GLOBAL HISTORY, FACTS AND FICTION IN EARLY COMPUTER GAMES: *HANSE, SEVEN CITIES OF GOLD, SID MEIER'S PIRATES*!

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For many years, historiography has ignored the importance of computer games for the general perception of past events, focusing instead on "conventional" receptions in film or literature. Mainstream historiography propagated the thought that computer games could not meet academic standards. On the other hand, there had been early computer games using historical events as background. Meanwhile, it is logical to also keep in mind the motives of designers for producing games set against a (quasi-)historical background: Historic settings are attractive for designers because they provide an already existing logical framework for a game, while making costly license fees obsolete. In this work, we analyse three games set against the background of – what Europeans call – the Late Middle Ages and Early Modern Period. The game *Hanse* is a game featuring elements of the 14th century Baltic trade. *Seven Cities of Gold* deals with European conquest in the Americas (during the 1500s). It is a real-time strategy game focusing on exploration. Sid Meier's *Pirates*! can be seen as a microcosm of the power struggle between European countries in the Early Modern Caribbean. It gives the player a sketch of complex economic or strategic issues where pirates (buccaneers) were operating under different circumstances to support the ambitions of colonial powers. The games were released between 1984 and 1987 for various platforms. Among the systems that have seen releases of all three games, the Commodore 64 versions have been used to analyse the games because of high market share and successful preservation of games. The games were in general very successful and well-received. From a technical perspective, those games did not max out the computer's capabilities, but rather attracted the players via the interesting setting and the historical connection.

Keywords: Video games, History, Commodore 64, Late Middle Ages, Early Modern Times

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INTRODUCTION

For many years, mainstream historiography propagated the thought that computer games had little to do with history and could even less meet academic standards of historiography. However, historians have begun to intensify their research during the course of the last two decades, using computer games as a lens to look at how millions of people perceive (fictional?) histories. History is attractive for designers in providing an existing logical framework for a game, while, at the same time, making license fees obsolete (Ahammer, 2014: 35). Video games are no longer perceived as leisure for "socially incompetent teenagers", but as being of interest for the general public (Buse, Schröter & Stock, 2014: 61). However, computer games set against a historic background are not new. The text-based game *The Oregon Trail* has been developed as early as 1971 and is addressing 19th-century pioneer life on the Oregon Trail, a large-wheeled wagon route and emigrant trail in the United States. Although most early computer games leaned towards arcade games, there have been many games with historical settings since then.

In this article, we analyse three games set against a historical background that have been published in the 1980ies for the Commodore 64, which had been the prevailing platform at that time. Switching from arcade games to games run on a home computer opened up the possibility for game designers to also make for story-rich, slow paced games, since there was no need to let the player die and throw in another quarter for the next game.

The three games selected for this paper are set against the background of what could be called (from a European perspective) the Late Middle Ages and Early Modern Times. *Hanse* features elements of the Eastern and Northern European Trade of the 14th century, *Seven Cities of Gold* deals with the topic of European exploration in the Americas (around 1500), while *Sid Meier's Pirates!* can be seen as a microcosm of the conflicts between European powers in the Caribbean during the 16th and 17th century.

The three games are limited to a single platform (Commodore 64) and have been released between 1984 and 1987, which is a comparable short period

compared to the overall time where games for the C64 platform have been produced. The aim of this paper is thus not to provide a comprehensive statistic over history-driven games but to analyse the three games from the perspective of historical accuracy and from the perspective of game design and technical realization.

The main research question addressed by this paper is to investigate what level of historic storytelling and what level of technical implementation were necessary to create those games.

RELATED WORK

Schwarz argues for four characteristics of a virtual past inherent to most computer games: (predetermined) linearity vs open endings, the mighty position of the player, authenticity as marketing feature, and a "contemporaneousness of the uncontemporary" (Schwarz, 2009: 15 f.). Most games featuring historical contents are not designed to meet the expectations of modern historical education and are sometimes diametrically opposed to such intentions (Grosch, 2002: 79 f.). Game narratives have to be counterfactual, while most players want them to seem authentic at least at the starting point – this correlates with the definition that a "game has to begin at a clear point in real-world history and that history has to have a manifest effect on the nature of the game experience." (MacCallum-Stewart & Parsler, 2007: 204). Video games can function as transmitters for ideologies, and many are based on the idea that "the ultimate answer of how to win is to spread your cultural, national and military influence all over the world" (Valdres, 2001: 70). Important features of life are missing from many games: social and cultural diversity, racial conflicts, or everyday problems (Grosch, 2002: 80). As Perry has stated with regard to the Middle Ages, homogeneity is problematic: "(…) it is certainly possible in any historical period to find a remote spot where everyone there looks completely homogeneous. But that is not (…) what medieval history looked like" (Chu, 2015).

