are simple in design and difficult to reconcile with the reality of the contemporary warfare. The famous board game *Chess* has more resemblance to reality than its classical predecessors by using different types of pieces with different rules for movement. The pieces were given the look of figures and elements that are important in actual warfare such as towers, horses, soldiers

³⁸ Lewin, *Wargames*, 16.

³⁹ See <http://www.aerobiologicalengineering.com/wxk116/Roman/BoardGames/latruncu.html>.

⁴⁰ Halter, *From Sun Tzu*, 16.

⁴¹ Lewin, *Wargames*, 17.

(pawns). Presumably the game came into being in India around the year 500.⁴² Here pieces were used with the looks of local army units like the elephant and the vizier. The game of *Chess* spread to China and Persia. In this last area the game got the name of *Shach* (King) and from here it was introduced in the Arab world and Byzantium. Around 1000 AD the game started being played in Western Europe. But *Chess* did experience some changes over time. The board changed into the chequered form as it is used nowadays and the rules relating to the movement of pieces also changed. The elephant was an unknown animal to most Europeans and thus was replaced on the checkerboard by the bishop. Also the visor was replaced by the Queen. In the period of these changes writers of different nationalities had the opinion that *Chess* certainly was a wargame which had the intention and made it possible to simulate certain aspects of actual warfare. This is the reason that many famous commanders showed interest in the game of *Chess*; William the Conqueror (he broke a chessboard on the head of an opponent), Richard the Lionheart, Edward I of England, Tamerlane (who named a conquered city to a chess move) and Napoleon (a mediocre and rash player). Despite a number of similarities the differences between *Chess* and actual warfare are big. The board is not a good representation of terrain, the number of units is too small and their stereotype movements do hardly resemble the actual tactical possibilities. Logistics are not present and *Chess* is, in contrary to real warfare, a game of complete information on the deployment and force of the opponent.

In the centuries after the moment that *Chess* came into existence, there have been developed versions that were an attempt to overcome these 'deficiencies'. The first *Chess* 'reformer' from whom his name is known, is Christopher Weickmann from Ulm, a German who made his *Chess* changes in the middle of the seventeenth century. Along with its successors C.L. Helwig and Georg Venturini from the end of the eighteenth century they expanded the number of chequers on the board. Multiple pieces with new rules of movement were being added to be more realistic. Different types of cavalry, infantry and artillery were being added. Helwig introduced different types of terrain and Venturini replaced the Chessboard with a grid of 3600 chequers that was laid over a map of the border area between France and Germany. He also introduced logistics in the wargame.⁴³ Within a period of less than two centuries *Chess* was so strongly modified from its origin that these new wargames had hardly any resemblance with their predecessor. *Chess* symbolized the battlefield in an almost fairy-tale setting while this new generation wargames tried to simulate warfare in its most modern appearance and on a realistic way. This development marked a shift from the elegance of an art form to the logic of science. Chess could symbolize the concept of warfare but these wargames played with possible outcomes of specific events down to the detail of the individual soldier. Helwig's and Venturini's wargames were being used as enjoyable training by high ranking military but the average player found the games too complicated.⁴⁴ Around the year 1811 Baron von Reisswitz had developed a new type of wargame. He was a civil war adviser to the Prussian Court. The game consisted of a set of reliefs of plaster that was used to indicate different types of terrain that could be laid next to each other on a table of almost two by two metres, according to one's own wishes of the landscape formation. This made it possible to play various scenarios which was different than the rigid character of the playfield in previous wargames. This made the game suitable for military training and – education. Miniature troops made of porcelain resembled the various military units. Although the game rules were rudimentary and mainly focused on troop movement, King Friedrich Wilhelm I and his sons became enthusiastic players of this game. Ten years later, the son of Baron von Reisswitz, Lieutenant Georg Heinrich Rudolph Johann von Reisswitz, made a number of important adaptations to the game with the intention to enhance the feeling of realism. His new wargame system, was leading, up to (and in some aspects during) the introduction of computers in the fifties of the twentieth century.

⁴² Michael Mark, 'The Beginnings of Chess' in I.L. Finkel, *Ancient Board games in Perspective* (London, 2007) 138-155.

⁴³ Creveld van, *Wargames*, 142-146.

⁴⁴ Halter, *From Sun Tzu*, 39.

He replaced the board system with topographical maps of actual landscapes on a scale of eight inch per mile. The opposing sides were given the colour red and blue. Nowadays, this practice is still in use at military exercises. Pieces were being moved in two-minute turns with a maximum distance that real troops could cover in those two minutes. By rolling a dice and checking statistic tables based on data from military history, an arbitrator (umpire) determined the results of every skirmish. Nowadays this game is called *Kriegsspiel*. The Chief of Staff, General Karl von Muffling was so excited about this game that it is claimed that he had said; 'This is not a game! This is a training for war! I can highly recommend it to the entire army.'. All Prussian military units obtained a copy for training purposes and the artful balance between instruction and entertainment made sure that a *Kriegsspiel* mania came into being in the entire German military community during the second half of the nineteenth century.⁴⁵ Until the middle of the nineteenth century war gaming remained primarily a German occupation. The Prussian successes in the wars of 1866 against Austria and of 1870-1871 against France changed this situation. Many thought that training with *Kriegsspiel* as part of a system of elite training and strategy had a decisive role in winning the wars. This led to a rapid implementation of *Kriegsspiel* on several war academies across Europe.

The change from military war gaming to civil or 'hobby' war gaming started in the beginning of the twentieth century. Before and during the first world war a lot of toys and games with a war theme were being released on the market. In this period the miniature wargames in which people re-enacted battles with miniature tin soldiers where very popular. The rule book of H.G. Wells, *Little Wars*, published in 1913 was the first work in this area. The book presented a game where battles could be re-enacted with the use of soldiers of tin and a spring loaded rubber cannon.⁴⁶ In 1910, every week, 200.000 of these tin soldiers were being produced in Great Britain alone. In the same year the first two commercially marketed wargames appeared on the market in London; *The Great War Game* by A.J. Holladay and the board game *L'Attaque* by Harry P. Gibson and his sons (being the first version of *Stratego*) in which, for the first time, the identity of the opponent's pieces was unknown. During the second world war a lot of war gaming took place among the military and also various commercially published board wargames hit the market like *Bomben auf England* (1939, Spear's Games, Germany) and *Conflict* (1940, Parker Brothers, USA). In 1952 the first 'modern' commercial board game was published; *Tactics*, by Charles S. Roberts from Avalon Hill. This game replaced the tin soldiers with cardboard squares on which military symbols and game statistics were printed. Onto the present day these so-called 'counters' are being used in wargames. Decimation of troops strength, 'combat results table', troop morale as game mechanism and 'zone of control' were all implemented. The game (*Tactics*) is often called revolutionary but that's because it's often compared with *Chess*. Compare this game however with *Kriegsspiel* and it becomes clear that the 'innovations' are only reinventions. Tables, dice, a realistic game board and hit points are all aspects that were present in the older *Kriegsspiel*. Revolutionary or not, after 1952 wargames became really popular and Avalon Hill dominated the market for decades. Around the year 1963 Avalon Hill had sold about 200.000 games. Nine Avalon Hill titles of that time reflect historical events that appear frequently in commercial board and computer wargames; *Gettysburg* (American civil war, 1958), *Chancellorsville* (American civil war, 1961), *Civil War* (American civil war, 1961), *Tactics II* (Cold war, 1958), *U-Boat* (naval-warfare WWII, 1959), *D-Day* (landing Normandy WWII, 1961), *Bismarck* (naval-warfare WWII, 1962), *Stalingrad* (WWII, 1963) and *Waterloo* (Napoleonic wars, 1962). Board-wargames reached a large audience when two, now classic, games appeared on the market, *Diplomacy* (Calheimer, 1952) and *Risk* (Parker Brothers, 1958). In 1975 the first international war gaming conference, *Origins*, took place at

⁴⁵ Halter, *From Sun Tzu*, 41-44. Creveld van, *Wargames*, 146-151.

⁴⁶ Wells, *Little Wars*.

Baltimore, Maryland, U.S.A.. The wargame ' hobby ' had now become a rich subculture with events, rituals, fan media, organizations and its own jargon.⁴⁷

It was in this same period that the army became interested in commercial wargame publishers. This was the result of the following: in the 1950s, Roberts (the founder of Avalon) was invited by the think tank Rand Corporation. His 'Combat Results Table' showed a lot of similarities with the tables that Rand used for their World War III rehearsals. These rehearsals consisted of simulating battles with nuclear weapons. Real exercise of these weapons was not possible and nobody really wanted to fight with them. Nuclear weapons were political weapons which had deterrence as main purpose. There was no historical experience in the use of nuclear weapons by multiple parties and because it was not possible to have a reality check, strategists had to find other ways to imagine how deterrence should work. One of the scientific methods was game theory. Thus a situation had risen in which the reality of strategy making coincided with the operation of a game, because they were held together by the logic and operation of game theory. Roberts saw at Rand that the company had divided her game board for this simulation in hexagons. He implemented this so called 'hex grid' method directly into the games of 1961, *Chancellorsville* and *Gettysburg* . Just as the 'counters' these 'hexa's' became a trade mark of Avalon Hill. To this day this method still can be seen in most strategic/operational wargames on table top and computer.



4.Hexacons on the map of the table top wargame *Chancellorsville* (Avalon Hill 1961).

From <http://home.comcast.net/~storto10/chancell.htm>

⁴⁷ Sebastian Deterding, 'Living Room Wars' in Nina B. Huntman and Matthew Thoms Payne, *Joystick Soldiers*(New York 2012) 21-38.



5. Hexagons in the computer wargame *Panzer General 2* (SSI 1997).
 From http://www.gog.com/game/panzer_general_2

During the 1960s Avalon Hill started to recruit military veterans as part of the historical research for their games.⁴⁸ This, among other things, resulted in the input of military war gaming knowledge in the commercial sector. The opposite thing happened in the mid-1970s when the U.S. Army hired James Dunnigan (military/political analyst and wargame designer) to make an exercise game in which Soviet- and U.S. tactics of smaller military units could be simulated. In 1976 the game was commercially published under the name *Firefight*. The Army was getting more and more interested in commercial wargame designers who, among other things, were being asked to change their manual table top games into digital versions. The game *Tanktics* can be seen as the very first commercial computer wargame. In 1977 Chris Crawford designed this game as an explicit attempt to digitalize table top wargames. Before this computers were only used to make the calculations and do the administration of complex table top wargames. *Tanktics* still had to be played using a board but the computer itself was the opponent in *Tanktics*. The player had to type his movements with a keyboard and the computer showed his moves and the results of the battle actions in numbers and coordinates on the screen. Then the player had to execute these results on the physical board. The board was reduced to a tool to visualize the game and the first commercial computer wargame was born.⁴⁹

In 1980 the Army Training and Doctrine Command (TRADOC) part of the U.S. army approached the company Atari, producers of arcade games, game consoles and home computers, to make a training version of their game *Battlezone*. With this move the army made the final transition from board games to computer games. 1980 was also the year in which most table top wargames were sold, 2.2 million units worldwide. The first computer wargames and role-playing games did, however, made their appearance and quickly conquered the market. In 1986, the sale of computer war games surpassed the sales of paper wargames.⁵⁰ The success of the computer wargame vis-à-vis the board wargame has several reasons. For the first time the detailed mechanics of a game could take place without leading this to an administrative burden for the player so that the attention could be entirely focused on strategy and tactics. For example, the player didn't had to throw dices and keep track of scores anymore so that he could totally focus on the game itself. The graphical representations on the computer screen were continuously improved creating a greater sense of involvement and realism than the table top game

⁴⁸ Perla, *The Art of Wargaming*, 116-118.

⁴⁹ Deterding, 'Living Room Wars', 21-38.

⁵⁰ James F. Dunnigan, *Wargames Handbook, Third Edition: How to play and design commercial and professional wargames* (Bloomington 2000) 198-199. Deterding, 'Living Room Wars', 21-38.

could offer. Complex wargames could be learned more easily by build in games of practice, called 'tutorials'. The computer was also a solution to the problem of finding a playing partner. By online gaming people with who could be gamed with could now be searched for worldwide. In addition, there was also the possibility to play against the computer (artificial intelligence (AI)).⁵¹

In the early 1980s it were mainly Avalon Hill Microcomputer Games and Strategic Simulation Inc. (SSI), who set the tone in computer wargame world. The first company came into existence out of the table top game company Avalon Hill and the second company was founded by Joel Billings. Billings was an avid table top war gamer and with that it becomes clear that the first generation of computer wargames was being developed and distributed by fans of table top games and –publishers. In the years of 1979 to 1982 sales increased for both table top -as computer wargames exponentially. Researcher and designer of computer games Sebastian Deterding calls these years the 'Golden Age' of wargames. The main reason for this increase was the entering of the market of the so called '8-bit personal computers' like Apple 2, TRS-80 and Atari 400/800. These computers, meant for personal use at home, had the necessary computing power, memory, interfaces and graphic routines needed to play wargames. From the wargame titles that came out in the 1980s such as, *Computer Bismarck*, *Midway Campaign*, *North Atlantic Convoy Raider* and *Nuclear Bomber*, it becomes clear that computer war games used the same historical settings as table top wargames did. The Second World War and the Cold War are their main subjects, followed by the American Civil War and Napoleonic Wars. It is striking that in this period computer wargames look like table top wargames. At that time most computer wargames were computerized versions of the table top wargames. The protocols of the table top wargames were implemented within the technology of computer wargames. It took several years before the old table top game protocols were replaced by new protocols which were making use of the technological innovations which a computer provided.⁵²

In 1983 video game designer Cris Crawford mentioned five key differences between table top- and computer games wargames:

1. Remote gaming, with each other on a certain distance, through a network has become possible by telecommunication with the computer.
2. The computing speed and automation of the computer ensures that players can move their pieces simultaneously and continuously. This so called ' real-time ' play ensures that players can experience a realistic tactical battle under time pressure.
3. The computer offers an 'intelligent' artificial opponent (AI) which is not possible with table top games.
4. A computer wargame can display limited information on the screen in contrast to table top wargames where practically all information is visible for both parties.
5. An important difference is that computer wargames can make many things invisible. The player does not function any more like a game processor but can concentrate on his role as a player. At table top games, the player has to execute all the calculations himself by tables, dices, controllers and rule books. In addition, the player must move the pieces on the board. In computer games the software has taken over these tasks.⁵³

This last point together with the ever growing processing power of soft-and hardware made sure that the line algorithms of computer games were becoming more complex than a human being was able to figure out himself. From the mid-1980s this resulted in computer wargames being able to offer richly decorated graphical interfaces

⁵¹ Lewin, *Wargames*, 223-224.

⁵² Deterding, 'Living Room Wars', 21-38.

⁵³ Chris Crawford, 'The future of computer wargaming' in *Computer Gaming World 1:1* (1981) 3-7.

combined with a strongly simplified set of rules. The table top gamer operates at the level of the source code (the rules). A computer game presents an interface with only limited and derived output. The rules, the source code are hidden and closed.⁵⁴ James F. Dunnigan, a renowned wargame designer and military historian, replied to the question how the introduction of computer technology had changed the wargame experience: 'Well, computers obviously made the games more accessible to far more people. You didn't have to be a math geek in order to get into it. And as the games shifted more to the mass market, it started to skew towards people who just wanted to kill things. Computer wargames became less dedicated to military study and more to entertainment. The business has split along these lines.'⁵⁵

From the mid-1980s the use of Personal Computers (PC) increased and the development of CD-ROM storage lifted PC games to a new level of popularity and advanced design. With the advent of PC games the first-person shooter became available to the public. The first game that made this genre popular was *Wolfenstein 3D* (1993) from id Software. It is a military fantasy game where an American World War II sergeant has to escape from a Nazi fortress. The game has provided a structure for computer games that nowadays is still being used. The perspective of the player is the same perspective as that of the American sergeant (First-person). The weapon of the player can be seen in the middle-bottom of the screen and there is made use of a 'heads-up display', a kind of panel separated from the 3D virtual world in which life force, score etcetera are being showed. Because of the use of Nazi symbols and the song of the Nazi party, *Horst Wessel*, the game was banned within the German borders. In the 1990s a lot of consumer hardware came on the market with which (war)games could be played. Perhaps the *Amiga* and *PlayStation* were the most popular. Notable computer wargames of the 1990s with a comparatively high historically realistic character were; *Panzer General* (Strategic Simulations Inc. 1994), *Steel Panthers* (Strategic Simulations Inc. 1995) and *Close Combat* (Microsoft 1995).⁵⁶ In general the 1990s saw a transition from raster graphics to 3D graphics and new genres came into existence like first-person shooter, real-time strategy, and MMO (Massive Multiplayer Online game).

In the years 2000-2014 the PC and console saw a lot of innovations. The devices on which the (war) games were being played, were always better than their predecessors. Faster processors, more memory and improved graphic cards made sure that games were becoming ever more complex and graphically more beautiful than before. This period also saw the rise of portable game systems like the *Gameboy*, but the number of wargames on this medium was relatively low. In the year 2000 *Combat Mission* (Battlefront) was released. This is a real time-strategy game that even nowadays can be seen as one of the most historical realistic World War II battlefield simulators.⁵⁷ Other titles that are very popular and are known for their (historical) realism are *Battlefield* (Electronic Arts 2002), *Call of Duty* (Activision 2003), *ARMA* (Bohemia Interactive 2007) (from which was made the military training game *VBS* (Virtual Battle Simulator)), *Total War* (The Creative Assembly 2000), *Hearts of Iron* (Paradox Development Studio 2002), *Assasins Creed* (Ubisoft 2007) and *World of Tanks* (Wargaming.net 2011). These are the best known titles developed in this period. However a lot more computer wargames came into existence in the last fifteen years, too much to mention here. It is striking that the mentioned titles all have become series with multiple parts that even are being released in present days.

What the near future will offer in the field of war gaming is of speculative nature. Most likely computer games can become more and more realistic and complex due to technological improvements. The first steps to virtual reality have already been made. In the beginning of 2015 the company Oculus will release googles on the

⁵⁴ Deterding, 'Living Room Wars', 21-38.

⁵⁵ Nina B. Huntemann en Matthew Thomas Payne, 'Interview with James F. Dunnigan' in Nina B. Huntemann en Matthew Thomas Payne, *Joystick Soldiers* (New York 2012)67-72.

⁵⁶ See http://en.wikipedia.org/wiki/Wargame_%28video_games%29 (Internet 10-12-2014)

⁵⁷ See the interviews with TNO and the Defence Department in Appendix V op pag.68 and 78.

market named *Oculus Rift 2* through which it seems for the player that he is actually within the virtual environment. Wherever the gamer looks the projection is also moving to that point. This will greatly enhance the feeling of realism. Games like *Warthunder* and *IL-2 Sturmovic; Battle of Stalingrad* will be available on this gaming medium.^{58 59} At this moment some companies are developing controllers that can register the movements of the body and implement that data into a game that is being combined with the virtual reality goggles of Oculus.⁶⁰



6.De Cyberith Virtualizer, prototype 2.

From http://en.wikipedia.org/wiki/Cyberith_Virtualizer

A common thread that runs through the history of wargames (and games in general) is that technological developments have ensured the possibility to enhance the feeling of realism. The models of warfare on all levels (operational, tactical and strategical) could be played ever more complex and with that potentially more realistic. Graphic developments ensured that the things projected could possibly reflect more and more the image of reality. In addition to the sensory experiences of seeing and hearing it soon will be possible to add movement, feeling and perhaps smelling to the gaming experience. From simple table top games like *Chess*, to complex table top games like *Kriegsspiel*, through first generation computer wargames like *Computer Bismarck*, to *Warthunder* in a virtual reality environment, the potential to simulate military history in a realistic way has become ever more bigger. The number of people that plays table top wargames has become a lot bigger in the 1950s. With the introduction of computers the group of practitioners of wargames has become even larger and nowadays there are millions of people playing wargames.⁶¹ Many of these games include aspects of military history that can be passed on to the player in some kind of realistic way. The interactive character of computer games ensures that gamers can learn in a different way than passive hearing. Because of that Wargames and in particular computer Wargames have a certain impact on society. But do the Wargame developers try to offer a historically realistic game? What are the epic battles, tactical movements and strategic decisions that are being played, based on? Where does the history that is presented in computer Wargames come from? In other words; what are the sources that game developers use to make their game historically realistic? This is the subject of the next chapter.

⁵⁸ See http://en.wikipedia.org/wiki/List_of_games_with_Oculus_Rift_support (Internet 12-12-2014).

⁵⁹ See <https://www.oculus.com/> (Internet 12-12-2014).

⁶⁰ See <http://oculusrift-blog.nl/de-meest-innovatieve-controllers-voor-de-rift-op-een-rij/> (Internet 12-12-2014).

⁶¹ See http://www.theesa.com/wp-content/uploads/2014/10/ESA_EF_2014.pdf (20-10-2014).

3. History in computer wargames

Due to the continuous increase of computers graphical capabilities it has become ever more possible to reflect images, through animations in a realistic way. If it is the wish of the game developer a battlefield can nowadays be depicted graphically much better (more realistic) than before. But graphical design is not the only way for game developers to express history in a game. Also the narrative of the game, be it spoken or through text can be used to pass a piece of history on to the gamer. For example the starting point of a strategical game can be based on a historical situation. The game *Hearts of Iron* has the possibility of such a historical starting point: the world on September 1, 1939.



7. Screenshot of the start of the game on September 1, 1939 in computer wargame *Hearts of Iron III*.

In addition, characters that appear in a game can be historical. In *Rome 2*, for example, a gamer can play with the general Hannibal. These historical figures can possess characteristics in the game that are historical of nature like the commander Heinz Guderian in *Hearts of Iron* who has the characteristic 'tank specialist'. Personal factors such as temperament and framework of thought are often more difficult to process in a game. The player himself determines the intellect, the framework of thought and the temperament as he is the one who decides on the actions of the playing figure. But these actions can be affected by set parameters. For example +2 speed and -4 military capability due to the trait 'impulsivity' by officer x. Music of the game can be contemporary music. The game system can comprise of historical elements, like the command structure of an army in a game which can be the same structure as that of the real historical army. A computer wargame can also be capable to show what has been the influence of coincidence, the illogical, the chaotic, the unexpected and the irrational on the course of the historical battle. By processing these aspects in algorithms in the shape of chance and by letting the gamer consciously or unconsciously take these factors into consideration when he is making decisions can give him insight in what way these factors have determined the outcome of the battle. These days most computer games have their own website. These websites regularly provide background information on the game. This information can be historical of nature. *World of Tanks* for example regularly posts so called web content (website

information) of historical stories on tanks on her website.⁶² Most of the time games have a forum on their website where gamers can exchange information. At forums of games that have a historical theme, gamers regularly discuss about historical aspects of the game.

These possibilities to pass on history through means of a game does not say anything about the accuracy of the given information. A generic answer cannot be given on the question whether computer games are historically accurate or not accurate. Of course some games are more accurate than other games but it is impossible to say that a game exactly matches the actual events of the past on which the game is based. A game is a model and so by definition a simplified view of reality and therefore not an exact representation of the past. This can also be said of other media such as movies and documentaries. This is also true for a scientific historical book. A book, and thus writing and language forces the writer to interpret his version of the happenings of the past and write this down in a model of language, writing and book. Furthermore 'history' is that what historians make of it on the basis of available sources and their interpretation of them. This is the limit of what can and what cannot be known about the past. In the academic world a historical book will be considered as 'correct' when the used sources are adequate, whether they are primary or secondary sources. At the same time information on sources should be given in a proper manner so that there is a possibility to check the used information. If all these requirements are met a work, in general, can be seen as 'scientific'.⁶³ A computer game having historical elements is not a work of science, if only because sources of information are not given. The same is true for feature film and most historical novels. A historical movie rarely cites the sources of information and for that reason alone is therefore no scientific work. This does not mean that this media is not capable of passing on history to the public. Historical feature films, historical novels and computer games with elements of history affect the public's conceptualization of history. It is through this media that an image of the past is being presented that, hopefully, stays in the memory ('cultural memory'⁶⁴) of the viewer, reader or gamer. In best case the person concerned can compare the presented image of the past with the knowledge he or she had before consuming the movie, book or game at hand. At worst the presented historical image may be the only image that the person in question has of the relevant time period.

