Преглед НЦД 15 (2009), 64–72

Selma Rizvić, Aida Sadžak, Anis Zuko
Faculty of Electrical Engineering
Sarajevo

ISA BEY'S TEKIJA IN SARAJEVO. REVIVING THE REMINISCENCE OF THE PAST

Abstract. Isa-Bey's Tekija is the oldest institution in the city of Sarajevo. It was built before 1462 and first mentioned in the endowment document of Isa Bey Ishakovic, the founder of the city. Today it does not exist any more. The final destruction of this object was done in 1957. The project of the virtual reconstruction using computer graphics techniques and multimedia internet presentation has a goal of reviving this important symbol of the past at least in our memory. This paper is describing the first phase of the project, the remarkable response of the public and the plans for the second phase. This project confirms the importance of virtual cultural heritage applications.

Keywords: virtual reality, virtual heritage

CCS: I.3.7 [Computer Graphics]: Three-Dimensional Graphics and Realism – Animation, Virtual Reality, I.3.8 [Computer Graphics]: Applications

1. Introduction

Bosnia and Herzegovina is a country where for centuries live the people of different cultures, religions and traditions. Cultural heritage of this country, founded in the 11th century, contains tangible and intangible memories of the past. Beautiful mosques, catholic and orthodox churches and synagogues are a part of this heritage treasury. Unfortunately, some of the objects are damaged because of their age and war and some of them do not exist any more. Virtual reconstruction using computer graphics techniques can help in recreating such objects and revive them in the public memory.

Our work in virtual cultural heritage has started with the first laser scanning and reconstructing the stecak (Bosnian medieval gravestone) from Donja Zgosca [RAA05], where we reconstructed the missing part of the object in its 3D model. Our collection of virtual reconstructions contains 3D models of Sarajevo City Hall Vijecnica [Hul07], [HulRiz06], cultural heritage objects from Sarajevo old town [BSRA08], medieval fortress in Travnik [JovRiz08]. The project of Virtual reconstruction of the Church of the Holy Trinity in Mostar is now in the second phase [KarRiz08]. We are also working on the virtual museums creation [Mus06] and the presentation of intangible heritage using digital storytelling [RizSadz08].

Isa Bey's Tekija project is one of our recent projects. In this paper we will present our experiences after finishing the first phase and the plans for the second phase of the virtual reconstruction.

The paper is organized as follows: in the Section 2 we will present why this object is so important for virtual reconstruction, Section 3 covers the first phase of the project, Section 4 describes the remarkable echo of the project in the Bosnian public, Section 5 gives the overview of our plans for the second phase and finally we offer some conclusions.

2. History and importance of the object

The word: Tekija (tekka), comes from Arab word takkiyya, with a root w-k'-, meaning “to lean on”, or “to be supported by”. Tekija determines an institution that belongs to a group of Islamic believers called dervish or Sufi (bos: derviši, sufije), a mystical order, where they gather around their sheikh, discuss religion and philosophy and perform their religious rituals.

Isa-Bey’s Tekija is one of the most important tekijas in Sarajevo. It was built before 1462 and it is considered the oldest institution in Sarajevo.

Isa-Bey Ishakovic, the founder of Sarajevo, listed it in his deed of endowment (*vakufnama*) written in 1462. Among other estates, he mentions, a *musafirhana* (shelter for pilgrims and travelers) which was a part of the whole complex containing Tekija [Zujo01].

Tekija has been damaged, destroyed in fires and floods many times and it was completely reconstructed several times. In the year of 1957, Tekija was demolished and completely destroyed for the last time. The final destruction of Tekija estate was made with the construction of the road to Pale, the gasoline station and other objects, many of them built without planning permissions (Figure 1).

