Documentation of Ecclesiastical Cultural Heritage

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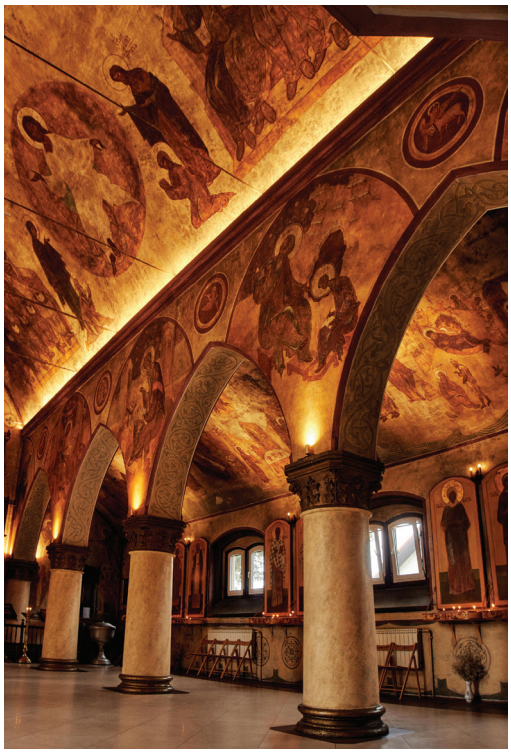

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Preface

Cultural Heritage (CH) represents a collective inheritance passed down from previous generations as a legacy to those who follow. Its preservation is a responsibility and a profound commitment to safeguarding our shared humanity. *NARRATE – Needs for Digital Recording and Documentation of Ecclesiastical Cultural Treasures in Monasteries and Temples*, an ERASMUS+ project funded by the European Union, emerges from this commitment, rooted in the necessity of preserving both movable and immovable monuments, as well as tangible and intangible heritage. The project's foundation lies in recognising that preserving cultural heritage, particularly ecclesiastical treasures, is vital to maintaining a continuous dialogue between past and future generations.

The importance of digital workflows in this effort is indispensable, not only for the preservation of cultural heritage but also for fostering a deeper understanding of its significance and meaning. Ecclesiastical cultural treasures, often referred to as part of the "sacred arts", embody a unique artistic expression of our cultural heritage and material culture. These objects, which serve worship and ritual functions across various religious traditions, stand as testaments to a theological vision that intertwines aesthetics and beauty. Consequently, the recording, documentation, and digital preservation of these treasures are crucial to safeguarding their physical and spiritual legacy.

This was the central theme of the *International Conference on the Documentation of Ecclesiastical Heritage*, held in Sofia, Bulgaria, from March 11th to 13th, 2024. The conference united experts, scholars, clergy, and practitioners, all committed to advancing the digital recording, preservation, and dissemination of ecclesiastical cultural treasures. It served as a valuable platform for dialogue and exchange, fostering collaboration between clergy and non-clergy communities, conservators, and researchers alike. The event aimed to inspire the custodians of ecclesiastical treasures to confidently embrace the era of digital transformation, ensuring that the rich heritage they safeguard is preserved for future generations.

This book compiles the presentations from the conference, organized and distilled into five key sections:

- Best Practices in Digital Documentation
- Digitization Ethics and Cultural Sensitivity
- Monuments in Thrace and Their Digitalization

- Challenges of Documentation and Preservation of Ecclesiastical Artifacts
- The Future of Digital Documentation of Ecclesiastical Treasures

These sections offer comprehensive discussions on the critical importance of ecclesiastical heritage, the practical and ethical challenges of digital documentation, and the application of cutting-edge technologies to preserve these invaluable cultural treasures.

As the digital era continues to redefine how we engage with and protect cultural heritage, we hope this book contributes to the ongoing dialogue on heritage preservation. More importantly, we hope it serves as an inspiration for new efforts in the digital safeguarding of these irreplaceable cultural assets, ensuring that future generations can experience and understand the rich artistic and spiritual legacy embodied in ecclesiastical cultural treasures.

Prof. Efstratios Stylianidis
Dr. Aikaterini Stamou

Best Practices in Digital Documentation

Digital archives and ecclesiastical cultural heritage: the BYZART project

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Keywords: Byzantine and Post-Byzantine Art and Archaeology, Byzantine and Post-Byzantine ecclesiastical heritage, digital archives, digital collection, Europeana

Abstract

The paper focuses on "BYZART – Byzantine Art and Archaeology on Europeana" project, dedicated to the creation of a pan-European digital collection of archival resources about Byzantine and Post Byzantine cultural heritage. The adopted methodology and main results of the project are described, focusing on recent developments related to the migration of the collection to Alma Digital Library resources.

Introduction

The cultural legacy of the Byzantine empire constitutes a very important common root to several countries in the Southern and Eastern Europe. Moreover, Byzantine influence has proven to be seminal in the development of much of Western-European Art, from the Middle Ages onwards. In addition to the archaeological remains still visible in today's towns and villages, a large part of this heritage is preserved in the archives of scientific institutions and museums. These archives hold graphic, photographic, and documentary data that recount the history of discoveries, depict lost or destroyed artifacts and monuments, and document the efforts of scholars and the evolution of scientific approaches over time. "BYZART – Byzantine Art and Archaeology on Europeana" project, launched in 2016 and EU-funded under the Connecting Europe Facility Programme, was conceived with the aim

of highlighting, connecting and enhancing this impressive heritage, otherwise destined to remain confined between dusty shelves at the risk of irreversible deterioration (Baldini, Lamanna, Marsili, Orlandi, 2020). This paper outlines BYZART main objectives, methodology and results, focusing on recent developments related to the migration of the collection to Alma Digital Library resources.

Methodology

The project, coordinated by the University of Bologna, brought together an international consortium comprising the Institute of Art Studies of the Bulgarian Academy of Arts (BAS IAS), Aristotle University of Thessaloniki (AUTH), Ionian University of Kerkyra (IONIO), Open University of Cyprus (OUC), the Institute of Historical Research of the National Hellenic Research Foundation in Athens (NHRF), and the Museum of the City of Ravenna-Centro Internazionale per la Documentazione e lo Studio del Mosaico-Biblioteca Classense of Ravenna (MAR-CIDM-CLASSENSE). Except for the IONIO team, responsible for the technical development and IT support, and NHRF, responsible for content validation, most of these institutions functioned as content providers, supplying materials from 29 archives, the majority of which were previously unpublished (Marsili, Orlandi 2019; Baldini, Marsili, 2022). The structure of the consortium, composed of institutions operating in Italy, Greece, Bulgaria, and Cyprus, enabled coverage of a substantial part of the territories influenced by Byzantine dominion. The documentary resources pertain to an artistic and archaeological heritage corresponding to 527 contexts in the Mediterranean area, including both extant architectures and artifacts and items exhibited in national and international museum collections (Fig. 1).

Figure 1 *Geographic distribution of the collection.*
Red dots correspond to the sites depicted in BYZART archival resources; bigger dots correspond to sites included in galleries and virtual exhibitions.

Some of these monumental realities are relatively unknown and gain prominence through this thematic collection. Considering the cultural focus of the collection, most of the digital resources pertains to ecclesiastical heritage, spanning from the 4th to the 19th century (Fig. 2).

Figure 2 Constantinople, Monastery of the Holy Savior in Chora (Istanbul, Kariye Camii), archivolt of a ciborium (Federico Zeri Archive, University of Bologna, https://www.europeana.eu/it/item/22/_1724)

The vast and heterogeneous collections provided by the content providers have been an exceptional documentary resource from the outset, albeit presenting significant complexity in terms of systematization and development of a unified acquisition and cataloging protocol. Most of the resources consisted of analog archival photographs, preserved on various media types, such as gelatin silver glass slides, analog photographic documents, slide films, photographic boards, postcards, sketches, and drafts. Additionally, the rich sound heritage included the Byzantine Orthodox chant music archive provided by the Bulgarian Academy of Art, preserved on magnetic tape reels, and numerous audio-visual contributions comprising documentaries on Byzantine monuments of Cyprus, produced by the Cypriot Broadcasting Corporation in digital format.

In the initial phase, the critical condition of some archives necessitated cleaning and restoration operations, essential for the preservation of the original supports. These activities were performed by the individual research teams according to local and national standards (Moutafov, 2020). Subsequently, the heterogeneity of the media and the varied conservation states of the collections required the development of specific digitization strategies, involving both the conversion of analog material into digital format based on shared standards and protocols, and the creation of a comprehensive and accurate metadata set, capable of encompassing the diverse characteristics of the individual archives to provide a high-quality and easily understandable user experience (Giannakoulopoulos et alii, 2021).

Where available in analog format, photographs, both black and white and color, were digitized in 24-bit RGB color space and saved in uncompressed TIFF 6.0 format with 600 DPI resolution according to ICCD parameters, incorporating technical metadata tracking the image history into the TIFF files. High and low-resolution jpg formats derived from these digital matrices, archived on HDDs, were subsequently linked to catalog pages on the project's web database. In many cases, handwritten or printed annotations on the back were also digitized and archived with the same serial number, supplementing the files with letters "a" (recto) and "b" (verso).

Thanks to the expertise of the IONIO team, the project's technical implementation resulted in a platform accessible through a web interface, thus remotely updatable by the various project partners, utilizing Omeka software (version 2.6.1) as the Content Management System and relying on a Cloud storage system (Amazon AWS S3) for managing master copies (Giannakoulopoulos et alii, 2021). The significant flexibility of Omeka enabled the implementation of numerous plugins, allowing substantial system customization based on project needs, resulting in a flexible, reliable, and easily implementable platform, both in traditional "data entry" mode and through an automatic multi-import system from xlsx or xml files.

Omeka's customization also allowed for the modeling of a metadata set designed based on the Europeana Data Model (EDM) schema, required by Europeana for all its collections, enriched according to the specific characteristics of the BYZART collections and in alignment with various cataloging systems and national and international best practices (Fig. 3)

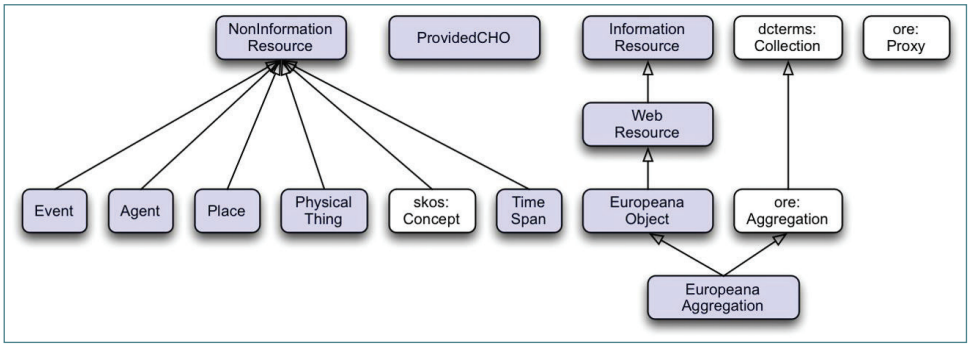

Figure 3 *EDM main classes, Europeana Data Model (https://pro.europeana.eu/files/Europeana_Professional/Share_your_data/Technical_requirements/EDM_Documentation/EDM_slides_130714.ppt)*

Further normalization of these fields was achieved through the creation of an extensive controlled vocabulary specifically dedicated to Byzantine art and archaeology (Chrysafi et alii, 2020). It contains verified terminological lists in English, Italian, Greek, and Bulgarian, drawing from existing repertoires, best practices, and national and international standards, including Getty AAT, terminological tools implemented within the PartagePlus project, and those provided by ICCD in Italy (). By exposing all content in English, the BYZART vocabulary has thus ensured a significant semantic and multilingual enrichment through the main project languages, while also ensuring, through the uniformity and standardization of descriptive content, high scientific standards, enhanced accessibility, intraproject searchability, and interprojects interoperability among digital cultural heritage research initiatives.

For each implementation session, content validation was entrusted to both an automatic formal cross-checking system implemented in OMEKA and a metadata quality control procedure coordinated by NHRF, which ensured rigorous verification of the coherence and scientific accuracy of the metadata content (Deliyannis et alii, 2020). Following necessary corrections, each record was published in the publicly accessible and navigable section of the project's web platform.

The aggregation of metadata datasets related to the 76,076 digitized items, implemented and verified by the BYZART consortium, was curated by AlmaDigital Library, which operated as the project aggregator, utilizing the Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH) technology.

Results

"BYZART - Byzantine Art and Archaeology on Europeana" action managed to gather a total of more than 76.000 newly digitized Byzantine-related materials, amongst which

photographs, slides, audios and videos, belonging to previously unexploited archives of different research and cultural institutions. This high-quality digitised content (meeting the Europeana Tier 2 requirements) was endowed with a rich metadata set, which aims to enrich users' experience and allow reuse of digital resources. Thanks to the Open Data framework underpinning the entire collection, the project's results and content can be exploited and manipulated by a wide range of actors and interested parties, such as scholars, schools, museums, cultural organizations, as well as enthusiasts and citizens at large. The qualitative characteristics of the content in the collection lend themselves to full reusability, modeling, and reworking on various multimedia platforms and through different technologies, such as augmented reality, virtual reality, and holographic projections, as demonstrated by the experimentation conducted by the IONIO and OUC teams for the creation of audio-visual content with holographic elements based on materials produced during the project (Giannakoulopoulos et alii, 2021). The high adaptability of the methodology developed have already been tested in other international projects, such as the European project Europeana Archaeology, to which the University of Bologna contributed as a partner by digitizing the Giorgio Gualandi archive, dedicated to classical art and archaeology.

Thanks to the collaboration of Alma Digital Library, the entire collection has been recently further refined and renovated to be migrated to Historica collections, the UNIBO institutional repository for digital replicas of ancient and valuable sources of scientific and cultural interest (https://historica.unibo.it/cris/fonds/fonds00008). Both BYZART and Europeana Archaeology collection can now be surveyed through a completely renewed interface in compliance with IIIF standards, thus ensuring long-term sustainability to the collections (Fig. 4).

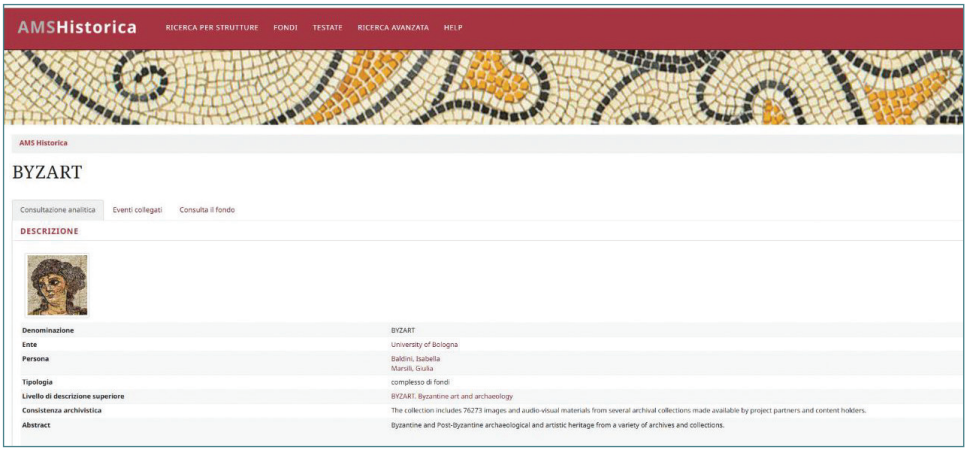

Figure 4 BYZART on AMSHistorica (https://historica.unibo.it/cris/fonds/fonds00008)

Conclusions

Through the digitization of a vast array of visual materials from physical archives and printed catalogs, the BYZART project aimed to contribute to the knowledge and appreciation of Byzantine and post-Byzantine artistic heritage, both in terms of preservation and accessibility of documents. Benefiting from the advancements made in the Digital Humanities over the past two decades, the creation of a digital archive sought to achieve the dual objectives of ensuring long-term data preservation, safeguarding their consultation even in case of loss of original supports, and guaranteeing the accessibility of the same to a broad user base. The project partners operated within an Open Data framework, shaping actions and activities according to shared protocols to produce a digital material management system inspired by the principles of FAIR data. In particular, the structuring of a database designed in compliance with high-quality standards, with an appropriate set of metadata and cross-platform connections, is fundamental to ensure simple and immediate retrieval of information, facilitate cross-queries, and guarantee the interoperability of heritage digitization projects over the long term. Effective documentation management cannot be considered an end but rather as the key to fostering innovation in knowledge and ensuring the reuse and long-lasting utilization of data by the community even after the data publication process.

Acknowledgments

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Best Practices for Recovering Texts in Palimpsest Manuscripts Using Multispectral Imaging

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Keywords: Multispectral Imaging, Palimpsests, Best Practices, Digital Cultural Heritage, Manuscripts

Abstract

Palimpsests are manuscripts that have been recycled, where the original layer of writing has been erased or obscured, and the writing material has been reused for a new text. In some cases, this recycling process has occurred multiple times, resulting in multiple layers of erased text. For over a century, scholars and researchers have been striving to bring to light these old scripts. However, earlier methods usually employed invasive and destructive techniques. Fortunately, new digital technologies have emerged, offering a non-invasive approach to uncovering the secrets hidden within these erased texts. One such cutting-edge technique is multi-spectral imaging, which has been successfully employed in renowned projects such as the "Archimedes Palimpsest" and the "Sinai Palimpsests Project."

Multi-spectral imaging has revolutionized the study of palimpsests, empowering scholars to unveil and explore previously inaccessible texts without harming fragile manuscripts. This technique involves capturing images of an object at various wavelengths across the electromagnetic spectrum, including those beyond the range visible to the

human eye, such as ultraviolet and infrared. Materials like inks, pigments, or types of parchment interact differently with light at different wavelengths. By imaging the manuscript at diverse wavelengths, researchers can heighten the visibility of the underlying text while minimizing the prominence of later writing or damage. Consequently, this approach enables the reconstruction and interpretation of the original text without physically altering the manuscript.

The Early Manuscripts Electronic Library, a non-profit institution, has devoted over a decade to the scientific imaging of more than 10,000 palimpsested, damaged, or otherwise obscured pages. This paper aims to provide an overview of past and current approaches, share best practices, and shed light on the captivating world of multi-spectral imaging and palimpsests.

Introduction

The value of applying modern imaging hardware and software to recover erased or otherwise damaged writings from cultural heritage has become widely accepted. Specifically, the technology of illuminating manuscripts with multiple wavebands of light and subsequently combining the resulting images (what is known as "multispectral imaging" and often denoted by the acronym "MSI") has been widely used. MSI imaging of the Archimedes palimpsest[1] in the early 2000s was one of the first large projects using this technology, which was subsequently applied to the Syriac-Galen palimpsest[2], and other "famous" manuscripts. A breakthrough in the recovery of erased texts was achieved through the five-year effort of the Sinai Palimpsests Project[3] (SPP) which aimed to recover palimpsests at St. Catherine's monastery, with the generous support of the Arcadia fund[4]. Though MSI technology in cultural heritage has been demonstrated to be useful, its history is sprinkled with examples where the images were collected and/or processed in manners that were less effective than possible.

The major shift and achievement of this project was the application of MSI to a large-scale collection of manuscripts worthy of text recovery, rather than its use only for "celebrity" manuscripts. This has been a turning point for the study of palimpsests since it was the first time that such a technology was applied in a collection with unique palimpsests, of which every single one of them posed a different unique challenge. These challenges were

1 Netz, R., & Noel, W. (2007). The Archimedes Codex: Revealing the Secrets of the World's Greatest Palimpsest. As well: https://www.archimedespalimpsest.net/

2 Easton, R.L., Knox, K.T., Christens-Barry, W.A., & Boydston, K. (2018). Spectral Imaging Methods Applied to the Syriac Galen Palimpsest. Manuscript Studies: A Journal of the Schoenberg Institute for Manuscript Studies, 3, 69 - 82.