Computer games also tend to marginalize the importance of women in history. Surely, in many cultures, politics, war, and economy – which are central for success in most historical games – were a male domain. Computer games often also relay images of a world in which there are no ethical limitations or consequences for violent behaviour (Knoll-Jung, 2009: 175).

Quite often, women are missing entirely from the gameplay, and if there are any, they are either unimportant or feature the same characteristics as men. Even if a game features female characters, their agency in a male-dominated general context is usually limited (Reinecke, Trepte & Behr, 2007: 12). While well-known female political or military leaders are relatively few, there are possibilities of introducing more female roles and countering a male-centric view of history (Knoll-Jung, 2009: 191). The topic of marginalization can be gainfully used by historians. Research in this regard should not end with asking the question of whether games are academically "accurate". Games feature the dichotomy of being historicized (by being put into a historical context), while at the same time historicizing themselves – by providing certain images of the past (Kerschbaumer & Winnerling, 2014: 14). Therefore, the central question for historians should be which ideologies and images of the past are being popularized and why.

Well into the 16th century, the most important maritime trade routes for European economies ran through the Eastern Mediterranean and the Baltic (see Ashtor, 1983; Harreld, 2015). One of the most crucial global developments between around 1350 and 1700, however, was Europe's overseas expansion.[1] Portugal as well as Castile and Aragon were in the vanguard of this development.[2] Explorations were financed by banks and merchants from Seville, Italy, or Upper Germany (see Otte, 1996; Verlinden, 1986). Transported goods often originated in Western Europe. Sailors, soldiers, and settlers represented a microcosm of diversity, even though a majority hailed from the Iberian Peninsula.[3]

In the 16th century, after the Spanish had conquered (at least on paper) large parts of the Americas, the importance of the Atlantic trade[4] began to increase

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[1] Seven Cities of Gold (1984) can be seen as archetype of a video game focusing on the issue of Europe's (overseas) expansionism and as potential inspiration for Sid Meier's Pirates! (1987).

[2] The conquests of Ceuta, Madeira, the Azores, and the Canary Islands are the most important examples of early Iberian expansion.

[3] Avellaneda identified the birthplaces of 45 men taking part in the "Federmann Expedition" of 1537; 39 were Spaniards, the others were Dutch, German, Italian, and Portuguese (Avellaneda, 1987: 388).

[4] Most of the European trade with China or Southeast Asia ran through the Southern Atlantic, but Atlantic commerce was also closely connected to the Spanish trade between China and Mexico.

at the expanse of the Baltic and the Levant trade (see Acemoglu, Johnson & Robinson, 2005). Spanish merchant fleets carried silver, dye, or sugar to Europe, while the Acapulco-Manila trade, starting in 1571, signalled the advent of a global economy (see Flynn & Giráldez, 1995). The most important product of Spanish America's economy was silver. Spaniards were not able to secure large gold deposits, but at least 150 000 tons of silver were legally exported from Spanish America until the early 19th century. Mexico, Peru, and Bolivia were the world's most important silver producers (see (Burkholder & Johnson, 2001: 134 f.; Garner, 1988). Inhumane conditions caused the death of tens of thousands of indigenous workers, social structures were destroyed by forced labour, and epidemics like measles or smallpox depopulated large areas of the Americas (see Austin Alchon, 2003; Cole, 1985).

