

Digital Archive of Cultural-Historic Heritage of Belarus: Certification of Bells Cast During 16th-19th Centuries

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Abstract. The article is a summary of a multi-year research into certification of bells of 16th - early 20th centuries collected as a result of liturgical instruments study of 287 bell towers, churches and museums. Analysis of archives from Belarus contributed to the research resurrecting knowledge about lost bell heritage. This is also the first attempt to discuss the establishment of digital Belarusian Historic Bells Archive and introduction of campan handling basic trainings into educational programs of religious educational establishments.

Keywords: bell, campan, certification, complex research, digital archive, digitalization

1 Introduction

If over the 19th - 20th centuries all issues related to acquisition or recast of bells required approval of ecclesiastical consistory, now it is a sole decision of an archpriest. Annual eparchy reports neither contains information about church bells, or statistics or their identification.

From 2003 to 2014 with a patriarchal blessing of Belarusian Exarch Philaret we make ethnographic visits to 287 rural orthodox churches in Brest, Grodno, partly Minsk and Vitebsk Oblasts. Simultaneously Lithuanian, Russian, Polish and Belarusian archives were diligently studied including documentation preserved in national museums and parish churches. As a result of longstanding researches a collection of rare materials of bells history was compiled, valuable bells identified, inscriptions texts of those already lost recovered, photos and videos of priests, bell ringers, local residents recollections made [3, 4].

The purpose of this article is to give consideration to the results of Belarusian bells fund certification and digitalization¹.

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Documentary description of church bells located in north-western regions of the contemporary Belarus is found in clerical records of the early 19th century listing quantity of bells. Starting from mid-century church ware is systematically and fully documented in a special worksheet. In 1879 based on the results of a survey there was a Description of Churches and Parishes of Minsk Eparchy compiled and printed based on the official information sourced from the clergy. The eparchy consisted of 9 counties: Minsk, Borisov, Bobruisk, Igumen, Slutsk, Pinsk, Novogrudok, Rechitsa and Mozyr [1]. The authors provided a short description of bells number and their weight, condition (whole and sound or damaged), location (on the church bell tower or on a separate bell tower or mounted on a pole, etc.). A few descriptions contain information about beneficiaries.

By the early 21st century despite historic twists and turns, wars and fires, atheistic outrages western Belarus managed to preserve a significant number of historic bells. Eastern Belarus faced the same situation as the whole post-soviet area: in the 1930th church bells of all confessions were demounted and sent for a recasting. Thus bell culture research in this region is far from being very fruitful, there are just a few bells preserved in museum archives in Mogilev, Vitebsk, Minsk, etc.

2 Digitalization of Belarusian bells from XVI-XX century

2.1 Previous researches

All in all 1704 bells were certified as a result of the visits [4]. 210 texts of liturgical instruments mainly bearing inscriptions of a sole or a number of beneficiaries were published in the form of a chronological table as a part of the book Bell Ringing of White Russia: a millennium of traditions (Minsk, 2015).

Our work characterized liturgical instruments located on free standing bell towers next to a church or inside of it or in a congregation area due to existing damages. It makes sense to note that lots of churches have bells hanging on the bulged or decayed joists with staircases to bell towers being in critical condition or missing at all. That is why quite often bell characterization was done under quite complicated conditions, often unassisted and 5-10 m off the bell tower floor. In a number of cases in order not to risk live bells were not measured, but they were photographed on a digital camera including inscriptions decrypted later during analyses of materials collected.

Every bell was measured with a tape: diameter of the bottom of the bell and the height without canons (up to 2005) and later with canons (since 2006). Defected bells were also measured. Before 2005 all bells were photographed with a film camera, later since 2006 with a digital SONY 7, 2 megapixels, featuring images of the Saints, icons, inscriptions. Bell ringing melodies were recorded with a Samsung 400x video camera. Bell measurements are printed, photographs are stored in a digital format, video and sound saved on cassettes [3].