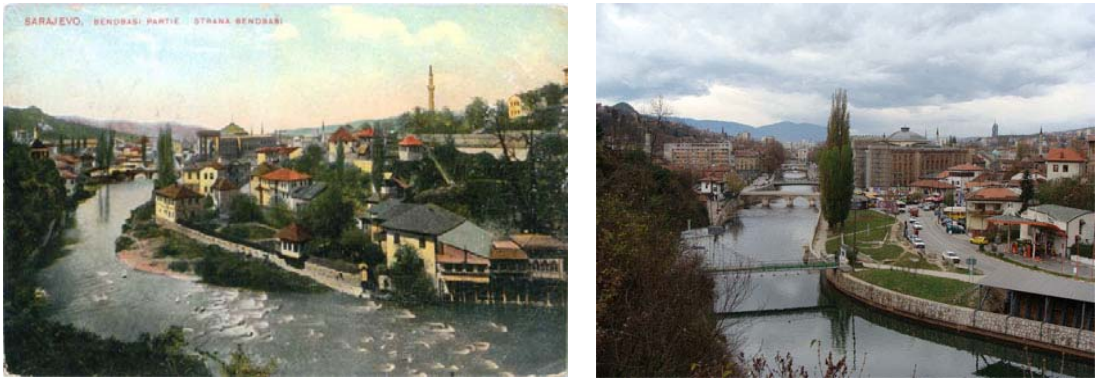

Figure 1: Tekija location before (left) and now (right)

The location of the Isa-Bey’s *tekija* was not chosen randomly. Traditionally tekija buildings have beeb built as a part of natural surroundings and completely open towards its ambience. A river, a cliff and a canyon or a hill were very often attributes of locations chosen for the tekijas. The same can be noted for this particular tekija. The Sufies believe that the choice is not up to a man. The sacred location is chosen by God who guided the man towards it. The surrounding area, the panorama, is a part of the ritual and thus integral part of a tekija. All the parts of a tekija complex, such as the house, the stairway, the water, the rock, the spring, the grave and the cave have certain symbolic meanings. [Hadz01] (Figure 2).

The great wealth and beauty of Isa Bey's Tekija on Bentbasa was described by Evlija Celebi (*Evliya Çelebi)*, an Ottoman traveler and journalist. In his travel logs from 1659 he describes Isa-Bey’s Tekija, located on the banks of the Miljacka River: *”The Tekija of Mevlevi order: At the bank of the Miljacka River, on the place resembling a paradise, a vakuf tekija of Jalaluddin Rumi is placed. Tekija has a simhana (the room where rituals of the dervish order were preformed), mejdan room (where dervishes could meet one another to socialize outside of the rituals), seventy to eighty rooms for the poor, balcony for those who sing and play music, imares (kitchens for the poor), and a dining hall. “*

There are 12 orders of dervish in Islamic religion. Isa Bey's Tekija belonged to the Mevlevi Order, whose founder was Mevlana Jalaluddin Rumi. These dervishes are famous by their ritual whirling "dance". Today in Bosnia and Herzegovina exists no tekija of this order.

As a rule, a tekija has a humble closed up shape. Its architecture reflects retrieval from the outer world and opening up towards the inner space.

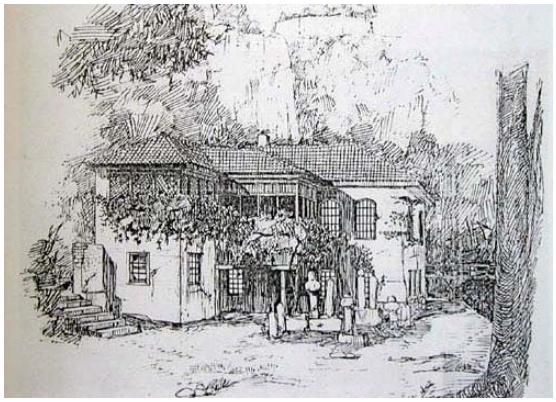

Figure 2: Isa bey's Tekija - drawing

Today it would be very difficult to perform the real reconstruction of Isa Bey's Tekija. It would be necessary to move the main road and the gasoline station. The bank of the river now looks completely different and it is made much higher than in the past. Therefore we decided to create a virtual reconstruction of Tekija using computer graphics techniques and 3D technologies.

3. First phase of the project

This project has started as a diploma project of our student Anis Zuko at the Computer Science Department of the Faculty of Electrical Engineering in Sarajevo. The created 3D model was extremely good and we decided to continue in cooperation with the Museum of Sarajevo and 5D-CaDD Company from Sarajevo. In order to provide the funding for this project we created a pilot version, implemented it on the web and created a small 3D printout of the model.

3.1. Virtual reconstruction. The virtual reconstruction of Isa Bey's Tekija consists of three models: the exterior of the object and two interior rooms. The models were created in several steps. First we collected the materials, then modeled the objects, created and mapped the textures, illuminated the scenes, created the environment, positioned the cameras and exported the scenes in web 3D technology VRML [ZukRiz06].

