An Educational Game from 17th Century Revived in Today's Web Virtual Reality Edutainment project

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ABSTRACT

We describe here a new (completed in October 2008) edutainment game in virtual reality that is dedicated to the historical world of 17th century. It is based on the Count Auersperg` book from 1659 describing the world with special dedication to the lands of Slovenia of that time. The game has been coded in the Adobe Director environment and can be played also offline. This project introduces the edutainment virtual reality games into the largely traditionally taught history education in the Slovene secondary schools.

Key Words: Web3D, virtual reality, edutainment, educational games.

1.Introduction

History education in Slovenia has been so far taught mainly in the traditional way using the classical paper textbooks. Recently the Pedagogical Institute of Slovenia launched the initiative for a new edutainment game about the world and Slovenia of the 17th century. This game has been called Orbis Lusus – the same name as of the 17th century book of Count Auersperg of Turjak located in the present Slovenia [1,2]. The young 18 year old Count Auersperg was studying on the Jesuit University of Graz. Most probably inspired also by some of his professors he wrote a book that was published 1659 with the title "Orbis Lusus". This book contained the idea and description of an inventive geographical game. The player could travel around the world as known in that time. He should always take care to choose the right vehicle for travelling - e.g. horse on the land, ship in water etc. But this is only the beginning. During the travel the players need to answer correctly to a number of questions, their topics mainly related to the geography. The educated people of the 17th century, especially the Jesuits were very

enthusiastic about getting more knowledge about the foreign lands. They also established their outposts in distant countries like China and Japan. Their final goal was to convert the foreign (Chinese or Japanese) rulers to the Christian faith, but in China and Japan they did not achieve this goal. However, they played a very important role in the development of sciences and culture connections as well as the trade. For example, a Slovene Jesuit named Hallerstein became a mandarin on the Chinese court and made important astronomical discoveries in China.

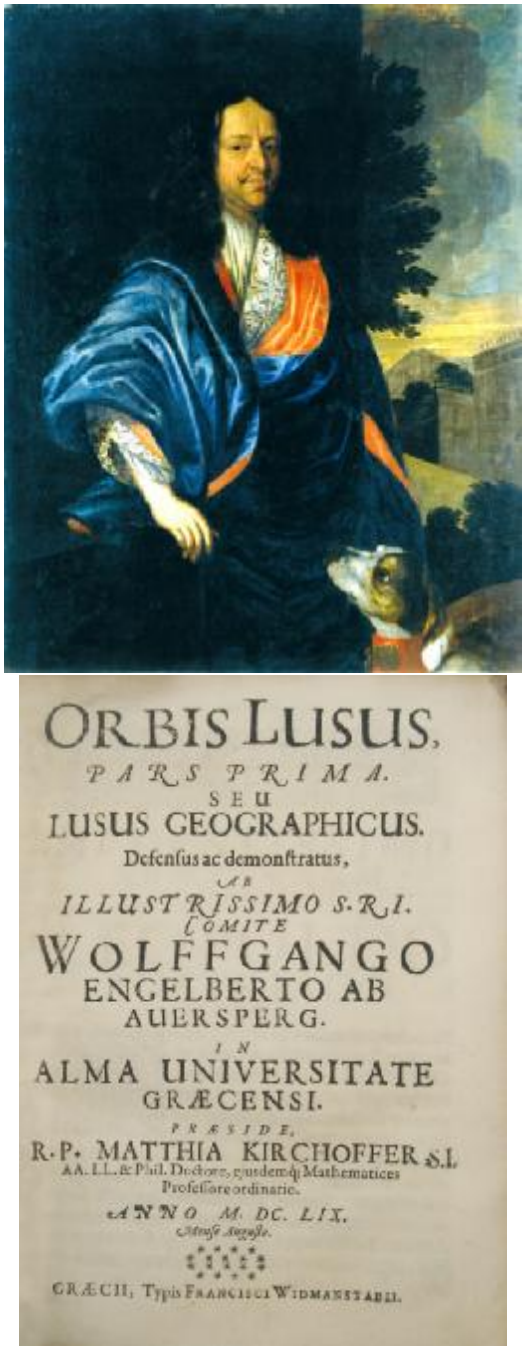

Fig.1. The portrait of the author Wolfgang Engelbert Auersperg of Orbis Lusus and the title page of the book