3 Rapp C., Rossetto G., Grusková J., Kessel G., New Light on Old Manuscripts (2023). As well: http://www.sinaipalimpsests.org/

4 Grant identifier: ArcadiaFund-3150 awarded to the Early Manuscripts Electronic Library (EMEL) and the University of California Los Angeles (UCLA).

overcome through innovations or improvements of available technology, leading in best practices and new workflows.

Methodology

During the course of the SPP, MSI systems greatly improved in light control, multispectral illuminant power, light quality (e.g., bandwidth and illumination uniformity), filter wheel capabilities, automated entry of metadata from text forms, and additions of metadata are among the numerous innovations and features that were directly impacted by the Sinai palimpsest project. New capabilities were often proved in Sinai prior to more general release. The British Library directly benefited from the Sinai Palimpsest Project, as did the entire field of cultural heritage multispectral imaging. For example, all known extant copies of Magna Carta from 1215 CE at the British Library were imaged using an MSI system by Megavision, Inc. (USA), including the "Burnt" copy, from which a great deal of text was recovered. Currently a diverse selection of MSI off-the-shelf- systems exists, although this was not always the case. During the time of the SPP (2009-2016), MegaVision's MSI system was selected as being robust and unique in the field.

MSI is an advanced technique that builds upon fundamental photographic principles, but extends the system capabilities significantly. It involves capturing images of objects under various wavelengths of light, beyond the visible spectrum, so to reveal details not discernible to the naked eye. An ideal setup reflects the meticulous precision required for MSI, starting with the use of a high-resolution digital camera mounted on a stable copystand. The stability ensures that the camera's position remains fixed throughout the imaging process, which is crucial to align images captured under different lighting conditions.

The arrangement of light sources, typically LED arrays or specialized lamps, at approximately equal distances from the camera, is designed to provide uniform illumination across the object's surface. The use of a dark room environment is essential for controlling extraneous light and ensuring that only the specific wavelengths intended for each capture are recorded. This controlled setting allows for the sequential illumination of the object with different wavelengths, each highlighting distinct features or materials that respond uniquely to certain light spectrums. The remote computer control of the system further enhances its capabilities by enabling precise adjustment of exposure times, light intensity, and wavelength selection, thus ensuring that each image in the series is captured under optimal conditions. This systematic approach is critical for the success of multispectral imaging projects in cultural heritage conservation, forensic analysis, and scientific research, where detailed and accurate visual information is paramount.

There are five key elements of a sophisticated MSI system:

1. Digital camera back enclosing a CCD or CMOS high-resolution sensor. The standards for spatial resolution of sensors keep changing with advances in technology, but "high

resolution" is now generally accepted to range from 50 to 150 megapixels for medium format cameras. The use of monochrome sensors is strongly advised, thus eliminating the colored filters over the pixels used to record apparent visual color under white-light illumination. These filters prevent at least two thirds of the incident light from reaching the sensor and also interfere with the sensitivity at ultraviolet and infrared wavelengths. Monochrome sensors are capable of recording the light intensity over ranges from black through various shades of grey to white with high accuracy. In photographic terms, such a sensor has a "high dynamic range," which is important for distinguishing subtle variations in material reflectivity within individual pixels. CCD/CMOS sensors made from silicon are generally sensitive to light with wavelengths ranging from approximately 360nm to 1000nm (or so).

2. Narrowband multichannel light-emitting diode ("LED") illumination sources. LEDs are highly recommended since they can produce narrow spectral bands of illumination with accurate repeatability of the power output intensity. LEDs generate light by electronic transitions instead of as a byproduct of heat, as in incandescent sources. The number of distinct spectral bands that can be generated can by quite large, up to 18 or so for wavebands from the near ultraviolet (wavelengths $\lambda \geq 365$nm) through the visible spectrum ($400\text{nm} \leq \lambda \leq 700$nm) into the near infrared ($\lambda \leq 1050$nm). Fewer bands can also be used. A step interval between wavebands of 20-50nm provides good spectral resolution. In addition to traditional light sources used at 45° angle, a transmissive spectral light source has proven very beneficial, as it allows longer wavelengths ($\lambda \geq 800$nm) to penetrate through areas of parchment that has been thinned by ink corrosion.
3. A filter wheel equipped with spectral bandpass filters, i.e., the filters pass only specific bands of wavelengths. These filters are used selectively, in conjunction with distinct illumination wavelengths (365nm, 385nm, 400nm) that induce fluorescence within the parchment. This approach serves to enhance the differentiation of fluorescence phenomena among various components of the object under examination, such as ink and parchment.
4. An apochromatic macro "UV-VIS-IR" lens[56] is very important. Nearly all camera lenses are apochromatic, which means that the focus is corrected at three wavelengths of light. However, since most lenses are used in visible light only, the three corrected wavelengths are typically in blue, green, and red light. In MSI where images are collected outside the visible range, such lenses would produce unacceptably out-of-focus images if used over the full range of imaged wavelengths from 365nm to 1050nm. The

5 MegaVision 120mm f/4.5 Macro UV-IR Apochromat. As well: https://mega-vision.com/products/lenses/

6 Coastal Opt / Jenoptik 60mm F/4 UV-VIS-IR Apo Macro. As well: https://www.jenoptik.us/products/optical-systems/customized-and-standardized-objective-lenses/multispectral-objective-lenses

UV-VIS-IR apochromat also is corrected at three wavelengths, but now includes ultraviolet and infrared wavelengths, so the images remain acceptably "sharp" over the full range of captured bands. Without such a lens, images would have to be refocused for different wavebands, which would change the image magnification and means that pixels in the different images would not be "lined up" ("registered"), and would therefore require further corrections. Utilizing such a lens allows the operator for a single focusing action that yields sharply defined images across all these wavelengths without necessitating any readjustments or interventions during the capture of images in these distinct light ranges.

5. Computer software that controls all system components. Image capturing software can prove to be the best approach in repeatable photographic sequences and the meticulous documentation of information inside pictures through metadata. MegaVision's tested software offers the capability to plan and meticulously customize the capture of a series of images. It enables the user to specify the desired sequence and quantity of shots, while also fine-tuning the operational parameters of each device involved in the imaging process on a per-shot basis. Parameters such as aperture, exposure duration, illumination intensity, filter selection, and light configuration can all be accurately set and stored as a comprehensive imaging protocol. This finely tuned sequence can then be executed with exact replication for each page of the object being imaged, ensuring consistency and reliability throughout the entire documentation process. Typical image sequences of spectral data consist of 30 to 50 images, with an acquisition time for each full set of 5-10 minutes.
6. An additional element which is not part of the system, but which plays a crucial role in repeatability and measurement of data, are calibration targets. Targets can measure color accuracy (such as the X-Rite "ColorChecker"), are essential to produce accurately colored images, but other special reference targets that exhibit very uniform reflectivity across the spectrum (e.g., "Spectralon®, a Teflon derivative) are necessary for calibrating the reflectance of the collected images.

Even when following strict protocols, errors (human or machine) may happen for various reasons. These may be due to environmental changes in temperature and/or humidity, unstable floors at onsite remote locations, and human factors. To detect and remedy these errors, quality control procedures are not only advised bt necessary. After each imaging sequence, the camera operator should check for registration of the captured images, as well as sharpness and luminosity. Examination of image quality (e.g., sharpness, exposure conditions, etc.) is necessary. In part, this is because parchments have a tendency to change shape as they adjust to ambient humidity levels; this action can expand or shrink the shape of the object, even during the image sequence capture. The image quality assessment can detect such errors.

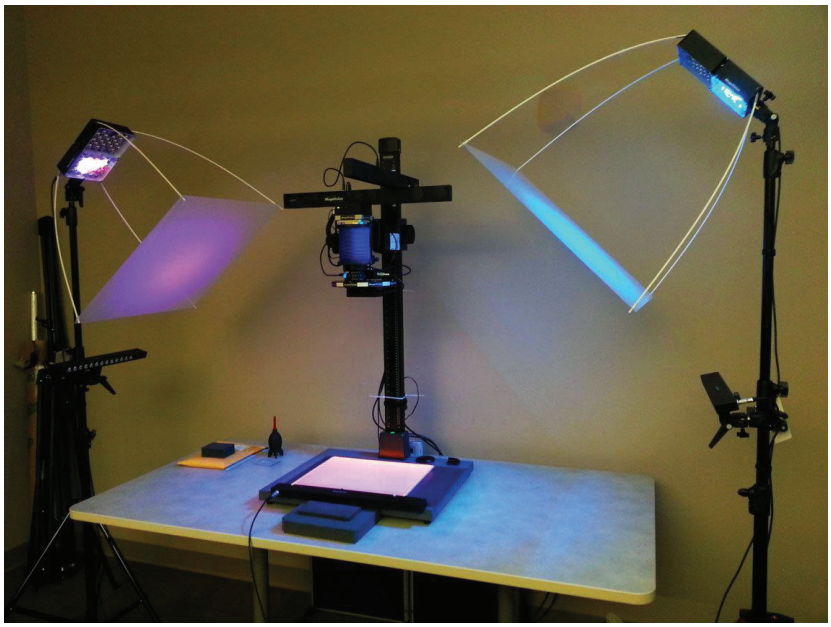

Figure 1 *Multispectral Imaging System. Central column supports camera sensor, lens and filter wheel. Right and left mounter narrowband LED lights with extended diffusing material. Transmissive light source directly below camera setup*

While imaging hardware and image capturing software are important to generate usable and useful data, it is also essential to consider subsequent steps of making use of the captured images for the benefit of scholarly work or other information extraction. This is achieved through image processing, which is the calibration and combination of the various image bands to recover or enhance the feature(s) of interest to the scholars. Some processing procedures can be automated to some degree, but many are very time consuming. Since all objects exhibit different conditions of damage, a single processing recipe to make illegible or damaged texts more visible is not feasible. Rather, the processing method that produces the most effective result is customized to the specific condition.

Prior to subsequent image processing, the image bands need to be calibrated by correcting for the illumination conditions and pixel sensitivities, which is collectively called "flat-field correction." To do so, images of a reference scene are captured using the exact setup, including using the number of bands. Capturing a flat-field correction set is better done before the actual object is imaged and uses the exact sequence of images as it will follow while capturing a palimpsest page. Its important to not disturb or alter the equipment setup after having captured this calibration dataset.

While some useful image processing methods can be listed below. Methods which have been proven in assisting text recovery, it is important to note that new methods are developed or adapted by other fields frequently. This makes the capturing of raw materi-

al through good practices and documented workflows even more important. New image processing techniques can be applied to old data, even data captured a decade ago. A case study is the application of a technique invited by Keith Knox in July 2018[7] while processing spectral data collected from the Early Manuscripts Electronic Library (EMEL) at Cambridge University Library, during MSI of *Codex Zacynthius*. This technique was then used on data collected years prior in the SPP giving much better results from the initial image processing using techniques available at the time[8].

Image processing modes can be divided into batch processing and statistical processing. Batch processing can combine bands of collected images from large set of leaves, can be done automatically and even run overnight. Batch processing is usually done first and is useful for reading large portions of text (circa 80%). Statistical processing is customized for each folio. Bands for combinations are selected based on multiband statistics within local problematic regions of each folio. It is of crucial importance the collaboration between imaging scientists and scholars, forming a feedback loop.

Important image processing techniques are:

1. Blur and divide preprocessing, which corrects for local variations in reflectance condition of the object
2. Simple band math (additions, subtractions, products, ratios)
3. "Pseudocolors" and "Sharpies", which are deterministic combinations of the spectral image bands that have demonstrated value for enhancing the visibility of the feature(s) of interest. These methods were developed during the course of the Archimedes Palimpsest Project and demonstrated value to the scholars.
4. Principal Component Analysis and Independent Components Analysis (PCA/ICA), which produces equivalent sets of image bands that are spectrally "uncorrelated" (PCA) or spectrally "independent" (ICA). PCA bands may be sequenced in order of "contrast," so that the highest-contrast bands have the small order numbers, while the low-contrast bands (which often include random "noise") have large order numbers in the output set. This allows random statistical noise to be segmented from the multispectral data. These methods may isolate the feature(s) of interest (e.g., erased text) into a small number of output bands such that the text contrast in enhanced.
5. Spectral Angle Mapping (SAM), which produces a monochromatic output image whose "brightness" is determined by the similarity of the spectrum of each pixel relative to that of a reference pixel of known constituency. For example, by specifying the spectrum of a pixel belonging to the feature of interest, the similarity of the spectra of all other pixels to that reference can be evaluated and displayed.

7 https://cudl.lib.cam.ac.uk/collections/codexzacynthius/1

8 https://cudl.lib.cam.ac.uk/view/MS-ADD-10062-UNDERTEXT/1

6. Minimum Noise Fraction Transform (MNF), which is a cascade of two successive PCA processes, where the noise is removed from the first set and a second PCA calculation does not include the random noise.

Software available for image processing can be free or proprietary. Basic free software includes HOKU[9] and GIMP ("GNU Image Manipulation Program"), while proprietary software that is often used includes ENVI® and Adobe Photoshop®.

Conclusion

In conclusion, while technology has advanced to the benefit of non-invasive scientific approach to cultural heritage object, it is paramount to identify appropriate hardware and useful software. Currently several developed techniques can be labeled as Multispectral, but based on experience and real-world results, only a few of them are able wield meaningful and scholarly helpful information. Correctly chosen tools, calibrated and adjusted for specific use, along with safe and productive workflows can overcome environmental, human and machine errors. This in turn shapes the best practices of MSI in the field of text recovery from ancient manuscripts.

9 Knox, K.T. (2022). Hoku—A Multispectral Software Tool to Recover Erased Writing on Palimpsests. The Vatican Library Review. As well: https://www.cis.rit.edu/~ktkpci/Hoku.html

Between Visual and Digital
French Example of Digitization and Digitalization of Ecclesiastical Artefacts

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Abstract

The present paper is focused on the French solutions for digitization and digitalization of artefacts. France is one of the world leaders in providing new perspectives, working tools and introducing advanced technologies (AI) to the cultural heritage field. Seeking to satisfy the constant need of improvement, French specialists have developed a specific work model which serves as example for many others. Since 1970s an appropriate software has been developed and integrated into the daily work of museum specialists, helping to improve the process of digitization of cultural heritage. A large database was therefore created largely supported by the French Ministry of Culture.

Through retracing the main lines in the history of digitization and digitalization process, we will conduct a brief study on how nowadays software and platforms for cultural heritage look like and what they offer. The comparison with the local Bulgarian situation seems inevitable in the process of identifying good practices in the cultural heritage field. The particular example of ecclesiastical collections software shall present a complete product intended for managing, digitization and digitalization of collections at the same time.

History in Dates: The Goal of Digitization and Digitalization of Collections

When talking about digitization and digitalization of artefacts, one can easily get confused. If the digitization refers to creating a digital inventory file with detailed information about

any artefact, digitalization is related to the process of making visible and accessible the artefact with its information to a larger audience. By this meaning the two notions are closely related but not necessarily inseparable.

One of the main purposes when digitizing an artefact's information is to create a long lasting copy of the latter. The paper copy is always appreciated but the digital one presents multiple advantages: 1. It can be saved on multiple devices which insures the preservation of information; 2. It offers the possibility of modifications at all time and also to keep trace of previous versions which presents a facility to every user; 3. Digital files can be password protected so that one could obtain appropriate access to multiple levels of information; 4. Each digital file can serve to create a new file with less private information and intended for large public. Either paper copy or digital one, the importance of the inventory file is certain: besides the historical and scientific value, it insures legal basis for property or insurance related problems.

Since centuries, people in France developed a particular sensitivity when it comes to cultural heritage and its preservation. Thus there is no surprise when in a closer look at the history of digitization and digitalization of artefacts, France is the first to mention. In 1959 the French minister of culture André Malaraux presented his mission to make accessible the major artefacts of humanity, starting with the French ones, to numerous French people and to insure the widest possible audience for French cultural heritage. His statement served as basis for the digitization process which started in the 1970s. In 1970 was born the first documental research software Mistral. Five years later was created the Joconda database which focused on museum collections. In 1978 started the Merimée database intended for historical monuments. About a decade later, in 1989, the general inventory database Palissy englobed previous entries. The next year 1990 marked a new stage for the digitization of French cultural heritage when all databases went online. In the 21st century with the new digital era came the need of a new modern tool to combine all information in one place. The result became visible in 2018-2019, when the POP-culture platform was born.

The POP-culture Platform

The Open Platform of Cultural Heritage (Plate-forme ouverte du Patrimoine) is a web-based platform which provides free access to reliable information, both textual and visual about French public collections. One of its main advantages is the open licensed content, encouraging every user to explore, download and share information. The French cultural heritage was made therefore widely accessible, not only to French people but to all over the world exceeding in this way the vision of Malaraux.

In a closer look to the platform, its advantages are easily recognizable. On the start page of the website (https://pop.culture.gouv.fr/) the visitor is invited to make a research on his own or to make a choice by different criteria: among the databases inside the plat-

Figure 1 *POP-culture Platform, General View*

form or by a particular topic. Once the action taken, the user is redirected to results page which content is divided in two. On the left side there are multiple criteria to define the research results and on the right are the artefacts results presented either in a list, or by their geographical position or in a selection of those including image.

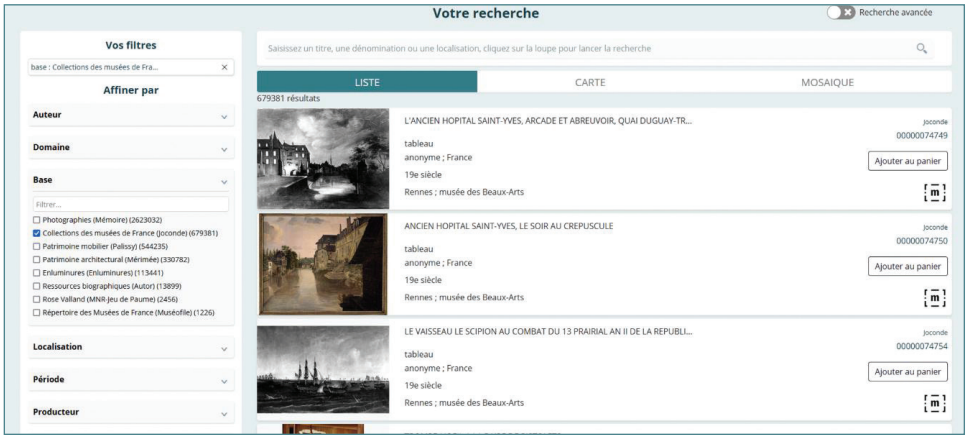

Figure 2 *POP-culture Platform, Research Results Page*

When an artefact is chosen, an information file is opening. The user has two choices that are both free of charge: to download the file as a PDF or to add it to the basket. The latter offers the possibility to collect multiple files in the basket and then to download them at a time. The generated file contains the exact same information as shown on the platform page, including artefact's image. Further use of the file or any content from the platform requires particular attention in respect with French and European regulations on Intellectual

property and Rights of usage of content and images: officially granted permission by the owner institution is mandatory.

At first glance, the platform is easy to work with both by different users and on different devices. In a deeper approach, the POP-culture is related both to digitizing and digitalizing of cultural heritage. Most of all it offers an innovating and enriching experience with French public collections assembled at one place. There are multiple further possibilities to use the information on different artefacts: museum visitors and tour guides can prepare their physical visit or explore different collections online; people with disabilities can also enjoy the selection of artefacts; when it comes to scholars, the platform offers a nice starting point for any research topic. Thus the POP-culture platform presents an interesting digitalization tool providing an innovating experience for different audiences. It can therefore be considered as a good practice for digitizing and digitalizing museum collections, contributing to promote, give more visibility to artefacts and reach wider audiences.