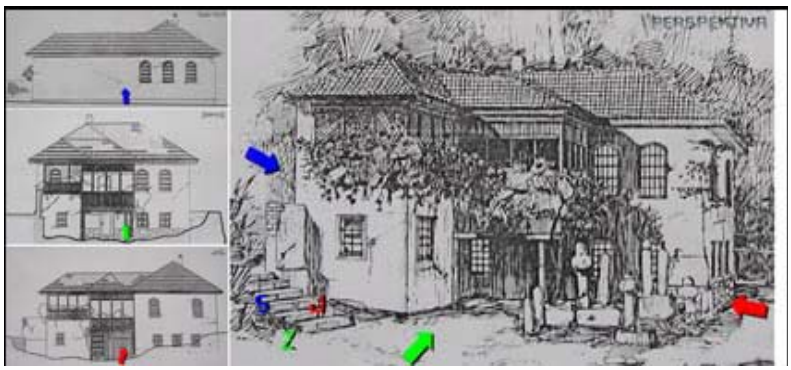

Figure 3: Drawing of the facades

Collecting materials was very difficult, as the object does not exist any more and a very few data on its position and appearance are available. All our materials consisted of several old photos and postcards, one drawing of the facades (Figure 3) and one sketch of the top view of the object.

As we had literally no information of the interior appearance, we have simulated the interior of Sinan's tekija in Sarajevo. This approach is acceptable because all tekijas have very simple and similar interiors.

Figure 4: Screenshot of the exterior model 3ds max project

Modeling of the objects was done in 3ds max software. We have used the classic modeling techniques such as polygonal modeling. It was very important to consider the level of details, as our target was the Internet presentation of the scenes, where additional details make the models slow and files too big for downloading. A screenshot from the exterior model project is presented in Figure 4.

A particular problem for us was modeling of the environment of the object. Our experience shows that even the highest quality model of the object looks poor when it is without environment. Isa Bey's Tekija had a slope of the hill from the back side and from the front side it was facing the River of Miljacka. Unfortunately, the river bank now looks completely different after many stages of construction, such as building of the road and the new objects. Our virtual environment contains a combination of the model of the terrain (the hill) and the panoramic photograph of the present environment mapped on a cylinder (Figure 5).

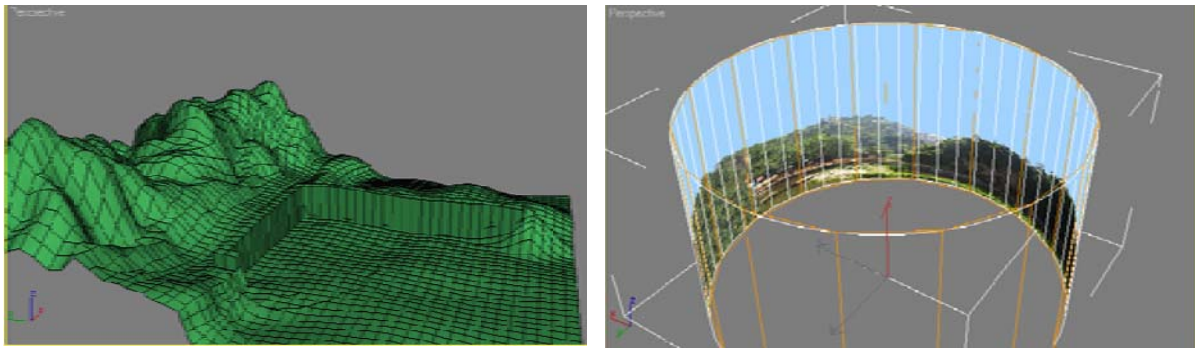

Figure 5: Environment of the object: terrain and panorama

Materials and textures for the models are made according to the appearance of traditional Bosnian houses, usually painted in white and containing many wooden elements. Mapping was done using 3ds max UVW mapping modifier, following the geometry of particular objects. The gravestones in front of Tekija were mapped by a material reminding on the old stone.

The illumination of the scenes is crucial for creating the right atmosphere. Unfortunately VRML does not support very sophisticated lighting possibilities, so we had to illuminate our scenes mainly using Omni lights. In order to enable our viewer to view different parts of the scenes using the menu of viewpoints, we created cameras in 3ds max that will be exported as viewpoints in VRML. Positions of some cameras and the illuminated model are displayed in Figure 6.

