Project SAGA: Towards Bridging the Gap between Serious and Entertainment Games

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Figure 1: *A Viking settlement in the mysteriously deserted world of SAGA.*

Abstract
We present the "SAGA" project, a concept for an entertainment game that is currently in development, which is based on historical and archaeological research and set in the mythology of the Vǫluspá. SAGA bridges the gap between Serious and Entertainment games by neither forsaking history and facts for entertainment, nor compromising on playability for historical accuracy. Reusing development work from the archaeological visualisation of a real world location on the island of Orust in Sweden, and transposing historical elements from other Viking age sites into the world of the game, the aim of SAGA is to convey the intangible heritage and history of Viking age society and beliefs to the game's players. In this paper we describe the game concept, discuss its development from an archaeological visualisation for use in a museum context and provide an outlook on the next steps in the game's development.

1. Introduction

Over the past two decades, the application of computer game technologies in the context of cultural heritage has been firmly established [AML*10]. Computer games can provide an effective avenue for conveying cultural knowledge [Cha16], as serious games for Cultural Heritage [AML*10] do, but, as Zyda strongly suggests [Zyd05], the conveyance of information must not happen at the expense of a game's "fun" elements. Due to their interactive nature, games are especially suited for presenting intangible cultural heritage or heritage at the intersection between the tangible and the intangible (such as the effect of beliefs and religion on domestic customs and practices), as immersion in the gameplay allows players to actively experience and participate in heritage activities. In particular, this intangible heritage can be conveyed through the story and narrative of a computer game.

Our project "SAGA", which is a work in progress, is such a game, aiming to convey knowledge of Viking society and beliefs to its players. Instead of employing the conventional development

methodologies of either creating an interactive historical visualisation and then gamifying this, or to implement a game based on a serious/educational game design framework or methodology, we have followed an inverse approach, where we started with the design of a game scenario and narrative on the basis of a historical setting into which the sociocultural aspects of – in the case of our project – the Viking age that are meant to be conveyed to the players have been embedded.

Our game's story takes place after Ragnarök, the apocalypse of Norse mythology [Bri22]. Ragnarök is described in the Vǫluspá, the first poem of the Poetic Edda [Lar14], and introduces the world's history and future as a perpetual cycle, as believed in ancient Norse mythology. In the game the player takes on the role of a Valkyrie in a world devoid of people (Figure 1), following clues to find broken picture stones, similar to the Viking age picture stones found on the island of Gotland that depict eddic themes [Oeh17], which in the game will depict scenes representing the verses of the Vǫluspá. By restoring the broken stones, and in the process becoming familiar with the Vǫluspá, the player will turn the stones into portals through which people can return from the world of the dead to repopulate the world of the living.

2. Related Work

Computer graphics have been used for the reconstruction and visualisation of cultural heritage sites and objects since the 1980s [RTW16], and since the 2000s, interactive graphics applications have been employed for the creation of virtual heritage experiences, allowing users to not only experience heritage as passive observers, but to actively engage with it, for instance, by interactively partaking in and experiencing a significant historical event, as can be seen in the example of the "Exercise Smash" Virtual Heritage Experience that allows audiences to join a WW2 amphibious landing exercise and archaeological remains [AS20]. Serious games for cultural heritage [AML*10] are another type of interactive graphics application employed in heritage contexts, similar to virtual heritage experiences, as are entertainment games with a historical setting, such as the games in the Assassin's Creed series of action adventures [PMBA19]. The interactive nature of games makes them particularly useful for the preservation and dissemination of intangible heritage [And13], as can be seen in several of the games in the Assassin's Creed series that have been provided with a separate game mode – the 'discovery tour' [Poi21] – that transforms the games into educational serious games that immerse players in the depicted history and culture, e.g. the most recent iteration of the Assassin's series, Assassin's Creed Valhalla[1], which has a Viking age setting and which also features a 'discovery tour'. Some interactive heritage experiences have also focused on Scandinavian history and Viking culture, such as "Augmented History – Gamla Uppsala", an Augmented Reality (AR) and Virtual Reality (VR) experience [Löw18], centred on three burial mounds and their surrounding area on the east coast of Sweden [PO04], set during the Vendel period [Lju05], a few hundred years before the

Figure 2: *Visualisation of the recreated Orust Viking marketplace and coastline (top); detail view of the marketplace recreation (bottom).*

Viking age, with similar architecture and settlement styles to those that were common at the turn of the first millenium.