2.2 Data collected from manuscripts on bells

Following list contains general information of the beneficiaries sourced from manuscripts or copied from the bells. The source of information of a bell inscription and the year of castings were copied directly from the bells. Present bell location is also specified: is it still ringing on a bell tower or displayed in one of the Belarusian museums. Abbreviation offered by the book *Parishes and Monasteries of Belarusian Orthodox Church*, Minsk, 2011 is used.

Bell founders often made mistakes in the bell inscriptions by embedding letters into a bell pattern before casting without punctuation or a title. For instance: «HL TRINITY», «S E Vasilenko», etc. Particular punctuation, bad spelling, unspaced writing, lettering of figures and numbers (including arithmetic symbol in brackets). Bell founders used to cast only big letters (except for the Samgins Factory which started to use their own signature, i.e. Samgins or Samgin Brothers starting from the late 19th century). Small letters were used by us in cases when: 1. Information about a bell was sourced from archives or literary works; 2) letters were cast or engraved on a cooled down bell by producers or personally by beneficiaries (graffiti). During casting metal used to partly burn through, that is why only a ready-made bell was weighted and “noted” next to already engraved letters “PUD...”, “F...”. In a few cases bell founders just skipped it. Inscriptions made around the bell are often interrupted by iconic images of the saints, therefore the table below has quotation marks opening and closing several times in a single example of an inscription.

List of general information of the bells beneficiaries is available online² (figure 1).

Beneficiary	Church location	Year of casting	Inscription or general information	Reference
Iulita I. Sakovaya	Malaya Berestovitsa, Berestovitsky rayon, Grodno Oblast, named after Dmitry Solunsky	1579	«Faithful servant of God Iulita I.Sakovaya for the church of Dimitry Malo-Berestovitkoy...»	The bell was returned from a Latin cloister to Orthodox church // Lithuanian eparchy, vedomosti, 1864, # 23, p. 883
Simeon Voino, a state and military leader	Molodovo, Ivanovsky rayon, Brest Oblast, Church of the Ascension	1583	«MARCZIN HOFMAN MNIE SLIWAŁ ROKU 1583» 4 columns and 13 lines inscription «NA WIECZNA PAMIEC BLAHOwierNEHO • CHRISTOLUBWOHO WIELMOZNEHO • PANA • IE • MCZY PANA WOINY MATFIEWICZA HRYCZYNA NARECZENNOHO WOSKRESZCZENIV BORYSA KASZTALANA MSCIŁAWSKIEHO STAROSTI OSKOHO PERELOMSKOHO VBORTSKOHO PODKOMOROHO PINSKOHO I MALZONKI IE* MSZY BLAHOwierNEY PANY BONDANY YANVZOWNEI LIVBELSKIEY NARECZENNEY WO S KRESZCZENNIY MELANIEI POWIELENIEM Y NAKLADOM ICH MCZY PRZES SINA ICH MCZY PERWORO DNOHO CWSIAKO BO OTROZA LOZESNA RAZWIER ZAIA...»	Information collected during field trips in 2007, damaged with a crack. Cast by Martin Goffman in Kovno (Kaunas, Lithuania) in memory of his parents, full text can be found on http://vkl.by/articles/2152 V. Pazdnyakou, Moladausky bell melody [42–39–50]
Yuri A. Golenitsa	Druya, Braslav rayon, Vitebsk Oblast, Church of Saint Savior	1590, 3 bells	«... a single great toll and another two minor tolls »	K.Shidloucki Architectural history of Braslav: historic-architectural overview. Minsk, 1996. p.21
			«MAGNUS DUX LITHVANIAE HANS CAMPA	

² <http://www.math.bas.bg/vt/BellKnow/BeBell/benef.php>

Fig. 1. List of general information of the bells beneficiaries

2.3 Documentation and certification of Belarusian bells

Our research in archives, churches and museums was the first attempt to certify and recover historic details related to an abundance of historic bells of the 16th-20th centuries. These bells were cast for orthodox and catholic churches by bell founders of contemporary Russia, Poland, Germany, the Ukraine, Lithuania, Belarus. At various times there were different beneficiaries (kings, dukes, szlachta, peasants, clergy). In September 1939 bell production for Western Belarus was ceased. Bells have cast or engraved inscriptions in the church Slavic, Polish, Latin, Russian, German languages sometimes containing mistakes. The biggest preserved bell has 132 cm diameter, 103 cm of height without canons, 132 cm with canons) weighing 960 kgs. According to archived data the maximum weight of a bell in its area was about 10.3 tons (Grodno Cathedral Church, 1897). Bell corpse was decorated with a cast sainthood, excerpts of Psalm texts, and a reference to a specific church, year of origin and weight.