Figure 6: Different views of the scenes

Being exported to VRML, the scenes became interactive. Users are able to move inside the environments using VRML browser, freeware player which is installed as plug-in to the Internet browser. This interactivity creates better immersion in the environments. Users are "entering" in the object by clicking on the main door. At that moment one of the interior models (the hallway) is open and displayed in the browser window. This transition is implemented using VRML Anchor node, which serves as a hyperlink in VRML and opens the file mentioned in one of its fields.

Anchor nodes are also used to provide additional information on particular parts of the environment. For example, we inserted the "i" object (Info node) next to the gravestones in front of Tekija, and assigned it to an Anchor node. After the user clicks on this object, a new window is displayed, containing the story telling who was buried below these gravestones. Similar Info node we have in the interior room, offering the information what is a "Levha" (a verse from Koran written using beautiful calligraphy). Walls of interior rooms in tekijas are always decorated by levhas.

3.2. Web presentation. Web presentation of the first phase of Tekija project is made in the Bosnian and English languages [Tekija08]. The home page quotes a verse of Mevlana Jalaluddin Rumi (Figure 8), a philosopher and mystic of Islam, whose doctrine advocates unlimited tolerance, positive reasoning, goodness, charity and awareness through love. To him and his followers all religions are more or less truth. Looking with the same eye on Muslim, Jew and Christian alike, his peaceful and tolerant teaching has appealed to men of all sects and creeds.

Figure 7: ***Tekija exterior scene in VRML browser***

Figure 8: Web presentation design

Web presentation, apart from the interactive 3D models through which the user can walk virtually, offers a variety of data about the historical and religious importance of Isa Bey's Tekija. The presented texts are mainly quoted from [Symp01] and some other sources. The purpose of these data is to inform the user with average education about the object and its importance. There are also two image galleries, showing the rare old photos and postcards where Tekija is visible and some rendered images of the models.

3.3. 3D printout. From our exterior model of Tekija, a small 3D printout was created using ZCorporation 310+ printer. Dimensions of the printout are 9,5 x 7 x 4,5cm (Figure 9). The print was performed from the VRML version of the model. The very good quality of this

printout inspired us for creating a prototype for the souvenir and a bigger version for the physical model of the object which will be created in the second phase of the project.

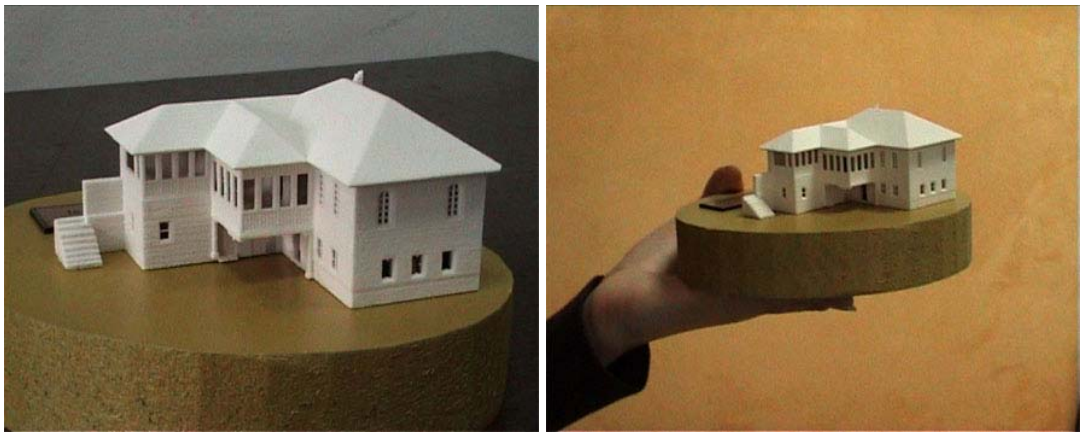

Figure 9: The 3D printout

4. Echo of the project

The first phase of the Isa Bey's Tekija project had an unbelievable and unexpected positive feedback in the Bosnian public. Many citizens of Sarajevo discovered this historically significant object just after visiting our web site. The reaction of the public was extremely emotional. We have had several interviews in the media where we invited the people who might remember the appearance of Tekija to contact us, as we need all available data on the object. These contacts provided us with precious materials for the second phase of the project. Now we have an old photo of the room where the "zikr" (joint prayer) ritual was performed. Using this photo now we can finally guess the appearance of the interior. Many people expressed their gratitude for enabling them to learn more about the past. It was an additional motivation for us to continue with this and similar projects.