When Spain, from the early 17th century on, was challenged by European rivals, the Caribbean and Spanish Main became an international battlefield. This period was also the heyday of a phenomenon best known as "piracy". However, this term does not fully describe the complexity of an issue characterized by far-reaching economic, social, and strategic implications. Pirates, buccaneers, and privateers were operating under a set of different legal and social circumstances, even though, in many cases, they were *doing* the same thing (Latimer, 2009: 4). Nations that gave so-called letters of marque to "privateer" captains while at war, ordered their navies to hunt down these "pirates" after a peace agreement. In the South China Sea, pirate-merchants sold protection for "water money" (*baoshui*) as part of a larger economic cycle (Andrade, 2004: 427). Popular culture often differentiates between "bad pirates" and "honest buccaneers". This dichotomy is often set against the background of a disciplining process (Pfister, 2014: 201). In many cases, however, becoming a pirate was a matter of survival. Even though life on a pirate or buccaneer ship had to deal with violence on a daily basis, it was not *per se* more brutal than service on a navy or merchant vessel (Rediker, 1981: 206 f.). Some pirate leaders treated the masters of captured ships well if their crews described them as fine captains; others were killed to avenge their mistreatment of sailors.

METHODOLOGY

Each game was played for several hours. If available, also handbooks have been studied. Visuals, gameplay and texts have been analysed with respect to its historic setting. One focus was on the general dichotomy of "historical" (outdated as well as up-to-date) versus "counterfactual" narratives in the *overall* game design, the other on the presentation of characters, cultures or technology in specific situations *within* the gameplay. Historical analysis was based on edited sources and scientific findings published in modern scholarly literature on the fields of colonialism, piracy, and early modern global history as laid out previously. Central questions in this survey were, among others: Did the games try to "rebuild" the world of the past or is the past simply the setting for adventure? Were the games designed with modern or outdated knowledge of global history in mind? How did the games deal with the complexity and diversity of early modern societies?

The games were run on VICE (Versatile Commodore Emulator) 3.2 set to emulate a Commodore 64C model with the European PAL system and an emulated 8580 SID sound chip. As a disk drive, a VC 1541-II drive was emulated within VICE. For reference to the used game versions, see the respective entries at the Gamebase64 database.[5]

The built-in machine language monitor of VICE was used to identify the used programming language, the used graphic modes and sprites and the use of raster interrupt techniques for switching sprite positions or graphic modes during a single frame.

Commercial games on the Commodore 64 have been implemented mostly in Assembly language for two reasons: first, the overhead in size and execution time could be kept to minimum with Assembly language and second, there was a lack of compiled languages that would come with a fast and optimizing compiler. Many programs, among them also hobbyist games, have been implemented in the built-in Commodore BASIC 2.0. Commodore BASIC 2.0 is based on Microsoft Basic for 6502 and comes with a more

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[5] Game descriptions at Gamebase64:
  Pirates! http://www.gamebase64.com/game.php?id=5727
  Hanse http://www.gamebase64.com/game.php?id=3403
  Seven Cities of Gold http://www.gamebase64.com/game.php?id=6722

convenient handling than Assembly language, but at the cost of execution speed. Besides being an interpreted language, the standard arithmetic system was built on 5-Byte floating point numbers, which makes even simple incrementation of a variable taking hundreds of processor cycles (for comparison, a similar operation takes six cycles in assembled machine language). One cycle corresponds to roughly 1 microsecond. An option to achieve a speed-up of a factor 3 to 5 was to compile the BASIC program with a specific BASIC compiler, however the achievable performance was still insufficient for most kind of games.

The graphics system of the Commodore 64 is able to display up to 8 movable objects, typically called sprites, within an area of 320 times 200 pixels. The video output is generated from top to bottom, where a single frame on a PAL system takes 1/50 of a second. Many games used the raster technique interrupt to redraw sprites with different coordinates further down on the screen, if the switch happens exactly between the two sprite positions, the sprite appears twice on the screen without flickering. Since the look of a sprite is defined by a single-byte pointer, it is also possible to change the look of the sprite on the fly so that the sprite below has an entirely different position and look.

FINDINGS

Hanse

Hanse was written by the German game designer Ralf Glau. The first version of the game has been developed by Glau for the Schneider CPC system. The C64 version was written by Bernd Westphal based on the CPC version. The game is in German language and is using *Mark* as currency, which was the official currency in Germany at the time the game was made. The game's name is derived from the Hanseatic League, a commercial federation that grew from a few North German towns across northern Europe.