It is important here to ask how many people play computer games with historical elements. The number of people who play computer games in general is big. According to general figures of the Entertainment Software Association 57% of the U.S. population played computer – and video games in 2013. The American consumer spent 21,53 billion dollar on the games industry in total.⁶⁵ Taken together the computer games industry made a revenue of approximately 100 billion dollar in the year 2014.⁶⁶ It is very hard to exactly define how many people in the world play computer games that have historical elements. When you look at the sales figures of individual games it becomes clear that there are many millions of players. The game *Assassins Creed III* for example sold 12,5 million retail- and digital copies.⁶⁷ The game *World of Tanks* (an MMOG, Massive Multiplayer Online Game) had 45 million registered players, in the year 2012. In the year 2013 that number increased to 60 million registered players⁶⁸ These figures alone makes it clear that a big number of gamers, play games with historical

⁶² See <http://worldoftanks.eu/en/news/pc-browser/47/> (17-10-2014)

⁶³ John Tosh, *The pursuit of history, fourth edition* (Harlow 2006) 88-113, 145-172.

⁶⁴ 'Cultural memory' is the term that Jan Assmann uses in his book, *Das kulturelle Gedächtnis* (Munchen 1992).

⁶⁵ See http://www.theesa.com/wp-content/uploads/2014/10/ESA_EF_2014.pdf (20-10-2014).

⁶⁶ See <http://www.gartner.com/newsroom/id/2614915> (13-1-2015).

⁶⁷ See <http://www.mcvuk.com/news/read/ubisoft-sees-revenue-increase-led-by-assassin-s-creed-iii-sales/0115602> (20-10-2014).

⁶⁸ See <http://www.pcgamer.com/world-of-tanks-celebrates-60-million-registered-users-with-destructive-cgi-spectacle/> (20-10-2014).

elements. All these millions of gamers are interactively engaged in computer games that portrays them elements of history. This, in some way, can influence the players image of history. Thus games have a possible impact on the historical awareness of the public. Scientifically it is hard, maybe impossible, to state what this impact exactly is. For example, to determine an individual's exact knowledge of military history before playing a computer wargame and determine his knowledge on military history after playing the game is practically impossible. Let alone that his measurement can be done with a large population. A baseline measurement is not possible. But instead of asking what the impact is on the historical awareness off the individual and thus what he or she has learned of the game it might be more interesting to question to which extend the game is based on historical facts; what can the gamer learn from the game in the first place? It is possible to check how the historical elements that occur in a game came into being. What is it that game developers do to process history in their games? Where do they get their information from? With other words, what are the sources that game developers use when they are making a game and how do they process this information into the game?

The efforts that game developers take to enhance the historical realism are different for every game. The game developer must have the intention to create a game that contains elements of history to give these questions any relevance. For the research of this thesis there has only been made use of computer games that, at least at a first glance, seemed to contain these elements of history. For example, a science fiction game like *Starcraft 2* from Blizzard entertainment is not part of this research.⁶⁹ A game like *Verdun* from Blackmill games and M2H studio is part of this research⁷⁰ This is because *Starcraft 2* is a game that has a story in the future and thus, despite the game can be qualified as a computer wargame, has no value fort his thesis. *Verdun* on the other hand is a World War I game on the battle of Verdun. The developers said that they have made the game as 'historical accurate' as possible. Computer wargames with historical elements are the games in question here..

To get a good understanding of what it is that game developers do to get elements of history transferred in a game, twelve companies that make these kind of games have been interviewed for this thesis. These are all commercial companies. At ten companies this was done by qualitative research in the form of semi-structured expert interviews. The following five questions have been submitted to them ;

1. Does your company makes games with historical elements?
2. In what way has the historical information been gathered for this game? What are the sources of information?
3. How was this historical information processed in the game?
4. During the development of the game which people (function names) are busy with getting aspects of history into the game?
5. What do you think of computer games as a medium to pass on elements of history to the public?

The last question has been asked to see whether the interviewees think that computer wargames can be of didactical value. Two companies have been approached with in-depth-expert interviews to get more information than the answers on the questions here above would offer. In addition to these companies interviews took place at institutes that are involved with wargames or educative games in another way than the commercial one. These are the Dutch armed forces, TNO (applied scientific research) and the UvA (University of Amsterdam). These institutes have also been approached with in-depth-expert interviews. From all these interviews transcripts have been written which can viewed at appendix IV and V. There have been made voice recordings of the in-depth

⁶⁹ See <http://us.blizzard.com/en-us/games/sc2/> (Internet 30-9-2014).

⁷⁰ See <http://www.verdungame.com/> (Internet 30-9-2014).

interviews which can be heard on the attached CD-ROM's. Intentionally there has been chosen to interview a combination of commercial companies and non-commercial institutes to get a wide perspective on what it is that developers of computer games do to process (military) history in their games. The commercial companies range from small companies such as Evil Twin to large multinationals like Ubisoft. The kind of war games that these companies develop is also very diverse. Shooters, adventures, tactical and strategic games are all covered. These companies have been intentionally chosen to get a wide view of the different kind of computer wargames that are developed by companies of different size. The UvA educates game developers and thus makes it an interesting party. The Dutch armed forces makes use of wargames as a tool of training. TNO is an organization that has expertise of the whole games industry in its role as a platform to get providers and users of 'serious games' together. The commercial company Fabrique is a separate case because it makes games (interactives) for a non-commercial institute being the newly opened National Military Museum (NMM) at Soesterberg (Netherlands).

It is striking that all the commercial companies answered with 'yes' on the question whether their games had historical elements. Apparently they believe that their game contains aspects of the past that have truly taken place. Whether it is an arcade simulation game of World War II air battles like *IL-2 Sturmovik* or an RPG (Role Playing Game) on seventeenth century piracy, *Ravenscry*; according to the developers they contain historical elements. There was no game developer who said that everything was fictional. Firefly studios answered the question with:

'All our games try to be historically accurate. *Stronghold Crusader 2* is the latest. Simon Bradbury is the games lead designer and founder of Firefly. He is the history buff that wants to make the games historically correct.'⁷¹

Gaijin who developed the game *War Thunder* states:

'Beginning from *IL-2 Sturmovik Birds of Prey*, our focus was on making military simulation games. Our most historical game at the moment is *War Thunder*, because it covers several theatres of war and includes over 450 historically accurate planes and armoured vehicles.'⁷²

Perhaps the most important questions to answer the main question of this thesis are; 'In what way is the historical information for this game gathered? What are the sources of information? In what way is this historical information processed in the game?'

As mentioned the company Gaijin developed the game *War Thunder*. This is an MMO (Mass Multiplayer Online) tactical game dedicated to the land, air and naval battles of World War II. According to the categorization of this thesis this is a tactical shooter that can be played in first – and third person. *War Thunder* has more than six million registered players and over ten thousand people average continuously online⁷³ The interview showed that Gaijin makes use of different sources for the historical input of this game like military archives, tactical manuals, blueprints, old maps and documentaries. In addition the company studies vehicles, that are shown in museums, all over the world, and she makes use of recordings of actual engine- and gun sounds. It are the game designers at Gaijin who do the historical research and process this information within the game. Among them are the 3D artists that model the land-, sea- and air vehicles in detail. In addition there is a special team of designers who implement all data into the game. This data can be: thickness of armour, engine power, climbing speed, penetration rates of the different bullets and hundreds of other parameters.⁷⁴ All this effort shows of in the game.

⁷¹ See the complete interview with Firefly studio's in appendix IV pag.58.

⁷² See the complete interview with Gaijin in appendix IV pag.54.

⁷³ See <http://gamingtrend.com/video-post/war-thunder-hits-6-million-subscribers/> (Internet 20-10-2014)

⁷⁴ See the complete interview with Gaijin in appendix IV pag.54.

The many hundreds of vehicles with which the player can play all have unique values. At every vehicle a historical picture can be seen and the different parameters like speed and maximum height are given. In addition it is possible to obtain historical information on every vehicle in the game.



8. Screenshot of a P-40E-1 Kittyhawk in Warthunder (Gaijin 2012) 16-1-2015

It is striking to see that this game can be played in different modes of realism; 'arcade (especially intended for entertainment) battles', 'realistic battles' and 'simulator battles'. This gives the gamer the possibility to choose the level of historical realism and with that, in a certain way, also the level of difficulty.⁷⁵ Just as the comparable game *World of Tanks*, *War Thunder* is a free to play game. This resulted in attracting a big number of players. On the website of *War Thunder* informative texts are being offered on historical plains, -tanks and -battles. On the forum developers and gamers discuss, among other things, historical issues.⁷⁶



9. Screenshot of techtree in Warthunder (Gaijin 2012) 16-1-2015

A completely different type of game is *Stronghold Crusader 2*, this is a combination of a RTS (Real Time Strategy) with a city-builder/Castle simulation game created by Firefly Studios. According to the given categorization this is a computer wargame on the operational/strategical level in real time. The 'historical' setting is the Middle East around 1189. As crusader Richard Lionheart or as the sultan Saladin of Syria it is the players goal to build a castle, assemble troops and defeat the enemy. Firefly has made use of multiple sources for the historical input of the game. History books, internet, and physical visits to English castles are the main ones. Firefly also used the movie *Kingdom of Heaven* as a source. By viewing this movie Firefly wanted to get an impression of the public view of the era in question.

⁷⁵ See the game *War Thunder* (Gaijin 2012) itself, on the home screen the different play modes are being explained .

⁷⁶ See <http://forum.warthunder.com/index.php?forum/236-war-thunder-historical-board/> (12-1-2015).

Senior Producer Paul Harris said:

'The game must be historical accurate but it is important to know what the public thinks what is historical correct. So that's why we look at movies like *Kingdom of Heaven*.'

So Firefly finds it important that gamers think that elements of the game are historically correct. But how does the player know this? With which historical knowledge does the gamer compare the game? It is quite possible that a large part of the player's image of the time period in question came into being by watching blockbusters like *Kingdom of Heaven*. That's why Firefly uses the movie as a source and not because this movie is very historical correct. The information offered by gamers themselves is also a source for Firefly. There was a discussion on the official forum of the website whether an Oriental bow was correct or not. Firefly had a choice out of five Oriental bows from the time period in question. She let the gamers decide in a democratic way which bow should be used in the game. Paul Harris noted that by far, the most historical research was done by the game designer and after him the art director with his graphical team. Approximately 5% of total work time in the preproduction phase is devoted to historical research. But during the production and also after publication of the game, although to a lesser extent, research has been done to improve historical issues.⁷⁷

Game developer Evil Twin used a very different source form for (historical) input of the game *Victory at Sea*. This is a computer wargame on the strategic/operational level what is played in real-time. A so-called RTS (Real Time Strategy) on naval warfare during the World War II in three theatres, the Atlantic Ocean, the Mediterranean Sea and the Pacific Ocean. In this game historical naval battles can be replayed or the gamer can choose to play a full campaign. In both options the gamer plays a Navy commander. The website says:

'Victory at Sea is not mission driven, it has a sandbox mechanic that allows you as the Captain to go where you want and do what you want. Your superior officers will give you orders and special assignments but however you play, your actions and your decisions will create your own story of WW2.'⁷⁸

For his game Evil Twin used as main source of information the table top game with the same name, *Victory At Sea*, published in 2006. The game methods and the parameters in the computer game have been copied from the table top game. Wikipedia in particular and the internet in general were a useful source for the characteristics and the graphic design of the ships. History books on naval warfare in the Pacific Ocean have been primarily used to determine the appearance of the ships. Five people have been working on this game and all five of them retrieved historical information needed for the game.⁷⁹

A good example of a computer wargame on the tactical level that is played in 'first person', a so called FPS (first person shooter), which has tried to display the historical setting as realistic as possible is the recently released game *Verdun* made by the Dutch companies Blackmill games and M2H studio. The game is inspired by the battle of Verdun in 1916. The official website of the game says:

'The game includes historically accurate features such as true WW1 weaponry, historical maps based on sectors of the Western Front and authentic uniforms and equipment. The game immerses you audio visually into one of the bloodiest conflicts fought in Europe. The merciless trench warfare offers a unique battlefield for tactical squad play in the realistic Frontlines game mode, and raw gameplay in the rifle-deathmatch. The Frontlines game mode is unique in its tactical complexity, where you are levelling different types of squads, each with your own tactics and roles. The realistic trenches are an extra challenge in the fight, where teamwork and tactical cunning are essential for success. Drive your enemies from their trenches and dominate the Western Front!'⁸⁰

⁷⁷ See the complete interview with Firefly Studio's in appendix IV pag.58.

⁷⁸ See <http://www.victoryatseagame.com/victory-at-sea-naval-strategy-game/> (internet, 23-10-2014).

⁷⁹ See the complete interview with Evil Twins in appendix IV pag.57.

⁸⁰ See <http://www.verdungame.com/> (Internet, 23-10-2014).

The website of the game explicitly states that *Verdun* is a historically accurate game. This makes it very interesting to see what the game developers have done to reach this 'accuracy'. The interview results showed that part of their research was done in the same way a historian would do it when he was researching the battle at Verdun of 1916. They have made use of primary and secondary sources. The history books of the Osprey series on World War I have been studied. In addition journals and French memoirs in possession of the French Ministry of Defence have been researched. The game developers went to the Verdun location to gather information as input for the game. The team has been advised by historians. The website says:

'The team has done extensive research in the field at Verdun and has been advised by knowledgeable historians to make sure Verdun is historically accurate. Uniforms have been recreated to the tiniest details, weapons modelled to exact references and maps created from real-life elements.'⁸¹

The game developer says that in addition they have made use of the internet by watching relevant *You Tube* and *Google* movies. Also documentaries like 'The hell of Verdun' have been studied. As an example how the information is processed in the game Jos Hoebe, founder of Blackmill says:

'From the images of a book a figure is being made. The graphic design of such a figure works in a way like modelling clay, at first roughly and after that more and more detailed. We try to be as correct as possible. For example, if we see a photo or image of a water bottle with a certain type of stitching we recreate that exact type of stitching in the game.'

This statement indicates how deep the level of detail goes in trying to make the game historically graphical correct. *Verdun* is made by three people who all provide historical information to the game. Jos Hoebe says that he is doing the most research, what means that he is busy doing historical research approximately one third of his total worktime. According to him historical accuracy costs a lot of time and with that man hours which makes it very expensive.⁸² By email Hoebe provided a list with some of the used sources for *Verdun*. This list gives an insight in the kind of secondary sources that are being used by game developers⁸³



10. Screenshot of the game *Verdun* (Blackmill Games and M2H Game Studio 2013) 16-1-2015.

⁸¹ See <http://www.verdungame.com/> (Internet, 23-10-2014).

⁸² See the complete interview with Blackmill games in appendix IV pag.56.

⁸³ For the list of used sources see the complete interview with Blackmill games in appendix IV pag.56.

A recent, very different type of game that also has World War I as his theme is *Valiant Hearts* from Ubisoft. It is a puzzle/adventure game in the graphical design of a comic book. Strictly speaking this game does not fit in the definition of wargames as previously given. Yet the game is covered here because Ubisoft made a huge effort to process history of World War I into the game. It is not a wargame but it is a game which has elements of military history. Ubisoft calls the game an interactive learning experience. Gerard Barnaud, the *Historical Content Coordinator* of Ubisoft tells about the way of collecting and processing the historical information:

'First, members of the team collected many letters, documents and objects from the Great War to illustrate and document all the historical facts that we wanted to put in the game (we even set up our own "mini museum" in the middle of the team's workspace). For the broader strokes, we used primarily general resources to look for historically significant events around which we could write the plot. Then we, as we zoomed in for the more defined and structured settings, relying on specialized books from the era and, as well as checking with historians specialized in that era. We also had the opportunity to build a partnership with "La Mission du Centenaire" (a French government organization for World War I commemorations) which provided us with an historical consultant. Our other partnership with Apocalypse, the most watched historical documentary brand in the world, provided us with a lot of images and video footage from World War I. In terms of researching, the writer was in charge of gathering the main information and then the head of each sub-team would drill down to get more details specific to his field. For example, the audio director did research on what weapons at the time sounded like, the art director used period photographs and drawings as inspiration, architects on buildings and so on...). As mentioned before, all information has been approved by the Mission du Centenaire, which has put its stamp (well, label...) on the historical accuracy of *Valiant Hearts*.'

On the question which people within Ubisoft are busy with historical research and the processing of this information in the game Barnaud answered:

'For *Valiant Hearts*, we were a small team so everybody participated in researching to some degree, sometimes even at garage sales, in attics, at museums, libraries, by watching movies, etc. Everything was shared between the members of the team so that every person in every field of expertise could find relevant information for his portion of the game. Also, many members of the team brought their own contribution to the game's story since they had family members or ancestors who had experienced the war and their personal effects, letters, memorabilia, objects, etc. were kept and passed down through the generations.'⁸⁴



11. Wallpaper of puzzle/adventure game *Valiant Hearts* (Ubisoft 2014).

⁸⁴ See the complete interview with Ubisoft with Barnaud in appendix IV pag.59.

So far only games on a specific period in history have been discussed. The game was about a certain war or just about a specific battle. There are also games with military and historical elements that are on several periods in history. During play the gamer goes through a history timeline. *Forge of Empires* is an example of such a game. This is a so called 'free browser game' which means that the game can be played for free through an internet browser like *Firefox* or *Explorer*. No data needs to be installed on one's own computer. A gamer can play his game on any computer with internet connection. *Forge of Empires* is a computer wargame on the operational/strategic level which is played turn-based. In *Forge of Empires* it is the idea to build a city and evolve it from the stone age to the so called progressive age. To meet this end the player has to build, develop, trade and fight. As a wargame the game's strategy and tactics are not very interesting. What is interesting is the way in which the developers treat the history that is showed in the game. Quirin Stubbe, de Lead Game Designer, says:

'The history of inventions is the red wire of the game. For example, if in the game 'the art of printing' is being invented the player achieves a next level. A lot of cliché history has been used for the game. It is not only important what is historically correct but also what the public thinks what is historically correct. In this game a medieval castle has the typical characteristics of a medieval castle as the public sees it while there might never have exist exactly this castle. For example, a medieval castle in this game is constructed only out of stone while in reality wood was also being used.'

In this game there has been chosen for a linear course of history on the basis of inventions. The Graphic Artist and Game Designer spend 20% and 10% respectively of their work time on historical research. During this research the sources of information for the historical input are Wikipedia (internet), historical documentaries, drawings, paintings and inventions.⁸⁵

A game that also deals differently with the course of history within the game is the *Assassin's Creed* series. Each part has a certain historical period as a starting point. Each new released part is situated in a later period than its predecessor. *Assassin's Creed III* for example, is on the American struggle for independence. *Assassin's Creed Unity* is on the French revolution. This game series belongs to the action-adventure genre. As computer wargame it can be categorized as a tactical third person shooter. In the role of an assassin the player is being sent to different moments and area's in history with a time-machine. The story is based on the battle between the 'malicious' Knights Templars and a small group of resistance fighters. Although this greater storyline is fictional, the player is sent to settings which, according to Ubisoft, are as historically correct as possible. A lot of historical figures have been put in the game with whom the player interacts with. Also the cities in the game (like Akko, Jerusalem and Damascus in *Assassin's Creed I*) have been modelled to detail in accordance with the real historical cities of the era involved. Maxim Duran is historical researcher and production coordinator for Ubisoft Montreal. He has a bachelor degree in history. Through an in-depth interview which can be found in appendix IV, he gives a picture of how the historical settings of this game are being created. For the latest release, *Assassin's Creed Unity*, which came out in November 2014 two years of extensive historical research has been done according to Durand. The sources that were consulted for this research were; guided tours, movies, documentaries, TV series, history books, magazines, encyclopaedias, atlases and history museums. The French museums have digitalized their artefacts. This database served as input for the game. The further they developed the game the more detailed the needed historical information became. First, they did research to get a good general idea of the historical period. This general historical overview was important when the script was created and was also important for the choice of the historical city in which the game would be set. Later they examined more specific historical elements. So, for example, they consulted catalogue's from museum's to find out more about the Knights Templar and in the National Library of France they researched what people in the streets of

⁸⁵ See the complete interview with Innogames in appendix IV on pag.57.

Paris did during the period of the French Revolution. For example, in the game story the stepfather of the main character dies in Versailles. To use a historical figure as the stepfather the death register of the city of Versailles was consulted. On the question which people were involved in the historical input of the game Durand replied;

'When you have a video game production two of the first people you have in the production are the producer and the creative director. The producer is the guy that says let's make a video game and makes sure it ships at the end of the project. So he has a big impact on the game, obviously he is the boss. The creative director is the one that makes sure the game is coherent, the script makes sense. He is my first ally in history, he makes sure the script is good, he makes sure that the whole game play looks nice, the way you are going to play this game is fun and you interaction with the character, with the system is coherent with history. All the teams working under him, the game play team, the teams that will create the type systems they are all interested in how history behaves. The teams that will create the NPC's , the Non-Playing-Characters, the crowd life, the enemy in the game are all people that can be inspired by history. It is not only visual it is also the system, the intelligence of the characters in the game are defined by our historical research. It is not only what people do in the street, it is not only animations, it is also how they behave. We try to make it as relevant as possible with the time period. (...) The artistic aspects, both buildings and all the clothing of the characters, what they look like, all off this is effected by our historical research. The marketing team works a great deal with me because we try to make sure what we do is respectful. Building a video game like this is not only building a playground. It is also building a philosophy, talking about a very mature subject which is the French revolution, which is the creation of men's writings of modern society. So for us it is important to be respectful in the way we portrait this. So it is important for us to stick to the facts and trying to get players more information so that they can decide and have a good comparison of the era.'

This quote gives a nice example of history being processed in a computer game. Durand said that he had spent about one-third of his working time to historical research for *Assassin's Creed Unity*. On the question how much percent of the total budget went to historical research he replied;

'That is very hard to estimate, every person that is creating content in the game, every artist, programmer, animator has to do some research. I don't know but maybe forty hours per person? We (me and externally hired historical professionals) also give historical research training to people in the team. On this project we gave twenty hours of training. Maybe the total average for an employee is forty hours. Again it is very hard to estimate. There is a landmark in Paris, the Saint Chapel. It's in Paris on the city island. The landmark we have right now is pretty much exactly as it was like in the French revolution so the artist didn't have much historical research to do then. He just produced the landmark so he didn't spent much time on that. But for the employee that produced the Bastille, a fortress that doesn't exist today, she probably did more than eighty or hundred hours of research.'

As mentioned before *Assassin's Creed III* has sold 12.5 million copies. For *Assassin's Creed Unity* it is expected that this game also is going to be played by millions of people. They will play a game where Ubisoft has put a lot of effort into getting the historic setting realistic. This is especially being reflected in the way that Paris is displayed at the time of the revolutions. By combining myth and facts *Assassin's Creed* seems to stimulate a large audience in their interest for history. However, it is not the story line which is historically correct and where history can be learned. It are the graphics of the buildings, weapons and costumes that are shown in a realistic way.⁸⁶

⁸⁶ See the complete interview with Duran from Ubisoft in appendix IV on pg.62.