Museum Inventory and Management of Collections in the Digital Era

There are various regulations regarding cultural heritage and its management (Pantalony, 2013). Each country has proper regulations (e.g., in France: Méthode d'inventaire, 1995; Méthode d'inventaire, 2007 (2005)) but common regulations also exist. International organizations like the International Council of Museums (ICOM) or the World Intellectual Property Organization (WIPO) have established a list of prescriptions related to this topic (Benhamou, 2019). The local Bulgarian policy on cultural heritage runs far behind the French example and even behind other countries that have developed their own model based on the French one. Furthermore, bulgarian seem somewhat irrelevant to the actual situation. According to article 27, order N6 of the Ministry of Culture from 2009, museum funds should be managed by specialized unified software approved by the Minister of Culture (https://mc.government.bg/files/1252_NAREDBA_N6.rtf). The same document contains annexes with precise prescription on how an inventory file should look like and what type information should contain. Contrary to that reality is different: in Bulgaria this kind of software has not been the well-known Microsoft office Word and Excel programs are in use for every type of museum documentation. Without leaving a comment on the here presented situation, one can easily arrive to the conclusion that in contemporary society the elaboration of appropriate software to digitize and digitalize museum artefacts appears essential.

In fact, each museum software presents two basic advantages: it simplifies museum work and contributes to the promotion of collections by giving access to bigger audience. Furthermore, this type of program is closely related to public and thus should always be updated to every novelty related to its content but also to its interface. Nowadays software's appearances have been adapted to be user and mobile friendly. Various products

were developed by different countries or cultural institutions in respect with their own needs. We will take a closer look into two of them that are used in France.

ActiMuséo, MuseumPlus and Digital Museum Collections

ActiMuséo is software developed by the A&A Partners, a French company offering solutions for collection management to cultural institutions. The product has been developed as an inventory tool to serve and facilitate museum specialists in their everyday work with artefacts. Back in 2011 the interface of the program was adapted to the needs of the time, until 2016 when there was a considerable evolution which resulted in today's user and mobile friendly view of the database. A major improvement: while the content stayed relatively intact regarding artefact's inventory file, the possibility to connect to user's account and this through different devices appeared.

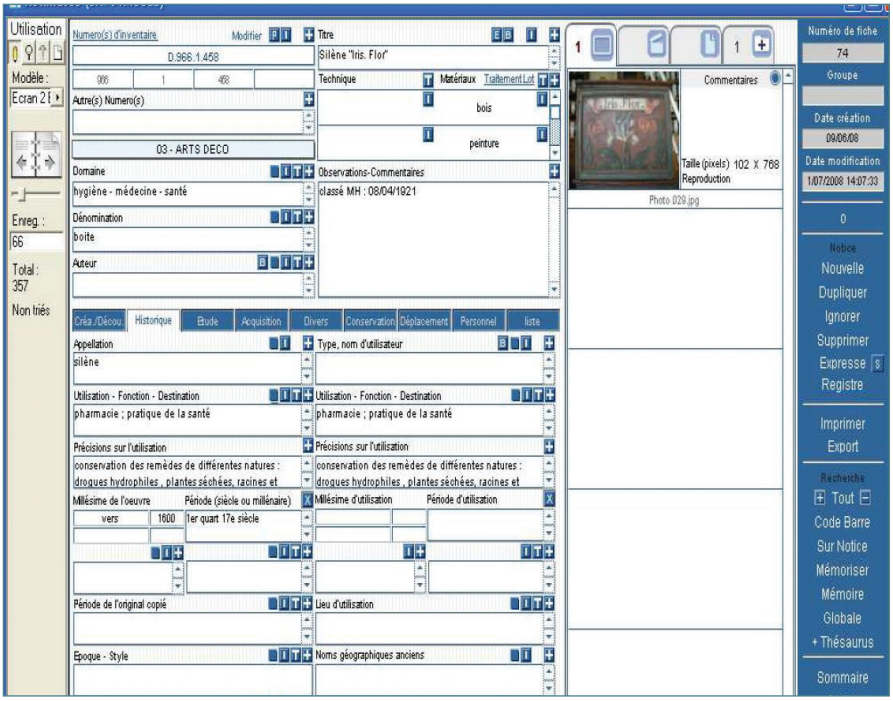

Figure 3 *ActiMuséo, General View before 2016*

ActiMuséo is simple and easy to work with program. Its homepage presents a grid with six fields to choose from, defining different types of access: Utilization, Express; Register; Medias, Bibliographies, Biographies; Events, Movements, Condition report, Restorations; System, Login; Exit.

Figure 4a *ActiMuséo, General View today*

When selecting Utilization, new window is opening containing multiple fields and sub-fields to fill in by the user. One can easily understand that information is organized into three main themes with subthemes. In the first theme is presented the general information about the artefact: name, inventory number, field, type and observations.

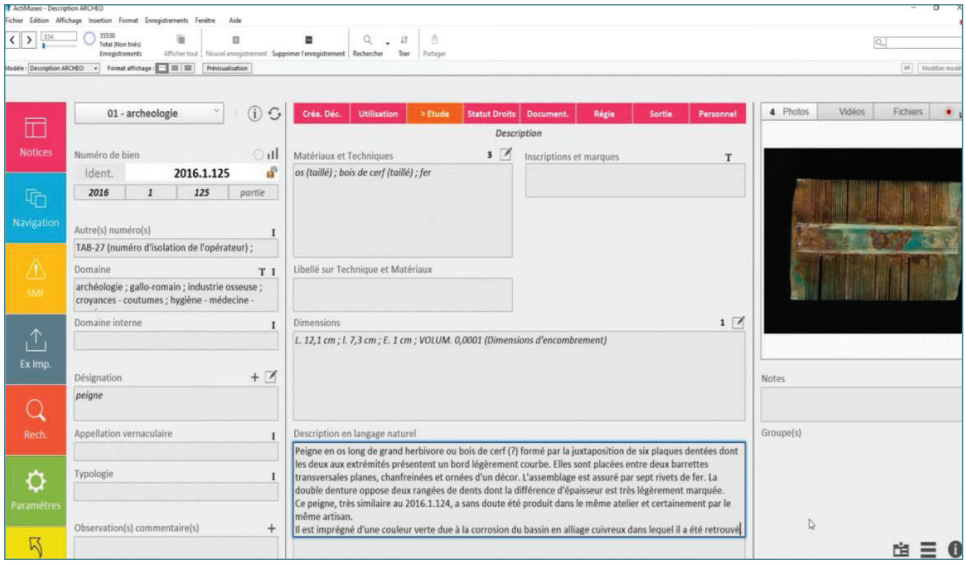

Figure 4b *ActiMuséo, Inventory File*

The second theme provides a more detailed information about the artefact. Different subthemes complete the inventory entry. One presents the history of the artefact with all details around its discovery, the date and the period of its creation, its usage and physical appearance, as well as every information about its actual emplacement, participation to exhibition and all bibliographical entries related to the artefact. Another subtheme is reserved to the detailed description of the artefact and mention of its actual condition. Special place is reserved for all details regarding insurances, transportations or any other movement. The last third theme in the inventory file contains all images of the artefact, old and new ones, as well as a digital copy of every document related to the artefact (e.g. contract of acquisition, insurance policy etc.).

ActiMuséo presents several advantages: the program can export the digital inventory file which can be therefore downloaded on every device; it keeps track of every modification and last but not least, files are made accessible at all time and from different places. Fact is that the future of museum software is to develop them as web-based platforms and therefore accessible from anywhere. The latter can be realized in two conditions: 1. to have personal credentials and 2. to dispose with device connected to the Internet.

The other software intended for collections managing and known among French museum professionals is MuseumPlus. The product is widely spread: among its clients (mainly museums and galleries) are the Louvre Museum, the Benaki Museum, the Acropolis Museum etc.

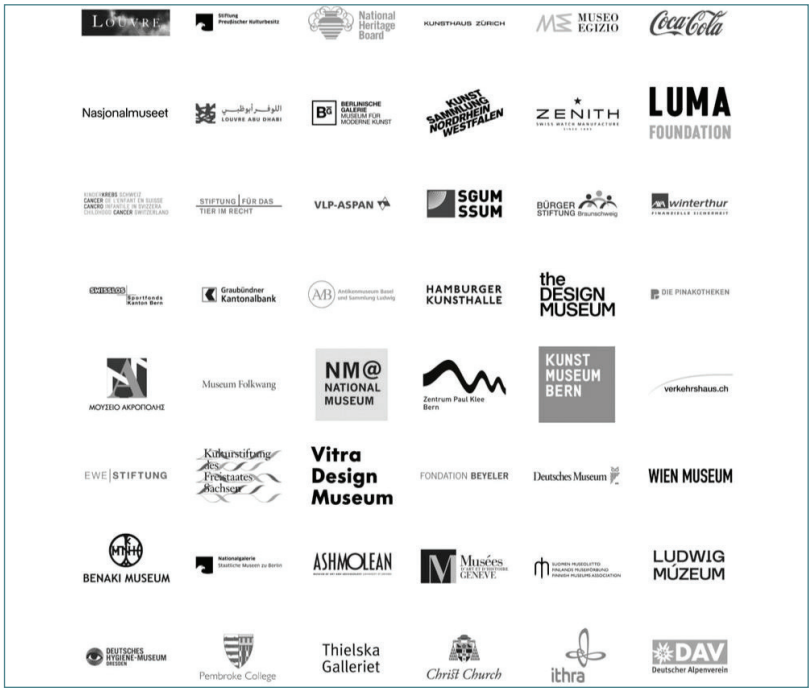

Figure 5 *MuseumPlus Clients*

Developed by Zetcom, a Swiss based company with multiple offices in Europe, the United States and others, MuseumPlus offers similar solutions to its users as ActiMuséo. A related product is eMuseumPlus: a platform with online content for museum visitors. Comparable to the POP-platform this product represents another good example for digitalization of museum collections. Similar is the website of the Louvre Museum developed on their own: https://collections.louvre.fr/.

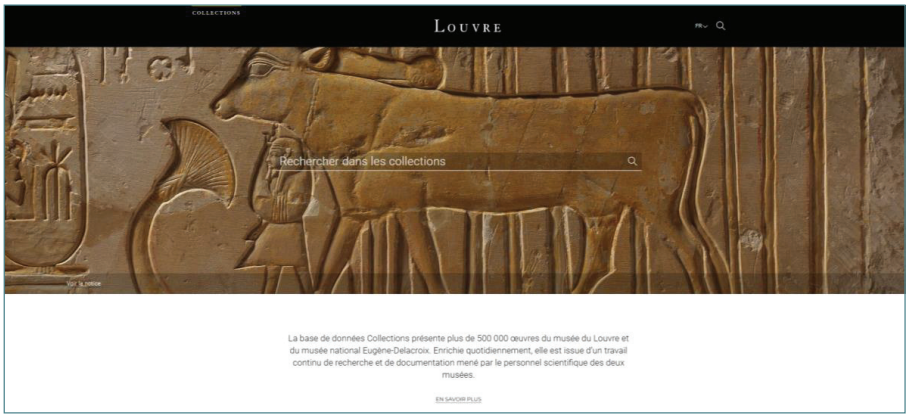

Figure 6 *Louvre Collections Website, General View*

The first appearance of the website seems very similar to the POP-culture platform: it offers to the user possibility to conduct a precise research or a random one guided by multiple themes to choose from. When artefact is selected its inventory file is opening. It contains artefact's basic information, followed by a detailed entry and, most important, multiple images, showing the entire object or small details where needed.

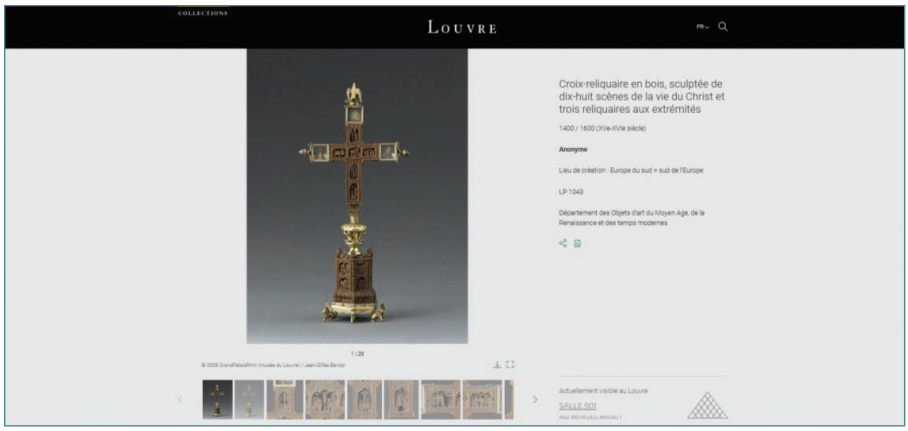

Figure 7 *Louvre Collections Website, Artefact View*

The information seem very similar to the entries from the ActiMuséo software although adapted to large public usage. Here is the detailed description of the artefact with its physical characteristics, its history, the date of its creation and its entry in the collection, also its actual emplacement. At the end of the document is placed a list of bibliographical references when the item has been subject to publications. The file can be downloaded freely and it is good to know that all of its content is subject to French and European regulations about Intellectual property and author's rights when it comes to the images.

Creating software for museum inventory and managing of collections is one part of the process when speaking of digitization and digitalization. And rendering this information online and freely accessible to a greater audience for various purposes is one of the concluding parts in the digitalization process. As mentioned above, the online content of these platforms of inventory files offers to the public the possibility to create multiple types of interaction between collections and users (both specialists and non-specialists). In this way is completed one of the main goals of any museum: to share and promote cultural heritage.

Index Patrimoine: all-in-one product

In 2020 two museum professionals created the startup company *Expertise art et patrimoine* (https://www.eap-expertise.fr/). As specialists in Ecclesiastical art they developed a particular web based software application intended for these artefacts. Their product *Index Patrimoine* is designed exclusively for the needs of ecclesiastical collections and can be applied to any collection including a private one. This part of their offer is similar to the other software solutions presented here above. What is actually particular is that the team

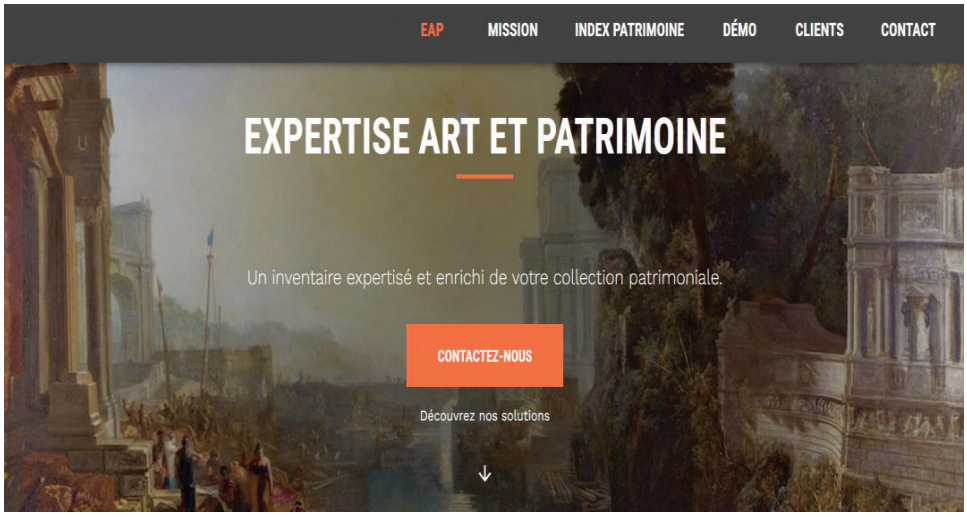

Figure 8 Expertise Art and Patrimony Homepage

offers a complete product: software to work with, specialized equipment (if needed) to make 3D-images of the artefacts and an expert to take care of the inventory files and to participate in every step of the collection managing. The latter is especially needed when speaking of artefacts estimation and insurance policies.

Until now the expertise team has gained the trust of ecclesiastical institutions like the Notre-Dame Basilica in Lyon and the Notre-Dame sanctuary in Lourdes. A note to make is that these specialists are aware of every sensitive aspect that the work with ecclesiastical collections imply. The advantages of the process are certain: creating a virtual collection database and keeping trace of every artifact and every detail insures the protection of the collection and also the owner's property, not to mention the public measure.

Index patrimoine is easy to use password protected application which offers multiple actions similar to those from the databases we mentioned above. Thanks to the personal credentials every user is granted different level of access (e.g. administrator, curator, insurance agent etc.) regarding his role in order to insure that every modification in the inventory is made by the correct person. Also the application is accessible on multiple devices, including a smartphone permitting to modify the content at every time and at every place.

Compared to others, the interface of *Index Patrimoine* is easier to use platform developed with a website view. When entering one's personal credentials to the application, user is redirected to the homepage with multiple fields. On the left side is the user profile image followed by a list of the main pages: Dashboard, Actualities, Expertise, Movements, Research, Profile, and Logout. The four windows in a row on the upper side present a brief information about the content of the database but only for professionals from the same institution: number of artefacts entries, number of users, and number of

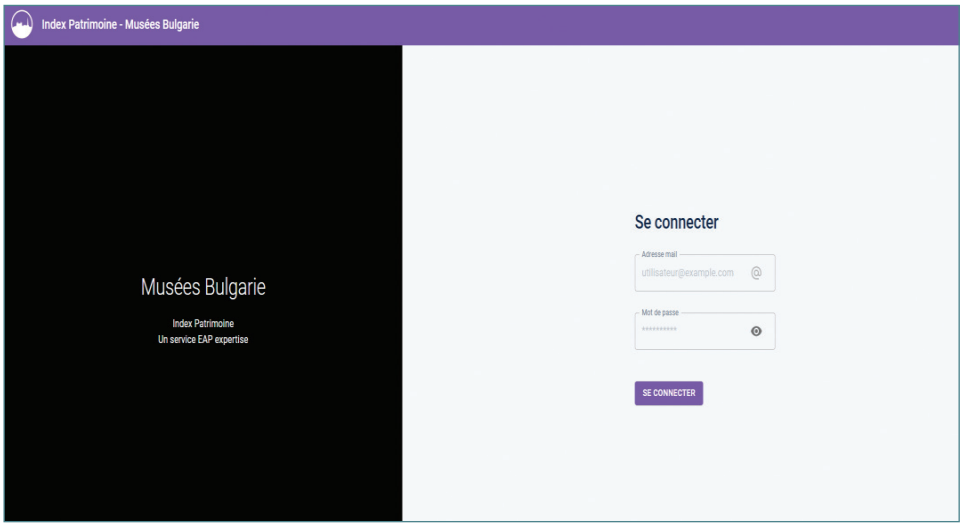

Figure 9 Index Patrimoine, Login Page

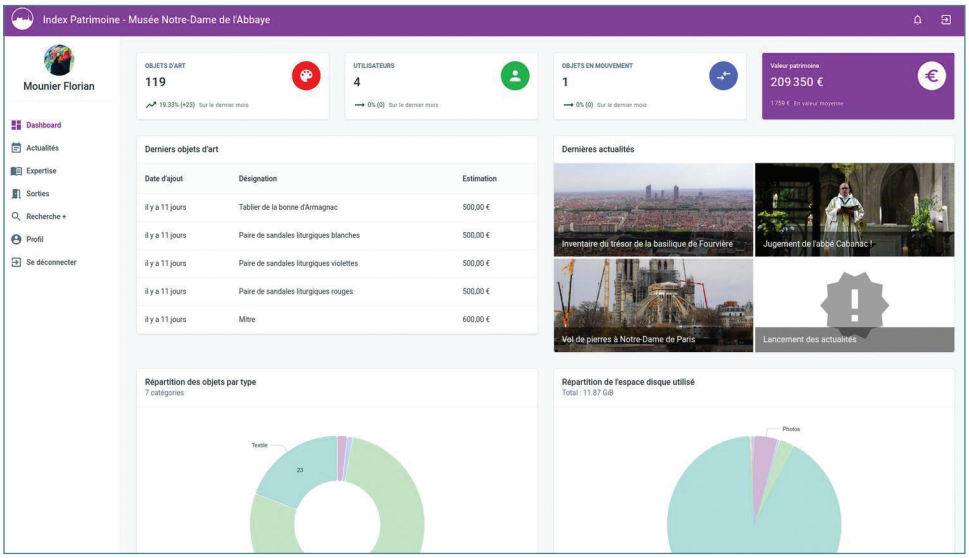

Figure 10 *Index Patrimoine, Homepage*

objects in movement and total estimation of the values in the collection. Below are listed the last entries in the inventory. Next to it are presented web news with recent information about church collections, a field managed by the team provider of the software. For any further interactions, a choice needs to be made either from the list on the left or from the windows on the screen.