Hanse is set in an earlier era than both *Seven Cities of Gold* and *Pirates!*, as dictated by historical logic. Players can trade in resources like fur, linen, or honey; a historically correct depiction, even though one of the most important commodities - fish - is missing. Activities in stock exchanges seem to be overrated, since Europe's stock exchanges were located far to the west (e.g. in

Antwerp), and so these kinds of financial enterprises were of little importance to the *Hanse* traders' everyday business. The use of a currency standard (*Mark*), while not entirely ahistorical, suggests the existence of a financial system based on a single coinage, which was not the case. Some features like the random loss of stored goods in a fire or the need to keep ships seaworthy are definitely in line with economic realities of the time as are the regionally diversified commodities. Notably for a 1980s game, *Hanse* can also be played using a female character, which hints at the possibilities for middle-class women to participate in trade; however, there is no specific female agency, since the choice of character does not influence the gameplay. While the game does not depict the "realm" of the Hanse as a whole (and also includes ports that were not a *Hansestadt*, like Novgorod), it does give an impression of the alliance as a trans- or even supranational enterprise par excellence.

The Commodore 64 version of *Hanse* uses the textmode with a modified character set and a hires bitmap mode for intermediate sequences. The major part of gameplay takes place on a screen with a drawing of north eastern Europe and overview information about number and quality of ships, available money, stocked trading items and a menu where the player can select trading, stock market, ships, kontore (branching offices) and chronicles. The screen is built up using textmode, the miniature drawing of north eastern Europe has been realized with custom characters. The textmode has the limitation of only a single colour in addition to a common background colour, which is visible on the game screen. The game code is mostly written in BASIC, in the analysed version it appeared to be compiled with the Data Becker Basic 64 compiler. The sprite functions were not used in any of the observed game screens, since the game play does not need moving elements. The interrupt vector was changed to a different ROM address in order to disable the RUN/STOP functionality, but there is no custom interrupt service routine.

Figure 1. Screenshot of the main interaction screen of Hanse

Seven Cities of Gold

Seven Cities of Gold is an open-world strategy video game by Ozark Software, created by main developer Danielle Bunten (credited as Dan Bunten) together with Bill Bunten, Jim Rushing and Alan Watson. The topic of the game is the discovery and exploration of the Americas. The game's name is derived from the 16th century myth of the "Seven Cities of Cibola".

Some of the game's features correspond with historical authenticity, for example, the player can move faster when using rivers and the voyage back to Europe depends on sailing along a specific latitude. Resources central to successful gameplay are men, food, (unspecified) goods, and gold, while silver is of no importance, which is problematic, since the game - according to its name - is set in the Americas, where silver was much more important. The myth of "golden cities" alone cannot explain the pertinence of gold. Quite

stunningly, the European garrisons of forts simply starve to death, if they run out of food and there is no artificial intelligence at least trying to prevent this. Horses, whose introduction could rapidly change societies, are shown in the graphics, but not in the gameplay. Social contacts between Europeans and indigenous groups run through one "chief", which correlates to the early modern European idea of a central ruler; however, such a position did not exist in most pre-Columbian societies. The player can "amaze the natives" - which relegates them to an irrational sphere of superstition - and also convert them (as a randomized feature). Overall, it becomes clear that *Seven Cities of Gold* is much more historically accurate on a technological than on a social or political level.

The version for the Commodore 64 was released briefly after the first version was built for the Atari 800 computer. Likely some game design decisions have been done with the capabilities of the Atari 800 in mind.

Figure 2. Interacting with villagers in Seven Cities of Gold

Except for a multicolor bitmap screen in the opening sequence, the game is using the multicolor text mode throughout the game. The beginning sequence which takes place in Europe is featuring a side-view scrolling screen, however only using one third of the screen height. After boarding, the game's characteristic top view is shown, where a compass is shown as an avatar of the player in the middle of a small game screen of 12 x 12 characters. For comparison, the full screen excluding borders would be 40 x 25 characters in size. The avatar is controlled by the player via joystick and always stays centered in the screen while the map moves according to the direction that was chosen. The avatar is realized with two overlaid sprites, while the map is drawn using an array of 12 x 12 custom characters. The characters also stay in place, but their content is dynamically written, thus emulating a small bit-mapped screen that is scrolled at pixel granularity. The same graphics set up is used when entering a village or viewing the map. The game is written in assembly language, which was expected, since scrolling the game screen needs to be done on a byte-per-byte basis, which, even in pure Assembly code, requires several thousand cycles. At a rate of 50 (PAL) or 60 (NTSC) frames per second, this leaves less than 20000 cycles per frame, making the timing for an on-the-fly update critical.

