

# Virtual Museum of Russian Bells in Bulgaria

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**Abstract.** The aim of our research is to trace and passport the Russian bells in Bulgaria on the way of the Russian troops from the Danube to Shipka, given in gratitude for the help provided during the Russian-Turkish War (1877-1878). We base our research on previous similar projects that we have successfully completed. In this paper we formulate stages of our project and present current situation in their completeness.

**Keywords:** Bells, Campanology, Passportization, Digitalization, Virtual Museum.

## 1 Introduction

Most of the bells in Bulgaria are of Russian origin. After the experience in the certification of the bells of the “BELL” (Bogdanova, Trifonov, Todorov, & Georgieva, 2007), (Multimedia fund BellKnow, n.d.) and “Multimedia Fund BellKnow” (Bogdanova & Kancheva, Interdiscipline research and passportization of Bulgarian bells (in Russian), 2015), (Bogdanova, Dimkov, Todorov, & Noev, 2010), (Bogdanova, Todorov, & Noev, Digital Repository of Information and Knowledge - Fund BellKnow, 2011), (Markus, et al., 2016) projects carried out, Bulgarian researchers decided to devote their future work to passportization of Russian bells in Bulgaria on the way of Russian troops from the Danube to Shipka, bells that Russia donated in gratitude for the help of the Bulgarian people in the Russian-Turkish war and the presentation of information in a virtual museum. Representing information on Russian bells in Bulgaria in a virtual museum, they will be available to a wide audience and the historical background and will provide information on the specific case for which the gift was made and will be preserved for future generations.

Before 140 years, with a chime from the Danube to the Bulgarian Shipka enslaved, people welcome their liberators... Years pass and commemorative bells today resemble the joy of freedom, but an expensive sacrifice of life is given over the battlefields of enslaved Bulgaria. In every Bulgarian church, in every liturgy during the Great Entrance, the words that commemorate the fallen soldiers of the Fatherland are heard: “Blessed-spirited Liberator of our Emperor Alexander Nikolaevich, all Orthodox leaders and soldiers who fell on the battlefield for faith and liberation, may God In His kingdom ...”.

140 years have passed since the beginning of the Russian-Turkish liberation war, but the feat, glory and suffering are not forgotten. A grateful Bulgaria remembers its liberators, the church prays for the fallen for the liberation of our Fatherland. From the Danube to Shipka bells, monuments and lonely graves of burial show the way to freedom of Bulgaria.

## 2 Digitalization of Russian Bells in Bulgaria

The Russian bells, where our attention is directed now, have their own history connected with the history of Bulgaria. Most of them were donated in gratitude to the churches and monasteries, which during the war were turned into field hospitals and military hospitals for the wounded Russian soldiers. Each bell is valuable and unique and the 140th anniversary of the end of the Russian-Turkish Liberation War is a good opportunity to revive memories of the fateful path to freedom of Bulgaria. The gratitude of the Russian soldiers who died for Bulgaria's freedom continues to this day - a new church was built in Veliko Tarnovo - "Resurrection of the Lord", which is located next to the place where during the Russian-Turkish war there was a military hospital in the region buried the senior Russian officers and soldiers. Golden crosses, domes crown the temple were donated by twin-city Veliko Tarnovo Tver. The church bells were cast in the city of Voronezh and will be placed and lit in the presence of Volokolamsky Bishop Hilarion Alfeev at the end of November 2014.

To implement new ideas about the virtual museum, we partially use methodology developed for the passportization of unique Bulgarian bells (the "BELL" project) as well as part of the BellKnow archive data.

The implementation of the project objectives planned several steps. Up to this moment we have worked on three of them:

### **Preliminary research in libraries and archives in Bulgaria and Russia in order to identify artifacts.**



**Fig. 1.** Russian bells from Transfiguration Monastery; Bell № 0203, (Multimedia fund BellKnow, n.d.)

The project starts with a preliminary study in the archives (military, state, church), museums and libraries to establish the details of the way of Russian troops from the Danube to Shipka and those places where there are bells donated for gratitude. The Russian bells donated by the Emperor Alexander II are in many cases in temples and monasteries, where there were hospitals and military field hospitals or military headquarters such as Svishtov, Gorna Studena, Transfiguration Monastery (Figure 1) or in places connected with great battles and large sacrifices (eg Temple-monument in the village of Shipka memorial church “Nativity of Christ”). Documents (if any) associated with the gift certificate will be studied.

At this stage information on the location will be collected and it can be used for “Virtual museum with an interactive map”.

#### **Digitization of artifacts, associated with Russian bells.**

Digital objects are “digital images” of different type of objects or content. Before digitization should be analyzed specifics of the objects and seeking goals of creation of digital resources:

- A digital resource is created to spread or to preserve – by this depends the quality of the resulting recordings;
- The digital resource will be used for further analysis – by that depends requirements of the content;
- Is the subject endangered of harm – by that depends the choice of technology of digitizing – contact or contactless, in a secure environment;