2. Technical description of the game.

The game is coded in the Adobe Director Lingo programming language. It also contains Havok physics emulation of rigid bodies. The user finds himself in the form of an avatar that changes shape according to the kind of the terrain below. Over the sea it is a mediaeval sailing ship, on the land the default avatar shape is the horse, but it can change to a knight or witch (if on the hill named "Slivnica" where witches live as the legend has it) or small boat on the lake named "Cerknisko jezero". So the game follows the descriptions of the original author from the 17th century Count Auersperg and his contemporary historian, the member of the English Royal society, Count Johannes Weichard Valvasor. If the user lifts above 100m over the surface, he turns into an angel and can observe the landscape below him texturized with the Bleau Earth Atlas of the 17th century with the most prominent mountain ranges profiled out. The sky is decorated with baroque paintings while over the ground hover stars which signal the user where to go to test his knowledge and so proceed further in the game. In fact it is not the proximity of the star which triggers the

behavior, but the position of the avatar above a characteristic color patch on the map (which is however not visible to the user). There is a specific color for each task to be performed by the user. After visiting a color patch it gets inactivated and also the star above it disappears. A typical task to be done

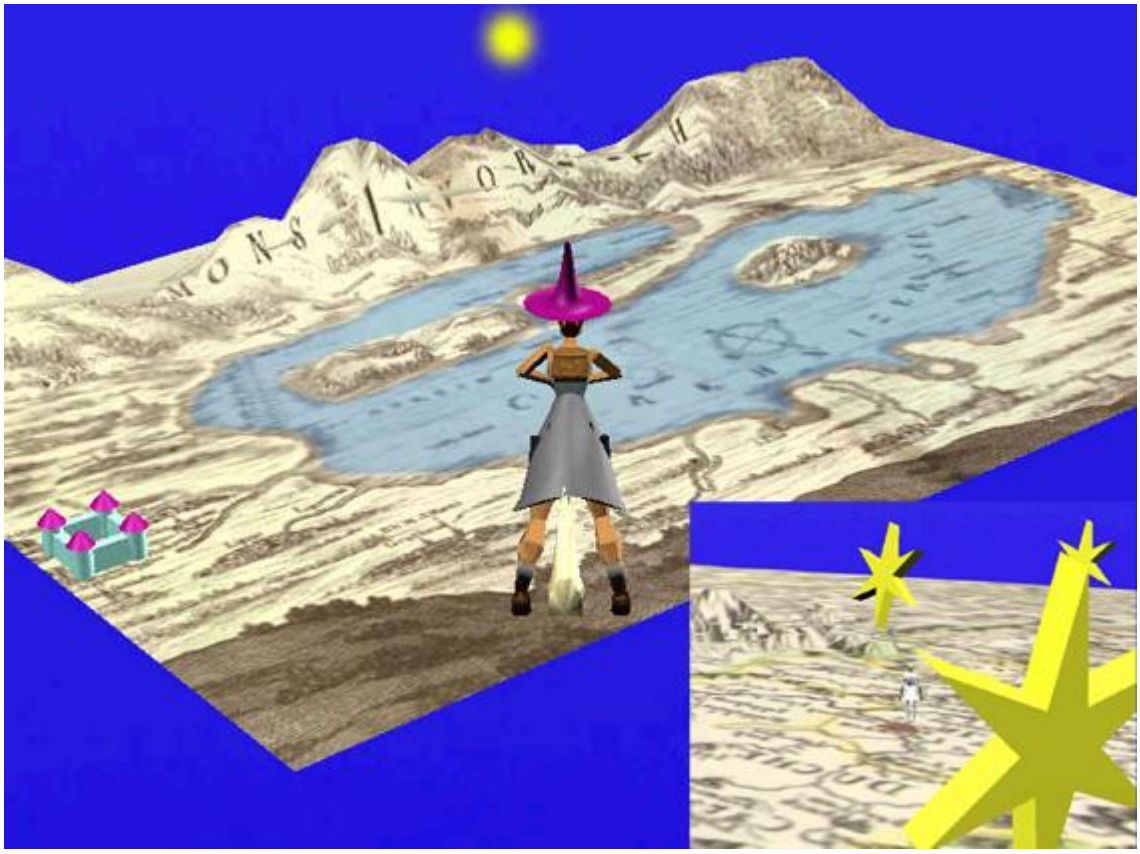

Fig.2 The virtual reality view of the Cerknica lake from the "witch perspective". The inset on the lower right shows the 3D stars over the Slovenia landscape that suggests where to try to collect further points.

is to answer some quiz questions. The quiz material (text and images) reside in a separate word file which can be edited by e.g. a historian without the need of knowing any programming. If a quiz question is properly answered, the user gets 10 bonus points and can advance further in the game. A wrong answer brings the user to the previous location and gives him 2 minus points. In addition to the Bleau World Atlas virtual reality world there are also other VR worlds to be visited by a good player. First there is the historical Lake of Cerknica in Slovenia. In summer when it is dry it is not a lake at all, but only grassland with small rivers surrounded by thick vegetation. However in autumn it fills with water through its underground water systems bringing water through karsts stone tunnels from the nearby mountains. This is an intriguing water and limestone system that had been already researched by the 17th century scientist Johannes Weichard Valvasor. For this