12. The Notre Dame in Paris. Left the real photo, right an in-game picture.

From <http://technowells.com/assassins-creed-unity-in-game-paris-vs-real-life-paris-screenshot-comparison-shows-dynamic-structural-visuals.html> (10-10-2014)

Another game that combines historical elements with fiction is *Ravens Cry* which will be released in the beginning of 2015. It is a third person action-adventure game. As a computer wargame, this game can be categorized as tactical third person shooter. On the official website the game is promotable being described as:

'Raven's Cry™ plunges you into the dark world of the Golden Age of Piracy, as you follow the story of Christopher Raven and his quest for vengeance against the men who murdered his family. Reality Pump Studios has recreated the world of the 18th century Caribbean in painstaking detail, leaving behind the family-friendly tropes common to portrayals of this era and instead bringing you a gritty, realistic pirate experience like you've never seen before. Players can immerse themselves in a living, breathing environment just begging to be explored, complete with realistic period architecture and geography.'⁸⁷

As a wargame this game is especially interesting because of its sea battles, and its eighteenth-century setting in the Caribbean. The storyline is fictional but there has been put historical research into the world and the vessels in which and with which the player plays. According to CEO (Chief Executive Officer) Tadeusz Zuber from Reality Pump it is mostly the game designer who collects the historical data for the game. The game designer, the story writer and the graphic artist have studied eighteenth-century primary sources such as historical maps, biographies and paintings and used these as input for the game. The story writer has mainly looked into the general history and used this to write the story. The game designers looked for example how people fought at the time and what had to be the parameters for the combat system. The graphic artist focuses his research primarily on how buildings, costumes and ships looked in the time period so that he draw them accordingly into the game.

'For Ravens Cry the historical information is continuously gathered during the process of making the game. But the most is being done by the game designer who is busy for two to three months on a 20 hour per week basis to retrieve all historical information necessary for the game. Interested people (hobbyists) sent emails what and where historically the game is wrong and how to improve it. For example "that sword was not a pirate sword of the 18th century".'

According to Zuber the biggest problem when looking for the necessary historical information is to determine where this information can be found. This company does not makes use of historians but that may happen in the future. People within the company who have an affinity for history are called upon to do the research. For

⁸⁷ See <http://www.ravenscry-game.com/en/game-info/> (Internet 3-11-2014).

example one employee who sees piracy history as his hobby, has helped with historical information for Ravens Cry.⁸⁸

Morphicon is a so-called game publishing company what can be compared to a book publisher. The games that they publish and are relevant to this thesis are; *IL-2 Sturmovic*, *Chivalry*, *Arma II* and *Men of War*. Glen Apel who is production manager at Morphicon replied on the question where the historical information of their games comes:

'For *IL-2 Sturmovic* the air museum in Russia was a source for the parameters of the planes involved. For *Men of War* historical archives were checked, the records of penalty squads were checked, reports of soldiers were looked at. This work was mostly done for the use of story writing. Research is continuously being done during the process of making the game and patches.'

According to Apel, it are the game designers who collect this information.⁸⁹

Kalypso Media is a company that markets, develops and publishes games worldwide. Part of Kalypso Media is Gaming Minds Studio. Daniel Dumont, Creative Director and Studio Lead at Gaming Minds Studio says that of their historical games the *Patrician* series and *Rise of Venice* are mainly about social politics. *Port Royal* is mainly about war politics. On the question how the historical information for these games is collected he replied:

'We read in encyclopaedias about the time, important towns, wars, conflicts, traders, pirates. We look at pictures and models of architecture, towns, people, clothes, ships, machines and production plants. We ask, how politics was made. Councils? How was a town ruled? Was there lots of corruption?'

Dumont said that history comes back in the graphic design; ship types, urban architecture and weapons. When playing the game history comes back in naval battles, stories that can be processed in the campaign, names and titles of important people, coastlines, countries with their borders, names of countries, cities and ships. At Kalypso it are the Game Designers, 3D Artists and Logic Programmers who process aspects of history into the game.⁹⁰

Until now this work has only discussed game developers that make games for the commercial market. The company Fabrique works at another business area. According to its own website it is a ' multidisciplinary design agency with different disciplines: new media, graphic design and product development. ' Fabrique made so-called interactives for the National Military Museum (NMM) at Soesterberg which opened in December 2014. In an interview with project leader David van Zeggeren it became clear what interactives are:

"Everything where you're not statically involved with physical means but really do something interactive with the medium. Having interaction with objects/monitors in a museum. '

Simply stated, Fabrique makes interactive games for the NMM. On the question which interactive offers the most historical information van Zeggeren replied:

'*Riding on Horseback* is a game which is very much based on historical information. A game like *VOC (Dutch East India Company)* is an interactive where historical information is told. There you learn directly about history. The history here is not interpreted but told. At *Riding on Horseback* history is interpreted and that is the basis of the game.'

'The museum itself has researched the historical information that was needed for the game *Riding on Horseback*. Normally Fabrique does not do the historical research, this is in the hands of the museum itself. Another interactive which can be played in the NMM is a tank game. This game has been presented by Fabrique with the words;

⁸⁸ See for the complete interview with Reality Pump Studios appendix IV op blz.55.

⁸⁹ See for the complete interview with Morphicon appendix IV op blz.55.

⁹⁰ See for the complete interview with Kalypso Media appendix IV op blz.58.

'(...) knock out enemy tanks from a real tank turret. The experience is true to life thanks to the contribution of military advisers and exciting by the input of game developers.'

On the question what it precisely was that these military advisers contributed the answer was:

"They ensured that the situation in which the visitor of the museum is being put could take place in the real world. It did not come out of our imagination. Once it had happened like this.. They are people who have worked in the military and can describe such a situation. There are tanks shown that could have been real tanks. It has been researched how a real tank explosion looks like and how an actual tank turret is being controlled. We have adapted the game to this information as much as possible. Of course you adjust the truth/reality here and there, to make the game more interesting. This is what the game developers do. There is a continuous cross-check with the military specialist. For example; "We make this adjustment but can it also occur in reality and if it cannot, is it really a problem?". '

But why would you offer an interactive in a museum? What is the advantage over written information?

'They should always co-exist because different people consume information in different ways. The advantage of an interactive is that you really can suck someone into it, really can bind them to the topic and that is the mode in which you can really teach something to someone. "Learning by doing" is something that can be achieved very easily with an interactive. So to convince someone with effects, with how great it looks, with audio, to offer a kind of convincing experience is an excellent way to teach people something. It is not suitable to bind people for hours. That you can do with a good text, a book and such a like. Short and intensive. '

In the educational space, where children are active, the element of play in the interactives is more important than passing on history. But in the theme halls transmitting history through the interactives is the more important part. History is mainly seen in the storyline of the interactives and less in the graphical design. Most Military Museums in the world that van Zeggeren has seen are classical in terms of setup and offer no interactives. The NMM as a museum with interactives is an innovative one.⁹¹

In addition to the above answers from commercial institutions, it is also important to know how independent/non-commercial institutions think that history in games is being processed so that a wider view of this matter can be formed. To achieve this Anja van der Hulst and Bas van Dijen of TNO have jointly been interviewed. She (van der Hulst) described her function as coordinator game research as follows:

'I do pretty much consultancy work for parties who purchase a new simulator or game. We first ask what one wants to achieve, what are the learning objectives? Then you go from functional specifications into technical specifications. The other branch is gaming innovations, developing new game concepts specifically for military applications. '

Bas van Dijen is master student Game Studies at the University of Amsterdam and runs an internship at TNO. On the question how they think that game developers process (military) history in their games the answers were:

'At the game *Arma* this is done by a clan (enthusiasts) who often have a military background. These are mostly volunteers. For example, they think; "I'm going to make a model of a tank from 1920". Then they search for all that data of that tank and then they go modelling the tank. I think it's almost a 100% volunteer based thing. The game engine is often commercial. '

' It is hard to say. These kind of things often start as friend groups. Especially in these types of games, simulation games. I think it is as with *Combat Mission*, it starts with enthusiasts. One person can program, one person knows how a 3D program works and then they make together what they like to play. Then at some point someone says "I like this too" and then it grows. It is a community that makes something and at some point finds

⁹¹ See for the complete interview with Fabrique appendix IV op blz.60.

out that they can also do something commercial with it. A level is being reached that is also wanted by other people.'

' At some point it is taken over by professional parties. For example, Bohemia is really big now, they are the makers of *VBS (Virtual Battle Space)*. They are employing more than a hundred men. At one point, the professional environment will make all kinds of demands. The AI (Artificial Intelligence), for example, was outrageously bad. Path planning made no sense, everyone bumped against everything. It was a multiplayer game but the artificial intelligence that you need, did not make sense at all. There were no vulnerabilities in the terrain-database, so in houses and sort of stuff you shot straight through everything, that was no good. At one point NATO had given Bohemia a fifty million contract to address a number of such fundamental issues. The Netherlands has a campus license (enterprise license for the whole Department of Defence), that has costed a million. The Netherlands is a small party of course. I think that currently all NATO countries have licenses for *VBS*. It often begins with an amateur development and later becomes a commercial product.'

'Games like *Combat Mission* run on the 'MOD's'⁹² scene. The people who are excited about it make accurate historical situations. They will say for example, "At the battle of the Bulge there were so many tanks, so many men on the one side, and so many tanks and men on the other side, that is we are going to do." Then they programme these kind of scenarios. A toolbox is made ready for them to write more scenarios and to give expansion to their games. (...) There is commercial benefit from MOD's in a game. There is a number of game companies that don't want that, they allow no MOD's and you can't do anything with it. (...) As a game developer you make all models about how bullets fly and how men move. That takes a lot of time but when you also have to focus on making a hundred thousand scenarios ... You must makes choices in the distribution of your time. You see regularly that the MOD maker is a historian who likes to model these kind of games. '

On the question whether TNO is actively busy to bring history and games together the answer was:

'Yes and no, actually you try to model current events. By definition not historic battles, but of course you can make use of historical data. For example, we drive around with Leopard tanks that are thirty to thirty-five years old, but that's recent history. But no, we are not actively engaged in historical battles.'

TNO was able to provide insight in the initial phase of game development and how a historian can be of use in that phase:

'The concept artist is often the one who deals with the images and functional display. The concept artist also thinks about the way in which the design document has to be drawn up. This document determines what everyone within the team is going to do and how to achieve that.. The bigger your game, the thicker that document is. If you want to know how to do something it should be in the document. It is a sort of plan of action for the whole game. Historians can be asked to make the stories and he could check the facts. If there is a story already written the historian can check "if it's really true".⁹³

TNO told much about 'MOD's' in the interview; the adjustments (modifications) on a standard game. These MOD's are usually made by enthusiastic gamers themselves. The game developer offers the game with a sort of a toolkit that allows players themselves to add all kind of things to the game. For example, at wargames

⁹² A mod or modification is a modification and/or expansion of a computer game in which different aspects of the game are changed. Mods are often not developed by the creators of the original game, but by players or another developer. MODs can create a total new game, though the player always have to have possession of the original game. MODs can add new objects, weapons, characters, textures, levels, story lines, music and game modes to the game. See: http://nl.wikipedia.org/wiki/Mod_%28computerspel%29 (16-1-2015).

⁹³ See for the complete interview with TNO with van der Hulst and van Dijen appendix V op pag.68.

the MOD's can be scenarios. During the interview with aide-de-camp Jurrie van der Zwaan, Staff Non-commissioned officer Projects and Innovation at the Serious Game Centre, Ministry of Defence revealed that aide-de-camp van der Zwaan himself is a 'modder'. The following quote from the interview with van der Zwaan gives an idea on how the writing of scenarios and the processing of history in these scenarios is being done:

'I am one of the developers of the game *Combat Mission*, I create scenarios, campaigns and maps. For the NIMH (Dutch Institute for Military history) I have processed the battle of Veghel (Operation Market Garden) in World War Two, 'Hell's highway', the fighting at Eerde and Koeving in the game, *Combat Mission*. This allows NIMH to give the people an image and let them play what the Americans were up against, to see which problems they had. This allows the player to better understand the situation. As input for this scenario, we read books and we actually went to the area with photos and maps from that time. We held a discussion to come to a conclusion as how it must have been. In the end we were quite able to map the history. For the game you first draw the strategical line and then the tactical part follows. That would be, for example, where a particular tank had been positioned, in which mill observers were sitting and so on. The internet makes it possible to retrieve a lot of information, names of units but even the name of persons such as the relevant tank Commander.'

Van der Zwaan told that how, after a scenario is written, a discussion on historical realism can arise:

'Some players of *Combat Mission* are checking the information of the game. They verify the information. I have created a scenario for example on the tank commander Barkman who had shot a whole American tank company to pieces at the North-East of St Lô in Normandy. The scenario was successful and many people were excited about it but at some point there was a discussion on whether the spot on the map that I had made was correct. The data that I had was correct. I had been on the location myself. But it turned out that there was another document that I had not found that showed that Barkman had been on a totally different location which in itself was also much more logical. Barkman himself was still alive and told personally that he stood on that last location. By that the scenario that I made was coming alive and in this way the military history is being deepened, explored. Especially with *Combat Mission* you'll see that a lot of discussion takes place about the correct view of history and I can adjust the scenarios accordingly. Here you can also see the difference between the real commercial games such as *Company of Heroes* and *Combat Mission*. *Company of Heroes* is focused on making money and with that entertainment, the realism is low but the models correspond to reality, it looks nice. *Combat Mission* also looks nice but it really comes down to detail of history and models.

For example, people know the penetration values of the bullets of a Tiger, Panther or T34. People say: "Yes but in 1943 that tank could not shoot through a Panther because the armour of the Panther at the time was much better because better equipment was still available at the factory. In the period 1943-1944 problems arose whereby the armour was of lower quality causing many tanks to be eliminated." In *Combat Mission*, the kind of units, the amount of units, the deployment, geographical classification of the field match reality or at least what is known of reality.

The game engine is of course limited. For example you can only choice from a limited number types of houses. But the game offers a proper image. I just make the scenario but the designer applies the models so that it corresponds to reality. (...) The modules for *Combat Mission* are built by the programmer, in this case that is *Battlefront*. Through a group on a forum I mention what is incorrect in the game engine. It has started voluntarily but nowadays I get money for the scenarios that I make. A game engine makes it possible to build scenarios. I use the game engine to create and install historically realistic scenarios.'

According to Van der Zwaan, Michael Wittmann is an example on how history is being handled in computer wargames. Wittmann was a World War II German tank commander, an ACE, a war hero:

"Buy ten computer games on the invasion of Normandy and Wittmann is in there. But they don't make any sense. What reality is concerned there's nothing correct. The game developer has heard something of

Wittmann's actions at Villers-Bocage, and wants to have this figure in the game. There are only one or two games in which it is tried to realistically rebuild the terrain and the situation. Only then it gets interesting and you might actually want to give a quality label to a game to indicate that the developer has tried to create a realistic game. I would find it valuable for training purposes, to be able to see whether I have a historically realistic game in my hands on the basis of a label/rating. There is also a large audience that wants to play realistic games. From *Battlefront* I can say they try to do as much as possible to come as close as possible to the real history. Also at *Total War Rome*, I have the feeling that they have done a lot to get as close as possible to history. The game was also used in a historical documentary on BBC.'

To aide-de-camp van der Zwaan also the question was asked how he thinks that the historical information that is being used in a game comes into being:

'The advantage of being one of the scenario writers is that I can affect that information but we do *VBS* ourselves. *VBS* has an 'open-engine'.⁹⁴ The advantage of 'open-engines' is that the best scenarios come from it. *Steal Beasts* also has an 'open-engine'. Companies often don't have the knowledge of history to process this in a game. Most of the time it are the hobbyists who do have this knowledge. (...) For the game that we are making for NIMH no historians have been hired. We do the research ourselves by studying books and by making visits to the locations. In addition, we speak with soldiers who were personally present at the situations concerned. So we are collecting the sources ourselves.'

In 2014 the NIMH was working under the direction of teacher Lieutenant-Colonel P.B. (Pieter) Soldaat MA, a staff officer of the Department of Military Historical Education and Doctrine formation (see interview with P.B.Soldaat in appendix V) to create a game (*VBS-3*) with the aim to show soldiers military situations that had taken place in Afghanistan. According to Soldier a game is used for this purpose because this is the only way to come into some kind of combat situation in an accessible way. This generates a high degree of involvement. The game shows an ambush where the leaders have to take quick decisions and apply them. A sort of movie is being made in which the results can be compared with the solutions the students had found themselves. The historical information that was needed for this game came from (partly secret) research and resources of the NIMH.⁹⁵ Van der Zwaan says:

'The army mainly uses games that are focused on very recent history, on current conflicts. But higher level generals now want history not only being presented in games as a goal but also as 'lessons learned'. This includes decision-making games at all levels.'⁹⁶

Through the above interviews a picture has emerged on how the commercial game developers process history in their games. Also it is shown how the interactives of the NMM came into being and how and what the Ministry of Defence does with history in games. But how about the field of education? Are students of game studies systematically trained in processing history in computer games? During the interview with Frank Nack, training coordinator at the UvA (University of Amsterdam) Game Studies, it became clear that this is not the case. On the question; 'Do you know if any other game education faculties, programs, schools, focus more on history in games? Is it a topic that is done somewhere?' the answer was:

'No, educations are going into two ways, they try to make you a very good game designer, that is in Utrecht and Breda. There you learn the tools. And then you have us here, we are more interested in it, we are probably the closest because we could integrate whatever domain there is because we have people from these domains as students. Than you also have the people in Twente and Eindhoven. The Eindhoven people see it more as interaction design for they are more interested in technology elements. The people in Twente are more

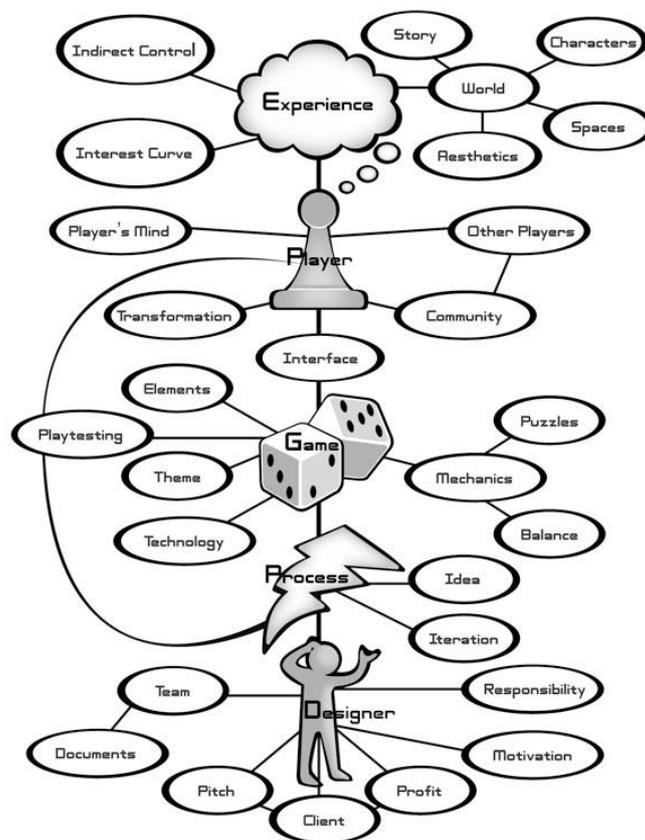
⁹⁴ In an 'open-engine' simply put the user himself can customize the program.

⁹⁵ See for the complete interview with the Ministry of Defence with P.B.Soldaat appendix V at pag.78.

⁹⁶ See for the complete interview with the Ministry of Defence with Jurrie van der Zwaan appendix V at pag.78.

interested in storytelling. History could be a domain but there is not any, not even in Europe that I know, where the aspect of history is important.'

That there are no game training courses that teach how to examine history and how to process this in a game is striking because there are many games that do contain elements of history. Besides, it has become clear from the interviews here above that game makers do indeed spend time and money on historical research for their games. Off course, game design in general, is a topic at most game educations. For this thesis, it is useful to see where history comes back in the game design. Jesse Schell is one of the top game designers of the world. He has made a schedule of the game design process in his work, called, *The Art of Game Design*.⁹⁷ This is the complete schedule of all game design processes according to Schell. To make theoretically clear what place history takes within game design his schedule is being used here. Within this schedule history elements as design input can be found in the following design components; story, world, characters, spaces, and aesthetics. These are all elements that contribute to the experience a player has by playing a game. Nack, sees these set of parts as the area where 'interactive storytelling' takes place.⁹⁸ It is also the area where history can be manifested in the design of a game.



13. The game design process from Schell, *The Art of Game Design. A Book of Lenses* (Burlington 2008) 463.

From the interviews it has become clear that history is treated in different ways within wargames. The discussed wargames are indeed different in nature. Nevertheless, generic statements can be made. Of all the discussed games the developers state that elements of (military) history have been processed within the game. None of the

⁹⁷ Jesse Schell, *The Art of Game Design, A Book of Lenses* (Burlington 2008) 261-352.

⁹⁸ See for the complete interview at the UvA with Frank Nack appendix V on pag.75.

game developers believe that their game is completely fictional. From the very first stages of game development historical research is being done.

The people that are involved in researching and processing history in games are the Producer, the Creative Director, Game Designers, 3D Artists, Logic Programmers, Art director, Graphics Team, Graphic Architect, Graphic Artist, Graphic Designer, Storywriters and Animators. These are the different function names that have been given, but their tasks can match, because different companies use different names for the same functions. At smaller companies/productions, where only a few people work on a game, most of the time every employee is putting something of history into the game. At larger companies it are mostly the people with above mentioned function names. Only at Ubisoft there were actually specific function names for people who do history research and process history into a game. They have a Historical Researcher and a Historical Content Coordinator as regular employees.

A company does not necessarily have to be large to spend much attention on historical research. The companies Blackmill and M2H game studio of the game *Verdun*, develop that game with three people. They all deliver historical input. One person is actually spending one third of his working time on historical research and processing it into the game for already three years now. It has become clear that the historical research that a game developer does takes a lot of time and when being translated in man workhours, is very costly. The most historical research is carried out by own employees. Sometimes a game developer asks an external historian for advice. This was the case, for example, with the game *Verdun* where on location (Verdun) a historian informed the game development team. It is also possible that an external historian is asked to give a college to the development team so that they have a better understanding of the period in which the game takes place (Ubisoft Montreal). But the main historical research and processing of this history in the games is generally being done by personal from the game developers themselves. It should be mentioned that there are games such as *Combat Mission*, where scenarios are being written by players after the game is released (sold to customers). Any historical research that has been carried out for these scenarios has been done by the player ('mod') himself and not by the game company.

The sources that are being consulted for historical research are of course different for every game. But it can be stated that game developers mainly make use of secondary and popular sources. These include historical books and magazines, books on architecture, documentaries, films, TV series, the internet (where Youtube and Wikipedia are mentioned a lot), encyclopaedias, atlases, guides tours, museum visits, catalogues of objects, older computer or board games with the same subject and historical information being given by gamers themselves. In addition multiple game developers said that they made use of primary sources. The mentioned kinds of primary sources are: military archives, tactical manuals, blueprints, historical maps, original vehicles in museums, relevant original objects (weapons for example), recordings of actual engine-and gun sounds, paintings, inventions, biographies, diaries, memoirs, letters, photos, reports of soldiers, reports of penalty platoons and field research on location for example terrain reconnaissance, analysis of a castle, cathedral or fort.

In the beginning of the development of a game the historical research is mainly focused on the general history of the theme to get a better idea of that time. In course of the development of the game historical details are getting more important. In preparing the concept of a game it is for example useful to know how a specific war was conducted, what the general history of that war actually was. Later, when the game is being programmed, details are getting more important, such as how far a weapon X was shooting, what a uniform of army Y looked like.