In general, graphics in the side-scrolling and in the exploration part are a bit coarse in comparison to other side scrolling or top view games using the same colour mode. The bitmapped graphics mode using an array of 12 x 12 characters offers many interesting possibilities for drawing the world or showing a lot of villagers at once, however it comes with the limit of a very small game screen. Nevertheless, the small game screen in combination with a huge game map gives the feeling of exploring a very large unknown continent, which contributes positively to the gameplay.

Sid Meier's Pirates!

Pirates! is another open-world strategy video game by Microprose. The game was created by Sid Meier, who is credited for game code and sound. Graphics were made by Michael Haire, documentation and scenario design by Arnold Hendrick. In the game, the player takes over a ship as captain and has the possibility to become a trader or pirate with different allegiances.

Pirates! is set in a later era than the other two games - the "golden age of piracy" (mainly the 17th century). Like *Seven Cities of Gold*, the game features accurate details such as the need to consider specific wind conditions, governors providing letters of marque - thus turning "pirates" into "privateers" - or the importance of certain resources such as food or tobacco. However, silver is again missing from the equation and replaced by gold. A player can be rewarded by receiving land grants, which shows similarities to colonial policies, but has no implications whatsoever as the game continues. On the other hand, duels between the player's character and the masters of ships he has attacked are very important; duels are also featured in the quest for brides - while colonial societies were patriarchal, the objectification of women in these scenes is obviously very problematic. *Pirates!* is best understood as an adventure game set against the backdrop of the Caribbean as a nexus of different European imperial interests, but without a deeper understanding of its historical complexities.

The game's title screen uses the multicolor textmode in a sophisticated way showing a nice depiction of a sailing ship and the game logo. In some text-based game screens, an additional picture is shown using custom characters.