The two schemes with divisions present the type of objects and the total memory space of the hard drive. The latter can be managed at any time by the team provider of the product and thus depends on the needs of each institution.

When choosing *Expertise* from the left list, on the right opens a page with several fields related to the inventory information. In the upper part, user can manipulate one inventory file: the latter can be created, exported, saved as draft, or stored in the recycle bin.

Below on the same page is shown a list of inventory files and on the top of it user can make a selection of objects by their type. When an artefact selected, its inventory file appears on the screen with information and attached files. Thanks to the QR code that one object obtains when an inventory file is generated, this entry can be used in various manners: if exhibited, the QR code can be presented next to the artefact thus to provide additional information. Legal regulations and restrictions are respected so that not all the record of one artefact is made public.

In the inventory file entries are similar to these from the ActiMuséo software but are distributed in a different way. A great example is the movement's field which contains all information about one artefact: exhibitions participation, insurance policies and other legal details. In this manner user access can be easily limited to different fields according to their role in the managing of the collection.

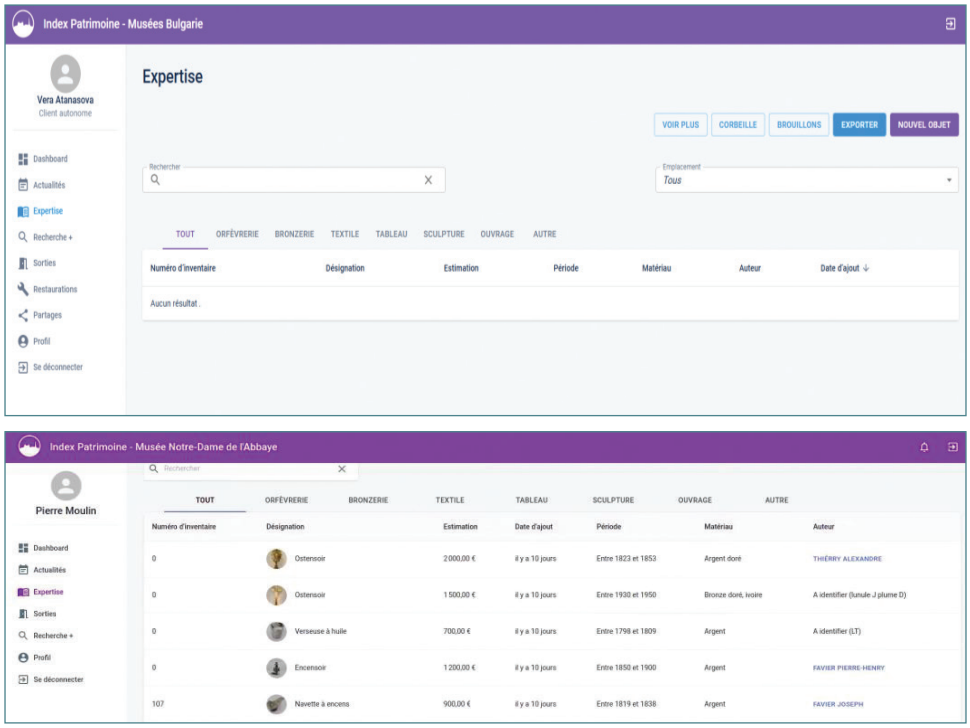

Figure 11 Index Patrimoine, Expertise Page

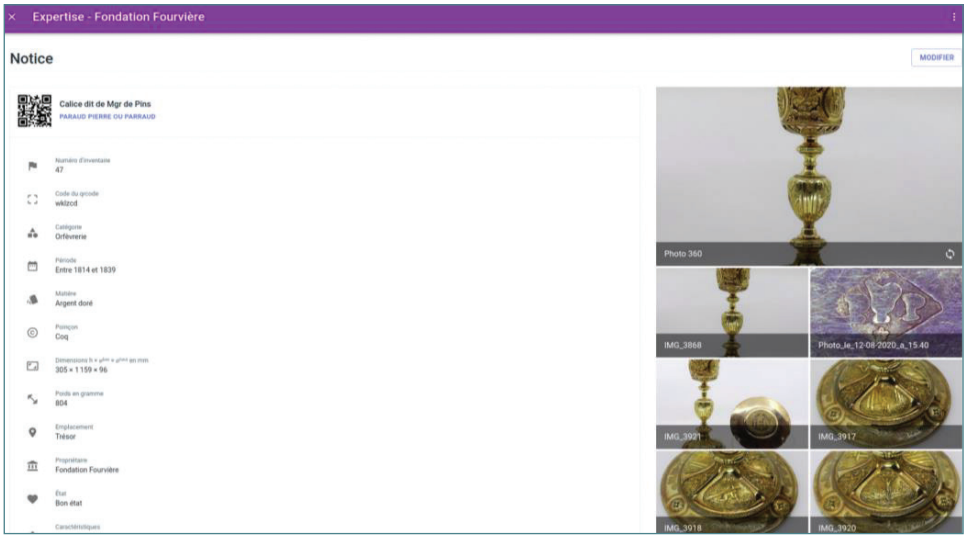

Figure 12 Index Patrimoine, File of an artefact

Finally *Index Patrimoine* offers the possibility to retrace every modification in the inventory file and to conduct a research among the artefacts in the collection by different criteria, a characteristic which relates the application to other products from the field. Its content can be made publicly accessible in many ways: files can be published on a proper site of the institution owner similar to Louvre collections, or in the social media or elsewhere since the inventory files and the QR codes are exportable. Thus this solution provides an unlimited possibility to share collections and make them as accessible as possible to the public.

Index Patrimoine of the French startup *Expertise Art et Patrimoine* relays on past achievements of other products intended for collections management. Although the application makes an important difference compared to other solutions: thanks to the all-in-one product developed by museum experts in ecclesiastical art, it offers a simple software with user and mobile friendly interface, QR code generated for every artefact, a 3D image made with specialized equipment provided by the team and most of all a professional expertise on ecclesiastical artefacts and collections. The product represents a good example on how ecclesiastical collections should be managed and what are the future goals of every person working with similar type of objects.

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Digitization Ethics and Cultural Sensitivity

Preserving Cultural Legacy through Integrity: Unveiling the Ethics of Art Conservation and Restoration

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Keywords: Art conservation, restoration, Byzantine icons

Abstract

Art conservation and restoration is a topic of profound importance, one that resonates across generations and shapes our understanding of history and human achievement. Art conservation and restoration are not mere technical tasks; they require an interdisciplinary approach with meticulous attention to detail at every step and in every decision. Conservation and restoration carry profound implications and lasting significance rooted in our collective past. However, we must acknowledge the vulnerability of preservation methods to mistreatment, often falling into the hands of uneducated non-experts, resulting in irreversible damage to these treasures. Restoration efforts frequently spark debates influenced by diverse cultural, religious, and aesthetic perspectives. Yet, our shared goal remains clear: to authentically preserve historical artworks for future generations. To achieve this, we must employ both scientific and artistic methods, guided by conscientious experts who uphold the highest standards of ethics and responsibility. In doing so, we place value on our cultural heritage, ensuring its protection through innovative interdisciplinary approaches.

Figure 1 Art conservation and restoration

The Meaning of Art Conservation and Restoration

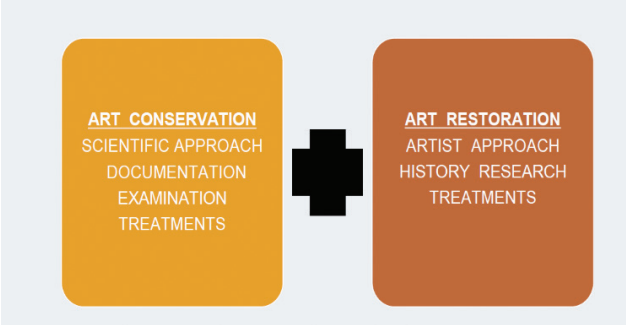

Figure 2 Art Conservation & Restoration are the combination of both Science and Art

Art Conservation: Art Conservation entails preserving historic artworks and cultural objects through meticulous examination, documentation, identification, treatment, and the application of preventive conservation measures and actions. Its focus lies in maintaining authenticity, stabilizing physical issues, and rectifying surface deterioration. As a result, conservation reinforces the structural integrity of artworks, ensuring their resilience across people and society as well.

Art Restoration: Art Restoration involves the careful aesthetic repair of historic or contemporary artworks damaged by neglect, intentional harm, or natural decay. It requires a deep understanding of art history and techniques, aiming to restore the artwork to its original state as created while preserving historical and material authenticity. This process respects the original artist's intent while safeguarding the integrity of the form, material, and technical values of the authentic artwork. Restoration treatments prioritize authenticity and originality within the historical context.

The combination of Science and Art is the essence of Art Conservation and Restoration.

The Distinction Between Art Creation and Art Conservation and Restoration

Figure 3 *The crucial distinction*

Art Creation: Art creation is a practice of bringing forth new expressions and interpretations which can be done by anyone whereas art conservation and restoration focuses on preserving and revitalizing existing historical treasures. Labeling the attempt to superimpose "art creation" onto those treasures as "Restoration work" applied by amateurs, students, or non-professionals is considered to be forgery—a condemnable cultural offense which should subject to legal measures. Such improper actions undermine the integrity of cultural heritage and tarnish the authenticity of artistic legacies, warranting serious consequences within the legal framework and Ethics.

Art Conservation and Restoration

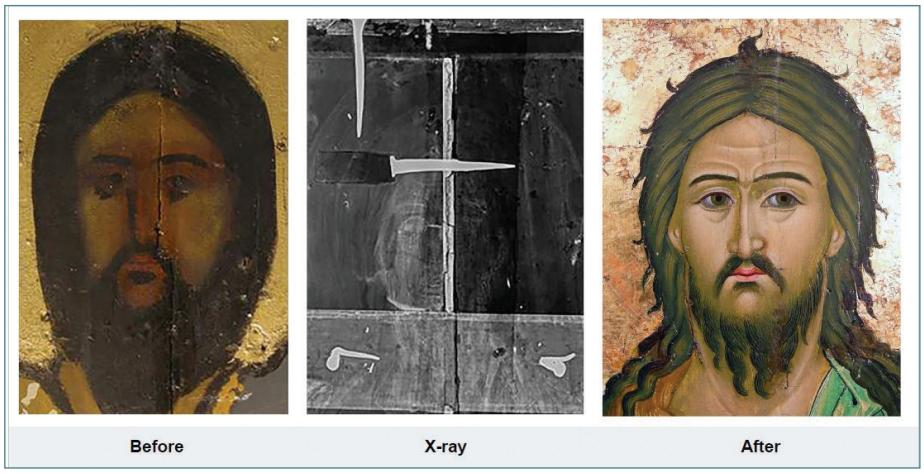

Figure 4 Art Conservation and Restoration- example

In stark contrast, the domain of art conservation and restoration addresses pre-existing historic artworks that may suffer from damage or decay due to poor environmental. condition. Our objective is not to generate something new but to safeguard and, when necessary, meticulously preserve an already existing historic treasures.

Figure 5 Repaints and unproper treatments

This task demands a profound comprehension of art history, materials, and techniques, coupled with an unwavering commitment of the conservator to preserving the authenticity and integrity of the original work. The successful task of this delicate process necessitates the complementary process of art and science, a mission entrusted solely to professionals—expert art conservators and restorers.

An Approach to Art Conservation & Art Restoration

Figure 6 An Approach to Art Conservation & Art Restoration

Examining and Analyzing Icons

Christian icons, revered in the Orthodox Church, embody centuries of faith and theological philosophies/theories. Despite their spiritual significance, these icons face threats from environmental issues, natural and biological phenomena, and disasters. For art Conservation and restoration demand specialized skills and a deep understanding of the requirements of collections as care practices.

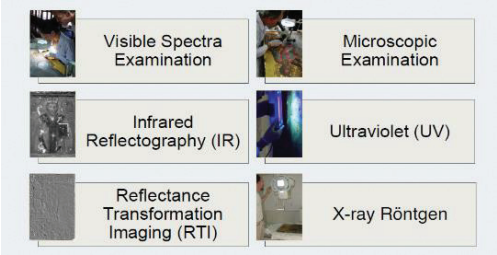

Figure 7 Examination & Survey of Historic Icons

Professional art conservators and restorers play a vital role in preserving these sacred artifacts. This document sheds light on the meticulous process of conserving and restoring Christian icons, emphasizing the skilled professionals' indispensable contribution to society and mankind. Through scholarly research, advanced scientific techniques, and artistic finesse, these experts ensure the icons' authenticity and cultural significance endure for generations.

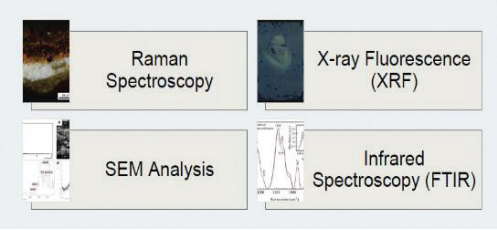

Figure 8 Examination & Survey of Historic Icons

The technical examination and scientific analysis of icons are crucial first steps in the conservation and restoration process. This initial phase helps experts to identify materials, techniques, and historical frameworks, guiding informed decisions, what actions shall follow in order to provide art rehabilitation. Various methods, tailored to specific object requirements, include examination and estimation of various-techniques of the paint layers or the support used. They provide valuable insights into the composition, art condition, and history of the artworks, ensuring a comprehensive approach to conservation. Exam-

ination and survey methods of paint layers of icons involve various scientific techniques that delve into the details of material/pigment composition, art condition, and historical reference of the artworks.

Documentation of Icons

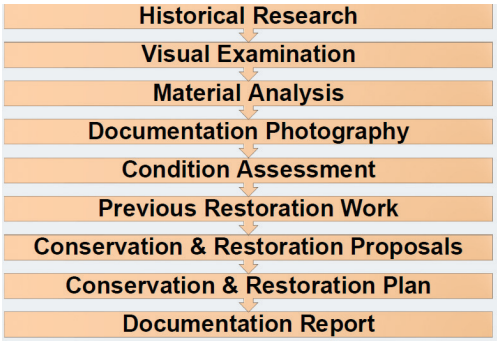

Figure 9 *Documentation of Icons*

The documentation methodology employed for an icon encompasses a systematic approach covering documentation, analysis, examination, and preservation of fundamental information pertaining to the artwork. This methodological rigor is indispensable for comprehensively grasping the icon's historical context, artistic techniques, present condition, and any prior restoration interventions. An outlined and structured approach to the phases of icon documentation is imperative, ensuring meticulous attention to detail and adherence to scholarly standards.

Figure 10 *Wooden icon*

Art Conservation & Art Restoration Ethics

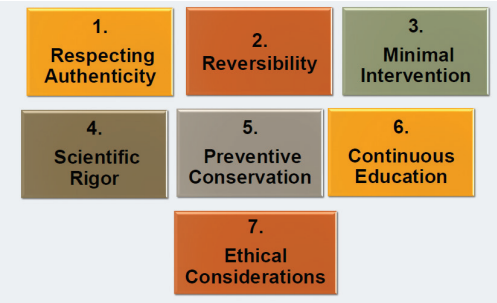

Figure 11 Main Principles Ethics

Ethics in Art Conservation & Restoration: Preserving Cultural Legacies

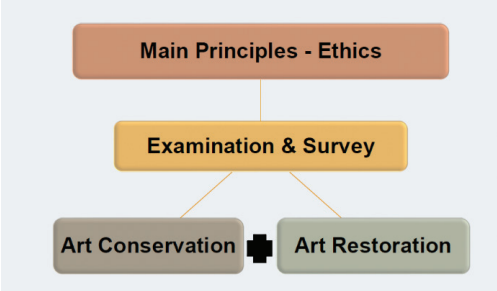

Figure 12 Ethics in Art Conservation & Restoration

Ethical considerations are paramount in guiding conservators to keep a "delicate" balance between intervention intensity and historical authenticity. In the realm of Christian icon conservation and restoration, historic art works preservation, art conservators and restorers serve as Art Doctors, preserving the spirituality and physicality of these historical artifacts. Through the dedication of these experts, these icons continue to inspire, educate, and embody the "rich tapestry" of human history and spirituality.

Main Principles - Ethics of Art Conservation and Restoration

The principles of art conservation and restoration prioritize authenticity, minimal intervention, scientific rigor, preventive conservation, professional expertise, and ethical considerations. These foundational principles and ethical considerations are essential to ensure the preservation, authenticity, and longevity of cultural heritage. They often align with established charters (as the Venice Charter) and (ICOM) professional Guidelines in the field.

Figure 13 *A byzantine treasure*

1. Respecting Authenticity: Preservation of the Original Intent: Conservation and restoration aim to preserve the artist's original intent, ensuring that the artwork reflects the creator's vision, aesthetic and historical context.
2. Reversibility: Interventions and techniques applied should be reversible whenever possible, allowing for future restoration advancements without causing harm to the artwork.
3. Minimal Intervention:
   - **Minimum Necessary Intervention:** Conservation should involve the least amount of intervention required to address issues, avoiding unnecessary alterations.
   - **Limited Retouching:** Efforts should steer clear of over-retouching where there are debates and different parameters and approaches.
4. Scientific Rigor:
   - **Material Analysis:** Through the scientific methods, to analyze the original material of structure is important so that the decision would correspond to the most appropriate material that would bind efficiently without disrupting the icon which would guarantee the integrity.
   - **Research and Documentation:** In-depth research and documentation of id of the artifact and provide a foundation for decision-making and future preservation efforts.
5. Preventive Conservation:
   - **Environmental Control:** Measures should be implemented to control environmental factors, such as indoor temperature, relative humidity, and levels of radiation/light, in order to prevent further deterioration.
   - **Handling and Display:** Proper handling and display practices minimize the risk of damage of sacred and religious/historic collections during transportation, installation, and public viewings.

6. Continuous Education: Qualified Conservators and restorers should engage in ongoing professional development in alignment with new techniques, materials, and ethical considerations.
7. Ethical Considerations:
   - **Respect for Cultural Heritage Context:** Art Conservation and Restoration decisions should respect the cultural and historical heritage context of the artwork, acknowledging the values associated with it.

Figure 14 PANAGIA Eleousa 16th century

The core of cultural heritage preservation is the holistic approach combining the ethics and the principles with consciousness. That core is vital and has to be present in every step of examination, survey, art conservation and restoration with such a strong roots, we are empowered to carry the legacy of the past forward into the future.

Figure 15 Uncovering PANAGIA Eleousa

Case study: A Byzantine Treasure

The icon of Panagia Eleousa of the 14th/16th century from Büyükada or Pringipos, one of the Princess' Islands in Istanbul, is an exceptional case of a portable master artwork that has undergone multiple treatments and aesthetic interventions over time.

Figure 16 *The icon of Panagia Eleousa of the 14th/16th century from Büyükada*

The distressed bilateral icon that was painted on both sides of the wooden support is considered interesting not only from a scientific point of view in terms of Byzantine and post-Byzantine art history, but also from the point of view of the science of conservation and restoration.

This was a special challenge for the team of conservators, restorers and scientists at VENIS STUDIOS. Conservation and restoration is an act of preserving our cultural historical heritage with traditional techniques and modern methods which saves all the information and historical testimonies that the icon has carried throughout the centuries.