Another interesting aspect that emerged during the interviews, is that some game developers want to make their games historically realistic such as *Verdun* and intensively conduct research as to what actually happened in the past and how that looked like, while at other wargames such as *Stronghold Crusader 2* and

Forge of Empires much importance is given as to what the player thinks off how 'it was at the time'. In other words, the existing public image of the period concerned is taken into account and incorporated into the game. As a result, the game developers tried to increase the players feeling of playing a historically realistic game.

One last notable point is that no computer wargame in the game itself or on its website provides an overview of the used sources. Source reference will ensure that the player or the evaluator of the game can check the information that is used for the game. By this verification option the credibility of historical realism will be enlarged and a player can look into the historical background related to the game. This thesis therefore advises game developers who produce historically realistic games to mention their used sources in the game or on their website.

On the last question: 'How do you see computer games as a medium to pass on elements of history onto the public?' all respondents answered remarkably positive although differently. It is therefore difficult to make generic statements with respect to the answers. Because the individual responses are important to get a picture of what the didactic value of computer wargames is and could be the most striking answers are quoted below⁹⁹:

Jos Hoebe from Blackmill games: 'Games are an excellent medium to pass on history. It is interactive so the player has influence which makes the player learn history in a different way.'¹⁰⁰

Maxim Durand from Ubisoft: 'I think it is a very good medium to have people interested in history, I take myself as an example, as a kid I really enjoyed games that talked about history. It made me realize there is something more in our life than our time period. I think every company that makes games has a different way in portraying history. Some games are very exact on some battles when they talk about warfare. I think with the technologies we have right now and technologies with which we can do *Assassin's Creed* or what companies can do right now, we can reach something that is closer to reality and that is interesting. I don't think it is going to and should replace history classes. I know people are very excited about games like *Assassin's Creed* because they get to learn about a period they didn't knew about. They get to learn about ways of thinking that are different than there modern reality. But again all of this is only possible because people researched the past. I think it may arise curiosity, but people have to look at real encyclopaedia, to real books if they want to know more. I definitely think that a game like *Assassin's Creed* has more resources and teaching possibilities than a movie or television series.'¹⁰¹

Aide-de-camp Jurrie van der Zwaan from the Ministry of Defence: 'I think it, is the best way there is to it. People are visually oriented. What you see in Afghanistan is that people have been through something, it is put in a book and someone else turns that book back into an image. Why don't we put the image that someone has into an image that can be shown to others, that way you will have the least pollution. I am a big supporter of games and think that people can learn much faster with them. But in an image you won't catch all the details that were historically relevant to the outcome of the fight. At a procedure a movie is being shown and there is a checklist of the things you have to think of. The thick book is downgraded to two A4 sheets with relevant information. Combined with image you will have the best method. In addition, by playing a computer game you will get a much better feeling of what it means, when for example 500 tanks conduct a battle, how it's like when they shoot at the same time, you will get a better understanding of the situation, better than a book can offer.'¹⁰²

⁹⁹ See for all the interview answers appendix IV and V.

¹⁰⁰ See for the complete interview with Blackmill games appendix IV on pag.54.

¹⁰¹ See for the complete interview with Ubisoft with Duran appendix IV on pag.62.

¹⁰² See for the complete interview with the Ministry of Defence with Jurrie van der Zwaan appendix V on pag.78.

Alexander Trifonov from Gaijin: 'We see it as one of our goals to teach our players about history of World War 2 and beyond. We believe that games can be an excellent gateway to studying history, military engineering, aerodynamics and many other things.'¹⁰³

Daniel Dumont from Kalypso games: 'This really works. However, most important for a game is game play. It has to be fun, historical facts can only be part of the background/story/graphics. If we look at Hollywood productions we can see, that nearly everything is exaggerated. Armour, weapons, brutality... In a game it's a problem if the game has to explain too much to the user to let him understand how everything works. This means that the game should work like the user expects it. In total I would say that the historical facts are part of the atmosphere of the game and give some ideas and background for story and missions.'¹⁰⁴

Anja van der Hulst from TNO: 'I think it's a really wonderful tool because instead of reading about something for example, a battle, you experiencing it. There is a nice theory about retention, it's like a pyramid. In the top are things that are told in the classroom, you would only remember some five percent of that in about five years. Things that you process/do yourself have a seventy-five percent retention and gaming also has this percentage. That has so much more of an impact than reading about it or getting a lecture on it . For me that is the main argument.'¹⁰⁵

Frank Nack, education-coordinator at game studies UvA: 'As any other domain, I think it is good. The advantage of games is that it is interactive. History has something to do in my understanding with relations. It is always quite nice to have that in the context of an animation and as animation is an essential part of games, I think it is good. As long as the game actually supports the reflective element. So if it is only "I put you in a situation and that is it and then you do skills such as shooting or painting or whatever then I think it doesn't really help. But the advantage for games for history is that it can actually explore the relations that are reflecting about it.'¹⁰⁶

Gerard Bernaud from Ubisoft: 'In the same way that TV, internet, and film can be instructive, video games represent a great medium to grab people's attention. The interactive aspect of the game allows for a more dramatic impact and a more powerful and lasting impression. Also, the player will be in direct contact with information and literally play through these historical events, so in my opinion, it can help with memorization (the same way you memorize a foreign language better being in the country where it is spoken compared to the classroom). However, it's important for players to be able to differentiate between the fictional part of the game and the historical reality. So, yes, games can definitely be a great medium to support the teaching of history, to bring awareness to a particular historical subject, but I don't think they're going to replace history books or teachers any time soon!'¹⁰⁷

¹⁰³ See for the complete interview with Gaijin appendix IV on pag.56.

¹⁰⁴ See for the complete interview with Kalypso Media appendix IV on pag.58.

¹⁰⁵ See for the complete interview with TNO appendix V on pag.68.

¹⁰⁶ See for the complete interview with UvA with Frank Nack appendix V on pag.75.

¹⁰⁷ See for the complete interview with Ubisoft with Barnaud appendix IV on pag.59.

Tadeusz Zuber from Reality Pump: "It is one of the best mediums to teach history, especially for younger people. They don't read books on history they play videogames. Some games have an outcome system that depends on the moral decisions that the player makes. The games can thus be a moral guide of behaviour."¹⁰⁸

Currently, computer war games are solely made for the entertainment or defence industry. Computer wargames with a purely didactic purpose for history education do not exist yet. For reading, writing and arithmetic, there are didactic computer games like *Rekentuin* and *Taalzee*.¹⁰⁹ Historical games of didactic nature, however, are hardly (if any) present with some exceptions such as the recently-released *Spel van de Gouden Eeuw*.¹¹⁰ This is striking, because the above answers make it clear that the people who are dealing with (war) games do have the opinion that (war) games can indeed be of historical didactic value. Is it currently not yet commercially viable to put these kind of 'historical' games into the educational market? Is it that simply nobody has been working on it so far? Further research is necessary to justify answers to these questions.

Computer war games with historical elements did all have some form of research according to the above interviewees. The kind of research is very different from each other. Where one game (for example, *Verdun* and *Assassin's Creed Unity*) spent years on historical research of primary and secondary sources in collaboration with historians, the other game (for example, *Forge of Empires*) is mainly based on secondary and popular sources that probably could be consulted quickly. It is partly for this reason that the historical realism differs per wargame and so can only be judged per individual wargame. The next chapter provides the tool to do this.

¹⁰⁸ See for the complete interview with Reality Pump Studios appendix IV on pag.55.

¹⁰⁹ See <http://www.rekentuin.nl/> and <http://www.taalzee.nl/> (Internet, 18-12-2014)

¹¹⁰ See <http://www.spelvandegoudeneeuw.nl/> (Internet 19-1-2015)

4. Reviewing the historical realism of a computer wargame.

This chapter, provides a method by which the historical realism of a computer wargame can be assessed. So far such a method did not exist. For gamers who like to play historical realistic games this reviewing method could be a tool to decide which game they should buy. To see if a game is potentially useful for didactic purposes (for example, military or educational purposes) this method will also be helpful. In addition, through this tool consensus can be made clearer on which game is historically realistic and which game is not.

A review will never be able to say that a computer wargame exactly matches the past because the past can never be displayed one to one in a game. As described this is also true for movies, documentaries and books. What can be assessed is whether there has been made a sound attempt to display aspects from the military past in a realistic manner. Since a computer wargame exists out of several parts, each of which can be assessed on realism it is useful to mention these components separately. What classifications can be made of the realism of a computer wargame and how can they be measured?

- **The story line and content of the game** – Is the storyline of the wargame realistic? Does the story match the events from the past that can be found in the historiography? This includes the introduction of the game which regularly hosts the historical setting of the game. This can be an animation, text and or sound clip. When booting a game, depending on the type of wargame the player often can choose from campaigns or missions. At this point there are texts that contain elements from the history. For example, in *Hearts of Iron* where, among other dates, the year 1936 can be chosen as starting point. The player then sees a text about the world's military and political situation in this year and for every country, information is given about the specific military and political situation in 1936. Also part of the assessment is the question whether the storyline is historically realistic at the end of the game. Did the end story actually happen or did a 'what if' situation come into being? In addition to the storyline many games offer on their website or in the game itself historical content. For example *World of Tanks* provides historical information on tanks on its website.¹¹¹
- **The graphic design of the wargame** – This is everything the player sees in the game. Buildings, costumes, weapons, units and geographical aspects are all examples of 'artwork' with which the game developer can literally display a historical image. The question then is whether this 'artwork' matches up with the past.
- **The parameters of the wargame** (especially those of combat models). For example: how far and often does a certain rifle shoot, what is the penetration rate of the armour of a given tank, how far can a soldier run with his gear x. So the question here is whether these parameters are set realistic.
- **The characters that appear in the game** – This is somewhat associated with the story line. The question here is whether the characters in the game are historical figures. If applicable the most important figure is the character (or characters) where the player himself is playing with. Also the characters who play a secondary role are of importance here. As in *Hearts of Iron*, where each unit has a leader (an Officer) who actually existed. At a shooter, it involves the main characters with whom and who against is played with but also involves the 'walk-on' figures in the game. Do they fit in the period setting of the game? At *Assassins Creed Unity*, for example, the 'walk-on' figures are the people in the streets of Paris. They perform the same activities and have costumes that match those of the actual residents of Paris at the time of the French Revolution. If applicable it can also be questioned here to what extent the traits of the characters are historically realistic.

¹¹¹ See <http://forum.worldoftanks.com/index.php?forum/160-historical-battles-and-other-events/> (13-1-2015).

- **Sound and music.** Are the music and sounds similar to those of the past? Is the sound of tank X realistic? Does the music that is heard in the game comes from the period in which the game takes place? Are the voices in the right language that fits the characters?
- **The game mechanics.** Are the game mechanics historically realistic? For example, a player plays with a general. The player gives an order that is executed instantly, is this realistic in the period that the game is set? In a shooter the player can die, is the moment of dying realistic? The decisions that a player takes, or rather would have to take, to play the game 'well', do those decisions match the past? Also the so called 'fog of war' should be mentioned here; is the information that the player has realistic? For example: parts of the map or the area in which is played and enemy units are present are in a realistic 'fog of war' only visible until they are respectively spotted or explored.

These are the points on which historical realism can be assessed. In a transcript of a review an evaluator could appoint his findings for every one of these parts. To make this realism of a computer wargame clear and comparable to other computer war games and reviewers a proposal of a system is given here in which a qualification per part and a final average qualification is made. At reviews of computer games often a rating on the scale of 1 to 10 is given where 1 is very bad and 10 is excellent.¹¹² This rating system will also be applied here. For example game X;

Assessment historical realism game X

Component	Rating
Storyline and content	8
Graphical design	7
Parameters	5
Characters	7
Sound and music	6
Game mechanics	7
<hr/>	
Final verdict $(8+7+5+7+6+7)/6$	6,7

For a more specific review it is possible to give the six components an individual weighting factor. What weighting factor should be given depends strongly on the individual characteristics of the wargame concerned. In general, it can be stated that computer wargames on the operational/strategic level should have other weighting factors than computer wargames on the tactical (shooter) level. In tactical games the storyline is often more deepened than it is the case with operational/strategic games. Also the graphic design is usually more important at tactical games than it is at its counterpart because the player in tactical games often moves ' through ' the graphical world while at operational/strategic games a 'Birdseye view ' (from above) is the players perspective. At operational/strategic games there are often more parameters with a historical base active and parameters should therefore weigh more heavy than with tactical games. Characters are usually more deepened in tactical games and therefore more important than in operational/strategic games. Sound, music and play mechanics are equally important for both categories. This results in the following weighting factor proposal:

¹¹² See <http://www.metacritic.com/browse/games/score/metacore/all/pc?sort=desc> (Internet 15-12-2014). See <http://www.pcgamer.com/company-of-heroes-2-ardennes-assault-review/> (Internet 15-12-2014).

Assessment of historical realism game X with weighting factors

Component	Weighting factor for operational/strategic games	Weighting factor for tactical games
Storyline and content	X 1	X 2
Graphical design	X 1	X 2
Parameters	X 2	X 1
Characters	X 1	X 2
Sound and music	X 1	X 1
Game mechanics	X 1	X 1
Final verdict	Total / 7	Total / 9

A reviewer may therefore choose to let a particular component weigh heavier than another one.

However this makes personal preference important, and it becomes harder to compare the historical realism of computer game X with computer game Y. In addition, the more people give a review on a game the more useful that assessment is. With this in mind, the assessment system should be relatively simple and uniform. How a reviewer comes to a final verdict and thus what he finds 'historically realistic' is personal. It can be based on historical research of primary and secondary sources that has relevance to the game's setting. This is likely going to be a good assessment but also a time consuming one. Rapid assessment will be based on the evaluator's own historical knowledge of the game's historical setting. The most practical way to achieve a reasonable assessment is a combination of both. The evaluator uses his historical knowledge and researches a number of aspects of the game by consulting primary and secondary sources.

The here proposed method is still to be validated. For a good validation multiple reviews by multiple persons is needed. When weighting factors are being used it is interesting to see what the reviewers find more and what they find less important. In the near future, the author of this thesis will offer a platform in the form of a website or blog where the assessments of historical realism can be done.

Conclusie

Wargames are military simulation games in which an attempt is made to simulate in a realistic way the military forces of opposite parties in which the players can make decisions that lead to winning or losing the game. The goal for the player to play wargames can be didactical or just for entertainment. Wargames do not include actual victims. All the violence is fictional. This thesis is not only on games that show a particular battle, operation, or campaign as exact as possible but it is on all games in which military-historical aspects appear that have a certain degree of realism. These wargames are being played for more than 3000 years. Through table top and computer games, models of war are being provided that, realistic or not, can influence the player's image towards that modelled military history. Through technological innovations it became possible to model more complex situations and by the advent of computer war games these more complex models could also be played relatively easy. The computer had, among other things, the advantage that the animations of the games offered more and more details enhancing the possibility of visual realism. The spread of personal computers and game consoles around the world, has enlarged the number of computer war gamers. The current range of computer war games is big. The number of computer war gamers are for some games millions of players as in *World of Tanks* with 75 million accounts and more than one million regularly recurring players. Because millions of people play computer games with a military-historical character, it is useful to ask the question in what way the creators retrieved the historical information needed for making these games. The military-historical awareness of all these players are, to a greater or lesser extent, being affected by playing computer war games with historical elements. To what extent the acquired knowledge of military history is also historically correct, is the question. This research shows what wargame developers do (and did) to make their games (more) historically realistic. Where do the game developers get their historical information from, how do they do this and how do they process this historical information in their games?

Reading the interviews with the commercial companies it should be kept in mind that these companies might give commercially useful answers. They probably will like it when their game is seen as historically realistic. This is not the case with the interviews with the institutions because they have no commercial interest. Nevertheless, from the interviews held it can be said that there are multiple game developers making a lot of effort and costs to enlarge the (military) historical realism in their game. Games with relatively large budgets such as the *Assassin's Creed* series are spending years on historical research for their games. But also smaller companies such as the developers of *Verdun* relatively put a lot of time and effort in the historical realism of their game. They do this mainly by consulting secondary sources such as historical books and magazines but also primary sources have been researched by several interviewed game developers. These sources can be population registers like *Assassin's Creed Unity* uses, contemporary nautical charts used by *Ravenscry* or military archives as *Verdun* uses. The intensity of the historical research varies with every game and also the types of sources consulted vary by game.

At most companies the historical research is done internally (sometimes by historians who are in permanent employment) and sometimes external historians are hired to gather historical information for the game. In the beginning of the development of a game the historical research is mainly focused on the general history of the games historical theme to get an insight of the historical period concerned. The further the development of the game goes, the more important historical details will become. For example; when formatting the concept of a game it is useful to know how a specific war developed, to know what the general history of that war is. Later, when the game is being programmed details are of more importance such as how a particular building X looked or what the abilities of general Y were. Another striking point that emerged from the interviews is that a number of game developers care about what the public thinks what is historically correct. For example, by watching popular

movies the developers try to catch this public image of the period in question so they can process this image in their game. For these developers it doesn't necessarily have to be the 'historical correct' image. In some wargames, such as *Combat Mission*, it are people from outside the company in the role of gamers or hired people that researches and write historical scenarios like the interviewee aide-de-camp Jurrie van der Zwaan does. The game developer provides a basic game and some sort of digital toolbox (editor) which allows the user (gamer) itself to create scenarios. The creators of these so-called MOD's (adjustments) are doing the historical research themselves. The websites of the games regularly offer extra historical information (web content) related to the game and depending on the kind of game there can be an active commune of players who provide military historical tips in order to improve a game. Also historical discussions are held on the game forums.

It is impossible to state that computer wargames are or aren't historically accurate, the differences between the games are too big for that. Besides, historically accuracy is a difficult to define concept. If something is only historically accurate when acknowledgement (of sources) has been done computer wargames don't do very well. None of the games researched for this thesis have offered acknowledgement (of sources). But it can be researched as to what the individual game developer has done to enlarge the historical realism of his game. That's what this study has done for a number of wargames.

From the held interviews it can be slightly concluded what the game developers themselves consider to be a historically correct game. It seems mainly to be the looks of the game what most game developers are concerned with in respect to historical correctness. Perhaps this is so because it is what can be done by the game developer in accordance with historiography. For the content of the game, for example, the course of the story, that is more difficult because a ' what-if ' scenario is being played most of times. For two respondents the most important was what the player thought what was historically correct. This reproduces the existing (might be false) image. A few exceptions here and there, most historical research is done by non-academic trained, non-professional historians. The popular, non-scientific image is therefore in general leading when making a game. This also applies to movies for example. But this can change when more historians would be involved in game production just as this is the case in the movies industry.

The progress and outcome of war and military operations are very complicated and they depend on many factors. The main factor of this complexity is that it are struggles with an opponent who wants the opposite for himself. By definition, this makes war/combat actions unpredictable. That also means that the outcome and course of real historical wars and battles is but one of the many that are in theory possible. Good wargames can actually make this aspect very clear because the player can make decisions that deviate from the historical decisions and by that playing towards a ' what-if ' situation. In general, shooters have a linear process of the storyline and strategic games generally have an open-end game play which could result in a ' what-if ' situation. It is with strategic realistic open ended game play games like *Hearts of Iron* where the number of variables is usually higher than, for example with shooters. Thereby the game becomes more complex and gets a steeper learning curve. Perhaps that is also the reason that more people play games such as *Call of Duty* than *Hearts of Iron*. Every game developer of open-end - but also of linear games wonders what the best balance is between playability and realism. In general it can be said, the more realism, the more variables, the more complex and thus less playable. Helwig and Venturini had this same dilemma already at the end of the eighteenth century with their forerunners of *Kriegsspiel*¹¹³. Actually it has been the computer that took many complex issues such as calculations out of the players his hands, but on the other hand new complex issues have risen in computer games, in comparison to the board games of the past. So there is, for example, the problem as to what extent it is possible to put character traits of historical figures in a game. In a game like *Hearts of Iron* there are historical

¹¹³ See pg. 13.

officers placed at the head of the armies of the player. Besides a factor experience and knowledge these officers also have their own characteristics such as 'defensive specialist' or 'panzer specialist'. These factors influence the game. These characteristics can to some degree be historically researched. Factors such as temperament and frame of thought are a lot more difficult to research and are even more difficult to express in a number that is useful for the game mechanism. The player himself determines the intellect, the frame of thought and temperament as he determines what actions the officers take. Nevertheless these actions may be affected by pre-set parameters. For example + 2 speed and - 4 strength because of officers X's trait 'impulsivity'. To set all these parameters in a realistic matter requires a huge effort but a number of game developers such as Paradox Entertainment are making good attempts. A computer wargame can also show what the influence was of coincidence, the illogical, the chaotic, the unexpected and the irrational in the course of a historic battle. By processing these aspects in the algorithms in the form of chance and by letting the player consciously or unconsciously balance these factors to make his decisions the player can get an understanding to what extent this has determined the outcome of the battle.

The given method for evaluating the historical realism of a wargame is a tool to give a judgement in a uniform and comparatively simple way by giving ratings on the historical components of a game. Hopefully this tool will be used by war gamers in the same as they give a general review of a game. The more reviews for a wargame, the stronger the consensus will be on the historical realism of that game. This should lead to the easier picking of historically realistic games for the potential player. To this end, a platform is needed on which the assessments can take place. In the near future the author of this thesis will create a website with the first goal to test and validate the given assessment method thoroughly. After validation the website can be used among other things to post, collect and view the reviews of wargames.

Nowadays computer wargames are played by millions of people. Many of these games comprise aspects of military history that are based on some form of research that to a greater or lesser extent is realistically being passed on to the player. The interactive nature of computer games makes the player learn in a different way than passively hearing and seeing.¹¹⁴ These three points together support the idea that the public can learn aspects of military history by playing computer wargames. So computer wargames are a potential medium to pass on military history. At the moment, computer wargames are being made for the entertainment and the military industry. Computer wargames with a purely didactic purpose for education do not exist yet. There are computer games though for reading, writing and arithmetic like *rekentuin* and *taalzee*.¹¹⁵ A similar computer game to pass on aspects of military history to students would be a next step in the development of education with the help of games. How to do this and why this has not been done yet needs to be examined.

Because computer war games are being made that contain (military) historical aspects for which game developers have to do research for a possible labour market for historians has come into existence. At all for this thesis interviewed companies there were currently two (Ubisoft and Blackmill) who use the knowledge of historians who are either permanently employed, or are hired. A historian can adequately collect the needed historical information for the game in question and historians can learn game developers themselves how to find this information. In addition, a historian should be able to write so-called web content for a game. This will allow the player to obtain historical background information related to the theme of the game. *World of Tanks* of Wargaming.net is actively looking for people with a (military) historical background.¹¹⁶ This company is very

¹¹⁴ See for the complete interview at UvA with Frank Nack appendix V on pg.75.

¹¹⁵ See <http://www.rekentuin.nl/> (Internet 18-12-2014). See <http://www.taalzee.nl/> (Internet 18-12-2014)

¹¹⁶ See <http://wargaming.com/en/careers/vacancies/#!vacancy=23037> (Internet, 18-12-2014). See <http://wargaming.com/en/careers/vacancies/#!vacancy=23017> (Internet, 18-12-2014).

successful and in terms of sales one of the largest game developers of this moment. The fact that they are looking for historians is proof that the computer game industry offers possibilities for historians to work.

History actually is a reconstruction of the past, a reconstruction of reality. Many of the games discussed here are also about this, reconstructing the reality. Computer games are getting better and better in portraying history. When a computer wargame is not historically realistic this is due to the program. If desired by the developer, the program can be adjusted. Aspects that cannot be simulated yet might be possible to simulate in the near future; smelling stimuli, sense stimuli and body movement registration. This along with ever-better performing processors, graphic cards and the introduction of virtual reality will enhance the opportunity to make a game historical realistic. When also more historians will be involved with the input of computer (war) games the saying, 'to bring the past back to life ' might become a virtual interactive reality.