Parts of the game featuring story parts of visiting a tavern or the governor of a city are implemented in BASIC, with other parts involving the traveling sequence are implemented in Assembly language. Other than in *Seven Cities of Gold*, the screen where the player's ship is moved uses the full visible screen area (without borders). In this mode, the environment is draw with only four colours: light blue background for the water, green for islands and a combination of black and yellow for vegetation and towns. Waves are also drawn in green colour. In addition, two overlaid sprites are used for the player's ship and some additional sprites for clouds, which are used to indicate wind direction and strength. Other ships are not shown but appear as a sudden notification when sailing.
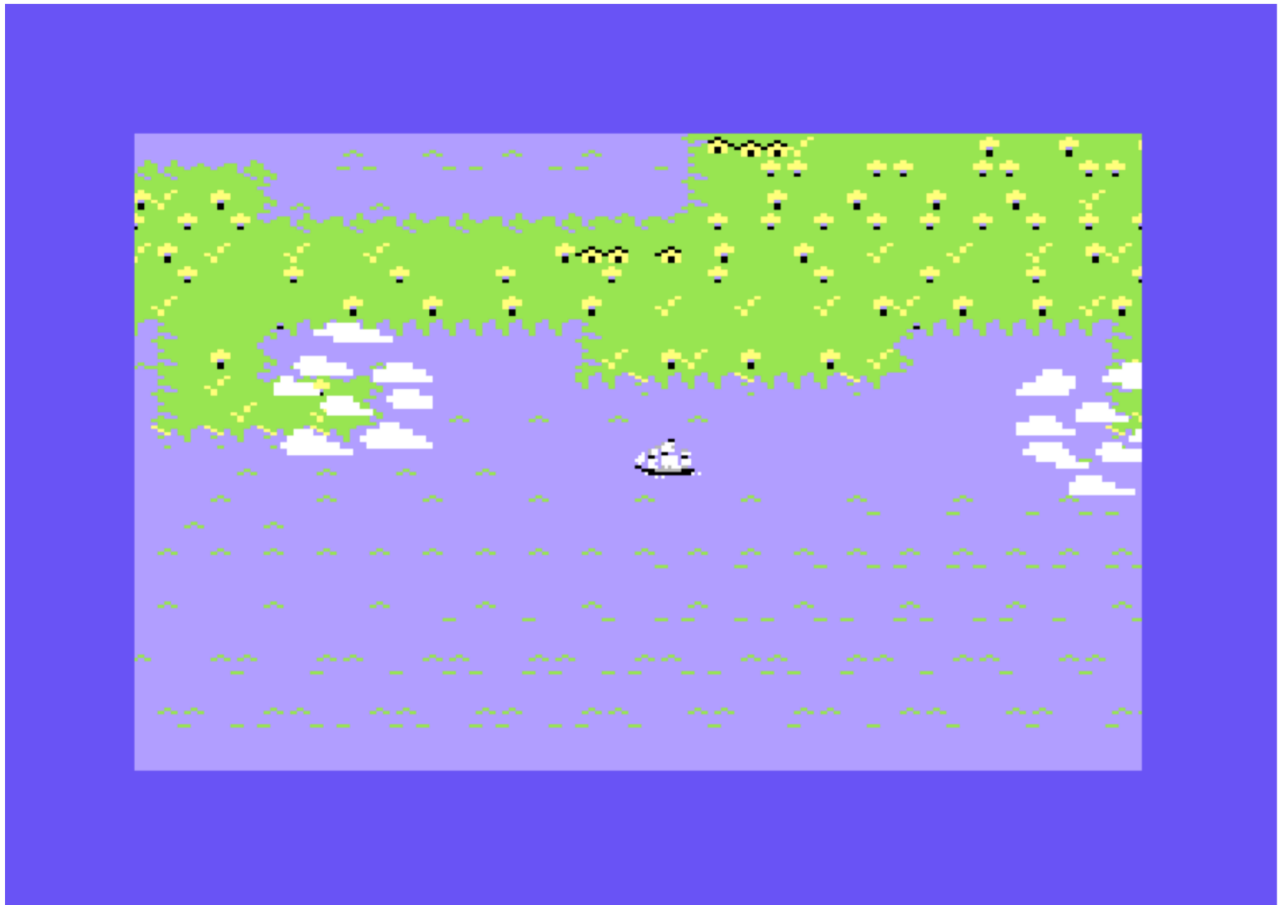
Figure 3. Sailing ship and coastal areas in Pirates!

Pirates! features a very nice gameplay with suitable graphics and, among the three presented games is the most feature and story-rich game. Being released in 1987, *Pirates!* also depicts a continuous improvement in game productions on the Commodore 64 platform. Still, in comparison to contemporary games on the same platform, the game mechanics, graphics and sound of *Pirates!* are not overly demanding for the platform.

CONCLUSION

All three games were in general very successful and well-received by contemporary game magazines. From a technical perspective, the analysis shows that these games did not max out the computer's capabilities, but rather attracted the players via the interesting setting and (the promise of) historical authenticity. Our survey shows that the three games did not break

with the long-standing master narrative that focused on European males being able to make their fortune in an international and/or colonial environment, while non-Europeans or also women do either not appear or are relegated to the status of "objects". The notable exception is the possibility to play a female character in *Hanse* who, nonetheless, embodies no specific female variation of political, social or economic agency. *Hanse*, *Seven Cities of Gold*, and *Pirates!* are materialist, not culturalist in their approach - an orientation they share with mainstream world or global history (Strasser 2020: 19). There are elements of economic history corresponding with scholarly historical knowledge; in general, however, economic content remains at an idealized, structuralist or undifferentiated level, with natural resources being there for the taking. Historical facticity and authenticity are of importance in setting the stage for the games; what follows are economic and/or adventure simulations that are counterfactual in nature.

FUTURE RESEARCH

Although today's technical specification of gaming platforms and today's game development tools differ significantly from the systems used in the 1980ies, there are a couple of lessons that can be learned from the analysed examples. Setting your game against a historical background immediately creates some resonance with the player's world and mind. The necessary material is available for free in real and digital libraries and, even more important, provides a license-free but well-known background. In addition, history is rich of different settings and stories, so that there is a vast set of materials available at the game makers' disposal. Furthermore, for the development of short games (Elmenreich, 2019), a historical background can raise interest in a game despite a comparably simple game play. Especially for low-budget independent game productions, the historic setting can thus be a helpful means for a successful game.

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