Bell certification work has to be continued and all collected data has to be provided to eparchy and local parishes. It appears that bells that have seen service having cleavages and other damages, being monuments of historic and cultural heritage must be displayed in a museum of Belarusian church bells.

This is an issue which is especially topical for Belarusian Orthodox Church that due to historic circumstances managed to preserve over two thousand bells dated from the 16th-20th centuries.

3 Digital archive of Belarusian bells

The knowledge of campanology for Belarus [3, 4], Polish and Bulgaria [1, 2] are part of the common Orthodox cultural heritage. Description of Churches and Parishes of Minsk Eparchy compiled based on officially requested data from the clergy: «Minsk Eparchy. Vedomosti» dated from 1878–1879 : – Minsk : B. I. Solomonova, 1878–1879. The part of digital bell ringers' archives are present in [3].



Fig. 2. Digital archive of Belarusian bells

By 2007 scientists of Polish Science Academy finished certification of preserved Polish and Belarusian bells. Analysis of archives from Poland, Lithuania, Russia, Belarus contributed to the research resurrecting knowledge about lost bell heritage. By 2013 Bulgarian researchers made a description of a number of Bulgarian orthodox cloisters and churches. Financial support for all these works was granted by the state.

The results from digitalization of Belarusian bells and bells ringers [3] is included in digital repositories using the digital methods and experience of Bulgarian scientists of digital archives. Considering that there is a digital archive for unique Belarusian bells (figure 2), and there is lot of interesting information hidden in digital resources, we make an intelligent annotation of knowledge. A digital archive is developed by using advanced technologies for analysis, reservation and data protection.

To organize archive we use software platform, specialized in creating digital arrays, indexing of media files and organize tree file structure. It allows programming of additional features that automate and enrich the processing of digital resources.

The content of archive is well structured, every picture is indexed with metadata and annotation (figure 3). The work with records is optimized with functionalities of digital archive:

- automatic actions of converting;
- formatting and reformatting of digital images;
- indexing and adding signatures, watermarking and etc;
- extracting collections;
- search in indexes and keywords;
- work with automated templates and extracting digital content to online services.

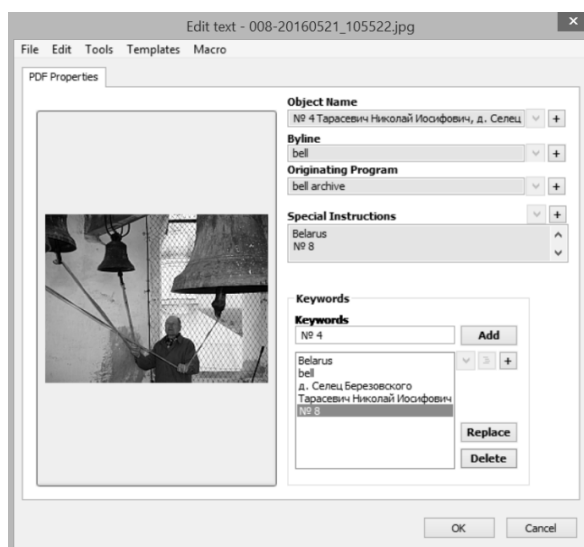


Fig. 3. Indexed bell object

4 Conclusion

The results from digitalization of Belarusian bells is included in digital repositories using the digital methods and experience of Bulgarian scientists of digital archives. This is the first attempt to discuss the establishment of digital Belarusian Historic Bells Archive and introduction of campan handling basic trainings into educational programs of religious educational establishments.

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