In the case of our project described here, the intangible heritage that we hope to convey is an understanding of Viking society and beliefs, embedded into and interwoven with the narrative of a 1st person perspective adventure game that should immerse players in an engaging representation of the Viking age.

3. SAGA – Beyond Visualisation or Serious Game

The concept for SAGA, which continues being refined, evolved from the virtual recreation of a Viking marketplace for use in a museum context, the idea being that the knowledge that the SAGA game is supposed to impart on players should be hidden within the story of the game so that players unconsciously absorb this information by playing the game and following its narrative. At the same time it is supposed to be an open world game that does not restrict players to a specific path but allows them to freely explore, providing opportunities for exposing them to additional aspects of the cultural heritage of the Viking age.

The landscape used as a base for both the Viking marketplace Virtual Recreation and the SAGA project is derived from the real-world location around Kalvöfjorden in the south part of Orust, a historically important island on the west coast of Sweden on which one of the only two known runestones in that part of Sweden was found. Within the bay there are two known burial mounds, and coins from both the Byzantine and Ottoman empires have been found there [Lö14], suggesting a centre for trade.

The Virtual Recreation of a Viking age marketplace that inspired SAGA (Figure 2) is part of a joint project between the Orust local government[2] and Bohusläns Museum[3]. The aim of the (non-interactive) recreation is to get a better understanding of how a pos-

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[1] https://www.ubisoft.com/en-gb/game/assassins-creed/valhalla

[2] https://www.orust.se
[3] https://www.bohuslansmuseum.se

Figure 3: *Glade with a picture stone portal in SAGA. The surrounding trees are slightly stylised versions of the tree species common to the area around the year 1000 AD.*

sible market could have looked like, as well as to explore new ways to convey such information to the public. There were two known types for market places during the Viking age. The one which was chosen as the most likely for the area being recreated, is a seasonal market, mainly used by locals, and not involved in international trade [Saw92]. This means that there were, most likely, few permanent buildings, leaving very little in terms of archaeological remains.

To maintain historical accuracy, the landscape was recreated in Unreal Engine[4] from Lidar data of the area around the suspected marketplace. The water system of Unreal Engine was used to create the sea, which was adjusted to the higher sea levels of around the year 1000 AD, resulting in the appearance of a natural harbour around the river mouth, where boats could likely be brought to shore to be unloaded. The virtual recreation therefore includes docks and ships at the river mouth, one larger and several smaller buildings which could have been used for storage, as well as a collection of tents which would have been set up by visitors to the market when it was in season.

Over the past millennium, the flora of Scandinavia has changed considerably and on Orust today, a majority of the trees are conifers, but at the turn of the first millennium the majority of trees would have been from species such as oak, birch, and alder, so the trees implemented in SAGA are oaks and birches. There would have been no extensive woodlands or forests close to settlements, trees only growing in smaller groves, as livestock were not kept in enclosures but instead roamed free. This meant that smaller plants and undergrowth were stripped away, much like it is in pastures today.

Both virtual environments, the Virtual Recreation as well as SAGA, aim to show what the area of Orust they depict could have looked like. However, unlike the Virtual Recreation of the Viking marketplace which only tries to illustrate the physical aspects, staying within the proven and plausible, SAGA takes creative liberties in physical aspects to focus on conveying the intangible, such as culture and religion. SAGA also differs in the way that, instead of

using a game as a tool for conveying history, history is used as a tool to enhance the game.