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Appendix Images and pictures

1. Afbeelding van computer wargame *Verdun* <http://www.giantbomb.com/verdun/3030-43245/>. Dit plaatje is afkomstig uit de press kit van de website van Verdun zelf en vervolgens bewerkt door de recensent van giantbomb. Merk op hoe de recensent per abuis het Franse symbool bij de Duitse soldaat heeft geplakt en het Duitse symbool bij de Franse soldaat.
2. Relatie van wargaming ten opzichte van andere recreatieve activiteiten. Schema uit Philp Sabin, *Simulating War* (Londen 2012) 3.
3. Wellicht de oudste wargame, *Petteia* afbeelding van <http://www.aerobiologicalengineering.com/wxk116/Roman/BoardGames/petteia.html>.
4. Hexecons op de kaart van de bord wargame *Chancellorsville* (Avalon Hill 1961). Van <http://home.comcast.net/~storto10/chancell.htm> .
5. Hexecons in de computer wargame *Panzer General 2* (SSI 1997). Van http://www.gog.com/game/panzer_general_2 .
6. De Cyberith Virtualizer, prototype 2. Van http://en.wikipedia.org/wiki/Cyberith_Virtualizer
7. Screenshot van de beginopzet op 1 september 1939 in computer wargame *Hearts of Iron III* (Paradox Entertainment 2009).
8. Screenshot van een P-40E-1 Kittyhawk in computer wargame *Warthunder* (Gaijin 2012) 16-1-2015.
9. Screenshot van techtree in computer wargame *Warthunder* (Gaijin 2012) 16-1-2015.
10. Screenshot van het spel *Verdun* (Blackmill Games en M2H Game Studio 2013) 16-1-2015.
11. Wallpaper van puzzle/adventure computer game *Valiant Hearts* (Ubisoft 2014). Van <http://valianthearts.ubi.com/game/en-GB/the-great-war/index.aspx#> 19-1-2015.
12. De Notre Dame in Parijs. Links werkelijke foto, rechts afbeelding in *Assassins Creed Unity* (Ubisoft 2014). Van <http://technowells.com/assassins-creed-unity-in-game-paris-vs-real-life-paris-screenshot-comparison-shows-dynamic-structural-visuals.html> 10-10-2014.

Appendix II Game list

Computer wargames

Arma serie (Bohemia Interactive 2007-2013)
Assasins Creed serie (Ubisoft 2007-2014)
B-1 Nuclear Bomber (Avalon Hill Microcomputer Games 1980)
Battlezone (Atari 1980)
Battlefield (Electronic Arts 2002)
Call of Duty (Activision 2003)
Civilization serie (Microprose 1991-2014)
Chivalry (Activision 2012)
Close Combat (Microsoft 1995)
Combat Mission serie (Battlefront 2000-2014)
Company of Heroes serie (Sega, Relic Entertainment 2002-2014)
Computer Bismarck (Strategic Simulation Inc. 1980)
Counterstrike (Valve corporation 1999)
Day of Defeat (Valve Corporation, Activision 2003)
Democracy (Positech 2014)
Europa Universalis serie (Paradox Interactive 2000-2013)
Forge of Empires (Innogames 2012)
Godfire: Rise of Prometheus (Vivid Games 2014)
Hearts Of Iron serie (Paradox Interactive 2002-2015)
IL-2 Sturmovic serie (Ubisoft, 1C Company 2001-2014)
M1 Tankplatoon (Microprose 1989)
Men of War (Digital Mindsoft, 1C Company 20090-2014)
Midway Campaign (Avalon Hill Microcomputer Games 1980)
North Atlantic Convoy Raider (Avalon Hill Microcomputer Games 1980)
Patrician serie (Ascaron, Kalypso Media 1992-2010)
Panzer General (Strategic Simulations Inc. 1994)
Port Royale 3 (Kalypso 2012)
Ravens cry (Reality Pump Studios, TopWare Interactive 2015)
Rise of Venice (Kalypso Entertainment 2013)
Rome 2 Total War (Creative Assembly, Sega 2013)
Starcraft 2: Wings of Liberty (Blizzard entertainment 2010)
Steal Beasts (Microsoft 1999)
Steel Panthers (Strategic Simulations Inc. 1995)
Stronghold Crusader 2 (Firefly Studio's 2014)
Tanktics (Chris Crawford 1976)
Total War (The Creative Assembly 2000)
Valiant Hearts, The Great War (Ubisoft 2014)
Verdun (Blackmill games, M2H game studio 2015)
Victory At Sea (Evil Twin 2014)

Virtual Battle Space (VBS) serie (Bohemia Interactive Simulations 2001-2014)
War Thunder (Gaijin 2012)
World of Tanks (Wargaming.net 2011)

Bord wargames

Bismarck (V.S. 1962)
Bomben auf England (Duitsland 1939)
Chancellorsville (V.S. 1961)
Civil War (V.S. 1961)
Conflict (V.S. 1940)
D-Day (V.S. 1961)
Diplomacy (V.S. 1952)
Firefight (V.S. 1976)
Gettysburg (V.S. 1958)
Go (Wei Chi) (China > tweede eeuw)
Kriegsspiel (Pruisen 1821)
L'Attaque (Londen 1910)
Latrunculi (Rome >27 v.Chr.)
Petteia (Griekenland > tweede eeuw)
Risk (V.S. 1958)
Schaken (India +/- 500)
Stalingrad (V.S. 1961)
Stratego (V.S. 1958)
Tactics (V.S. 1952)
Tactics II (V.S. 1958)
The Great War Game (U.K. 1910)
U-Boat (V.S. 1959)
Victory at Sea (V.S. 2006)
Waterloo (V.S. 1962)

Appendix III Internetpage overview

<http://www.aerobiologicalengineering.com/wxk116/Roman/BoardGames/petteia.html> (20-5-2014).

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<http://www.verdungame.com/> (Internet 30-9-2014).

Appendix IV Transcripts interviews commercial companies

De volgende vijf vragen zijn voorgelegd;

1. Maakt uw bedrijf spellen met historische elementen?
2. Hoe is de historische informatie voor dit spel verzameld? Wat zijn de informatiebronnen?
3. Hoe is deze historische informatie in het spel verwerkt?
4. Welke mensen (functienamen) zijn tijdens het maken van het spel bezig om aspecten van geschiedenis in het spel te verwerken?
5. Hoe ziet u computergames als medium om elementen van geschiedenis op het publiek over te brengen?

Bedrijf: Vivid Games

Communicatievorm: direct persoonlijk interview

Geïnterviewde persoon/functie: Marcin Tukaszewski / PR (Public Relations) Manager

Datum/locatie: 13 Augustus 2014 / Gamescom 2014 Keulen (Gamebeurs Kölnermesse)

Antwoorden:

1. 'Yes we do. For example in the game *Godfire* we have elements of history combined with fiction.'
2. 'The game designer knows the myth and history thoroughly from books, art, TV and movies.'
3. 'He tries to put this historical knowledge in the game. For example the names and buildings in the game corresponds in what he researched. But the playability of the game goes before historical accuracy.'
4. 'Game designer, Graphics designer, Graphics artist and Animators. Actually the whole graphics team in general is involved in putting history in the game.'
5. 'It is a cool medium to teach anything. It keeps growing and it is fun to do.'

Bedrijf: Gaijin

Communicatievorm: Antwoorden via Email op 29-9-2014

Geïnterviewde persoon/functie: Alexander Trifonov / Hoofd PR (Public Relations)

Antwoorden:

1. 'Of course! Beginning from *Il-2 Sturmovik* *Birds of Prey*, our focus was on making military simulation games. Our most historical game at the moment is *War Thunder*, because it covers several theatres of war and includes over 450 historically accurate planes and armoured vehicles.'
2. 'We have a lot of different sources: military archives, documentation such as field manuals, blueprints, old maps, documentaries, etc. We study surviving vehicles in museums all around the world, record real engine and gun sounds.'
3. 'In addition to 3D-artists, who recreate the vehicles in painstaking detail, we have a special team of designers who implement all of the real data in the game: engine power, climb speed, armour thickness, penetration rates of different shells and hundreds of other parameters.'
4. 'It's our game designers.'
5. 'We see it as one of our goals to teach our players about history of World War 2 and beyond. We believe that games can be an excellent gateway to studying history, military engineering, aerodynamics and many other things.'

Bedrijf: Topware interactive / Reality Pump

Communicatievorm: direct persoonlijk interview

Geïnterviewde persoon/functie: Tadeusz Zuber / CEO (Chief Executive Officer)

Datum/locatie: 13 Augustus 2014 / Gamescom 2014 Keulen (Gamebeurs Kölnermesse)

Antwoorden:

1. 'Yes, Ravens Cry and WW2 Panzer Claws are the most prominent.'
2. 'The game designer is the one that mainly checks historical files to get data for the game. For the Ravenscry game, Game designers and story writers looked at 18th century primary sources like historical maps, paintings and biographies.'
3. '-The story writers do the main research for writing the story, the overall history.
-The games designers check for example how they fought in the time and what the parameters are (for fight system).
-The Graphic artist focuses mainly on research of how ships, costumes and buildings looked like to draw them accordingly in the game.'
4. 'Game designers, story writers, graphic artist.'
5. 'It is one of the best mediums to teach history, especially for younger people. They don't read books on history they play videogames. Some games have an outcome system that depends on the moral decisions that the player makes. The games can thus be a moral guide of behaviour.'

Extra antwoorden/commentaar/aanvulling:

- For Ravens Cry the historical information is continuously gathered during the process of making the game. But the most is being done by the game designer who is busy for two to three months on a 20 hour per week basis to retrieve all historical information necessary for the game. Interested people (hobbyists) sent emails what and where historically the game is wrong and how to improve it. For example 'that sword was not a pirate sword of the 18th century'.
- 'The problem in finding the historical info needed is that it is hard 'to know where to look'
- 'A the moment we don't hire historians but it is something that could be done in the future. There are people within the company with affinity for history who are being called upon for there knowledge. For example an employee with a hobby of history on pirates helped providing information for Ravens Cry.'
- 'In the game Ravens Cry no explicit realistic violence like shopping heads of or torturing is being used. This is unrealistic and historically not correct.'

Bedrijf: Morphicon (Game Uitgever)

Communicatievorm: direct persoonlijk interview

Geïnterviewde persoon/functie: Glen Apel / Product Manager

Datum/locatie: 14 Augustus 2014 / Gamescom 2014 Keulen (Gamebeurs Kölnermesse)

Antwoorden:

1. 'We are a Publisher company but yes *Chivalry*, *Arma 2*, *IL-2 Sturmovic* and *Men of War* all have historical elements.'
2. 'For *IL-2* the air museum in Russia was a source for the parameters of the planes involved. For 'Men of War' Historical Archives were checked, the records of penalty squads were checked, reports of soldiers

were looked at. This work was mostly done for the use of story writing. Research is continuously being done during the process of making the game and patches.'

4. 'Game designers.'
5. 'Gaming is a very good opportunity to learn about history. *Valiant Hearts WW1* is a good example. I have enlarged my military historical knowledge by playing *F14 Fleet Defender*.'

Extra antwoorden/commentaar/aanvulling:

- Welke games zijn historisch goed? *IL 2 in and around Stalingrad* is the best. *Red Orchestra battle of Stalingrad* and *Rising Storm Pacific* are also very good.
- I think game developers hire historians for consultancy but I am not sure.
- Glen Apel adviseert naar *Warhorse* (developer) te kijken. Hij noemt hun werk zeer historisch realistisch.

Bedrijf: Blackmill Games/ N2H

Communicatievorm: direct persoonlijk interview

Gesproken persoon/functie: Jos Hoebe / Oprichter

Datum/locatie: 14 Augustus 2014 / Gamescom 2014 Keulen (Gamebeurs Kölnermesse)

Antwoorden:

1. 'Ja het spel *Verdun*, een Eerste Wereldoorlog shooter'
2. 'Geschiedenis boeken zoals de *Osprey* serie zijn bestudeerd'
'We hebben het Internet geraadpleegd waaronder You Tube en Google filmpjes.'
'Dagboeken en Franse memoires van het JMO Franse Ministerie van Defensie zijn bestudeerd.'
'We zijn zelf bij Verdun geweest om op locatie informatie in te winnen voor het spel'
'Documentaires zoals 'Hel van Verdun' bekeken.'
3. 'Van de plaatjes uit een boek wordt een figuur gemaakt. Het grafische ontwerpen van zo'n figuur werkt als een soort boetseren. Eerst grof dan steeds fijner. We proberen zo correct mogelijk te zijn. Als we bijvoorbeeld op een foto of plaatje een veldfles zien met bepaalde stikking dan maken we dat in de game precies na.'
4. '3 man in totaal werken aan dit spel. Het is een egale structuur waarin functienamen moeilijk te benoemen zijn. Maar alle drie zijn we bezig met historische input.'
5. 'Games zijn een uitstekend medium om geschiedenis over te brengen. Het is interactief dus de speler heeft invloed wat de speler op een andere manier geschiedenis doet leren.'

Extra antwoorden/commentaar/aanvulling:

- 'Er wordt al 6 jaar aan dit project gewerkt wat begon als een hobby. De laatste 2 jaar zijn we er professioneel mee bezig.'
- 'Zeker één persoon is een derde van zijn werktijd bezig met historische feiten verzamelen. Dat ben ik vooral.'
- 'Historische accuraatheid kost veel geld want het kost veel tijd en dus manuren.'

Via een email gaf Hoebe een lijst met een deel van de gebruikte bronnen voor *Verdun*. Deze lijst geeft een aardig inzicht in wat voor soort secundaire bronnen gamemakers gebruiken:

Literatuur

Buffetaut, Yves, *1917 Spring Offensives: Arras, Vimy, Le Chemin Des Dames* (z.p. 1997).
Horne, Alistair, *The price of glory, Verdun, 1916* (z.p. 2007).
Mirouze, Laurent, *World war I infantry in colour photographs* (z.p. 1999).
Osprey Series, *alle relevante delen over WOI*.

Internet

http://www.memoiredeshommes.sga.defense.gouv.fr/fr/arkotheque/inventaires/ead_ir_consult.php?&ref=SHDGR_GR_26_N_I
<https://www.flickr.com/photos/drakegoodman/favorites/>

Bedrijf: Evil Twin

Communicatievorm: direct persoonlijk interview

Gesproken persoon/functie: James Carroll / Directeur

Datum/locatie: 14 Augustus 2014 / Gamescom 2014 Keulen (Gamebeurs Kölnermesse)

Antwoorden:

1. 'Yes; *Victory at Sea*.'
2. 'There is an older tabletop game *Victory at Sea*. This tabletop game was the most important source used when making the computer game. Wikipedia on the internet was a useful source for the characteristics of the ships. Historical books on the war in the Pacific have been used to determine the appearances of the ships. The playing method of the tabletop game has been used for the computer game.'
3. 'The parameters haven been taken from the tabletop game. The graphics have mainly been taken from the internet.'
4. 'Five people have been working on this project and all five of them have retrieved historical information needed for the game.'
5. 'Games are perfect to learn history, *Sid Meyers Pirates* learnt me a lot about pirates, more than my history teacher learnt me.'

Bedrijf: InnoGames

Communicatievorm: direct persoonlijk interview

Gesproken persoon/functie: Quirin Stubbe / Lead Game Designer

Datum/locatie: 14 Augustus 2014 / Gamescom 2014 Keulen (Gamebeurs Kölnermesse)

Antwoorden:

1. 'Yes, *Forges of Empires*'
2. 'Wikipedia, History documentaries, History books, drawings, paintings and inventions where all sources of information for the historical input.'
3. 'The history of inventions is the red wire of the game. For example, if in the game the art of printing is being invented the player achieves a next level. A lot of cliché history has been used for the game. It is not only important what is historically correct but also what the public thinks what is historically correct. In this game a medieval castle has the typically characteristics of a medieval castle as the public sees it

while there might never have exist exactly this castle. For example, a medieval castle in this game is constructed only out of stone while in reality wood was also being used.

4. 'Graphic Architect, Game designer, Graphic artist.
10% of his total time is spent on historical research by the Game Designer.
20% of his total time is spent on historical research by the Graphic Artist.'
5. 'Games help to put things into perspective which can be educative. But it is never 100% accurate.'

Bedrijf: Firefly studios

Communicatievorm: direct persoonlijk interview

Geïnterviewde persoon/functie: Paul Harris / Senior Producer

Datum/locatie: 14 Augustus 2014 / Gamescom 2014 Keulen (Gamebeurs Kölnermesse)

Antwoorden:

1. 'All games try to be historically accurate. *Stronghold Crusader 2* is the latest. Simon Bradbury is the games lead designer en founder of Firefly. He is the history buff that want to make the games historically correct.'
2. 'History books, Internet, Movies (*Kingdom of Heaven*) for the public image. Visits to Castle's (UK is full of it). Information from gamers.'
3. 'Artwork translates history in the game.'
4. 'First and most by Games designer, Then the Art Director and his graphics team.'
5. 'The time of *Stronghold*, the medieval period is a interesting time. The game is quite educational for kids to learn about this period.'

Extra antwoorden/commentaar/aanvulling:

- Military is more important in the game than other things for example culture.
- In pre-production 5 % of time is spent on historical research.
- Research goes continuously through game production an patching phase.
- The games must be historical accurate but it is important to know what the public thinks what is historical correct. So that's why we look at movies like *Kingdom of Heaven*.
- A gamer said that a certain type of bow wasn't historically correct. But we had a choice of five eastern bows from the era concerned. We have let the players decide which one to use.
- On a certain point we had rats in the game. Rats caused disease and ate food etc. It happened that sometimes you got more concerned with rats than sieging armies at the gates. That's was a point where playability takes over historical correctness. Rats were made less important.

Bedrijf: Kalypso Games/ Gaming Mind Studio's

Communicatievorm: antwoorden per Email op 20-10-2014

Geïnterviewde persoon/functie: Daniel Dumont / Creative Director and Studio Lead

'My name is Daniel Dumont and I work for Gaming Minds Studios which is part of Kalypso Media. Before I was working at Ascaron Entertainment where I invented *Patrician II* and the *Port Royale Series*.'

Antwoorden:

1. *Patrician 1-4, Port Royale 1-3, Rise of Venice, Grand Ages: Medieval* (Release 2015). The type of historical elements in these games are very different. *Patrician* and *Venice* show more social politics, *PR* is more about war politics. I would say, that the game have about the same amount of historical elements.
2. We read in Encyclopaedias about the time, important towns, wars, conflicts, traders, pirates. We look at pictures and models of architecture, towns, people, clothes, ships, machines and production plants. We ask, how politic was made. Councils? How was a town ruled? Was there lots of corruption?
3. Graphics: models, types of ships, architectures in towns, buildings, ships, weapons. Gameplay: Seabattles, Historical-like stories can be included in the campaign, names/titles of important people, coastlines, nations and their boundaries, names of nations and towns, names of ships.
4. Game Designer, 3D-Artists, Logic Programmers.
5. This really works. However, most important for a game is game play. It has to be fun, historical facts can only be part of the background/story/graphics. If we look at Hollywood productions we can see, that nearly everything is exaggerated. Armour, weapons, brutality... In a game it's a problem if the game has to explain too much to the user to let him understand how everything works. This means that the game should work like the user expects it. In total I would say that the historical facts are part of the atmosphere of the game and give some ideas and background for story and missions.

Bedrijf: Ubisoft (over het spel *Valiant Hearts: the Great War*)

Communicatievorm: antwoorden per Email op 14-10-2014

Geïnterviewde persoon/functie: Gerard Barnaud/ Historical Content Coördinator

Antwoorden:

1. ((Red.) Op deze vraag is geen antwoord gegeven. De antwoorden hieronder gaan uitsluitend over de game *Valiant Hearts: The Great War*.)
2. First, members of the team collected many letters, documents and objects from the Great War to illustrate and document all the historical facts that we wanted to put in the game (we even set up our own "mini museum" in the middle of the team's workspace).
For the broader strokes, we used primarily general resources to look for historically significant events around which we could write the plot. Then we, as we zoomed in for the more defined and structured settings, relying on specialized books from the era and, as well as checking with historians specialized in that era.
We also had the opportunity to build a partnership with "La Mission du Centenaire" [a French government organization for WW1 commemorations] which provided us with an historical consultant. Our other partnership with Apocalypse, the most watched historical documentary brand in the world, provided us with a lot of images and video footage from World War 1.
3. Our first intention was to develop a very accessible game, for all generations. We knew we wanted this to be a game with a strong but non-intrusive educational component, so that the player could learn about the time period and get more information about a particular topic without being forced to. This is what we did with the historical facts in the game: the player is not forced to see them, but they are intrigued by the story they're following and so they often choose to read them.
In terms of researching, the writer was in charge of gathering the main information and then the head of each sub-team would drill down to get more details specific to his field. For example, the audio director did research on what weapons at the time sounded like, the art director used period photographs and

drawings as inspiration, architects on buildings and so on...). As mentioned before, all information has been approved by the Mission du Centenaire, which has put its stamp (well, label...) on the historical accuracy of *Valiant Hearts*.

4. It depends on the game. For *Valiant Hearts*, we were a small team so everybody participated in researching to some degree, sometimes even at garage sales, in attics, at museums, libraries, by watching movies, etc. Everything was shared between the members of the team so that every person in every field of expertise could find relevant information for his portion of the game.

Also, many members of the team brought their own contribution to the game's story since they had family members or ancestors who had experienced the war and their personal effects, letters, memorabilia, objects, etc. were kept and passed down through the generations.

5. In the same way that TV, internet, and film can be instructive, video games represent a great medium to grab people's attention. The interactive aspect of the game allows for a more dramatic impact and a more powerful and lasting impression. Also, the player will be in direct contact with information and literally play through these historical events, so in my opinion, it can help with memorization (the same way you memorize a foreign language better while in the country compared to the classroom). However, it's important for player to be able to differentiate between the fictional part of the game and the historical reality. So, yes, games can definitely be a great medium to support the teaching of history, to bring awareness to a particular historical subject, but I don't think they're going to replace history books or teachers any time soon!

Bedrijf: Fabrique

Communicatievorm: direct persoonlijk interview (diepte expert interview)

Gesproken persoon/functie: David Zeggeren, Projectleider

Datum/locatie: 15-4-2014 / Amsterdam kantoor Fabrique

1. 'Wat zijn interactives?'

Antwoord:

'Alles waar je niet statisch met fysieke middelen bezig bent maar interactief iets doet met het medium. Interactie hebben met objecten/beeldschermen in een museum'.

2. 'Wat is de doelstelling bij het maken van de interactives voor het NMM?'

Antwoord:

'Per interactive zijn er doelen gesteld en die zijn verschillend maar meestal educatief van aard.'

3. 'Vind je dat geschiedenis overgebracht kan worden door games/interactives?'

Antwoord:

'Ik denk het wel. Maar in een museum moet het niet te serieus zijn. De valkuil waar musea vaak in trappen is dat ze te diepgravend zijn omdat ze inside-out denken. Bij musea werken mensen die heel veel kennis hebben die ze willen overdragen maar wat ze vaak vergeten is dat wat mensen zoeken als ze naar een museum gaan.

Natuurlijk is er een groep mensen die voor verdieping, leren en lezen naar een museum gaat maar we merken in de onderzoeken die we doen en in de spellen die wij maken dat mensen steeds meer naar een museum gaan om cultuur te snacken. Er worden kleine stukjes informatie opgehaald, hier een beetje daar een beetje, thuis een beetje en zo al doende leren. Zij worden vaak afgeschrokken door lange teksten, veel informatie. Een museum dat wat minder interactief is kan zijn doel bereiken maar moet dat heel slim en gedoceerd doen. Het Rijksmuseum

is bijvoorbeeld helemaal niet interactief maar die hebben heel slim gekozen voor weinig zaaltekst en een bepaalde manier van opstellen zodat je het idee hebt at je naar iets dynamisch kijkt zoals niet alleen een schilderij maar ook een kanon erbij. Steeds meer mensen die naar een museum gaan gebruiken thuis tablets en smartphones dat was tien jaar geleden anders. Daarom werden musea tien jaar geleden ook anders opgesteld.