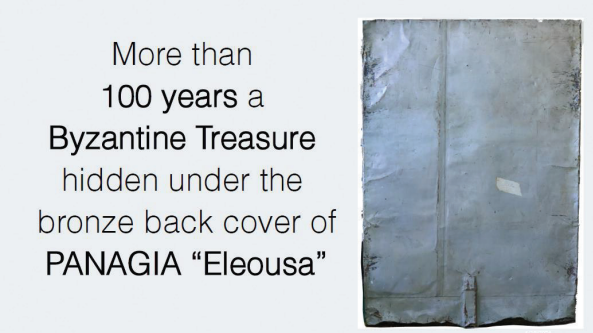

Figure 17 *Bronze back cover of PANAGIA Eleousa*

During the first phase of the examination of the icon, the silver icon revetment was removed. The silver revetment dates back to 1750. The unique 16th-century icon of Panagia Eleousa was revealed.

Figure 18 *The Discovery of a Byzantine Treasure*

Under the silver revetment coins and silver votive offerings of the faithful from different time periods were discovered. Among them was a gold coin which belonged to the period of Sultan Mahmud II (*ruled 1808-1839*). All these findings were researched, examined, and restored alongside the icon. After removing the front silver revetment, the back metal bronze protective case was removed. This revealed a unique Byzantine icon, The Descent into Hades.

Figure 19 *The Descent of Hades 14th /16th century*

After the completion of the restoration/cleaning The Descent into Hades, two different time periods of its creation were revealed: the 14th century and the 16th century, as well as various rescue interventions - repairs that had been made from the 16th century up to the most recent period.

Regarding the physicochemical research, 40 samples were taken from various areas of the icon from both sides. In this way, it was possible to study the stratigraphy, identify the pigments, the gold leaf, and other construction materials from various parts (mainly the faces, the lights, the pigments in the undercoats, in the background, in the frame, etc.).

All this sampling was done in order to study the colors the painter used, the construction technique, and even the protective varnishes, and to certify the exact dating of the image on both sides.

Special documentation photography was used such as:

1. UV photography, detects several surface changes-past restoration. Newer interventions and over paintings which were discernible appear darker.
2. infrared photography, an attempt to identify the materials used due to the degree of differentiation of the materials/ pigments and observe differences in the chemical composition of them. Also, to study the primary sketch /pattern of the design.
3. Three-dimensional 3D RTI photography and the creation of a 3D digital model in order to identify and document the pathology of the icon and any aesthetic differences between the initial icon and the later interventions.
4. Black & white photography provided the possibility of studying the design of both painted sides of the icon.

Figure 20 Scientific research

Figure 21 Infrared photography

Figure 22 Ultraviolet Photography UV

Figure 23 Reflectance transformation Imaging

Figure 24 B&W photography

The linear illustration of damages of the painted surface provided us with data on the types and degrees of damage.

Figure 25 *Digital Linear Illustration of Damages to the Painted Surface*

Figure 26 *Conservation Painting Consolidation*

First, it was considered urgent to consolidate the painting surface (color layers) and the gesso preparation in all cases of moderate or bad state of preservation with intense losses, pulverization, etc. This was the first rescue operation of the icon.

Figure 27 *Wooden Support Consolidation*

This was followed by the consolidation of the wooden support, which was in a state of disintegration and needed immediate strengthening and stabilization. For this reason, apparently, the back of the icon was covered in the 20th century, in order to ensure or avoid the further and complete destruction of the wooden support by wood-eating insects.

Figure 28 *Restoration*

At the same time, it was possible to assess the degree of preservation of the original painting and the extent of the overpainting. The ultimate goal of the conservation was to preserve the wooden support, given that the icon had undergone various aesthetic interventions and carpentry work in two different periods. The disinfestation/consolidation of the wooden support was carried out in order to deal with the loss of its mechanical strength. Treatment of the damage caused by the wood-eating insects involved not only the use of a suitable non-toxic insecticide solution, but also consolidation through the use of injections.

A great concern of VENIS STUDIOS was the detailed consolidation of the painted surface and the preparation to save the entire original painting surface and the pictorial nature of the icon. Indicatively, during the conservation, many corroded metal nails that had been nailed into the icon causing damage were removed. The completion of the consolidation of the painting surface, the gesso preparation and the wooden support were followed by the cleaning of the painted surface on both sides from the multiple oxidized varnishes, deposits of soot and other contaminants, oils, and waxes.

Specifically, on the face of "The Descent to Hades" after the completion of the cleaning, the two different periods of its construction and partial overpainting were clearly revealed.

The unveiling of the original icon was the main goal of the surface mechanical and chemical cleanings that followed. These cleanings were done with organic solvents, in order to reveal the original iconographic representations of the Panagia Eleousa and the Descent into Hades. The purpose was to remove deposits, atmospheric pollutants, soot, other pollutants, oxidations or later color additions and interventions that recovered the original hagiographies/painting. The conservator, as an "art doctor", systematically utilized the stereomicroscope in order to zoom in and reveal the details of the color surface, preparation, and substrate. This was also done to study the varnish, the protective resin that had been applied by the painter during the creation phase or later.

The result of the cleaning work indicated that two different periods are preserved in the scene of The Descent into Hades: the original one of the 14th century and the second one of the 16th century. It is a bilateral procession icon. Over the years the icon was dismembered and destroyed, and the right part of The Descent into Hades was lost along with the part of the Christ as a child from the side of the Panagia Eleousa.

In the surviving part of the icon, during the 16th century, the following rescue conservation operations took place: the incomplete part of the wooden support was added to obtain the original part of the icon, and the face with the composition of The Descent into Hades was completed according to the iconographic and stylistic standards of that period.

Figure 29 *One Icon Two Periods*

Figure 30 *Digital retouching*

During the cleaning, part of an illegible inscription was revealed in the lower left part of the 14th-century icon. Special photographs were taken and digital processing so that it could be studied in depth.

Figure 31 Retouching

Figure 32 Before retouching

Figure 33 After restoration

Conclusions

Given the great historical importance and the high aesthetic value of the icon, conservation ethics had to be strictly adhered to. First, the digital restoration was carried out in order to decide the degree of retouching/restoration as well as what method should be used. The retouching/restoration was carried out with respect to the principles of the reversibility of restoration actions, the compatibility of restoration materials, and the principle of minimal possible intervention, without overlapping with the painting's original colors and design.

The retouching/restoration, where deemed necessary, was done with strict restoration criteria. Following a museum-level retouching/restoration approaching, the Italian "Trategio – Rigattino" technique was chosen, in which the color complement is distinct from a close distance, while it is unified from a far. The retouching/restoration was done with watercolors of the highest quality and grain size according to the strictest international quality standards. During the final conservation phase, the icon was varnished on both sides to protect it from harmful radiation; for waterproofing, protection, and preventive conservation.

In conclusion, as confirmed by the Byzantine art historian Professor Athanasios Semoglou, the icon was originally created in the 14th century when The Descent into Hades and the Panagia Eleousa were painted. However, on the side with the Panagia Eleousa, due to the obvious destruction of the original painting, the Panagia Eleousa was completely repainted in the 16th-century. So, on the front, we have the Panagia Eleousa from the 16th century and on the back The Descent into Hades from both the 14th century and the 16th

century. In other words, we have two distinct phases of the execution of the icon and an important ancient testimony of an intervention of conservation in order to save and preserve this important historical artifact.

With the completion of the conservation and restoration operations, the icon of the Panagia Eleousa was preserved for the future and along with it all the priceless spiritual, historical, social, and artistic messages it conveys. The science and art of conservation and restoration "healed" the problems and damages, and saved a master piece of history and culture.

Figure 34 *The team of conservators and scientists of VENIS STUDIOS*

The team of conservators and scientists of VENIS STUDIOS who contributed to the rebirth of this extraordinary artwork "met" its creators through their scientific work, studied them, researched them, and "rescued" them from oblivion brought about by neglect and the ravages of time. This rescue of both the work and its "creators" is reflected on the preserved unique masterpiece: the icon of the Panagia Eleousa.

This icon despite all its hardships, with the help of conservator's scalpel, managed to survive through the centuries, from Byzantium to the 21st century, and to continue its life into the future.

Preserving the Sacred Legacy of Christian Icons

Christian icons endure as symbols of faith, spirituality, handcrafts and human creativity. Exploring their history, symbolism, meanings, techniques, and conservation unveils the

profound interplay between religious devotion, artistic ingenuity, and the meticulous efforts of conservators and restorers. Rooted in centuries of tradition, Christian icons transcend mere art; they embody spiritual, folk and ethnological beliefs, conveying theological messages through vibrant colors, intricate details, and timeless symbolism. Icons serve as windows to the divine, fostering spiritual contemplation and deepening connections between worshipers and sacred figures.

The historical evolution of Christian icons reflects dynamic intercultural exchanges, shaping their significance from catacomb paintings to the Byzantine period and beyond. Symbolism in each stroke adds layers of meaning, inviting viewers to explore rich narratives of faith, sacrifice, and divine grace. Conservation demands technical expertise and profound sensitivity to cultural contexts. Professional experts' art conservators and art restorers, armed with empathy, sensitivity skills and ethical considerations, play a pivotal role in ensuring authenticity endures. Meticulous examination methods provide insights into composition, condition, and historical context, unveiling hidden details and deciphering artists' intentions.

Ethical decision-making guides our interventions, preserving historical integrity and cultural value. Comprehensive documentation, including historical research and material analysis, provides a robust foundation for preservation, fostering a deeper understanding of these sacred artifacts.

In professional Christian icon conservation, experts preserve not just physical form but the soul of these artifacts. Through meticulous examination, analysis, and restoration, icons continue to inspire, educate, and resonate. As bridges between earthly and divine realms, they weave a timeless narrative of faith, artistry, and cultural heritage, illuminating the enduring power of spiritual expression.

In essence, conserving Christian icons is a sacred blend of art, science, and devotion. Dedicated expertise ensures that these icons radiate divine light, guiding next generations to come.

Ethical Issues from Church Monuments' Digitization

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Keywords: Church monuments, digitization, ethical dilemmas

Abstract

Digital technologies have permeated almost all aspects of our daily lives. Among them is the highlighting of the ecclesiastical past. However, this specific process also raises many concerns, which, in fact, move in different directions. Our work attempts precisely to detect the aspects of these concerns and to lay some foundations for a more systematic examination of this activity.

Introduction

Today's field of ethics is characterized by the particular interest it attracts in various areas of public debate. The reasons why this happens are varied. Certainly, however, an important role is played by the fact that among the new circumstances that our time has brought also belong the challenges and dangers of which we would otherwise be unaware. To be able to pass through the novel obstacles posed by our times, moral reflection is cultivated so that our unfortunate choices can be prevented as far as possible and, if this does not happen, their negative consequences can be cured or minimized.

The points of reflection

The possibilities of digitalization are a typical example of the involvement of ethical issues, which arise through the new possibilities offered to our culture by modern technological

means. If we add their combination with the particularly sensitive sites of past monuments and ecclesiastical heritage, it is easy to see whether these issues can be multiplied.

To be more specific, let's proceed to list individual issues raised in a project to digitize ecclesiastical relics and monuments:

1. First, it is known that ecclesiastical art develops within a specific environment, addresses a certain part of society, the faithful, and fulfills its mission in defined spatial and temporal frameworks. The exit from them and their museum display weakens their semantic content and weakens their conceptual and symbolic wealth.
2. A related set of issues involves preserving the sanctity of their now-digitized monuments and the general respect for their religious significance. In an environment of loss of vulgarity, the emergence of lower instincts in public digital discourse, and an insult to the values of the other by any available means, the exposure of the sanctuaries of faith to the complex moods of each digital media user is a cause for concern. In this regard, the reflection is also introduced on the type of digital space in which these monuments will be exhibited.
3. Related to the above, issues of commercialization may arise as a result of the availability of the digital form of monuments to the wider public. Although, indeed, this temptation did not have to wait for the digital revolution to manifest itself, as it is already visiting our relationship with the past, new technological possibilities bring about an increase in potential risks.
4. Although it is possible to find a substantial control of the economic benefit that will result from the relevant procedures, it should be clarified here that a usually invisible characteristic of the commodity/speculative character that can appear and dominate is the corrosive spirit of the exclusive economic view of monumental culture. Moreover, tourism studies have already shown us that where this has happened, i.e., where it has not been possible to maintain a balance between cultural contribution and economic exploitation, the product as a whole has been devalued. Significant financial losses have been incurred for those who have ignored the fine and sensitive lines of economic exploitation. Nowadays, this has become more urgent, as it seems that the number of visitors to tourist attractions has lost its mass character compared to other, more qualitative and alternative forms.
5. On the other hand, however, we must recognize that reality requires those responsible for managing the ecclesiastical monumental past precisely to map these treasures digitally. In other words, in a world increasingly moving on electronic paths, the involuntary or voluntary exclusion of a huge part of the essentially global cultural tradition becomes morally accountable, if not suspected, for negligence or even for deceit. In other words, depriving the general public of even digital shares in these goods cannot be accepted.

Even more so, this happens if we consider that many of our fellow human beings cannot access them for several reasons: health, mobility problems, financial scarcity, lack of time, language or general cultural barriers, etc. This arises, in other words, an issue of equivalence, which is difficult to overlook, given the technological capabilities at our disposal. Moreover, let us not forget that we are talking about the good of knowledge and education, the relationship with which is a fundamental human right. Beyond this, however, the ecclesiastical ethos requires the leaders of the spirit to promote society as a whole in the richness of universal civilization and to communicate its pedagogical and aesthetic values more broadly.

6. Another group of issues concerns intellectual property, the correct rendering, and presentation of the symbolic and conceptual wealth included in these monuments, or even the appropriateness of transmitting their meaning in different cultural contexts.
7. Other issues concern the optimal protection of monuments. Widespread exposure can stimulate interest in conservation, prevent forgetting, reduce the risk of indifference, etc. However, it can also motivate delinquent behaviors and put them at risk.
8. Problems may also arise due to the lack of obtaining a wider consensus of persons most closely involved in the safekeeping and protection of these monuments.

Discussion

The above points represent perhaps the most basic areas of concern that can arise through digitizing ecclesiastical monuments and relics. Of course, it cannot be ruled out that other similar ones, more or less important, will emerge along the way.

However, as in other similar cases, it is necessary to develop a culture of dialogue that must be preceded to prevent as far as possible and remedy the problems that will arise in the future. This dialogue, for its part, must be extensive, frank, and substantial to include all interested parties but also to cover all the issues that arise. And, of course, a thorough discussion presupposes its interdisciplinary formation: the individual approaches of the actors that will meet in this project (ecclesiastical, technical, political, cultural, etc.) are necessary. The comments of each side are welcome since they share a vision of digitally highlighting the ecclesiastical past in a spirit of respect for itself and the audience to whom it will be addressed. Only under these conditions will adequately rules and regulations be set for the various aspects of the process, and the project will be transparent and meet high ethical standards.

Moreover, as we alluded to earlier, the issue also touches on an ecclesiological task. Throughout history, the Church carries a constant duty to remind the Eternal within the present. In other words, it is called endlessly, and within the framework and means available to each age, to reveal the human destiny, which is the heavenly homeland. She does not deny the products of the human spirit but produces culture itself. With all her works,

speech, and art, she projects the memory of divine Providence in our world and reduces existence to communion with the divine. And this task is being worked out by every appropriate means at its disposal, obviously even digital.

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Ethical Problems and Challenges in the Digitalization of Church Cultural Heritage in Bulgaria

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Keywords: ethical problems, digitalization, Christian cultural heritage

Abstract

The presented report contains some observations and ethical aspects about the digitization of church heritage in Bulgaria. The analytical overview is based on some critical observations, ethical reflexions and practical cases from the contemporary situation in Bulgaria. In the focus of the research is the specific difficulties and problems in the process of the preservation and digitization of the Christian and church cultural heritage.

Introduction

The Christian cultural heritage is the subject of various cultural policies for protection, research, preservation and exposure of different monuments, and usually we associate these policies with the cultural standards of UNESCO, and due to this fact, our attention is often directed to precisely those cultural monuments that have found a place in the established world heritage registers.

In Bulgaria, as we know, such monuments are the Rila Monastery, the Boyan church, the Rock monasteries in Ivanovo and the Christian monuments from the cultural complex of Nessebar (Mesembria). Of course, this cultural wealth in Bulgaria also includes other cultural and historical monuments of the Christian heritage, which are not yet included in the UNESCO register, such as the Bachkovo Monastery, the temples in Arbanasi and Melnik,

the monasteries in the Sofia Holy Mountain, Episcopal Basilica in Plovdiv and other centers of Christian spiritual and cultural heritage.

In recent years, the Bulgarian Orthodox Church has been given the opportunity to regain ownership of many cultural monuments that were nationalized in the past, and to take care and responsibility for their preservation, restoration and socialization. Rila Monastery and Patriarchal Cathedral and Temple-monument "St. Alexander Nevsky' as two of the large and significant stauropygial sites exemplify this process. The museums of these two Orthodox cultural sites store a huge wealth of icons and other artifacts, and this requires special care and the development of competence and expertise for their preservation, which becomes the responsibility of the Church.

In such a cultural and historical environment, the current ethical problems and dilemmas arise in connection with the description, registration and digitization of the Christian and church cultural heritage.

Methodology

The methodological framework of this critical research combines a theological, anthropological and ethical-normative approach in view of the specificity of the subject of research. They also apply a comparative and historical-critical method. The process of digitalization of Christian cultural heritage in Bulgaria in recent years necessitates the creation of specialized legislation, but also the training of specialists and the application of new methods and technologies for the protection of the Christian church's cultural monuments, which also include the digitization of iconographic monuments and other artistic values and objects (Pandurski,2002).

The digitization of the Christian church heritage in recent years can also be a means of combating the trafficking of cultural values, because when an artistic object-icon or other church value is previously described and documented through the creation of a digital archive and register of cultural values from a given parish, diocese or monastery and if it becomes subject to theft and trafficking it can then be more easily identified and restored to its original location.

At the same time, there are still many concerns and risks that when digitizing and popularizing church values - icons, church artefacts, sacred relics and other works of art, they will become objects of some criminal actions or trafficking of cultural values.

Results

1. *Ethical dilemmas and practical problems in the digitization of Christian cultural heritage in Bulgaria*

In recent years, on the one hand, the use of digital opportunities and technologies to popularize the Christian church's cultural heritage has been strengthened, evaluating the

undeniably positive opportunities and results of this process. Digitization can contribute to the better study of the wealth of Christian artistic monuments, to document the condition of a certain object and preserve its integrity and form by preserving its data due to the danger of its physical damage and damage if it is not subject to timely restoration and conservation.

There are many endangered valuable monuments of Christian wall painting in small medieval temples, which by digitizing their artistic monuments can be preserved both for science and generations and cultural wealth of the Church and national cultural heritage.

At the same time, on the other hand, there are still many concerns and risks among some clergy, abbots, church officials or experts from church museums on Christian art about this in the digitization and promotion of church values - icons, church utensils, sacred relics and other works of art, so that they do not fall into the view of thieves and traffickers and do not become the object of encroachments, theft or trafficking of artistic values.

We encounter a paradox that shows us one of the great ethical dilemmas in today's social and ecclesiastical context - digitization can simultaneously help to register and identify already stolen icons and liturgical utensils, enthroned gospels and liturgical books and other movable cultural values, but it can also serve as a lure for impure interests and criminal appetites to find still in museum collections of temples and monasteries, which may be vulnerable to such encroachments.

In my modest experience on the subject, I would like to point out some concrete examples from my work as a teacher in the Master's program in Ecclesiastical Arts at the Faculty of Theology and as a screenwriter of a series of documentaries about Bulgarian churches and monasteries of Bulgarian National Television, where I have come across some case studies, which illustrate these ethical dilemmas and practical difficulties and challenges.

These are Christian monuments and church sites from some monasteries in the Sofia Holy Mountain - Dragalevski and Seslavski, as well as temples from nearby settlements, associated with artistic values and stolen relics, as well as with miraculous icons that once disappeared and their rediscovery.

2. *Positive examples and opportunities for preservation and research of cultural heritage through modern digitization methods*

The digitization of various monuments of Christian ecclesiastical heritage is implemented and can be useful in several main directions:

2.1. For educational purposes - for the training of schoolchildren and students, as well as for the preparation of other qualified specialists in architecture, art history or restoration, by preserving and exhibiting special or rare examples of Christian art.