The main aim of SAGA is the presentation of a world for the player to explore, through which the player is introduced to Viking society and the Viking beliefs conveyed through the Vǫluspá. The game mechanic for introducing the player to the Vǫluspá is the use of picture stones (Figure 3), similar to those found on Gotland. The picture stone design in SAGA will combine the symbolic image language used on the Gotlandic Picture Stones with the tradition of telling tales common on runestones [RW92]. Each of the picture stones in SAGA will represent a stanza from the Vǫluspá, and by exploring all of them the player will be introduced to the Viking belief system.

The reason why the picture stones were selected to serve as doorways was that, e.g. on Gotland they are placed at the boundaries of the landscape, much like a door in a building is placed within its walls, and many picture stones resemble the shape of the north portal of Urnes Stavkirke [UNE79] (both picture stones and the church portal have a shape that is similar to that of an old keyhole [Eri13]), a Viking age church that was probably built at the onset of the Christianisation of Scandinavia. Doors hold an important symbolic role in many cultures and religions, and in Viking culture, the door becomes a ritualistic tool for seeing into other worlds [Eri19].

An example of entertainment being prioritised over accuracy in SAGA, can be seen in the design of the village (Figure 4). An important aspect of game level design is to decide what is visible, i.e. what the player can see from a given point in the virtual world, and what is hidden from them. In SAGA the use of a rampart around the village, similar to the one found at Birka [UNE93], as well as the layout of building plots inside the village uses this technique to create a natural flow that invites the player to explore. The placement of houses in the village is based on a common layout of the Viking age, when larger farms were divided, resulting in a more organic placement of the houses [Saw92]. Although the archaeological record shows no evidence of either a rampart or a permanent settlement in the area of Orust being depicted, these were included in the virtual environment of the game level to anchor the narrative, creating a better platform for playability as well as a means
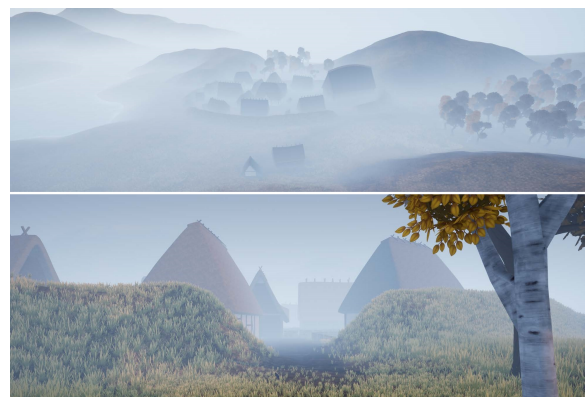

Figure 4: *Viking village and its surrounding landscape in SAGA (top); entrance to the village from outside of the ramparts (bottom).*

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[4]

for communicating what society could have looked like during the Viking age.

4. Discussion, Conclusions and Future Work

In this paper we have presented the concepts underlying our SAGA project, a computer game that is currently work-in-progress, which uses the mythology of the Vǫluspá as the basis for its narrative and utilises historical and archaeological research of a real world location on the island of Orust in Sweden as the basis for the location in which the story of the game takes place. We have developed the game world in successive prototypes, using focus groups along the way to evaluate elements of the design and guide future decisions (e.g. to establish if players understand what they experience in the game, such as the mood that the narrative tries to convey).

SAGA bridges the gap between Serious and Entertainment Games by neither forsaking history and facts for entertainment, nor compromising on playability for historical accuracy. Focusing on the intangible heritage allows for history to become a tool for entertainment, and thus the two become mutually dependent on each other. Unlike the Virtual Recreation it does not necessarily remain true to the most plausible alternatives. Instead it takes the concepts and knowledge and develops these further, to something which focuses mostly on entertainment. The history and culture is hidden within the game's plot and world for the player to discover.

Future development of SAGA will extend the world along further historical and eddic concepts to allow for additional aspects of Viking age beliefs and society to be explored, including more elements of the mythology presented in the Vǫluspá, such as the various worlds and the beings that inhabit them (e.g. dwarves and giants). During this we intend to continue conducting focus groups to test the game to ensure that information embedded in the narrative is successfully conveyed to players.

To summarise: SAGA is not a Serious Game, nor was it ever intended to be. SAGA is a game of exploration and history is our guide.

5. Acknowledgments

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