research Valvasor was accepted into the British Royal Society, the only Slovene fellow to be awarded this honor. In our virtual reality game we do not enter into the complicated Karsts phenomena of the Cerknica lake, but rather discover its historical highlights like the mountain Slivnica where according to the legend the witches reside. As the user starts to climb this mountain he first gets the introductive questions and when he successfully replies, his avatar gets the form of the witch. He starts to fly around on the air and visits for example the ruins of the medieval castle Steberk or discovers the holes where the water flows out of the lake into the subterranean cave system. These locations were used in the 17th century to catch fish that were flowing with water into the underground. From the Cerknica lake one can proceed to further discover the historical highlights of the Slovene countryside. For example, there is the mine of Hg in Idrija, the castle of the Counts of Auersperg on Turjak south of Ljubljana, the locations of the 17th century Jesuit schools etc. the user can also travel to the border of the world known in the 17th century. This is called the Terra incognita. When entering the Terra incognita the user gets as usual some questions especially regarding the modern solar system which was first described by Copernicus. After the right reply the user is catapulted from the 17th century world into the modern solar system. The planets start to circle on the stage, the avatar changes into the form of the modern spaceship so that we can discover in virtual reality the composition of the solar system.

3.Conclusion

The web virtual reality education projects have around ten years of history. There is the famous VRML 1997 web virtual reality language which opened this way. Although quite old the VRML is still living and constantly updated in its new form called X3D. We have also produced several projects in VRML like the biology project named “Cell-Tissue-Body”. However, the project described here is not written in VRML but in the Adobe Director Lingo. This is because the Director platform enables much better textures than it were possible in VRML. Good textures are essential for the game with lots of ancient topography maps, old paintings, portraits etc. Our virtual world also contains the Havok physical emulation of rigid bodies what significantly contributes to the realistic appearance of the game.

Finally why not to do this project in the Second Life instead? The difference between this world and the Second life virtual reality community is in the first place that the SL works only online, while Orbis Lusus can be stored on a CD-ROM or computer hard disc and played also offline. It is technically not as advanced as the SL environment but it meets the needs of the company that ordered and owns the Orbis Lusus VR project – the Pedagogical institute of Slovenia.

References:

[1] Engelberto Wolfgango Ab Auersperg in Alma Universitate Graecensi, 1659. Orbis Lusus pars prima seu lusus geographicus. Francisci Widmanstail.

[2] Junič Stanislav, 2007. Blaž Kocen in začetki pouka geografskih vsebin ter geografije med Slovenci. Slovenski šolski muzej, Exposition catalog, Ljubljana.