2.2. For the purposes of cultural and religious tourism, such as the promotion of the ecclesiastical heritage of Christian cultural objects, which are objects of pilgrimage and

cultural routes for connoisseurs of Christian spiritual saints and memorialists of architecture and art.

2.3. To exhibit the wealth of church heritage that has been accumulated over the centuries and is located in a limited physical space and cannot be displayed simultaneously in the same place due to limited possibilities - different layers of church frescoes that are located on top of each other and for their study or consideration it is necessary to separate and preserve them at the same time, but there is no possibility of both being in the same place. There is such a case with the old medieval temple of the Dragalevtsy Monastery.

2.4. To prevent and combat the trafficking of cultural values and to create appropriate conditions both for the preservation of the original monuments in suitable storage conditions and at the same time for access to the monuments in their natural cultural and ecclesiastical environment in temples and monasteries where they are located or cultural context of emergence presence as a spiritual value. An example is the dispute about the famous icon of the Rublev Old Testament Trinity - in the museum or in the temple, to be kept in laboratory conditions or to be exhibited in the natural and temple space for prayerful veneration and access of believers to it. (Pavlova, 2017)

3. *Negative examples and cases of abuse of monuments of Christian church art during the period of the communist regime and the post-communist transition*

The situation with the preservation and management of church cultural heritage in Bulgaria - the care of churches and their murals and icons, liturgical books and church utensils, iconostasis decorations and other movable and immovable monuments is determined to a certain extent by state policies towards Christian monuments over time of communism.

During this period, there was a unilateral policy of turning the large monastery complexes into museums and the ancient temples into museums and cultural monuments, taking away their religious purpose and church use. The cases of the Rila Monastery, which is the most striking, as well as other iconic Christian temples such as those in Nessebar or the Rotunda "St. Georgi" in Sofia, show the dual policy and many remaining ambiguities and ambiguities regarding the preservation of this ecclesiastical cultural heritage.

And if the Rila Monastery and the Rotunda in the capital, which were turned into museums during the communist regime, now after the beginning of political democratic changes have been returned to the Church and have regained their purpose as active Christian temples, then the temples in Nessebar continue to be only in their status as cultural monuments without a liturgical function. (Fernando e Gioia Lanzi,2003)

But the presence of many abuses and negative examples and trends from the past now makes many of the church representatives too cautious and skeptical about uncritically accepting only the positives of the mass digitization of the available church cultural heritage.

For example, during the era of the communist regime, when the monasteries were converted into museums, there was an increased presence of the state authorities in the field of cultural relics in the monasteries and temples themselves, and this led to some tension between the monks and clerics and the government officials in the field of restoration and the apprehension of the cultural monuments themselves.

For example, in the Rila Monastery, the museum workers disposed of the monastery property and after full restoration of the property of the Church buildings, now the museum itself is the property of the Monastery, and the responsibility for the preservation and restoration of the monuments of the Christian cultural heritage in the holy abode is now the responsibility of the monastery brotherhood.

In the same way, with the restoration of ownership of the Patriarchal Cathedral and temple - monument "St. Alexander Nevsky" of the Bulgarian Patriarchate, now the national museum, which is housed in the crypt of the temple, is a joint responsibility between the Church and the responsible authorities in the field of preservation of cultural heritage monuments. (Koeva, 2011)

But there are many cases, such as the iconostasis that was stolen and disappeared without a trace from the church of the Seslav Monastery, which is considered the work of the great Christian icon painter Saint Pimen Zografski and to this day has not been discovered together with the great icons of the royal order.

During a police operation to intercept traffic of cultural values across the border, only the royal doors of this iconostasis were captured and identified and handed over to restoration and storage in the Church Archaeological Museum of the Bulgarian Patriarchate. This and many similar cases have caused many clergymen to be cautious and not reveal what church treasures of icons and other sacred objects are stored in their churches and monasteries, and this hinders the process of digitization and creation of digital collections, electronic galleries of icons and others similar contemporary educational products with digitized icons, manuscripts and audio and visual artworks to serve educational and other cultural purposes.

Discussion

In conclusion of this brief observations, and as some possible perspectives for building a working models and good practices for the digitization of church cultural heritage in Bulgaria, we can make some proposals for future projects and cooperation.

Nowadays, there are many successful European projects and working models for the digitization of the Christian church heritage, which are implemented by church institutions - dioceses and metropolises, monasteries and individual parishes. (SOFIA. 1997)

In the Romanian and Greek Church, many examples can be cited for building digital collections of icons or other forms of support for diocesan and monastery museums, for building programs for pilgrimages and religious tourism, or for preserving and popularizing rare and hard-to-reach examples of Christian art, which can be presented to the general public and specialized audiences only through these new technologies and methods of digital processing of the artistic wealth of the Church.

In Bulgaria, we can cite as a positive example and good practices at the world level:

1. The new museum of the Episcopal Basilica in Plovdiv with integrated modern information technologies and digital possibilities for presenting the ancient Christian cultural heritage;
2. The new Museum of Icons in the Bachkovo Monastery, created as a specialized gallery for Christian art;
3. The coexistence between the Patriarchal Cathedral and the National Gallery of Christian Art and the opportunities to exhibit and present the entire wealth of frescoes in the temple and icons in the crypt through various joint modern technological solutions and innovative projects for digitized and remote visitor access to these sacred spaces and spiritual values through virtual galleries and attracting visitors who will then be welcomed as pilgrims in the temple to touch the Divine beauty and spiritual power of Orthodox art.

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The Ethics of Digital Representation of Sacred Church Art

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Keywords: Ethics of Digitalization of Church Art, Church Digitalisation, Sacred Art

Abstract

Is it normative to explore the question of ethical standards in the execution of tasks which appear to be wholly routine? A person who is lagging behind the developments of the digital world would respond that there is nothing inherently complex in digitalization: one just scans, uploads, describes the items, or the reverse, describes and then uploads. These actions would appear to be purely technical, requiring mere technical abilities. But the digitization of historical heritage is not a scene from a Charli Chaplin movie where nuts are handled in a feeding system. Not unlike in the Modern Times movie, the end result of such an automated process, requiring no application of human thought and action is disastrous, and gives us a hint as to why the posed question is relevant. This article explores in depth this subject and gives some answers relating to the human and his understanding, conception and handling of the Sacred.

Introduction

Is it possible to put forward a question on the ethical standards in the execution of tasks which for some may appear to be wholly routine? So, to say, without any affront to the specialists, a person who is an outsider to the digital world we live in may say: what is there to discuss, one just shoots, uploads and describes, or in reverse - describes, and uploads. This is a rhetorical question that is often declared to me: that documenting sacred art consists of actions which do require anything beyond mere technical skills. In such

moments involuntarily before my eyes appears the scene of the Modern Times movie of Charlie Chaplin with the automatic feeder of screws and nuts. Perhaps exactly what happened with Chaplin's hero as a result from the automatic, requiring little thought, action is the least of reasons to put forward the question of ethical standards in documenting ecclesiastical sacred art.

Furthermore, there exist other reasons to pose the question and they are all connected with a single thing - man with his conception, understanding and attitude to the Sacred. Because in my view when one works with or talks about objects related to the religious, these are not standard objects, but items which reveal precisely the Sacred, which requires a specific type of attitude. For it is known that the most vulnerable of feelings is the religious feeling. It is this feeling that has to be balanced on the two Commandments of our Lord Jesus Christ: *You shall love the Lord your God... you shall love your neighbour as yourself* (Matthew 22:37-39). Not balancing it on them leads to tragic outcomes not only for the individual person, people or state, but for the whole world. If Christ's Nativity the angels spoke of peace unto the whole world and good will towards me, the least toward which men have to show good will is precisely respect. In this simple feeling are contained all basic moral human values.

Church artefacts

Church artefacts as a whole and these which are out of ecclesiastical liturgical use, in one way or another defined as cultural and historical heritage, are not mere items. Wherever they are stored, upon them continues to work God's heavenly blessing and the grace of the Holy Spirit (from the Prayer for the Consecration of an icon of Christ the Saviour) (Trebnik&Sinodalno izdatelstvo, 1994). For this reason, a specific type of an attitude is required in every single contact with them.

When God appeared to the holy prophet Moses in the burning, yet unburnt bush, the later said:

> *I will now turn aside, and see this great sight, why the bush is not burnt. And when the Lord saw that he turned aside to see, God called unto him out of the midst of the bush, and said, Moses... draw not nigh hither: put off thy shoes from off thy feet, for the place whereon thou standest is holy ground* (Exodus 3:2-5)

Later, when the Ark of the Covenant was being translated by the holy prophet and king David, the following transpired:

> And they set the ark of God upon a new cart, and brought it out of the house of Abinadab that was in Gibeah: and Uzzah and Ahio, the sons of Abinadab, drave the new cart... And when they came to Nachon's threshing floor, Uzzah put forth his hand to the ark of God, and took hold of it; for the oxen shook it. And the anger of the Lord was kindled against

> Uzzah; and God smote him there for his error; and there he died by the ark of God (2 Kings 6:3, 6-7).

The church tradition tells of the Dormition and laying of the Holy Mother of God in the tomb of the unheard-of wrath with which one Jewish priest attempted to push the body of the Theotokos out of the bed upon which she was placed, and of the consequences for him for this blasphemous plan. St. Demetrius of Rostov relates the story:

> *A Jewish priest, bearing the name Anthony, went out on the road... saw the apostles, the multitude of singing Christians who had gathered around the body of the Holy Virgin Maria, and was filled with jealousy. In him was rekindled the old hatred towards the Lord... As he was very strong physically, he rushed with crazed wrath into the Christian crowd in order to push the body of our Most Pure Queen to the ground. When the hands of the audacious priest touched the altar, an invisible angel immediately cut these hands off with the immaterial sword of God's revenge, and they hanged in the air, as stuck to the bed* (Жития на светиите et al, 2001).

This scene is an important element in the Orthodox Iconography of the Dormition of the Mother of God icon.

Of course, no one wants and considers that everyone who puts forward his hand with evil intentions towards the holy artefacts will be or must be punished in this way, but the question about the attitude towards them and the external plans to use them is a question which is painful to consider for any religious organisation, but especially and to a great extend in particular for the Bulgarian Orthodox Church.

As is well-known the atheistic repressions against the Russian Orthodox Church which began from 1917, continued in the end of 1921 and the beginning of 1922 gained strength and spread. The multiplication of the repressions was connected with the issuing of the Decree for removing of church valuables which the Church - clergy and people - firmly opposed. The priest Kiril Krasnoshtekov, a candidate of the theological sciences, writes the following in an article of his on these events:

> *In the whole country begin confiscations, often accompanied with clashes between the Confiscation Committees and the gathering around the churches people. All this works well for the bolsheviks, as it gives them a reason to blame the Hierarchy of the Russian Orthodox Church in counter-revolutionary activity, among others* (Кирил Краснощеков).

In his article, Fr. Kiril quotes a response of Lenin, given to Molotov and the Politbureau of the Central Committee RKP (b) from March 19, 1922, on the occasion of a received letter on the opposition on the side of the Orthodox Christians. Lenin writes *I reach the unconditional conclusion that we are obligated precisely now to enter the most decisive and*

merciless battle with the reactionary clergy and to crush its defence with such cruelty that they remember it for decades on... The more representatives of the reactionary clergy and bourgeois we manage to shoot on this occasion, the better (Ibid).

What transpires in Bulgaria after the arrival of the atheistic communist regime on September 9, 1944?

The matter of things is relatively well described by Fr. Ludmil Malev, a Professor of Church History of the Veliko Tarnovo Faculty of Theology in his book *To disposes the Church, rather than help her.* The under-title of the book of the same name makes apparently clear the comprehensive policy of „solving" the question of preserving the monuments of history and culture which are in ownership of the Bulgarian Orthodox Church.

A glimpse on the documents and commentaries on them, laid out in the monograph, leads us the appearance that the people who wrote them consider that it is a matter of joy that in the confiscation of Church property in the People's Republic of Bulgaria did not flow rivers of blood, as was the case in Soviet Russia. Even if they did not, even if there were no visible wounds, sufficient were the wounds on the souls and hearts of the Orthodox faithful - clergy and people.

The following is just a paragraph of the Decree of the Council of Ministers from May 14,1947, Protocol No. 80, on the Boyana Church. In it is written:

> *The following is approved: to suspend all services in the Boyana Church, where the property of the Church with its whole yard and the house of the guard is taken away from the Church Board and the keys are given to the National Archaeological Museum, which is to remain the single and fully empowered owner of the Church, yard and yard building* (Fr. Ludmil Malev, 2022).

Fr. Ludmil Malev offers the following commentary:

> *The planned dispossessions are carried out in the years and months following the Decree of the Council of Ministers from May 14, 1947. The efforts on the side of the owner, the Church, to prevent these dispossessions are not crowned with success. From the text of this decree, it does not become apparent what is the actual state of these Ecclesiastical Monuments and why it is imperative for them to be put to such a stringent regime of conservation - not merely to tighten and control the access of pilgrims, but to shut them down for services and visits* permanently (Ibid., 15).

That is to say, to disposes God of what is God's by itself leads to the impairing of religious feelings of the people. Precisely this is what turns the whole question into a question of ethics. Or if we are to use St. Gregory the Theologian's words, the religious feeling is a thin string upon which one must play with exceeding caution, in order for it not to tear. Yes,

it can mutate into an extreme religious fanaticism, but by itself it is a feeling which is holy, pure, and it is in exactly this original essence that it must be respected.

Turning our attention to the topic of the digital representation of sacred church art, we now focus on its benefit for the Church.

In his monograph, Fr. Ludmil Malev cites a letter of the Ministry of Education and Culture, addressed to the Politbureau of the Central Committee of the Bulgarian Communist Party. In it is written:

> *Now almost all churches and monasteries in our country are under the auspices of the Synod of the Bulgarian Orthodox Church which is not able competently to take care of the preservation of the historical and cultural monuments which are stored in them. Due to bad ownership... (they) are in dire state and under threat of oncoming dereliction and destruction...* (Ibid., 120)

Fr. Malev writes:

> *in fact, we cannot disagree that in this statement there is concealed certain truth. Both in terms of buildings, and ability to research, conserve and preserve the mentioned monuments, the Church would not be able to cope with the tasks only under the conditions, in which it is put by the very same regime power* (Ibid., 131-132).

The regime power is repressive not only towards the Church, but towards religion as a whole...

Conclusions

Of course, the Bulgarian Orthodox Church has not remained silent and even under these conditions and according to its abilities it exerted efforts to care for what is under its rule. Icons and sacred objects are stowed away in specialised for this purpose storage houses in the Dioceses of the Church. In Plovdiv the Metropolitan Barlaam of Plovdiv re-enacts a whole complex of facilities, including in addition to the Icons Vault Room also an Atelier for Restoration of Icons, a Photo Laboratory and a Woodworking Workshop. Church valuables are indexed meticulously in inventory books with inventory numbers, dimensions, date, initial location, and everything requisite for a precise identification of the author, origin and ownership of the items.

However old inventory books and the old way of keeping inventory today are to change. In the digital age with the advancement of artificial intelligence it would appear that the status quo is to evolve. An attempt for digital reindexing took place in the Metropolis of Plovdiv back in 2012. It was performed in a response to a recommendation of the Ministry of Internal Affairs, and as a way to prevent and enact a countermeasure to the theft of church valuables. By decision of the Diocesan Council of the Plovdiv Metropolis, a

plan-proposal was prepared which included two stages of implementation by two different teams. The first stage was to describe the icons, church valuables and other objects of historical value, and with it were tasked the person responsible for the Icons Vault Room and representatives of the History Museum, the Icon Gallery, part of the City Art Gallery, a photographer, and a representative of the parish church or the monastery brotherhood.

The second stage, describing the books, archive units, and other valuables of the kind, was to be carried out by the librarian of the Plovdiv Metropolis, an assistant from the Culture and Education Department of the Metropolis, representatives from the Ivan Vazov National Library and the Hristo Danov House Museum, a photographer, and a representative of the parish church or monastery.

Despite the proposal being accepted by the Diocesan Council of the Plovdiv Metropolis, its parameters receiving a financial backing, it remains unrealized until the present day. But that is only for now. It may appear banal, but the questions relating to where and how to store the appearing information, as well as to whom and to what extend it will be accessible and given appear to be a reason for its delaying. The letter by the Diocesan Council with which the proposal is accepted bears the following requirement:

> *an obligation to turn in all materials, including those exiting the premises of the Plovdiv metropolis, with the purpose not to allow any dissemination of copies of the photographs.*

This obligation may appear of little consequence but it again puts the question on an ethical basis which is the basis of the good cooperation, communication and relationship of Church and State institutions, as well as scientific institutes, museums, galleries and others, among which individual research workers. A proposal such as the considered one from one side cannot be accomplished merely from within the Church institution because it is apparent that not every priest can be a specialist in church art or restoration. It is not his mission and prime calling. For a priest it is enough to have the requisite reverential attitude and conscience of the historicity of the artefacts and the importance for its preservation for the generations who will follow after him.

As to those who come as external partners or assistants, it is not obligatory for them to be religious, but it is requisite for them to be respecting, aware that the icons and church artefacts are something more than mere objects with historical and cultural value, and that even if they are stored in a storehouse, they continue to be alive, in the sense of being capable to serve not only as objects for exhibition in a museum, but used in a prayerful and liturgical setting.

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Monuments in Thrace and their digitalization

Recording and Documentation Needs for the Ecclesiastical Cultural Treasures in Thrace region in Greece

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Keywords: Ecclesiastical Treasures, Cultural Heritage, Documentation, Digitization, Temples

Abstract

Cultural Heritage (CH) is a common good handed over from previous generations as a legacy for those to come. Its preservation is a strong commitment to our humanity. The preservation of ecclesiastical treasures, including movable and immovable monuments and tangible and intangible heritage, is of great importance in the region of Thrace in Greece. Post Byzantine Ecclesiastical treasures are expected to be in abundance in this specific region. Until now, no systematic documentation has been performed to preserve and promote the ecclesiastical-historical heritage of this region. The current study is part of the European programme NARRATE. NARRATE aims to codify the actual recording and documentation needs for the ecclesiastical cultural treasures, through a systematic study of the users' needs. In this paper we present the results of the surveys performed in the Thrace region in Greece. The aim was to capture and document perspectives on ecclesiastical treasures directly from stakeholders, encompassing both clergy and non-clergy participants, along with their current experience with ecclesiastical CH documentation. The questionnaires

were filled out by clergy members and monks residing in the areas of Xanthi, Didymoteichon, Alexandroupoli, and Maroneia, alongside with museum employees and conservators. In total 81 questionnaires were collected from clergy and 40 from non-clergy individuals, and the results show that all participants provided valuable insights and demonstrated cooperation while discussing the religious objects. Therefore, it is worth considering that stakeholders exhibit a high level of receptiveness and collaboration, particularly in matters related to preservation and educational purposes.

Introduction

Documenting Cultural Heritage treasures is of great importance as it is a fundamental process aimed at ensuring historical preservation, cultural continuity, and at the same time it facilitates and promotes the academic research. Post Byzantine Ecclesiastical treasures in particular, serve as vital links to the spiritual and artistic legacy of the Byzantine Empire, persevering through its profound transformation and influence on Eastern Orthodox Christianity. These treasures not only include tangible heritage such as icons, manuscripts, liturgical objects, and architectural marvels (Tsivolas, 2019), but also includes intangible heritage treasures that are equally important. As stated in the UNESCO's (United Nations Educational Scientific and Cultural Organization) report[1], 'Cultural heritage does not end at monuments and collections of objects, but also includes traditions or living expressions inherited from our ancestors and passed on to our descendants'. Intangible ecclesiastical heritage is expressed through processes, rituals, festive events etc. that are irreplaceable components of the Ecclesiastical Cultural heritage. Tsivolas (Tsivolas, 2017) in his research, has highlighted the importance of documenting intangible heritage as it helps identifying and preserving the intangible notion of "sacredness". This notion of «sacredness» is a respected cultural value that reflects the pan-European religious traditions, both current and past.