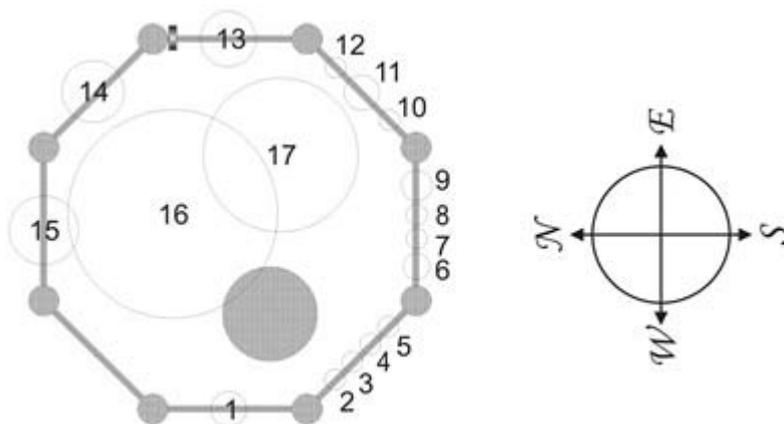
#### **Processing of digital data on Russian bells, indexed with metadata and archiving in the archive.**

Indexing of separate digital recordings has been done by entering the metadata into objects, as it is consistent with international standards applicable to objects of cultural heritage (Ivanova, Dobрева, Stanchev, & Totkov, 2012). The choice of these standards should be consider where the resources will perform in the global network. Good practice is to use the Dublin Core standard and technology of adding text boxes (metadata). The description of digital resources is necessary as part of the method of building digital archive, supporting activities such as classification, searching, filtering and etc. of artifacts in a wide array of resources (Noev, 2015), (Paneva-Marinova, Goynov, & Luchev, 2017) (Luchev, Pavlov, & Paneva-Marinova, 2015). After research was formed two lines of organization of metadata (the use of two lines simultaneously is recommended):

- Indexing of characteristics of resources – brief descriptions of recordings with purpose of fast processing of computer systems;
- Indexing of content of resources – descriptions in detail of the content of the digitized object in order to detect information in that content.

Processed and indexed digital resources for all objects are placed in separate multimedia archives (text, audio, photos, videos) of the Bellknow digital repository.

Details of the digitization process of object N9 (Temple-monument in the village of Shipka -memorial church “Nativity of Christ”) are shown in figure 2 and figure 3.



**Fig. 2.** The scheme of the all 17 bells from object N9 (the church “Nativity of Christ”, Shipka



**Fig. 3.** Photos of the largest bell N16 of the object N9 (church “Nativity of Christ”, Shipka).

Next steps that we plan to perform are:

#### **Passportization of Russian bells.**

The information gathered in the previous stages will be processed in the form of a passport made for each Russian bell. In the production of passports, the manufactured passportization methodology used in the project of passportization of unique Bulgarian bells ("BELL") and the media fund "BellKnow" (Institute of Mathematics and Informatics, BAS) will be used (Bogdanova & Kancheva, Interdiscipline research and passportization of Bulgarian bells (in Russian), 2015), (Research and Identification of Valuable Bells of the Historic and Culture Heritage of Bulgaria and Development of Audio and Video Archive with Advanced Technologies, n.d.).

Methodology of the passportization of the Belarusian bells and, in particular, the research of Russian bells in Belarus is presented in (Shatko, Bells and chimes Orthodox

churches of the western regions of Belarus: history and the present (with DVD), (in Russian), 2014).

**The book with the disc “Russian Bells in Bulgaria 1878 – 2017”.**

At the last stage of the project, a book with a disc “Russian Bells in Bulgaria 1878 – 2017” will be created. It will represent Russian bells on the way from the Danube to Shipka as a token of gratitude for help provided by Russian troops. Each bell will be presented with a photograph, historical information about the donation, historical information on whereabouts, information about archival documents (if any) related to the act of donation. A CD with sound of bells will be attached to the book.

**Exhibition “Russian Bells in praise of freedom of Bulgaria”.**

Within the framework of the project, information is spread about the Russian-Turkish War, which is part of the history of Russia and Bulgaria. Bells donated in gratitude to the Russian people and in memory of the events of the Russian-Turkish war are witnesses of the spiritual connection and closeness of the two Slavic peoples.

**Presentation on the Internet in the Virtual Museum with an interactive map.**

After the work is finished on the ground and data processing, information about the objects will be presented on the Internet in the appropriate form of the Virtual Portal - the electronic museum “Russian Bells in Bulgaria from the Danube to Shipka” with expositions and an interactive map. Through certification and representation in the virtual museum, Russian bells and historical events that are their memory are popularized. Through the Russian-language virtual museum will be popularized knowledge of Russia and little-known facts on the way of Russian troops from the Danube to Shipka, marked with bells, granted as a token of gratitude. The expositions of the electronic museum will show each individual bell and the whole group in one temple, represented by photos, sound, video and text (historical information on the cause of the donation, historical information on whereabouts, information of archival units associated with the act of donation), Russian design Bells - friezes, iconographic subjects (works of Russian art), inscriptions. Representing Russian bells in virtual space, they will be available to a wide audience.

We will also protect data with modern techniques. Each media recording will be marked with interpolation of identification code in its content. This is done in order to guarantee its authenticity, identification and copyright. For images will be used insertion of visible and invisible watermark in it (Berger & Todorov, 2008). Marking of audio tracks will be done by insertion of an identification code in at least significant channels adapted to human hearing. For videos will be used combined methods of image and sound marking.

### 3 Conclusion

Here is presented a research project to trace and passport the Russian bells in Bulgaria on the way of the Russian troops from the Danube to Shipka. We have developed methods and technologies for the creation and indexing of digital resources of various objects in the field of cultural heritage, consistent with their specifics: text, images, audio and video recordings, digital three-dimensional models of volumetric artifacts. We have also explored methods for marking of the digital resources with interpolation of identification code in audio recordings and digital images. Ideas for development of digital repositories have been given.

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