4. 'Van alle interactives die jullie voor het NMM maken welke geeft het meest geschiedenis informatie?'

Antwoord:

'*Rijden te paard* is een game wat zich heel erg baseert is op geschiedenis informatie. Een spel als *VOC* (*Vereenigde Oostindische Compagnie*) is een interactive waar historische informatie wordt verteld. Je leert daar één op één over de geschiedenis. De geschiedenis wordt hier niet geïnterpreteerd maar verteld. Bij *Rijden te paard* wordt de geschiedenis geïnterpreteerd en dat is de basis voor het spel.'

5. "Je zei op een website van Heijmans over een tankspel wat jullie maken voor het NMM; "maak vijandelijk tanks onschadelijk vanuit een heuse tankkoepel. De ervaring is levensecht dankzij de inbreng van militaire adviseurs en spannend door de inbreng van game ontwikkelaars." Hoe moet ik de inbreng van militaire adviseurs zien. Wat zeggen ze als het spel wordt gemaakt?'

Antwoord:

'Zij hebben ervoor gezorgd dat de situatie waarin de bezoeker van het museum zich bevindt in het echt zou kunnen plaatsvinden. Het is niet bedacht door ons. Het is ooit weleens zo gebeurd. Het zijn mensen die in het leger hebben gewerkt en zo'n situatie kunnen omschrijven. Er worden tanks getoond die echte tanks zouden kunnen zijn. Er is gekeken naar hoe een ontploffing van een tank plaatsvindt. Er is gekeken naar hoe je zo'n pantserkoepel zou besturen en daar hebben we het spel zoveel mogelijk op aangepast. Natuurlijk pas je af en toe de waarheid/ de werkelijkheid aan om het spel interessanter te maken wat de game ontwikkelaars doen. Er wordt telkens wel weer teruggediept met de militaire specialist. Bijvoorbeeld; "deze aanpassing maken we maar kan het ook in werkelijkheid en als het niet kan is het dan erg?'

6. 'De historische informatie die gebruikt is voor het spel: *Rijden te paard*, waar komt die vandaan, wie levert het aan?'

Antwoord:

'Dat is het museum. Dat zijn de mensen van NMM zelf die zorgen voor de input. Wij doen die research niet. Als we denken dat we historische informatie nodig hebben kunnen we daar zelf induiken maar in principe doen we dat niet. Het is het museum wat die informatie uitzoekt en bedenkt voor ons.'

7. 'Werkt u met Historici?'

Antwoord:

'Ja'

8. 'Zoekt u zelf historische informatie op?'

Antwoord:

'Nee in principe niet'

9. 'Is het spelelement belangrijker dan het overbrengen van geschiedenis?'

Antwoord:

'Soms wel, soms niet. In de educatieve ruimte waar kinderen bezig zijn daar is het spelelement belangrijker dan

het overbrengen van geschiedenis. Maar in de thema hallen is het overbrengen van geschiedenis belangrijker.

10. 'Komt in de verhaallijn van de spellen geschiedenis tot uiting? Komt in de grafische vormgeving van de spellen geschiedenis tot uiting?

Antwoord:

'In de algemene verhaallijn van het museum zeker op meerdere plekken (interactives red.) Niet in de grafische vormgeving omdat we daar vaak hebben gekozen voor een moderne laag over de geschiedenis heen. We doen alsof de interface waar je naar kijkt, nu is, waardoor je de historie kunt bekijken. Het is eigenlijk een modern vergroot glas waardoor je de geschiedenis tot je kan nemen. We kiezen niet voor knopjes die lijken op oude elementen dat vonden we er een beetje suf, te Madurodam uit zien.'

11. 'Wat is het voordeel van interactives ten opzichte van geschreven informatie in een museum?'

Antwoord:

'Ze moeten altijd naast elkaar blijven bestaan omdat verschillende mensen op verschillende manieren informatie tot zich nemen. Het voordeel van een interactive is dat je mensen echt erin kan zuigen, echt aan het onderwerp kan binden en dat is de modus waarin je iemand echt iets kan bijbrengen. "Al doende leren is wat je met een interactive echt goed voor elkaar kunt krijgen. Dus iemand overtuigen met effecten, met hoe tof het eruit ziet, met audio, een soort van overtuigende experience/beleving bieden, dat is een uitgelezen mogelijkheid om mensen iets bij te brengen. Waar het niet voor geschikt is om mensen echt uren aan je te binden, dat doe je dan weer met goede teksten, een boek en dergelijke. Kort en intensief.'

12. 'Zou een diepgaander spel die langere binding wel kunnen bieden zoals een diepgaand commercieel spel?'

Antwoord:

'Ik denk het wel maar ik denk dat het museum daar niet de plek voor is. Daar nemen de mensen er niet de tijd voor. Maar ik denk absoluut dat spellen zoals *Age of Empires* je heel veel kan leren over geschiedenis omdat je thuis zit en echt verslaafd kan raken aan het spel.'

13. 'Ken je andere Militaire Musea in de wereld waar ze op dit moment gebruik maken van spellen/interactives?'

Antwoord:

'Ik heb redelijk wat Militaire Musea gezien in de wereld en dat zijn vaak klassieke musea. Ik heb er tot nu toe nog geen interactives gezien.'

14. 'Hoe zie je persoonlijk de toekomst van games die een geschiedenis element in zich hebben?'

Antwoord:

'Ik denk dat het absoluut een toekomst heeft. Er zijn mensen die heel veel gamen, omdat het tof is om te doen, omdat het stoer is, omdat het verslavend is. Een game-ontwikkelaar kan de speler zonder aan het voorgaande afbreuk te doen wel het een en ander leren. Ik denk dat het heel weinig wordt gedaan omdat game-ontwikkelaars er niet echt een belang bij hebben. Maar mogelijk is het zeker.'

Bedrijf: Ubisoft Montreal (interview over *Assassin's Creed* Serie)

Communicatievorm: telefonisch (conference call) persoonlijk interview (diepte expert interview)

Gesproken persoon/functie: Maxim Duran / Historical researcher/ Production Coördinator

Datum/locatie: 7-10-2014 / conference call met Ubisoft in Montreal

1. 'Which Ubisoft game so far do you think has the most historical elements?'

Antwoord:

'It is a good question, I think every *Assassin's Creed* game since *Assassin's Creed I* get's closer to real history. Every time we are more aware of the details, of the elements of history. Obviously also because we got closer to modern history. Part III and *Unity* are in the eighteenth century. Because we are closer it's easier for us to be closer to history because we got more evidence.'

2. 'Is *Assassin's Creed Unity* the game which has the most historical detail because it is the last *Assassin's Creed* game?'

Antwoord:

'I would say *Assassin's Creed III* probably took a little less liberty in the production but it has higher fidelity, for instance we have more details that we can go in with history while for *Assassin's Creed III* we had less liberty in the design, our graphics for instance, but maybe it was a bit closer to history. For *Assassin's Creed Unity* we decided to produce things with high fidelity. For instance if I say liberties I am thinking about the Notre Dame for instance some landmarks we take some details from fifty, sixty years later than the time period but obviously because we have better technology, we have better possibilities you can go to higher fidelity but sometimes we are a bit further away from history.'

3. 'Ok let's focus on *Assassin's Creed Unity* in the following questions. When a game is made how is the historical information needed for that game collected?'

Antwoord:

'It is not only me as a historian that is researching when we are creating a game like *Assassin's Creed* so for *ACU* and for most of *Assassin's Creed* we have three years, lets say between two and four years, of researching and development. For instance on *Assassin's Creed Unity* the first two year we have been researching a lot. The sources of inspiration are obviously guided tours, movies, TV series, history books, encyclopaedias, atlases. The more we go into development of a game the more we go into detail. When we get into the details we look at architecture books, more specialized history books for instance if you want to know more about the Cross Knights, about people that populated the city of Paris we use books that are catalogued from museums, catalogues that gives us artefacts. For instance what people where doing in streets of Paris. So for instance the National Library says that. Also the museums in France have a corporation that have all their visual artefacts digitalized so we can use that. That is part of sources we use. We also seek al lot of documentaries in libraries or history magazines as well.'

4. 'Is the two till four years you needed spent on the research of the history or is that the total development time for the game?'

Antwoord:

'The total development time for this game I say they started researching three years, two and half years ago. So they develop the technology first and then they understand the time period. It is very important for us to understand at first how the time period is generally so I can understand how this is going to effect our script, our technology. Also it is going to help us to define for instance the city we are going to play with.'

5. 'During that research is there a focus on for example the storyline or is there a focus on the buildings. Is there a special focus or do you research the time in general?'

Antwoord:

'When we start up I'll say the artistic team already starts to look at the architecture but for most when we start working on the project, or start researching we start with general stuff to get a good idea/understanding of the time period is what is most important.'

6. 'How is the history being translated into the game itself?'

Antwoord:

'A video game is not made like a movie it is very different. So the thing is, the way we make the game is always different so we are always inspired or changed throughout the process. The game is going to be shipped at November the 11th and we are still working on it for instance. All the way inspiration can be used throughout the game so nothing is fixed until the game is shipped. So for instance if you have details at the end of the game, if they are small details you can add them. For big things in the scenario it is sometimes too late to change. So in the beginning we are trying to understand characters in advance and the more we go towards the end of the project we go with more details but we don't change big aspects of the game. If we decided for a mission that we are going to have a character, we do that in advance but there is a moment in the concept of the game where it is too late to cut it or to add it. The way we define this is we calculate the time to (decide red.) make it or change it and we do it or don't do it. It is not like a movie where you have a script, you shoot the film and then you edit the film for us it is always in the process.'

7. 'Do you also do research and make changes after the release?'

Antwoord:

'No not for historical purposes unless there was a big mistake on an era that we made that needs to be fixed. But normally two to three months before the release of the game we don't touch the gap (?Red.) of history anymore.'

8. 'What kind of persons within your company are involved with putting this history in the game (function names)?'

Antwoord:

'When you have a video game production two of the first people you have in the production are the producer and the creative director. The producer is the guy that says let's make a video game and makes sure it ships at the end of the project. So he has a big impact on the game obviously he is the boss. The creative director is the one that makes sure the game is coherent, the script makes sense. He is my first ally in history, he makes sure the script is good, he makes sure that the whole game play looks, so the way you are going to play this game is fun, you interact with the character, with the system is coherent with history. And then also all the teams working under him, the game play team, the teams that will create the type systems they are all interested in how history behaves. The teams that will create the NPC's, the Non-Playing-Characters, the crowd life, the enemy in the game are all people that can be inspired by history. It is not only visual it is also the system, the intelligence of the characters in the game are defined by our historical research. It is not only what people do in the street, it is not only animations it is also how they behave. We try to make it as relevant as possible with the time period. For instance, this game has faction points as we call it. So as an example the police faction which presents the National Guards of Paris is there to check everybody is neutral, is set to peace. There is the enemy faction which are the revolutionaries they are the extremists in the revolution. So they are the enemies of the character because they are too extremist in their ideas. There are also allies of the character, they are common people from Paris that are

just tired of the revolution, they are tired of being harassed all the time. So that is an example of how history can be applied to engineering, can be applied to programming. All the artistic aspects both buildings and all the clothing of the character, what they look like, all off this is effected by our historical research. The marketing team works a great deal with me obviously because we try to make sure what we do is respectful. Building a video game like this is not only building a playground. It is also building a philosophy, talking about a very mature subject which is the French revolution, which is the creation of men's writings of modern society. So for us it is important to be respectful in the way we portrait this. So it is important for us to stick to the facts and trying to get players more information so that they can decide and have a good comparison of the era.'

9. 'Can you give an example in developing *Assassin's Creed* where playability took over from historical reality?'

Antwoord:

'Every *Assassin's Creed* game is different in what we choose from history. For instance in *ACIII* it was very hard to do research on the American revolution, we didn't have as much content. Sometimes when we did have content and we cut it, like the city of Philadelphia it was a hard choice but we made it for different reasons such as the fact that it was a grid which is a fun city to play with. For *Assassin's Creed Unity* the hard choice was that there are to many things to choose from. All the buildings and pirates are interesting, all the characters in the French revolution are interesting, so obviously there are characters like Lafayette, which we had in *ACIII*. We also wanted to have him in *Unity* but he is not as interesting to have in this game because he is away most of the time, he is in London, obviously we could have decided to put him in the game and say actually he was in France but he was undercover. That was a kind of thing that we could have done but we decided not to do it and decided to go with other characters because there are to many characters that are interesting in the French revolution. We try to base ourselves on the relevancy of history and the appeal of these characters but there are many of them like that but its very hard to decide which one to have then but we have to cut somewhere.'

10. 'On *LinkedIn* I saw that you do historical research for Ubisoft and are a production coordinator for Ubisoft. How much of your working time approximately goes to historical research?'

Antwoord:

'I would say about a third of my time on this game. Every game is very different. It depends on if things are accessible or not. The French revolution being very accessible as a matter of information. This time around I was more involved in finding details. For instance the Cathedral of Notre Dame the artists could find the most of the information very accessibly. We bought some books about Notre Dame and she had most the details to do the Cathedral visually but then the information about what was happening inside the Notre Dame during the French revolution needed some research because it was not something that was accessible for artists. So they asked me for instance to research on that I could tell them that the Notre Dame during the revolution was for a time being used as a weapon depot and before that it was used more as a temple when the church went down. So that is the kind of information where I can help the team when they have questions. But most of the time with the French revolution my task was more about making sure the general idea of the French revolution, the conception of the revolution was fine. So to understand it is some sort of civil war and it is not easy but complex. It is not only about the king falling down, it is about a whole society restructure.'

11. 'You said that about one third of your time you are doing historical research or is it a full time occupation for you as a employee?'

Antwoord:

'Sometimes I can work for two, three weeks mostly on research and then for some weeks I don't do this work. I estimate that on the two years I spent on this project about a third of the time was used for historical research.'

12. 'Can you say what percentage of the whole budget for *Assassin's Creed Unity* went to historical research approximately?'

Antwoord:

'That is very hard to estimate, every person that is creating content on the game, so every artist, programmer, animator has to do some research. So I don't know but maybe forty hours per person? We also give training to people in the team. We (me or external professionals which are asked to come here) give training to the team. So on this project as a matter we give twenty hours of training. Maybe the average for an employee is forty hours. Again it is very hard to estimate. There is a landmark in Paris, the Saint Chapel. It's in Paris on the city island. The landmark we have right now is pretty much exactly as it was like in the French revolution so the artist didn't have much historical research to do then. He just produced the landmark so he didn't spend much time on that. But for the employee that produced the Bastille, a fortress that doesn't exist today, she probably did more than eighty or hundred hours of research.'

13. 'What do you personally think of games in general as a medium to teach the public elements of history?'

Antwoord:

'I think it is a very good medium to have people interested in history, I take myself as an example, as a kid I really enjoyed games that talked about history. It made me realize there is something more in our life than our time period. I think every company that makes games has a different way in portraying history. Some games are very exact on some battles when they talk about warfare. I think with the technologies we have right now and technologies which we can do *Assassin's Creed* or what companies can do right now can reach something that is closer to reality and that is interesting. I don't think it is going to and should replace history classes. I know people are very excited about games like *Assassin's Creed* because they get to learn about period they didn't know about. They get to learn about ways of thinking that are different than their modern reality. But again all of this is only possible because people made research in the past. I think it may arise curiosity, but people have to look at real encyclopaedia, to real books if they want to know more. I definitely think that a game like *Assassin's Creed* has more resources and teaching possibilities than a movie or television series.'

14. 'Do you know if the *Assassin's Creed* game is being used in class rooms as an example of how things looked like?'

Antwoord:

'If we did manage to extract the combat system, if we could extract the violence, it is a good portrayal of the time period. If we remove the violence gameplay part of the game I think yes there is obviously a lot that can be learned from a game like this.'

15. 'What do you do as a historical researcher for Ubisoft?'

Antwoord:

'On a daily basis either I look for information, I create timelines, I watch some movies and TV-series. I write down a very short description of these and tell that to the team. For instance a movie that was made/published last year in France, called, "Les adieux à la reine", about the queen Marie Antoinette. The visual set and the whole movie is very great. So part of my job is to find that kind of information, review the movie, make a critic and give the movie to the team so that they can watch it and also write down a critic so that they can get information on what is

good about the movie and what they should be aware of, because we don't want to use liberties that were taken making some of movies for instance. Part of my job is to give people information before people ask for it, so writing books, writing articles for the team. But also a big part of my work is filling the gaps the team needs. For instance if a scriptwriter asks me to find a person, someone who died under certain circumstances, at a certain moment in history that is a part of the work I can do. So for instance there is a character in the game called de La Sayevve, the main character's stepfather. This guy dies in Versailles and my work was to find actually that person. Who was going to be this real character in history who was going to be the main character's stepfather? So I researched the death record of the Versaille county in Paris. So I researched death records in handwriting and it took me about two days to find that character, that real historical character that was fitting with our need, with our historical need, so he was a noble, he was dyeing at the right moment at the right place. That is the kind of work I do.'

16. 'So in this example you were looking for a character that fits in the storyline as I understand?'

Antwoord:

'Yes, so sometimes I have a big excel sheet that have the death records of many people of the time era. For instance we know we are going to work from 1789 till 1794, than I do a big excel sheet, put in the most characters that died in that era. I try to research very widely and than we see if there is match between these characters that died and our fantasy that we are building upon the game. Does the character has historical relevance? Did he died at the right moment at the right place? Is there a suspicious(?Red.) circumstance to his death? For us it is funnier to respect the way a person dies. So for instance if it is not clear in history how a person died than it is perfect for us, than we have room to add content, so it is believable.'

17. 'Do you know about other historical researchers working in the game industry, like you with a historical background?'

Antwoord:

'Yes, so I am not the only historian or researcher working for Ubisoft. Before me they had other historians, I also work with external historians, as I mentioned some of them we ask to do lectures here at Ubisoft. We review them so we have an external view of what we are doing so that we have a fresh view of people who don't work in the industry, people who are specialists of the time period. Internally I am not the only historian, the scriptwriter who made Assassin's Creed Liberation two years ago, a game that was first released on Playstation Vita, has a background of history and there are also other historians here.'

Appendix V Transcripts interviews institutes

Instelling: TNO

Communicatievorm: direct persoonlijk interview (diepte expert interview)

Gesproken persoon/functie: Anja van der Hulst / Coördinator Gameonderzoek en Bas van Dijen / UVA student gameopleiding / stagiaire TNO

Datum / locatie: 24-4-2014 / Amsterdam

1. 'Wat doet u in uw functie als Coördinator Gameonderzoek?'

Antwoord:

'Ik doe vrij veel advieswerk voor partijen die een nieuwe simulator of game aanschaffen. We vragen eerst wat men wil bereiken, wat zijn de leerdoelen? Dan ga je van functionele specificaties naar technische specificaties. De andere tak is gaming innovaties, het ontwikkelen van nieuwe game concepten specifiek voor militaire toepassingen.'

2. 'Gaat het dan vooral om games met militaire toepassingen en gaat het zelden om commerciële games en het nut (of onnut) voor het publiek?'

Antwoord:

'Over het algemeen gaat het daar niet om maar zo nu en dan maken we een uitstapje om te kijken of we commerciële games kunnen hergebruiken. Het is over het algemeen maatwerk wat wij doen.'

3. 'Waar ziet u militaire geschiedenis in games naar voren komen?'

Antwoord:

'Als ik naar de KNMA opleidingen kijk (dan heb ik het niet zozeer over digitale games) maar zij herbeleven allerlei militaire historische scenario's. Dus ze gaan naar de Ardennen om het Ardennen offensief in feite na te spelen. Er zijn heel veel momenten in de opleiding waar ze naar historische battles kijken. Historisch kan dan zeg maar al Afghanistan zijn.'

4. 'Geld hoe recenter hoe beter?'

Antwoord:

'Ik denk dat ze eigenlijk nu wel weer met koude oorlog scenario's bezig zijn. Dat zou zo maar kunnen. Er zitten behoorlijke historische dingen in zoals, Ardennen offensief, Tweede Wereldoorlog, Eerste Wereldoorlog. Er wordt ook gekeken naar de Korea oorlog. Qua historische digitale games heb ik er niet heel veel zicht op maar ik denk dat het er heel erg weinig zijn. De praktijkoefeningen beginnen bij de Eerste - en Tweede Wereldoorlog waar je gemechaniseerd optreden hebt, wat relevant is. Er wordt erg veel gekeken naar Irak en Afghanistan.'

5. 'Hoe zie je computergames als didactisch middel om geschiedenis over te brengen?'

Antwoord:

'Ik vindt het een waanzinnig prachtig middel omdat je in plaats van ergens over te lezen bijvoorbeeld een battle beleeft. Er is een leuke theorie over retentie dat is zeg maar een piramide. In de top zitten dingen die in de klas verteld worden daar onthoud je zeg maar een jaar later vijf procent van en de dingen die je feitelijk zelf uitvoert die zitten op vijfenzeventig procent retentie en gaming valt onder doe vijfenzeventig procent retentie. Dat heeft zoveel meer impact dan erover lezen of er een college over krijgen. Dat is voor mij het belangrijkste argument.'

6. 'Denk je dat je via commerciële games, in tegenstelling tot serious games de speler iets kan opsteken van geschiedenis?'

Antwoord:

'Commerciële games kunnen ook serious games zijn. Maar jij bedoeld of je ook van entertainment games iets kan opsteken?'

7. 'Met commerciële games bedoel ik meer de games die het publiek kan kopen en spelen. Serious games bedoel ik meer de games die als trainingdoel gebruikt worden in bedrijven of het leger enzovoort.'

Antwoord:

'Ik denk aan de game, *Democracy* want dat is een commerciële entertainment game maar er zitten een aantal flauwe dingen in als dat je bijvoorbeeld de alcohol wetten vrijgeeft dat iedereen dronken wordt. Dat is niet realistisch maar grappig en entertainmentachtig.'

Antwoord Bas van Dijen:

'*Democracy* is een redelijke accurate simulatie totdat je een beetje in het onbekende gaat, zo gauw je bijvoorbeeld drugs legaliseert heb je een gigantisch probleem maar je organized crime is helemaal weg. Dat soort dingen.'

8. 'Maar dingen die al feitelijk gebeurd zijn, die in het verleden hebben plaatsgevonden?'

Antwoord Bas van Dijen:

'Die dingen kunnen ze redelijk accuraat brengen omdat ze vaak historici uitnodigen bij dit soort games. Bij game studio's worden heel vaak historici uitgenodigd om dit soort conflicten/situaties helemaal uit te pluizen en daaromheen dan het spel maken. Commerciële games huren letterlijk historici in voor dit soort dingen en dan is de modellering van de actie misschien niet helemaal netjes.'

Antwoord Anja van der Hulst:

'Je hebt een categorie van commerciële entertainment games. Dat zijn de *Call of Duties*, "we knallen een eind weg" alhoewel *Call of Duty* best realistisch gemodelleerd is.'

9. 'Hoe zit dat met *Arma II*?'

Antwoord Bas van Dijen:

'*Arma II* is bijna een advertisement game om mensen te leren en te overtuigen van het Amerikaanse leger.'

10. 'Een soort rekruteringsgame?'

Antwoord Bas van Dijen:

'Ja daar zie je dat de modellering van de wapens heel erg realistisch is. Alle benaming en informatie daarover is heel gedetailleerd terwijl spellen zoals *Counter Strike* dat niet heel erg hebben. Daar gaat het meer om de sport van het spel dan dat het daadwerkelijk gebaseerd is op een realistisch niveau.'