By systematically cataloguing and studying these treasures, scholars, conservators and the clergy are able to safeguard the unique craftsmanship and theological significance embedded within them, ensuring their survival for future generations. Moreover, such documentation helps to foster a deeper understanding of the cultural and historical contexts in which these treasures were created and used, providing insights into the religious practices, social dynamics, and artistic developments of Post Byzantine societies. A systematic documentation of tangible ecclesiastical treasures can provide future conservators and clergy information on past restoration efforts, enabling them to monitor the effectiveness of treatments over time (Beck, 2013). Additionally, it allows for comparisons between the object's previous and current states, highlighting the rate

1 https://ich.unesco.org/en/what-is-intangible-heritage-00003

of deterioration. On the other hand, documenting intangible ecclesiastical treasures will help preserve and transmit religious traditions to future generations (Antohin, 2019). In an era where global heritage is increasingly vulnerable to neglect, conflict, and environmental threats, the meticulous preservation of these ecclesiastical treasures is crucial for maintaining the rich tapestry of human history and for inspiring ongoing dialogue between past and present cultural narratives.

This research work aims to codify the actual recording and documentation needs for the ecclesiastical cultural treasures in the region of Thrace in Greece where post Byzantine Ecclesiastical treasures are expected to be in abundance in this specific region. In Greece, as well as many other orthodox societies, national histories are deeply intertwined with their orthodox churches and at the same time there is a direct engagement with the historical impact of the Church on local and indigenous traditions. Until now, no systematic documentation has been performed to preserve and promote the ecclesiastical-historical heritage of this region. By establishing a comprehensive framework for cataloguing these treasures, this study seeks to ensure their preservation, enhance their visibility, and provide a valuable resource for scholars, conservators, and the broader clergy and non-clergy community. This initiative, which is part of the European Erasmus+ project NARRATE[2], represents a crucial step towards safeguarding the unique cultural legacy of Thrace for future generations.

Methodology

The methodology of this research study is intended to establish a comprehensive and unified framework for extracting information, gaining access and actively involving the owners of ecclesiastical treasures themselves – including clergy and other church officials, as well as museum workers in the process of documentation. Our principal aim is to actively involve stakeholders in the process of "narrating", showcasing and, displaying the ecclesiastical treasures within their institutions. For this reason, the implemented methodology is structured in four stages:(1) Identifying the potential stakeholders that possess ecclesiastical treasures, (2) Creating the Questionnaires, (3) Reaching out to the survey participants informing about the NARRATE project and circulate the survey/questionnaires to the potential survey participants and (4) Conducting the analysis of the surveys.

Key stakeholders

As previously mentioned, our primary stakeholders encompass both clergy and non-clergy members. Within the clergy community, this includes Local Metropolitans, Parish Priests, Chancellors, Abbots, Monks, while our secondary target group comprises museum cura-

2 https://www.narrateproject.eu/index

tors, conservators, historians specializing in art, members of church councils, parishioners, local guides, and other members of the broader community of the clergy group.

Reaching out to and introducing the project to the stakeholders was the crucial initial step that needed to be taken before conducting surveys. Given the significance of hierarchy in Greece's clergy community, it was crucial to introduce the NARRATE project to the high-level authorities. The purpose was to inform the community about the project's partners and details well in advance of distributing the surveys, ensuring that the community is well-informed and receptive to the forthcoming questionnaires. Furthermore, the absence of any prior research on the digitalization of church assets made it crucial to emphasize that this project would not be a local initiative but rather an academic endeavour involving three different countries under the Erasmus+ framework.

Conducting the Survey

The questions included in the NARRATE questionnaires were established after the formation of the afore-mentioned methodology conducted by NARRATE's research teams of Greece, Bulgaria and Turkey.

Several key factors were considered in the development of the questionnaire (QR) for our survey. Firstly, recognizing the diverse stakeholders involved, including clergy (priests/monks) and non-clergy (museum employees/conservators), it was decided to tailor the questionnaire to each group's specific needs. Consequently, two versions of the questionnaire were devised, ensuring relevance and engagement for both group of participants. Accordingly, acknowledging the fact that the majority of the targeted stakeholders might not be familiar with computers, we decided to prepare the QRs both in digital form and on paper. The electronic version was accessible for those who prefer using a telephone device or a computer. Both paper and electronic versions were offered as an option for clergy and non-clergy community.

As the primary aim was to encourage survey participants to «narrate» the interconnected histories of ecclesiastic treasures and their spiritual significance over time, it was decided that the questionnaires would include both close-ended and open-ended questions with opportunities for small interviews/discussions. Moreover, considering the dual nature of ecclesiastic treasures—both tangible and intangible— it was important to streamline participant feedback effectively. To achieve this, comprehensive lists of objects were curated, in order to facilitate participants choosing and expressing their opinion, as well as 5-point scale questions were conducted to aid interviewees in comprehending the questions and responding more efficiently.

The Questionnaires were divided into three sections:

Section I: General Information/Technological literacy (Questions 1 to 5)

Section II: Needs analysis (Questions 6 to 14 for Clergy QR and 6-17 for non-Clergy QR)

Annex: Lists of proposed objects that need to be documented/digitized.

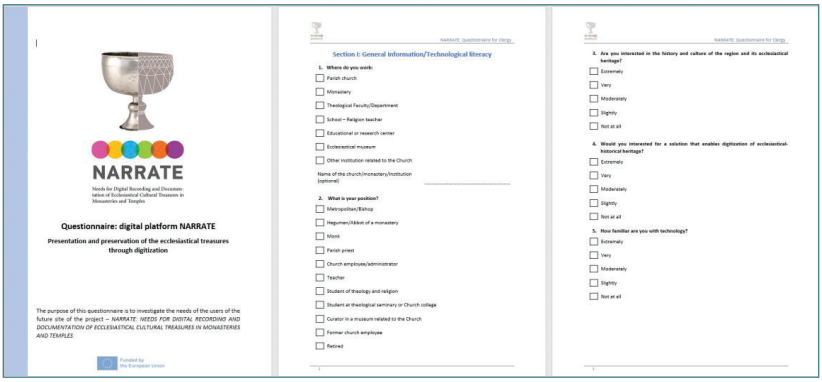

Figure 1 *The Section I of the QR: General Information/Technological literacy (Questions 1 to 5)*

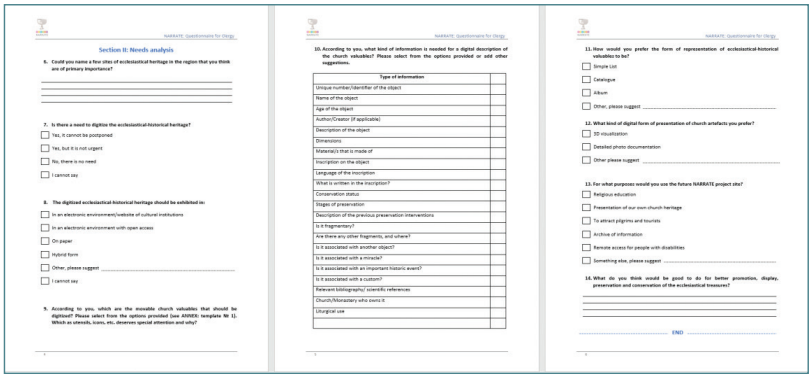

Figure 2 *The Section II: Needs analysis (Questions 6 to 14 for Clergy QR and 6-17 for non-Clergy QR)*

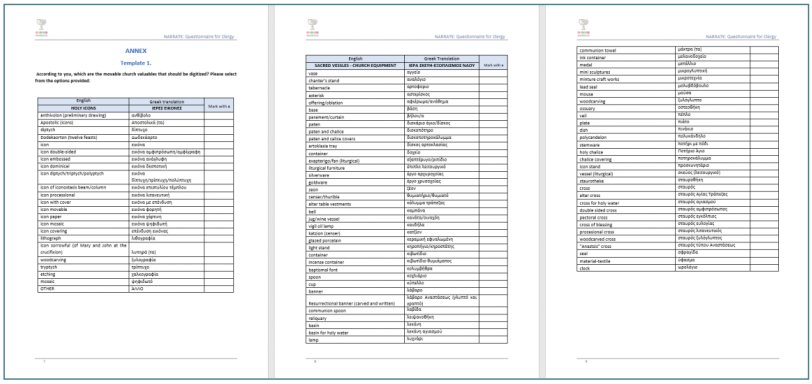

Figure 3 *Part of the Annex with lists of proposed objects that need to be documented*

Circulation of the QRs

Following authorization from church authorities, our surveys were conducted during the summer of 2023 in the Thrace Region, including Xanthi, Didymoteichon, Alexandroupoli, and the Maroneia region, where post-Byzantine churches are located.

Figure 4 *The Thrace region in Greece*

In total, we gathered 81 questionnaires from clergy members and 40 from non-clergy individuals, with the majority obtained through in-person interactions. All survey participants have shown great interest on the NARRATE Project and all of them provided answers. They expressed keen interest in the history and culture of their region and its ecclesiastical heritage recognizing the need to digitize the ecclesiastical-historical heritage in their region.

Results

The following paragraphs include the findings of our survey in the Thrace region in Greece.

Questionnaires of Clergy in Greece

In this group the majority of the interviewees are priests in churches (91%) and 95% of them have expressed keen interest in the history and culture of their region and its

ecclesiastical heritage (choosing answers 'extremely' and 'very' in the relevant question). They recognised the need to digitize the ecclesiastical-historical heritage in their region (with choosing answers 'yes, it cannot be postponed' and 'yes but it is not urgent' in the relevant question).

Additionally, 82% of them prefer the exhibition of the ecclesiastical treasures in an electronic environment, either on the website of cultural institutions or in an open-access form or in a hybrid form, despite the fact that only 54% in total are familiar with technology (choosing answers 'extremely familiar' and 'very familiar' in the relevant question). Albums and detailed photo documentation were the most popular answers for the form of representation of ecclesiastical-historical valuables.

On section II with the open-ended questions, the majority of the interviewees proposed various (post-Byzantine) churches as sites of ecclesiastical heritage in their region. They also mentioned many Monasteries and the Ecclesiastical Museums of Thrace. Finally, 13 out of 81 have proposed the publication of (e-)books/albums as a good option for promotion, display, preservation and conservation of the ecclesiastical treasures.

Questionnaires of non-Clergy in Greece

In this group the majority of the interviewees are teachers/professors (35%) and employees in churches (27%). All survey participants have expressed keen interest in the history and culture of their region and its ecclesiastical heritage (choosing answers 'extremely' and 'very' in the relevant question). They recognised the need to digitize the ecclesiastical-historical heritage in their region (choosing answers 'yes, it cannot be postponed' and 'yes but it is not urgent' in the relevant question).

Additionally, 84% of them prefer the exhibition of the ecclesiastical treasures in an electronic environment, either on the website of cultural institutions or in an open-access form or in a hybrid form, and only 12% of them prefer the paper format. It is noteworthy that only 57% of them are familiar with the ways, methods and benefits associated with digitizing Ecclesiastical heritage (choosing answers 'extremely familiar' and 'very familiar' in the relevant question).

Albums, Catalogues and detailed photo documentation were the most popular choices for the form of representation of ecclesiastical-historical valuables.

On section II with the open-ended questions, the majority of the interviewees didn't give any answers. Several proposed various (post-Byzantine) churches as sites of ecclesiastical heritage in their region, and they also mentioned Monasteries and the Ecclesiastical museums. In Alexandroupoli region for example, all non-clergy interviewees proposed the Church of Panagia Kosmoswtira in Ferres. Finally, 6 have proposed various forms of documentation (e.g., audio-visual, historical records, photographs, interactive maps, touristic maps, android apps) as a good option for promotion, display, preservation and conservation of the ecclesiastical treasures.

The following figures (fig.5-11) are presenting the results from a selection of Questions from the survey.

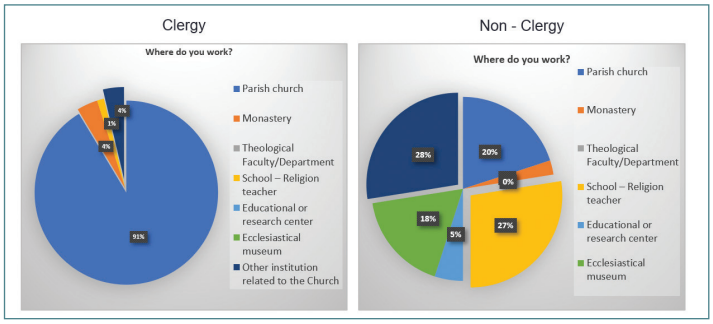

Figure 5 Charts depicting the answers of Clergy and non-Clergy group in the question: Where do you work?

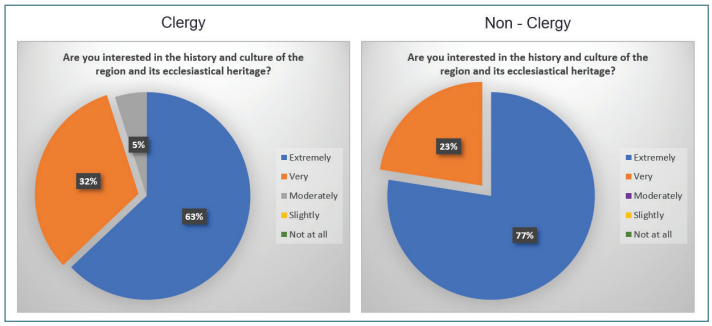

Figure 6 Charts depicting the answers of Clergy and non-Clergy group in the question: Are you interested in the history and culture of the region and its ecclesiastical heritage?

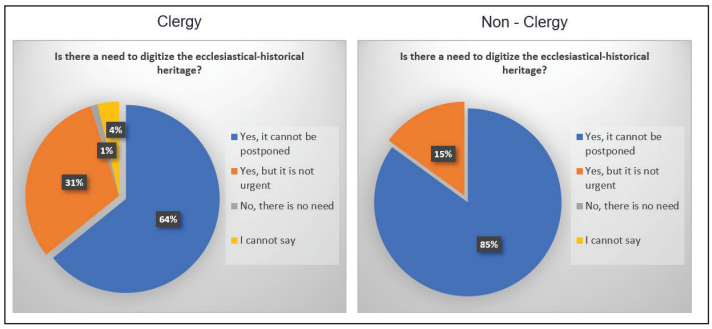

Figure 7 Charts depicting the answers of Clergy and non-Clergy group in the question: Is there a need to digitize the ecclesiastical-historical heritage?

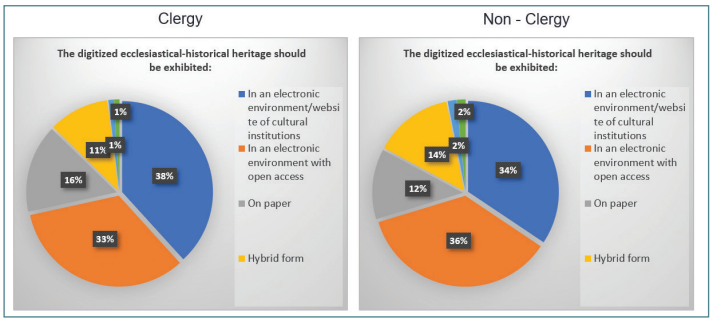

Figure 8 Charts depicting the answers of Clergy and non-Clergy group in the question: In what form should the digitized ecclesiastical-historical heritage be exhibited?

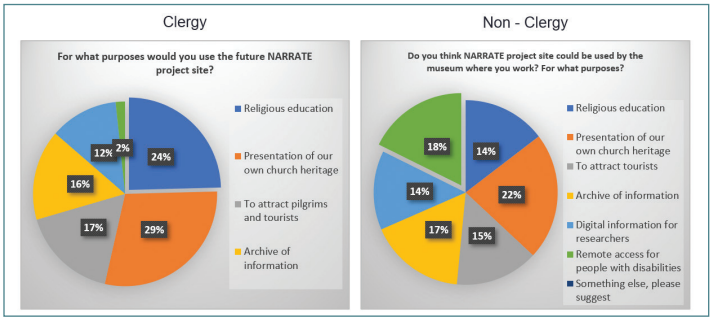

Figure 9 Charts depicting the answers of Clergy and non-Clergy group in the question: For what purposes would you use the future NARRATE project site?

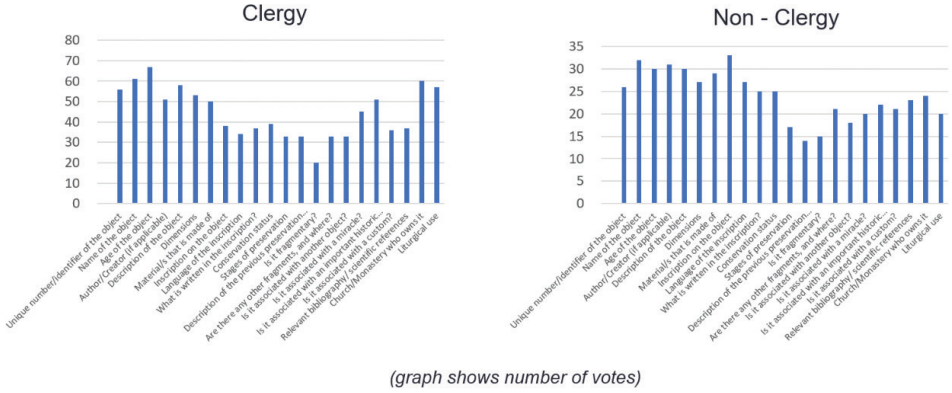

Figure 10 Charts depicting the answers of Clergy and non-Clergy group in the question: what kind of information is needed for a digital description of the church valuables? Please select from the options provided or add other suggestions

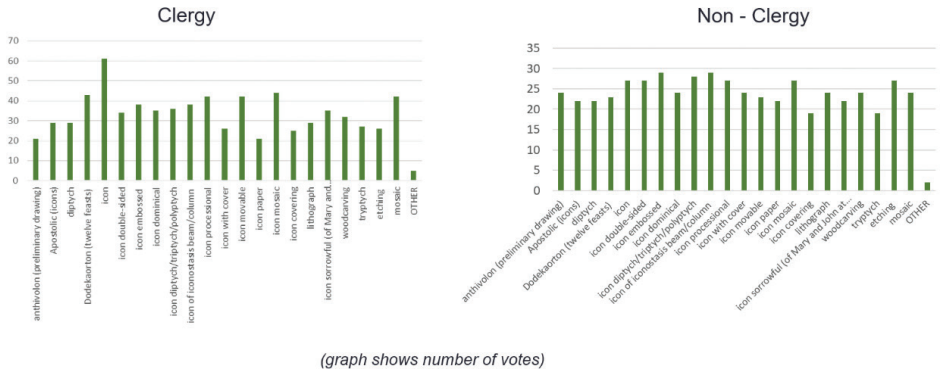

Figure 11 *Charts depicting the answers of Clergy and non-Clergy group in the question: which are the movable church valuables that should be digitized? Category: Holy Icons*

Discussion

The successful completion of the initial phase of the NARRATE project in Greece, which involved collecting 121 survey responses, has demonstrated a strong interest in preserving ecclesiastical heritage among both Clergy and non-Clergy groups. All participants provided valuable insights and showed a high level of cooperation during discussions about religious objects. This suggests that stakeholders are very receptive and collaborative when it comes to preservation and educational initiatives.

Our survey results highlighted the need for digitizing ecclesiastical objects. Creating a digital repository of these treasures will significantly contribute to preserving cultural heritage, promoting research and education, and fostering intercultural appreciation and mutual respect for diverse religious traditions in the country. As NARRATE's next goal is to establish an ecclesiastical-centered data repository and discovery service for targeted stakeholders (both Clergy and non-Clergy), we sense that the feedback in Greece gained through the user-centered Surveys, showed that this initiative will be welcomed by the majority of the keepers of the ecclesiastical treasures. Our objective is to facilitate the cataloguing, discovery and sharing of relevant data sets between different systems and users, and we believe that the NARRATE platform will be an excellent tool for this purpose.