5. Second phase

Isa Bey's Tekija was a part of the whole complex of objects, positioned in a unique natural environment. Many objects from this complex had not just a religious, but also a humanitarian role. There was the "musafirhana" - shelter for pilgrims and travelers, where they were offered a free accommodation and the "imaret" - a public kitchen where the food was prepared and served for free.

Isa bey Ishakovic, the founder of Sarajevo, built these objects and dedicated them to the public benefit using the institution of "vakuf" (endowment). This institution, characteristic for the Islamic religion, enables the donor to give precise directions how the objects from his endowment will be used and maintained for the public benefit after his death. Isa-beg's *vakufnama* (deed of endowment), the oldest signed document of the Ottoman rule about Sarajevo was verified in front of the Sarajevo *Sheriah* (Sher´i`at) court, as stated, in the month džumade-l-ulu , *Hijri* 866 (1462 A.D.). The Vakufnama was, according to the rules and customs of the time, written in front of the *kadija* (judge), and its origin was confirmed with signatures of 18 witnesses.

The whole complex was placed in such a natural environment called by contemporary researchers a "natural botanical garden" due to abundant different flora and fauna species that can be found only in this area. The surrounding cliffs and caves were also important from the

symbolic point of view for the dervish ritual. A cliff is the integral part of a Bosnian tekija. It usually towers almost horizontally over the house, symbolizing interaction of human construction with the power of the Eternal. The house is leaning on the rock and partly is cut in it. The rock is covering the house like an umbrella, and thus reinforcing the symbolism of the roof of the world. The river and the rock are a pair that is expressing their self and reflecting each other in their contrast: the firmness and everlasting as opposed to constant flow; the peacefulness as opposed to instability, the quiet opposing the noise [Hadz01].

The second phase of the project will focus on the symbolism of the objects, where every detail has a deeper meaning. We will introduce virtual guides who will tell the stories about the object and its history using digital storytelling techniques.

From the aspect of the model the second phase of the project includes:

- modeling of the remaining interior spaces (semahana, divhana, mutvak)
- virtual reconstruction of the entire complex
    - musafirhana and imaret
    - Šehova korija - tekija, two graves of devishes
    - Abu-Hayat spring
- the cave
- Orlovača cliff, the second cave
- visualization of the "natural botanical garden" around the Tekija complex
- creating the physical model of the complex using 3D printing technologies

The final goal of the second phase is to create a department in the Museum of Sarajevo dedicated to Isa Bey's Tekija. This department would contain the interactive 3D model of the whole complex displayed on a touch screen, enabling the visitor to make a virtual walk through the objects. There would also be a 3D printout of a larger scale, as a physical model of the object. In the place of the original location of the object should be a panel inviting the people to the Museum, to see the revival of the oldest institution in Sarajevo that existed there long time ago.

6. Conclusion

The feedback of Isa Bey's Tekija project confirmed the value of virtual reconstructions of cultural heritage and their importance for reviving the collective memory of the past. There are many objects which existed long time ago and now, after many years and development of urban areas, nobody remembers any more how they looked like. This is the way to recreate complete quarters of cities which no longer exist, keep them in the memory of the citizens and present to the visitors.

In the future we plan to create virtual reconstructions of several parts of Sarajevo which do not exist any more. There are Bakr-babina mosque and library in the Atmejdan park, the Skenderija complex, Čajirdžik mosque close to the National Theater etc. We also plan to continue our work in creation of virtual museums and to introduce digital storytelling in our virtual environments with the purpose of increasing the immersion of the visitor.

Acknowledgements

We would like to thank hadži Velija Kukuruzović for providing us with the only picture of the Tekija interior. We are grateful to the director of the Museum of Sarajevo, Mrs. Amra Madžarević for her support to the project. We also thank Mr. Dino Selimovic and Mr. Srdjan Tešan from 5D- CaDD company for 3D printing of our model, Mr. Vedad Hodžić for his as-

sistance in selecting the music of Mevlevi dervishes and Mrs. Marijana Plavetić for English translation of the presented materials.

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