Antwoord Anja van der Hulst:

'Er ontstaan clans die iets realistisch willen maken. De makers van *Arma* wilde ook realisme bereiken. Er is een nieuwe doelgroep en dat zijn de volwassenen die opgegroeid zijn met games en die voor hun interessante games willen hebben. Ik denk dat er een heel nieuwe markt komt van mensen die realisme interessant en entertainment vinden. Dat geldt voor mij in ieder geval. Ik zat gisteren in een vergadering met mensen die al heel lang in de simulatiewereld bezig zijn en die zeiden "het verschil tussen gaming en simulatie is helemaal aan het verdwijnen", want de onderliggende modellen in games worden steeds geavanceerder. Dus het antwoord is ja, ik denk dat entertainment games hartstikke veel educatieve waarde hebben.'

11. 'TNO brengt vraag en aanbod bij elkaar middels het platform Value Centre for Applied Games. Weet u of TNO via dit platform partijen bij elkaar heeft gebracht die aan de ene kant vanuit de historische hoek komen en vanuit de andere kant uit de game industrie?'

Antwoord Anja van der Hulst:

'Nee, die zijn er niet. Ik ken geen partijen die vanuit historische hoek hiermee bezig zijn. Ik heb best een redelijk beeld van de hele gaming industrie plus de academische/HBO partij maar ik ken ze niet in Nederland. Ik weet wel dat de club waar Joe Sauer spin in het web is dat ze daar bouwen aan historische games en modern-historische battles. Er zijn wel enkele projecten zo heeft de Waag een historische game uitgebracht dat Frequentie 1450 of zoiets. Het is in ieder geval een game voor kinderen van de lagere school waarbij ze op hun telefoon een historische kaart van Amsterdam hebben waarmee ze door de stad lopen en op historische punten allerlei opdrachten moeten doen en daar films van maken maar dat zijn eenmalige exercities. Er zijn volgens mij geen partijen die zich structureel bezighouden met inbreng van historische gegevens in games. Die zijn er niet in Nederland maar in de VS zijn ze er zeker.'

12. 'Hoe denk je dat spelmakers ervoor zorgen dat (militaire) geschiedenis in hun spelletjes komt?'

Antwoord Anja van der Hulst:

'Bij *Arma* is dit een clan (enthousiastelingen) met vaak een militaire achtergrond. Dit zijn meestal vrijwilligers. Ze denken bijvoorbeeld ik ga een model van een tank uit 1920 maken. Dan zoeken ze al die gegevens van die tank en daarna gaan ze modelleren.'

13. 'Er wordt daar dus niet iemand voor aangesteld maar de vraag wordt rond gegooid wie weet wat van die tank?'

Antwoord Anja van der Hulst:

'Ik denk dat het bijna 100% vrijwilligers gebeuren is. De engine is vaak wel commercieel.'

Antwoord Bas van Dijen:

'Het is lastig te zeggen. Vaak beginnen dit soort dingen als vriendengroepjes. Vooral bij dit soort games, simulatiegames. Ik denk zoals bij *Combat Mission* dat het begint met enthousiastelingen. Een kan programmeren, één weet hoe een 3D programma werkt en dan maken ze samen wat zij leuk vinden om te spelen. Dan komt er op een gegeven moment iemand die zegt "dit vindt ik ook leuk" en dan groeit het. Het is een community die iets maakt en er op een gegeven moment achter komt dat ze er commercieel ook nog wat mee kunnen. Er wordt een niveau bereikt wat anderen mensen ook willen.'

Antwoord Anja van der Hulst:

'Op een gegeven moment wordt het overgenomen door professionele partijen. Bohemia is bijvoorbeeld nu echt groot, zij zijn de makers van *VBS*. Er werken meer dan honderd man. Op een gegeven moment gaat de professionele omgeving allerlei eisen stellen. De AI was bijvoorbeeld schandalig slecht. Pad planning sloeg nergens op, iedereen loopt overal tegenaan.'

14. 'Was het niet zo dat het een multiplayer game moest zijn waardoor de AI minder belangrijk is?'

Antwoord:

'Het was wel een multiplayer game maar de kunstmatige intelligentie die je wel nodig hebt, klopte helemaal geen hout van. In de terreindatabase zaten geen kwetsbaarheden in, in huizen en dat soort dingen dus dan schiet je overal dwars doorheen, dat schoot niet op. NATO heeft op een gegeven moment een contract van vijftig miljoen aan Bohemia gegeven om een aantal van dit soort fundamentele problemen op te lossen. Nederland heeft een

campus licentie (enterprise licentie voor heel defensie), daar is ook een miljoen in gaan zitten. Nederland is een kleine partij natuurlijk. Ik denk dat alle NAVO landen op dit moment wel licenties voor VBS hebben. Het begint vaak met een amateuristische ontwikkeling en later wordt er commercieel ontwikkeld.'

Vraag:

'Dus het is niet zo dat je van te voren bedenkt "wij gaan dit spel maken en daar hebben we zoveel geld voor nodig"?'

Antwoord Bas van Dijen:

'Ja dat kan ook wel en dat zie je nu steeds vaker. Het is dan commercieel. Je hebt vaak een groep mensen die iets willen dat door marketing gezien wordt als iets wat commercieel niet haalbaar is. Het is vaak meer een droom zoals *Arma*: "wij willen het meest realistisch zijn en het maakt niet zoveel uit of het er super mooi uitziet maar het moet 100% realistisch zijn in het spel, hoe het schiet, hoe het loopt dat soort dingen moet realistisch zijn. Voor mensen die dat graag willen kunnen ze met Kickstart programs geld sponsoren. Daar komen dat soort simulatie games wel vaker tot hun recht. Vanaf marketing gezien ziet het er negen van de tien keer niet heel positief uit omdat je eigenlijk een hele kleine groep aanspreekt. Maar die kleine groep is meestal heel erg fanatiek.'

Antwoord Anja van der Hulst:

'Sterker nog vanuit *Arma* werd *VBS* afgeleverd, dat was dan de commerciële variant. Toen van *VBS* / zoveel naar versie II gegaan werd zijn ze weer terug gegaan naar *Arma* en hebben ze de engine van *Arma* weer gepakt. Eind dit jaar komt *VBS3* en dat is ook weer op de engine van *Arma*. Onder *Arma* zit inmiddels ook een commerciële ontwikkeling maar in het begin was dat niet zo. Maar als je kijkt naar *Grand Theft Auto IV*, dat is een geplande commerciële ontwikkeling, daar zit geen amateur in.'

Antwoord Bas van Dijen:

'Games zoals *Combat Mission* draaien wel op de modders scene. De mensen die er enthousiast over zijn maken historisch accurate situaties. Ze zeggen bijvoorbeeld: "battle of the Bulge daar waren zoveel tanks, zoveel manschappen aan ene kant, zoveel tanks zoveel manschappen aan de andere kant, dat gaan we doen". Dan programmeren zij dat soort scenario's. Er wordt hun een toolbox geleverd om meer scenario's te schrijven en uitbreiding te geven aan hun games. Er is op een gegeven moment een beweging gekomen in de gamewereld waarbij gerealiseerd wordt dat mod's, de retention, hoe lang iemand een spel speelt oneindig vergroot kan worden. En dat willen ze. Je verkoopt niet nog een keer hetzelfde spel want dat is verkocht je krijgt er dus niet meer geld door maar ze blijven het spelen. Als er dan een nieuwe komt dan zijn er heel veel mensen die in jou fanbase zitten, die allemaal zonder dat je daar meer moeite voor hebt kunnen doen meer content hebt kunnen geven, meer toegang kunnen geven. Ik denk dat ze daar heel veel van hebben geleerd. Er is commercieel baat bij mod's in een game. Er zijn een aantal game companies die daar niets van moeten weten, die laten geen mod's toe en je kan er dan niets mee. En er zijn een aantal die er op gebouwd zijn. Op *Steam* heb je een workshop waarbij mensen hun eigen content kunnen uploaden. *Valve* heeft vanaf het begin aan altijd hun engine met een developer kit geleverd. Daaruit zijn spellen zoals, *Day of Defeat* en *Counterstrike* uit voortgekomen. Al die games zijn mod's eigenlijk.'

15. 'Dus als ik het goed begrijp is het voor diegene die de mod's maakt ook makkelijker geworden om ze te maken?'

Antwoord Anja van der Hulst:

'Een commercieel spel zoals *VBS* wordt echt met een volledige kit geleverd om zelf nieuwe modellen en terreindatabases te maken. Ook voor de professionele wereld doet men dat.'

Antwoord Bas van Dijen:

'Ik denk dat er heel veel te halen valt. Want je modelleert als gamemaker alle modellen over hoe de kogels vliegen en hoe de manschappen bewegen. Dat kost veel tijd maar als je je daarnaast ook nog moet focussen op het maken van honderdduizend scenario's... Je moet ergens een afweging maken in de verdeling van je tijd.'

Antwoord Anja van der Hulst:

'Het open-source model is echt nieuw voor defensie. Bij *VBS* is dat er voor het eerst opgekomen. Ze zitten met argus ogen te kijken. Maandag heb ik een verhaal voor de marine moeten houden, " *VBS* hoe werkt dat dan?", "Nou iedereen binnen Europa binnen de Nato maakt terreindatabase en die wisselen we uit, en alleen als je een terreindatabase echt voor je zelf wil omdat het gebied geclassificeerd is dan moet je twee tot drie keer zoveel betalen. Voor een normaal tarief wordt het uitgewisseld". Dat vonden ze erg heftig, ook je eigen modellen van je eigen wapensystemen worden in principe gewoon meegeleverd in de volgende release.'

Antwoord Bas van Dijen:

'Het is wel logisch want het kost natuurlijk heel veel geld om te onderzoeken en dat kan je of verdelen over heel veel mensen of je betaald alles als je het alleen voor je zelf wil.'

16. 'Als ik het goed begrijp zijn het dus heel vaak enthousiastelingen die mod's maken en misschien in die mod's iets van geschiedenis zouden kunnen stoppen. Hun kennis wordt dus gebruikt?'

Antwoord Bas van Dijen:

'Het kan zijn dat die kennis komt van iemand die historicus is, die het leuk vindt om dat soort games te modelleren. Dat zie je best wel vaak, dat soort dingen zie je vaak terug komen.'

17. 'Kennen jullie bedrijven/software huizen/personen die zich expliciet bezig houden met militaire geschiedenis in games? Stel dat ik een spel maak wat gaat over de Tweede Wereldoorlog, en ik wil daar iemand voor inhuren die mij daar bij kan helpen. Weten jullie dan bij welk bedrijf/persoon je moet zijn?'

Antwoord Bas van Dijen:

'*Battlefront*, de makers van *Combat Mission* die zijn er heel erg mee bezig en doen ook dit soort opdrachten vanuit het leger. Bijvoorbeeld voor het Australische leger wilden met het *Africacore* omdat ze hun mensen wilden trainen met historische tactieken hebben ze hun gevraagd; "kunnen jullie een adaptie maken voor jullie spel?" Dan maken ze de content die daar bij hoort en eventueel wat scenario's die daar bijhoren. *Battlefront* is een rare want ze zijn eigenlijk commercieel maar ook weer niet. Ze houden bijvoorbeeld geen enkele rekening met conventionele interfaces van games. Ze hebben er helemaal niks aan besteed. Als je de interface opstart heb je geen idee, de tutorials zitten er niet in, het is echt gemaakt voor iemand die er erg enthousiast over is want anders kom je er gewoon niet in. Het wordt wel commercieel uitgebracht maar ze draaien op de niche markt van hele realistische simulaties en eventuele contracten met het Amerikaanse/Australische leger enz.'

Antwoord Anja van der Hulst:

'Er zit altijd een expertise clubje van lui die een simulatie kunnen draaien dan hoef je inderdaad niet allerlei fancy dingen te maken om het makkelijk te maken voor gebruikers.'

Antwoord Bas van Dijen:

'Ze gaan er van uit dat van te voren de user manual gelezen wordt. Geen gamer die dat ooit heeft gedaan, maar in het leger wordt dat gewoon gedaan.'

Antwoord Anja van der Hulst:

'Voor defensie is het maatwerk en dan denk je dus niet zoveel na over allerlei mooie interfaces en fancy handleidingen. Het zijn dedicated lui die daar gewoon drie jaar mee bezig zijn.'

Antwoord Bas van Dijen:

'Het lijkt een beetje het verschil tussen de serious game en de entertainment game ondanks dat het geen zwart-wit gebied is. De drempel hoeft niet laag als je enthousiastelingen vindt die het super realistisch willen dan kan je

misschien de drempel ook helemaal niet verlagen en dat is dan ook helemaal niet je doel en het gebeurt dan ook niet.'

Antwoord Anja van der Hulst:

'Je moet echt parametiseren. Voordat je begint moet je honderdduizend parameters in stellen om je eigen battle te doen.'

Antwoord Bas van Dijen:

'Er is bijvoorbeeld een heel groot verschil tussen *Europa Universalis* en *Civilization*. *Europa Universalis* heeft op geen enkel moment gedacht "het moet ook makkelijk zijn om te begrijpen" maar het is wel onwijs diep gemodelleerd. *Civilization* is voorgesneden en geeft meteen gas....'

18. Is TNO actief bezig om geschiedenis en games tot elkaar te brengen?

Antwoord Anja van der Hulst:

'Ja en nee, eigenlijk probeer je de actualiteit te modelleren. Per definitie juist niet historische battles, maar je maakt natuurlijk wel gebruik van historische gegevens. We rijden bijvoorbeeld met tanks rond, Leopards die dertig tot vijfendertig jaar oud waren maar dat is recente geschiedenis. Maar nee we zijn niet actief bezig met historische battles.'

19. 'Zie je de combinatie tussen geschiedenis en games groter worden; dat er meer mee gaat gebeuren?'

Antwoord Anja van der Hulst:

'Ik zie het absoluut groter worden, ik vind het een prachtige manier om geschiedenis en ook militaire geschiedenis over te brengen. Of het binnen defensie een grote rol zal krijgen? Dat zal beperkt zijn. Ze zullen nog steeds naar de Ardennen gaan en daar op die heuvel staan en kijken maar wellicht in combinatie met gedigitaliseerde battles.'

20. 'Je hebt het nu over het leger maar ik bedoel ook voor het algehele Nederlandse publiek. Bijvoorbeeld in klaslokalen.'

Antwoord Anja van der Hulst:

'Ja ik verwacht het absoluut maar je ziet nu dat voor veel docenten bij spellen de drempel te hoog is. Bij de docenten van mijn generatie gaat het niet gebeuren. Er zijn wel onderwijsuitgevers die nu redelijke grote didactische spellen uitbrengen maar ze pakken de grote markt eerst, rekenen, taal, de basics. Pas daarna zullen ze dingen oppakken zoals geschiedenis, aardrijkskunde. Dus dat gaat wel komen maar daar zijn ze nog niet aan toe. Ik heb wel op conferenties al mooie voorbeelden gezien. Microsoft heeft een interessante game waarbij je op een tijdslijn allerlei historische events kan opvragen met animaties en filmpjes. Nog niet een playable iets maar het zag er heel mooi uit.'

21. 'Hoe komt het dat spellen in musea zoals nu bijvoorbeeld in het Nederlands Militair Museum zo simpel en kinderachtig zijn?'

Antwoord Anja van der Hulst:

'De spellen in musea moeten heel laagdrempelig zijn, die moeten in een minuut te spelen zijn. *Hearts Of Iron* werkt dan dus niet.'

Antwoord Bas van Dijen;

'Een speelsessie is berekend op twee minuten, wat wordt dan de balans tussen hoeveel informatie je daarin stopt en hoe leuk is het om het spel te spelen? Het is moeilijk om heel veel informatie te geven en er een spel van te

maken dat leuk is. Wat dan vaak gebeurd is dat de informatie wordt ondergeschoven en het spelletje leuk gemaakt.'

Antwoord Anja van der Hulst:

'Dit is nog een soort overgangsfase. Het is interactief en het is al goed. Daarna komt een periode waar het gaat professionaliseren.'

22. 'Hoe zie je toekomst van games met geschiedenis elementen?'

Antwoord Anja van der Hulst:

'Ik denk dat we het niet perse over toekomst hebben maar dat het al gebeurd. Er zijn mensen die het echt leuk en interessant vinden om dit soort games te maken, alles wordt uitgepluisd tot op de laatste punt. Het gaat over hoe fanatiek die mensen daar in zijn. Er is een markt voor, al is het een kleine markt, maar die markt is wel zo hardcore dat ze dat soort dingen willen, voor betalen en uren achterelkaar kunnen doen. In principe is de toekomst een beetje waar we nu naar toe aan het gaan zijn. Er komen spellen die heel accuraat zijn, waarin de modellen heel erg uitgebreid worden, misschien daardoor minder toegankelijk voor de main stream gamer maar niche markten worden steeds interessanter voor game companies. Ik denk dat het wel die kant opgaat. Je ziet veel meer games die bijvoorbeeld voor realistische shooters gaan, die *Call of Duty* uitlachen. *Insurgency* is zo'n game. Die adverteert met "one shot, you die", er is geen kill confirmation, als iemand doodgaat moet je het zien of maar aannemen, respawnen is flauwekul doen we niet aan... Er is een bepaald publiek die gewoon snel casual wil schieten en er zijn mensen die het realistisch willen. Ik denk dat die realistische markt nu veel meer aan bod komt en groter wordt omdat daar zo'n gat in was. Daar wordt nu heel veel aan gedaan.'

23. Geen directe vraag maar tabletop miniature wargames kwam ter sprake:

Antwoord Bas van Dijen:

'Er zit een groot verschil in wat je in algoritmes kan programmeren en wat je in zo'n spel speelt. De rule bending van zo'n game maakt het interessant. De regels zijn niet duidelijk je hebt in-house rules. Binnen games heb je dat niet. Er is geen dungeon master die zegt "hier kom je mee weg omdat je creatief bent", want die is er niet. Of je speelt volgens de regels of niet en meestal ga je dood als je het niet doet.'

Antwoord Anja van der Hulst:

'Binnen defensie worden eigenlijk nooit stand-alone games gebruikt. Dus je hebt eigenlijk altijd wel een regie, in feite een umpire. Deze kan tegenspel bieden of events introduceren om de balans weer goed te krijgen.'

Antwoord Bas van Dijen:

'Er is maar zoveel variabele tijd die je in je code kwijt kan en mensen zijn zo creatief in het verzinnen van oplossingen. Sommige oplossingen kan je niet op anticiperen. De mogelijkheden exploderen dat is niet te doen. Er is einde aan wat een programma kan tegenover wat jou brein kan bedenken als creatieve oplossing voor een situatie en soms zijn creatieve oplossingen juist heel interessant en dat kan je bijna niet meer modelleren, dan moet je iemand met heel veel ervaring hebben die dat model eigenlijk is.'

Antwoord Anja van der Hulst:

'Het is in feite een luxe positie dat dan binnen defensie nog kan. De entertainment wereld moet het met stand-alone doen.'

Antwoord Bas van Dijen:

'Er zijn maar weinig games waar de regels bepaald worden door de spelers.'

24. Bas van Dijen zegt nog:

'Wat je wel eens ziet is dat gamestudio's zelf hun concept artists erop uit sturen. Jongens werden voor Real naar China gestuurd om met een camera architectuur beelden te maken. (...) De concept artist wordt vaak diegene mee bedoeld die de plaatjes en functionele weergave doen. De concept artist denkt over het design document wat opgesteld wordt. Er wordt dan een document opgemaakt waarin je vaststelt wat iedereen binnen jou team gaat doen, hoe je het wil bereiken. Hoe groter je game, hoe dikker die pil wordt. Als je iets wil weten hoe je dat moet doen, dan moet het erin staan, een soort van plan van aanpak over de hele game. Historici kunnen gevraagd zijn om hier bij te zijn om de verhalen te maken en misschien de feiten te checken. Of er wordt een verhaal geschreven en gekeken "is dat wel zo".'

Instelling: Universiteit van Amsterdam, Game Studies

Communicatievorm: direct persoonlijk interview (diepte expert interview)

Gesproken persoon/functie: Frank Nack / opleidingscoördinator Game Studies

Datum/locatie: 16-5-2014 / Amsterdam kantoor Nack op Science Park

1. 'What do you think of games as a didactical medium to learn aspects of history?'

Antwoord:

'As any other domain, I think it is good. The advantage of games is that it is interactive. History has something to do in my understanding with relations. It is always quite nice to have that in the context of an animation and as animation is an essential part of games, I think it is good. As long as the game actually supports the reflective element. So if it is only "I put you in a situation and that is it and then you do skills such as shooting or painting or whatever then I think it doesn't really help. But the advantage for games for history is that can actually explore the relations that are reflecting about it. So that is good.'

2. 'Is dat het beste leerpunt wat een spel toevoegt ten opzichte van andere leermedia om geschiedenis over te brengen? De relaties?'

Antwoord:

'Yes, so I think if you have a book and say it is an exceptional scholar and it can provide all the various relations, what is going to happen is that it is all linear. Of course you can go back but it has a very clear narrative. As in a game you can potentially work on these relations in your own speech, in your own manner and it might even, depending on the engine, generate relations even the most brilliant scholar could have foreseen and that is good, the generative element in it.'

3. 'During the most game studies in general is there any education on history as input for games?'

Antwoord:

'No, well the students do have little design assessment, now some of the students are actually from history, so their bachelor is history or whatever in that field. They come up with solutions out of that field and that is exactly what is the Master about. The same goes for economy or psychology. They fall back into that field so I would not say that we don't see anything with history on the contrary we had this one game, in the game project this block where one group was actually working on memories of people in homes for the elderly, where the intention of the game more to show that it was actually quite interesting working there. One of the ways was that you became part of the memory of these people. The example they had was from the WWII.. that one woman had to steal potatoes from the Germans and how she was doing it and then they designed the game around this. So the motivation was actually very different it was how do we get people to understand that is actually worthwhile to work in such a

home even when your pay is discussible. But the means was that they took elements of history. As about other stories but the best that worked out was the one from WOII which I think also shows that it is a fascinating time. They also good take easily something from the fifties or sixties.'

4. 'Do you think that that input of history was in accordance with earlier motivation for making the game?'

Antwoord:

'It was, they could have picked other stuff but the real interesting thing is that you work with people, and with the most interesting thing of people; their memory and then you go straight away in history. Not that it was very accurate. There design decision had something to do with the point of they could only use one particular game engine and everybody looked a bit like these *Playmobile* figures. You could sort of see these were soldiers, the story sad these where German soldiers.'

5. 'The graphics did not allow more detail?'

Antwoord:

'Exactly, but it worked fine..'

6. 'Do you know if any other game education faculties, programs, schools focus more on history in games? Is it a topic that is done somewhere?'

Antwoord:

'No, educations are going into two ways, they try to make you a very good game designer, that is in Utrecht and Breda. There you learn the tools. And then you have us here, we are more interested, we are probably the closest because we could integrate whatever domain there is because we have people from these domains as students. Than you also have the people in Twente and Eindhoven. The Eindhoven people see it more as interaction design for the elements they are more interested in technology. The people in Twente are more interested in storytelling. History could be a domain but there is not any, not even in Europe that I know, where the aspect of history is important. But however TNO is very much interested in this but that is because they work with the army. They do al lot but they are more interested in decision making, conflict resolution. These kind of things.'

7. 'To be concrete , at this moment there are no game studies in Europe which incorporate history in gaming?'

Antwoord:

'Not that I am aware of.'

8. 'Do you think there is an intradisciplinary field possible between UvA History and UvA Game Studies?'

Antwoord:

'Sure, in general I would say, yes. Intradisciplinary work should be done and it is something we are also interested in. We know have links with psychology and medicine, a bit to economy. This year we had some students from psychology who followed some of our courses. The problem is that the master program is planned as a linear educational experience. Where we expect certain elements to be done. Which means that by simply following just one course might not be that good. You would have to follow a couple to get a real understanding. But we simply see how that is further developing. And that planning is done because we have this year people from various different background, that is why the program in itself is necessarily multidisciplinary. They should be able to pick up what they need if they go back in there domains they can set up game environments for that domain.'

9. 'Ik zie in de toekomst wel dat in het klaslokaal gebruik gemaakt gaat worden van spellen die al gemaakt zijn maar aangepast met editors ingezet worden om leerlingen iets van geschiedenis te laten zien.'

Antwoord:

'It is also cheaper, cheaper than that people actually replay battles. They wear the clothes, they have the weapons, they go to the places and replay the battle, which is roughly the same idea, to some extent even better because suddenly you start to realize that all that stuff is really heavy if I have to walk, to run, it's raining, it's nice wetter or whatever. Same idea but far more expensive off course. In a game everybody can do this. The battle itself would take in a realistic game the same time. But you can rebuilt it more easily, but you lose certain reality elements of it, the heaviness of gear.'

10. 'How do you see interactive history storytelling and do you have examples of this being materialized?'

Antwoord:

'There is one lovely, interactive story environment by Michael Matheus. That is *Terminal Time*. *Terminal Time* is a film with an underlying engine, it is showing elements out of history. It provides by statements where it tries to get people to, so they see a bit of history and development of humankind, then a couple of questions, then people clap, the film continues depending on which of these statements got the most clapping. The idea there is actually that the system tries get people to understand that they have a very buzzed(?) few on history. It tries then to contradict whatever they think that history is with real elements out of history which simply state the opposite. The power of interactive storytelling is that the engine needs to be proactive and reactive. So it is not only that you get material where you can go through, like in hypertext. It really needs engines that manoeuvre you in a position that contradict yourself, only then you learn. We get back then to reflection. So at the end, the engine needs to get you to a point that you start reflecting about what you just did, thought.'

11. 'By your opinion you learn the most, the most intensive by reflection?'

Antwoord:

'Reflection is the only way to really learn something, otherwise you only absorb.'

12. 'Did you ever played wargames on a computer yourself?'

Antwoord:

'No, the only game I played on a computer was *Risk* and that was because I simply plaid a lot of *Risk* when I was younger but I got immediately bored because I understood with the AI background within minutes, I could always win.'

13. 'Waarom denk u dat AI nog zo slecht is, waarom kan dat niet beter?'

Antwoord:

'Within AI there are lots of different things you actually have to combine. So one of the problems is, problem solving, decision making, conflict resolution are complicated enough if you go only for the facts. Than you have human behaviour which is not always plannable in fact it is quite illogical what humans do depending on there experience. So what we actually also would have to do is modelling experiences. No each of these parts in itself is complicated. Merging them so that actually get a human like behaviour or a system that sort of can understand this is complicated. The film *Her* is about a operating system that responds to the human being on all various human levels. At the end the two have a sort of platonic relation, a lover relation that is not working, other stuff is simply complete nonsense in that film. The real interesting point in that film is that indeed the engine has reflective powers so that is exactly what humans also can do and that helps. The conclusions, the assess drawn from that

were ridiculous but never mind. That is the problem if you only look at games. There had been a long discussion is a game narrative or not, well I don't care, but the point is simply if we would like to have engines that are in the position to tell narratives as we do, they would have to have something we have and that is memory and the history. That is what these engines don't have, so the idea what is also described in science fiction stories like Blade Runner that we have to put in memories into these engines is what we have to do and that is why they are usually not that good.'

Instelling: Ministerie van Defensie, Militair Historisch Onderwijs en Doctrinevorming.

Communicatievorm: interview antwoorden per email.

Gesproken persoon/functie: luitenant-kolonel P.B. (Pieter) Soldaat MA / stafofficier van de afdeling Militair Historisch Onderwijs en Doctrinevorming.

Datum: 6-10-2014.

1. 'Uit het interview met Adjudant van der Zwaan kwam ik erachter dat u op NIMH militaire situaties die in Afghanistan hebben plaatsgevonden middels een game laat zien. Hoe heet het spel wat u hiervoor gebruikt? Past u het spel zelf aan?'

Antwoord:

'Dat wordt VBS-3. We willen zelf MAIS invoeren of iets wat er op lijkt. Dit spel is niet ideaal, maar is voor het lage niveau van optreden (soldaat, groep, peloton) goed genoeg. Daarboven heb je ondersteuning van AI nodig om de vele entiteiten te helpen aansturen.'

2. 'Waarom kiest u voor een spel om deze situaties te laten zien? Wat is het doel?'

Antwoord:

'Omdat een spel de enige mogelijkheid is om laagdrempelig in een soort van gevechtssituatie te komen. Dit genereert een veel grotere mate van betrokkenheid en derhalve een hogere leercurve.'

3. 'Welke situaties laat u in het spel zien?'

Antwoord:

'Ik wil een hinderlaag laten zien, waarbij de leiders snel besluiten moeten nemen en deze laten toepassen.'

4. 'Hoe komt u aan de historische informatie (wat zijn de bronnen) die als input voor het spel gebruikt?'

Antwoord:

'Uit (deels geheim) onderzoek en militaire bronnen op het NIMH.'

5. 'Hoe wordt deze historische informatie vertaald in het spel?'

Antwoord:

'We willen een soort film maken met de historische uitkomsten en deze dan als vergelijk gebruiken voor de door de leerlingen gevonden oplossingen.'

Instelling: Serious Game Centre/ Land Training Centre / Simulatiecentrum Landoptreden

Commando Landstrijdkrachten / Opleidings- en Trainingscommando, Ministerie van Defensie.

Communicatievorm: direct persoonlijk interview (diepte expert interview).

Gesproken persoon/functie: Adjudant Jurrie van der Zwaan / Staf Onderofficier Projecten en Innovatie.

Datum/locatie: 25-4-2014/ Bernardkazerne te Amersfoort.

1. Jurrie van der Zwaan zegt;

Commentaar:

'Einde jaren tachtig speelde ik *Kampfgruppe*, het eerste programma waarin ik tactiek ervoer, grafisch was het nog niet veel maar je kreeg berichten met tekst en coördinaten en een kaart. Via een script kreeg je vijandposities door. Ik zat op dat moment daadwerkelijk in een commandogroep en dacht, "dit doe ik in mijn echte werk ook", het was heel realistisch. Vervolgens kwam het grote keerpunt en dat was het spel *M1 Tankplatoon*. Daar zag ik waar ik jarenlang voor getraind had in een 3D omgeving inclusief uitwerking en effecten. Toen dacht ik; "Waarom gebruiken we dit eigenlijk niet om onze mensen te trainen?". Vanaf 1990 ben ik bezig om serious gaming bij de militairen tussen de oren te krijgen. Dat is heel moeilijk vanwege een aantal factoren. Militairen vinden het lastig om veranderingen te accepteren. Daarnaast was de gametechnologie nog niet zo ver dat je een spel snel kon manipuleren en dat het bruikbaar was. In 1999 kwam de spellen *Steal Beasts* en later *VBS* uit. Deze spellen richtten zich ook op de militaire industrie. Hiermee konden we snel dingen aan de militairen laten zien en het spel makkelijk aanpassen. Vanaf 2003 ben ik demonstraties gaan geven om te laten zien wat je met de games kan. In 2007 is uiteindelijk het Serious Game center opgericht. Momenteel zijn er veertien man plus achttien stagiaires werkzaam op deze afdeling. Het gehele simulatiecentrum is van vierentwintig mensen naar meer dan honderd mensen uitgebreid. Ik verwacht dat groei doorzet. De docent Pieter Soldaat op het NIMH gebruikt een game om militaire situaties die in Afghanistan hebben plaatsgevonden aan militairen te laten zien. Hiermee krijgt de game historische toegevoegde waarde. Hierbij gaat het om een game die je zelf kan manipuleren waardoor je zelf historie erin kan zetten. Hierdoor krijg je beeld en geluid bij historie. Door korte filmpjes en interacties kan men leren van de geschiedenis. Waarom bijvoorbeeld mensen met zwaarden en speren op die manier vochten. Waarom ze in groepen vochten en niet als individuen zoals (weliswaar gestuurd) tegenwoordig wel gebeurd. Veel mensen zijn niet beried om hier een dik boek over te lezen maar wel om een game te spelen.

Ik ben één van de ontwikkelaars van het spel *Combat Mission*, ik maak scenario's, campagnes en kaarten. Zo heb ik voor NIMH de slag bij Veghel (Operation Market Garden) in de Tweede Wereldoorlog, 'Hell's highway', de gevechten bij Eerde en Koevingel in de game *Combat Mission* verwerkt. Daarmee kan NIMH de mensen een beeld geven en laten spelen waar de Amerikanen tegen aanliepen, welke problemen ze hadden. Hierdoor kan de speler de situatie beter begrijpen. Als input voor dit scenario lasen we boeken, gingen we daadwerkelijk het gebied in met foto's en kaarten van toen erbij. We hielden een discussie om tot een conclusie te komen hoe het geweest moest zijn. Uiteindelijk hebben we redelijk de geschiedenis in kaart gebracht. Voor het spel breng je eerst de strategische lijn in kaart en vervolgens het tactische deel. Dat gaat bijvoorbeeld over waar een bepaalde tank gepositioneerd was, in welke molen waarnemers zaten enzovoort. Door het internet kan er vrij veel informatie achterhaald worden, namen van eenheden maar ook zelfs de naam van personen bijvoorbeeld de betreffende tankcommandant. Daar ligt ook de valkuil omdat je moet zorgen dat de mensen niet ondergesneeuwd worden door informatie. Het moet wel behapbaar blijven. Als je zo'n scenario maakt moet je de informatie op het publiek afstemmen. Sommigen willen alles weten en ander publiek raakt daardoor juist de weg kwijt. Sommige spelers van *Combat Mission* trekken de informatie van het spel na. Ze verifiëren de informatie. Zo heb ik een scenario gemaakt over de tankcommandant Barkmans die ten Noord-Oosten van St Lo in Normandië een hele Amerikaanse tankcompagnie had weggeschoten. Het scenario was goed gelukt en velen waren er enthousiast over maar op een gegeven moment kwam er een discussie of de plek die ik gemaakt had op de kaart wel klopte. De gegevens die ik had waren correct. Zelf was ik op die locatie geweest. Maar er bleek een ander document te zijn die ik niet had gevonden waaruit bleek dat Barkmans op een hele andere locatie had gestaan wat op zich ook

veel logischer was. Barkman zelf leefde nog en vertelde uiteindelijk persoonlijk dat hij op die laatste locatie had gestaan. Het scenario dat ik gemaakt heb gaat dus leven en op deze manier krijg je een verdieping in de krijgshistorie. Vooral bij *Combat Mission* zie je dat er veel discussie plaatsvindt over de juiste weergave van de geschiedenis en ik kan de scenario's daarop aanpassen. Hier zie je ook het verschil tussen de echte commerciële games zoals *Company of Heroes* en *Combat Mission*. *Company of Heroes* is gericht op geld verdienen en daarmee entertainment, het realisme is laag maar de modellen komen overeen met de werkelijkheid, het ziet er leuk uit. *Combat Mission* ziet er ook aardig uit maar het gaat echt om detail van historie en modellen. Men weet bijvoorbeeld van een *Tiger*, *Panther* of *T34* de penetratie waardes van de kogels. Er wordt dan gezegd ja maar in 1943 kon die tank niet door die *Panther* heen schieten omdat de bepantsering van de *Panther* toentertijd veel beter was omdat er nog beter materiaal in de fabriek beschikbaar was. In de periode 1943-1944 zijn er problemen ontstaan waardoor de bepantsering veel minder goed was waar veel tanks op werden uitgeschakeld.'

2. 'Stop je dit allemaal in het spel?'

Antwoord:

'Ik maak alleen het scenario maar de designer past de modellen aan zodat het met de werkelijkheid overeenkomt. In *Company of Heroes* is het spel gebalanceerd terwijl de Tweede Wereldoorlog alles behalve gebalanceerd was. In *Combat Mission* hoeft het spel niet gebalanceerd te zijn. Het gaat vooral om de tactiek van die tijd waarmee je de tegenstander kan uitschakelen. Ik vind in *Combat Mission* turn-based realistischer dan real-time. Dit vanwege de commandostructuur. In real-time kan je een foutje snel herstellen door snel te klikken. In het echt werkt dat niet zo. Het nieuwe bevel moet namelijk eerst gegeven, overgebracht, ontvangen en uitgevoerd worden dat is bij turn-based wel het geval. In *Combat Mission* komen de soort units, de hoeveelheid units, de opstelling, de geografische indeling van het veld overeen met de werkelijkheid of althans wat daarvan bekend is. De game engine is natuurlijk wel beperkt Zo heb je de keus uit een beperkt aantal soorten huizen. Maar het spel geeft een aardig beeld weer.'

3. Volgens van der Zwaan is Michael Wittmann een voorbeeld hoe er met geschiedenis om wordt gegaan in spellen. Wittmann was een in de Tweede Wereldoorlog een Duitse Tankcommandant, een ACE, een oorlogsheld.

Commentaar:

'Koop 10 computerspellen over de invasie van Normandië en Wittmann zit erin. Maar het raakt kant nog wal wat de realiteit betreft er klopt niets van. Men heeft iets gehoord van de acties van Wittmann bij Vilers-Bocage en willen graag dit figuur in de game hebben. Er zijn dan maar één of twee games waarin men heeft geprobeerd om het terrein en de situatie reëel na te bouwen. Dan pas wordt het interessant en je zou eigenlijk een keurmerk moeten geven aan een game om aan te geven dat de ontwikkelaar getracht heeft om een realistisch spel neer te zetten. Ik zou het waardevol vinden voor onder andere opleidingsdoeleinden om aan de hand van het keurmerk/beoordeling te kunnen zien of je een historisch realistisch spel in handen hebt. Er is namelijk ook een groot publiek wat realistische spellen wil spelen. Van *Battlefront* kan ik zeggen dat ze er zoveel mogelijk aan doen om zo dicht mogelijk bij de historie te komen. Ook bij *Total War Rome* heb ik het gevoel dat ze veel gedaan hebben om zo dicht mogelijk bij de geschiedenis te komen. Het spel werd ook gebruikt bij een historische documentaire op BBC. Geschiedenis moet toegankelijker worden en begrijpbaar voor kinderen. De modules worden door de programmeur gebouwd in dit geval *Battlefront*. Via een groep op een forum geeft ik aan wat er aan de game engine niet klopt. Het is begonnen op vrijwilligersbasis maar tegenwoordig krijg ik geld voor de

scenario's die ik maak. Een game engine maakt het mogelijk om scenario's te bouwen. Ik gebruik de game engine om historisch realistische scenario's neer te zetten.'

4. 'Wat is het doel van het serious game centre?'

Antwoord:

'Het doel van het serious game centre is om militairen beter voor te bereiden op inzet.'

5. 'Hoe gebeurt dat?'

Antwoord:

'Stel je voor dat we oefenen we in een bos met vlaggen en prullenbakken die *Taliban* en voertuigen moeten voorstellen. Hiermee worden procedures getraind. Vervolgens worden de mensen daadwerkelijk naar Afghanistan gestuurd waar allerlei auto's rondrijden, beesten los lopen, waar heel andere gebouwen zijn en waar het heel warm is. Die overgang tussen het bos met vlaggen en prullenbakken hier en Afghanistan is zo groot, er is eigenlijk geen andere manier om de militairen voor te bereiden. Games helpen ons om die transfer velen malen beter te maken en dus zijn de militairen veel beter op hun werk voorbereid op allerlei terreinen van procedure tot en met de hoogste generaal die een beter gevoel krijgt van de situatie. Vanaf 2007 zijn we bezig met het professioneel gebruik van games. Terwijl het leger inkrimpt zijn wij aan het groeten.'

6. 'Worden er in de spellen dingen/situaties verwekt die al daadwerkelijk gebeurd zijn?'

Antwoord:

'In de scenario's van de spellen die gebruikt worden om mensen voor te bereiden op een missie wordt vaak gebruik gemaakt van 'de lessons learned' oftewel situaties die we meegemaakt hebben. Dit heeft niet tot doel om te laten zien wat is gebeurd maar om te confronteren met een situatie die kan gebeuren.'

7. 'Wordt er uitsluitend gebruik gemaakt van computerspellen of wordt er ook nog gebruik gemaakt van andere vormen van spellen bijvoorbeeld bordspellen en tabletop?'

Antwoord:

'Nee het computerspel wat gebruikt wordt is *VBS3 (Virtual Battle Space)* en *Steal Beasts Pro*. Er zijn zo'n 1000 systemen in het land waar de militairen dit spel op spelen. Het is nu nog vrijblijvend maar het wordt binnenkort standaard in de schietopleiding ingebakken. Tijdens de opleiding wordt ongeveer twee weken aan oefenen met dit spel besteed. We gebruiken *VBS* ook als visualisatie tool, dus niet om te spelen maar om een filmpje te laten zien. Tijdens de missie in Kunduz was een eenheid samengesteld uit militairen, politiemensen, Afghaanse politiemensen, Buitenlandse Zaken, genisten en enablers. Deze mensen werkten nooit met elkaar terwijl dat in Afghanistan wel de bedoeling was. In *VBS* werd iedereen in een konvooi geplaatst. Er kon toen gezien worden, wie de baas was, wie het leidde. Op basis van het spel *VBS* kan dus een filmpje worden laten gezien om de mensen een idee te geven hoe het zit. Een virtuele wereld geeft je de kans om alles al van te voren te zien. Om dit te maken worden eerst satellietfoto's gemaakt en daarna worden op de grond in het gebied foto's gemaakt van de omgeving om het spel te verbeteren. Voor trainingswaarde is dit nuttig maar voor historische waarde is dat moeilijker want hoe maak je een kaart/omgeving als je niet genoeg info hebt. Je moet heel veel dingen fantaseren of interpreteren. Bij de commandovoering rehearsal wordt getraind met een game. De bataljonscommandant doet bevelschriften met een game. De oude manier is met magneetjes schuiven op een kaart. De magneetjes stellen een vierkante kilometer voor. Dit is een beslissingspel waar de hele staf bij zit om te beslissen 'wat doen we als dit gebeurd'. Dit is wel grof want een magneetje stelt een peloton voor die in het echt misschien maar honderd vierkante meter bezet terwijl de magneetjes een vierkante kilometer vertegenwoordigd. In *VBS* is kan je

bijvoorbeeld kijken of je daadwerkelijk als je in bepaald huis een andere compagnie ziet aankomen om bijvoorbeeld vriendelijk vuur te vermijden. Dit is hele ander manier van voorbereiden. Het is veel visueler en daarmee duidelijker. Als men daadwerkelijk in het betreffende huis zit herkend men dit ook weer uit de virtuele omgeving. Met een programma als *Rapid 3D mapping* is het mogelijk om terreinen vrij snel de kopiëren in een virtuele omgeving. De 3D data heb je nodig om terreinen te bouwen. *Google Earth* en *Google Streetview* samen met kaarten en foto's zijn allen input voor de 3D omgeving. De vraag is natuurlijk wel hoe nauwkeurig de informatie is. Van Mali bijvoorbeeld is er helemaal geen *Google Streetview* opname. Het leger maakt vooral gebruik van spellen die gericht zijn op zeer recente geschiedenis, op huidige conflicten. Maar hogere generaals willen nu ook dat geschiedenis niet als doel maar als 'lessons learned' gepresenteerd worden middels spellen. Het gaat hierbij om beslissingsspellen op alle niveau's.'

8. 'Welk spel geeft volgens u het best een historisch beeld?'

Antwoord:

'*Combat mission* voor het tactische niveau en *Total War* series voor het strategische, operationele niveau en in mindere mate het tactische niveau. De huidige *Combat Mission* spellen liggen redelijk dicht bij de waarheid (afhankelijk van scenario schrijver).

9. Wie zorgt voor de informatie die nodig was om geschiedenis in het spel te stoppen?

Antwoord:

'Het voordeel van dat ik zelf een van de scenario schrijvers ben is dat ik die info kan beïnvloeden maar *VBS* doen we zelf. *VBS* heeft een 'open-engine'. Het voordeel van 'open-engines' is dat daar de beste scenario's uit komen. *Steal Beasts* heeft ook een 'open-engine'. Bedrijven hebben vaak de kennis niet van geschiedenis om dit in een game te verwerken. Het zijn vaak hobbyisten die deze kennis wel hebben. *Band of Brothers* is een uitzondering. Voor het spel wat we voor NIMH aan het maken zijn worden geen historici ingehuurd. Wij doen het onderzoek zelf uit boeken en door bezoek aan de locaties. Bovendien spreken we met militairen die persoonlijk bij de situaties aanwezig waren. We verzamelen de bronnen dus zelf.'

10. 'Komt het binnen de serious games binnen het leger voor dat het trainingselement het over neemt van het historisch realisme?'

Antwoord:

'Ja, omdat wij een trainingsbelang hebben. Als in het verleden een hele compagnie werd doodgeschoten leert de trainee daar niks van. Naar een zwart scherm kijken heeft niemand wat aan.. Het trainingsdoel is leidend. Als historie over brengen het doel is, is dat natuurlijk anders.'

11. 'Hoe zie je games als didactisch middel om geschiedenis over te brengen?'

Antwoord:

'Ik denk dat het, het beste middel is wat er is. Mensen zijn visueel ingesteld. Wat je ziet in Afghanistan dat mensen iets hebben meegemaakt, dat wordt vervolgens in een boek gezet en iemand anders zet dat boek weer om in beeld. Waarom zetten we het beeld wat iemand heeft niet om in een beeld en laten we dat beeld weer zien aan anderen, dan heb je de minste vervuiling. Ik ben een groot voorstander van games en denk dat mensen er veel sneller mee kunnen leren. In beeld vang je alleen niet alle details die historisch relevant waren voor de uitkomst van het gevecht. Bij een procedure wordt een film vertoond en er zit een checklist bij met de dingen waar je aan moet denken. Het dikke boek gaat dan naar twee A4's met relevante informatie. Gecombineerd met beeld heb je dan de beste methode. Daarnaast krijg je door een computergame veel beter gevoel bij wat het

bijvoorbeeld betekend als 500 tanks slag met elkaar voeren, als die tegelijk schieten, je krijgt meer begrip voor de situatie dan dat je alleen uit een boek kan halen.'

12. 'Hoe zie je toekomst van Wargames? Zowel commercieel als binnen het leger?'

Antwoord:

'Militair zie ik het alleen maar door ontwikkelen; we zullen altijd simulatieomgevingen gaan gebruiken. Voor de commerciële games kan ik er geen pijl op trekken, het zal altijd blijven maar of het toeneemt durf ik niet te zeggen. De techniek, mogelijkheden en daarmee details nemen alleen maar toe, maar waar het heen gaat heb ik geen idee van. Ik ben erg geboeid door realiteit maar heb gemerkt dat realistische spellen afgenomen zijn daar waren er veel meer van. *Kampfgruppe*, *M1 Tankplatoon*, vliegsimulatoren (*Tornado*, *Falcon series*) waren allemaal high fidelity simulatoren. Dat is allemaal verdwenen. Van *IL-2 Sturmovic* waren Europese competities waar ik zelf ook aan deelnam. Dit klopte allemaal één op één. Ik zie dat dit allemaal afneemt omdat ze te moeilijk zijn. Ze waren realistisch maar de verkoop te laag waardoor het stopt. Bij veel kinderen boeit het niet dat het realistisch is. Dit is het spanningsveld tussen commercie en realiteit.'