Acknowledgments

This work is part of the NARRATE programme: 'Needs for Digital Recording and Documentation of Ecclesiastical Cultural Treasures in Monasteries and Temples' co-funded by the Erasmus+ programme of the European Union (Contract number: 2022-1-EL01-KA220-HED-000089867). The European Commission's support for the production of this publication does not constitute an endorsement of the contents which reflects the views only of

the authors, and the Commission or the Hellenic National Agency cannot be held responsible for any use which may be made of the information contained therein.

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Icons from the Thracian region in the collection of St. Demetrius Cathedral of Stara Zagora

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Keywords: icons, collection, region of Thrace, Stara Zagora diocese

Abstract

The publication presents the beginning of the exploration of a large collection of icons from the region of Thrace, stored in the temple «St. Demetrius», Stara Zagora, which originate from churches in an emergency condition or with lost information about their origin, found in the Stara Zagora diocese. Until now, this iconic wealth has not been documented and made available for research and exploration. Partial restoration of some of the exhibits has been carried out, but the storage conditions have a destructive effect on their condition. A thorough study of this icons wealth also aims to seek opportunities for better preservation, conservation and partly exhibition of the collection.

Introduction

The oldest church in Stara Zagora, a symbol of the local Revival movement, spirituality and culture bears the name of the Saint Great Martyr Demetrius. It was built between 1859 and 1961 and was used as a school before the Liberation. It also served as a centre of the most important town events from the pre-liberation period. Moreover, the church was situated in the Bulgarian neighborhood and offered refuge to the Deacon of the Bulgarian Liberation, Vassil Levski. It also perpetuated the memory of welcoming of the Russian troops

and the Bulgarian volunteers during the Russian-Turkish War of 1878. A very interesting moment of the history of the artistic decoration of the church was recorded in a preserved stone carving, informing us that in 1912 the artist Apostle Hristov depicted Jesus Christ Pantocrator under the dome. The wholesome artistic adornment of the interior of the church was completed a century after its construction, in 1960, and was accomplished by a team led by the most notable local artists at the time – prof. Nikola Kozhuharov and Dimiter Gyudzhenov (Vasileva, 2006).

In the 1960s, it was decided to set up an icon repository in the building of the church. Back then, the eparchy was led by Clement, the persevering Metropolitan of Stara Zagora, who in 1966 demanded an inquiry on icons excluded from liturgy service in the churches from the Stara Zagora eparchy. In response, the parish priests and the episcopal vicars from the entire eparchy sent detailed information, accompanied by meticulous and minute descriptions of such icons, as well as notes about the missing ones. This activity continued in the subsequent years during the time of the Nicodemus, the Metropolitan of Sliven, who became a vicar of the vacant diocese, as well as afterwards, when it was headed by Pancratius, the Metropolitan of Stara Zagora. The icon depository in the building was formed by a oficial decision in 1972.

At present, the icon repository stores approximately 600 clerical artifacts, most of which are icons. It occupies two rooms in western and northwestern direction, belonging to the second floor of the bell tower of St. Demetrius Cathedral. They are equipped with horizontal grids of L-section iron beams, and the pulling of each row offers easy access to each new icon. In the western room, the grids are situated in a northern and southern direction. The sites designated for icons are significantly fewer than their number, which explains why some of the icons are arranged on a table, and others are situated vertically on the floor, leaning against each other. A total number of 260 icons are stored in the room, including Iconostasis cross – crucifix, ripidia and two carved dragons. In the other, the grids are situated in a southern, western and eastern direction. Similar is the arrangement of a few other icons – again, leaning against each other on the floor. That part of the repository contains a total of 337 icons. [Fig.2,3]

The churches, which donated the icons were over 80, spread over the entire Stara Zagora eparchy, including the vicarages of Kazanlak, Chirpan, Nova Zagora, Svilengrad and Harmanli. The works were accompanied by descriptions with data about the place and church of origin. Many of these villages no longer exist and their churches have been destroyed, which adds an extra value to the information contained in the inquiries. [Fig. 1]

Figure 1 Eparchy of Stara Zagora

The largest number of icons received by documents in the iconodepository are from the temples as follows:

- Stara Zagora Spiritual District:
- Stara Zagora, "St. Nicholas" Church, 21 pcs.
- town of Radnevo, "St. John of Rila" Church, 18 pcs.
- Zmeyovo village, "St. Nicholas" Church, 15 pcs.
- Hrishteni village, "St. George" Church, 14 pcs.
- Zanamenosets village, "St. Demetrius" Church, 10 pcs.
- Chirpan Spiritual District:
- town of Chirpan, "St. Archangels" Church, 14 pcs.
- Cherna gora village, "All Saints" Church, 12 pcs.
- Milevo village, "St. Archangels" Church, 10 pcs.
- Kazanlak Spiritual District:
- town of Kazanlak, "St. John the Baptist" Church, 18 pcs.
- Enina village, "St. George" Church, 14 pcs.
- town of Maglizh, "St. Dimitar" Church, 11 pcs.
- Nova Zagora Spiritual District:
- Gledachevo village, "St. Arch Michael" Church, 14 pcs.
- Konyovo village, "St. Arch. Michael" Church, 13 pcs.
- Svilengrad Spiritual District:

- Malko Gradishte village, "St. Athanasius" Church, 19 pcs.
- Shtit village, "Assumption of the Mother of God" Church, 16 br.
- Studena village, "St. John the Theologian" Church, 13 pcs.
- Dimitrovche village, "St. Athanasius" Church, 10 pcs.
- Harmanli Spiritual District:
- Mednikarovo village, 16 pcs.
- town of Maritza (nowadays Simeonovgrad) "St. Nocholas" Church, 13 pcs.

The repository of St. Demetrius Cathedral has been maintained for many years by the priest Todor Milchev who was responsible for the cult properties of the Stara Zagora Diocese during the time of Bishop Pancratius, and then by the head of the local church - priest Petar Radev. Despite the daily care, the atmospheric conditions in the rooms take their toll on the state of the icons. The temperature there varies with seasons, there is no ventilation system, nor any other to maintain an optimal temperature or humidity level in the building. A few of the artifacts have undergone partial restoration, yet after their return to the repository, they have once again been subjected to decaying processes. As a result of the continuous stay, the wooden bases of a big part of the icons have been gnawed by wood-eating insects, and in certain places wide holes are visible. Because of the horizontal arrangement, the wooden dust from the damages by the insects has covered the underlying icons. Arch deformations are notable, due to the natural drying of the wood, changes in the panel shapes, and presence of vertical clefts. Tiny crevices on the surface of the layered dust, decayed and unstable varnish and paint layers can be observed.

Figure 2

Figure 3

Other than the bell tower, the same rich collection contains icons stored in the art galleries of Kazanlak and Stara Zagora. Forty-four icons from the repository of St Demetrious Cathedral were sent to the Art Gallery of Kazanlak for temporary use. They were received gradually after being conserved and restored by Dimitrios Papadakis (restorer with the Eparchy Art Workshop in the town of Shipka) in 1988, 1990 and 1992. Six other icons from the same archive were given to the Art Gallery of Stara Zagora in 1986 by Pancratius, the Metropolitan of Stara Zagora for an unlimited period of time. They were restored, and two of them joined the permanent exhibition of the gallery. [Fig.4]

Except for the above mentioned works, the greater part of the icons stored in the St. Demetrius Cathedral are in seriously damaged condition, and some in urgent need of restoration [Fig.5,6]. At present, the focus is directed towards the digitalization and publish-

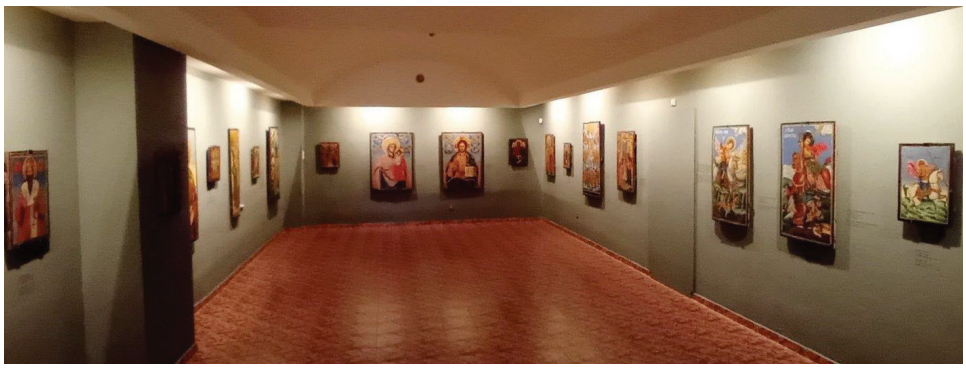

Figure 4

ing of this invaluable treasure composed of religious artifacts, mainly dating to the 19th century, originating from churches in the Thracian region. A thorough study of the entire documentation on the collection and reception of the icons in the repository is foreseen. Furthermore, a search of the restoration passports and notes (if available) and a detailed review and creation of new passports for the greater part of them must be performed. Other than including them in the scientific circulation of the icon repository, better possibilities for the icon storage must be sought, and their conservation and restoration should be gradually resumed. All of the above activities would allow the collection to reach the stage of showcasing a part of the most valuable icons in specially arranged exhibition areas, as well as creating a good museum exposition which would enrich the cultural background of the city and the region. Undoubtedly, the varied and elaborate creative work of 19th century religious artists, who left behind their icons in the Thracian region, deserve investigation and storage by contemporary means and methods of documentation which may enable their reliable research and preservation. The presented collection is an exemplary testament our ancestors have bestowed on us and also a reminder of their efforts to create this artistic heritage. We remain responsible to preserve this invaluable cultural patrimony, to study and leave it to the younger generations in an appropriate condition.

Figure 5

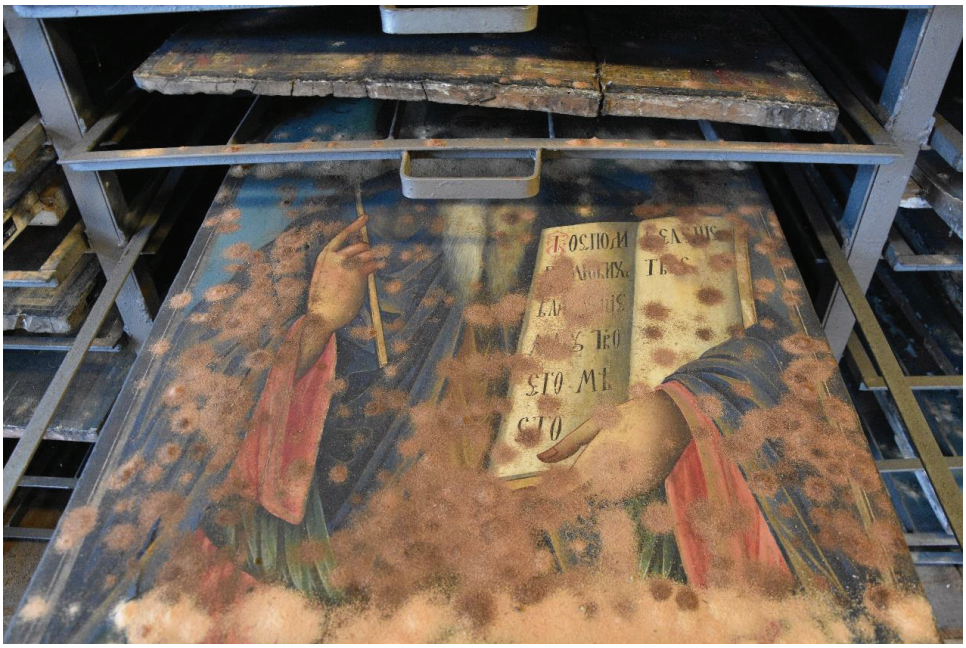

Figure 6

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Documentation of the Mosaic Pavements of the Byzantine Church at Perinthos-Herakleia in Thrace

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Keywords: Cultural Heritage, Perinthos-Herakleia, Byzantine Church, Mosaic Pavement, Documentation

Abstract

The three-aisled church in the ancient city of Perinthos-Herakleia (modern Marmara Ereğlisi, Tekirdağ) represents the early classical basilica design type with a narthex on the west and an apse on the east, and is decorated with mosaic pavements dating from the late 5th - early 6th century AD. The first excavation and conservation works at the church were carried out in 1992-1993. These works were put on hold during the expropriation process of the area for public purposes and reinitiated in 2007. The northern and southern aisles of the basilica as well as the northern wing of the atrium, and narthex are decorated with opus *tessellatum* mosaics; nave and middle part of the atrium are paved with marble slabs. The annex, to the southwest of the basilica which was used as a chapel in later periods is paved with *opus sectile* and marble slabs.

The architectural documentation of the basilica was started in August 2009. The archaeological and architectural remains of the Basilica and the lower city walls to the north of the Basilica were regularly documented every year between 2009 and 2013, and the building survey, restitution proposals and restoration projects were completed in 2014. The survey drawings of the mosaic pavements were carried out in parallel with the conservation works. In the first two years of these studies, the drawings were made with CAD software on photomosaics prepared with digital photographs combined according to the

points taken with the total station theodolite. In the following years, drawings were made with CAD software over the orthophotos of the mosaic pavements. Restitution proposals were prepared for the parts of the mosaics that do not exist today, in the light of the data obtained from the preserved parts. These drawings were brought together with the architectural drawings after their completion. The deterioration of the mosaics, the locations of the samples taken for mortar and *tessera* analyses, and restoration applications are shown on these drawings. This paper aims to present this comprehensive documentation work with reference to the use of evolving documentation techniques and their advantages and disadvantages for the documentation of mosaic pavements.

Introduction

The three-aisled church, which represents the early classical basilica design type in the ancient city of Perinthos-Herakleia, is situated in the Marmara Ereğlisi district of Tekirdağ province. Knowledge about the early periods of the ancient city is quite limited. Although it is accepted in the scientific literature so far that the settlement was founded by colonists from Samos around 600 BC, recent findings of stone tools and pottery from the Bronze Age on the acropolis of the city discovered during the new period excavations that began in 2021 (Koçel-Erdem: 2023; Koçel-Erdem et.al. 2023), indicate that the settlement in the city dates back to the Prehistoric Period. The Prehistoric findings from the recent seasons of the excavations conducted under the direction of Prof. Zeynep KOÇEL- ERDEM of Mimar Sinan Fine Arts University have proved that city was settled much earlier periods than the Colonial Period. It is known that the city experienced its most brilliant times in the Classical period, especially in the late 5th and 4th centuries BC and, the city continued to flourish in the Hellenistic Period. The city came under the rule of the Kingdom of Pergamon in 189 BC and Roman rule in Trace began in 129 BC. In 46 AD, Perinthos was chosen by Emperor Claudius as the administrative centre of the province of Thrace. The city came under the rule of the Kingdom of Pergamon in 189 BC and Roman rule in Thrace began in 129 BC. In 46 AD, Perinthos was chosen by Emperor Claudius as the administrative centre of the province of Thrace. In contrast to the rural character of the Thracian settlements, Perinthos became one of the richest and most splendid cities in the region, adorned with significant monuments under the patronage of the emperors. It also became the base of the navy responsible for the security of the Propontis. During the reign of Emperor Diocletian, the city was renamed Herakleia. During the reigns of the Byzantine Emperors Anastasius (491-518) and Justinian (527-565), the city experienced a new period of construction. Ancient sources indicate that Herakleia became an episcopal centre during this period. The church mentioned in this paper in the context of the documentation work belongs to this period. The first excavations in the church began in 1992-1993 by the Tekirdağ Archaeological Museum under the scientific supervision of Prof. Dr. Nuşin ASGARI (Işın 1994; Işın 1995; Sayar 1998).

Figure 1 *First period of excavations in 1992-1993. Photo: Prof. Dr. N. ASGARİ*

These works were suspended during the expropriation process of the area for public purposes and reinitiated in 2007 by Tekirdağ Archaeological Museum (Öztürk 2009), with the scientific contributions of Prof. Dr. Mustafa Hamdi SAYAR. The coins of Anastasius (491-518) recovered from the mosaic mortar of the north nave indicate that the mosaic decoration was made in the late 5th and early 6th centuries. The destruction of the building by fire can be traced by the fire layer on the mosaic floor, especially in the north nave, and the falling architectural fragments (Westphalen 2012). The ceramic finds recovered from the burials made in the area after the destruction of the building, the coins found on the mosaic floor and the Avar invasion known to have taken place in 591 indicate that the church was destroyed in the 600's (Westphalen 2012). After the destruction of the building, a large part of the basilica area of about 1300 m^2 was used as a cemetery for a wide period of time, and a part in the northwest was used as a chapel.

The three-aisled church in the city of Perinthos-Herakleia represents the early classical basilica design type with a narthex to the west and an apse to the east. The church is decorated with mosaic pavements dating from the late 5th - early 6th century AD. The northern and southern aisles of the basilica as well as the northern wing of the atrium, and the narthex are decorated with opus *tessellatum* mosaics; the nave and central part of the atrium are paved with marble slabs. The annex, to the southwest of the basilica which was used as a chapel in later periods is decorated with *opus sectile* and marble slabs.

The main objectives of the conservation and documentation project, which were initiated in parallel with the excavations, are,

- the documentation of the building and its decorative materials as they have been preserved to our day
- documentation to contribute to archaeological analyses
- carrying out urgent preservation action
- Documenting conservation processes
- And to enable the design of the future protective shelter project

Figure 2 *Byzantine Church at Perinthos-Herakleia. Photo: Prof. Dr. Seçkin TERCAN*

Methodology

The architectural documentation of the basilica was started in August 2009 by M. Çıngı SALMAN of Rekare Architecture, under the scientific supervision of Prof. Dr. Yegân KAHYA-SAYAR of the Restoration Department of Istanbul Technical University. The architectural remains of the Basilica and the city walls to the north of the Basilica were regularly documented each year from 2009 to 2013, and the building survey, restitution proposals and restoration projects were completed in 2014. The architectural documentation project was approved by the Edirne Regional Board for the Protection of Cultural Assets in the same year. The documentation of the pavements, the largest preserved part of the church

decoration, was carried out by the conservation team supervised by the author of this paper (Yeşil-Erdek 2014).

The floor decoration of the church, consisting of opus *tessellatum*, opus sectile and marble slabs, has been documented in three different methods as graphic, written, photographic.

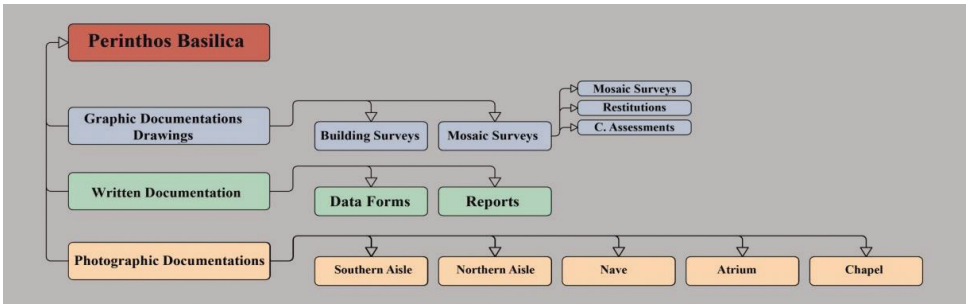

Figure 3 *Documentation scheme of the mosaic pavements in the Church*

The graphic documentation of the floors consists of survey drawings and restitution proposal drawings. In addition, condition assessment sheets and sheets showing the current conservation practices were produced on these surveys. The drawings were made using CAD software on photo-mosaics creating from digital photographs combined according to the points taken with the total station theodolite. In this method, target points were affixed using water-based adhesive to the corners of approximately 2x2 m sections of pavement and photographs were taken as perspectiveless as possible to include these target points. The target points on the mosaic were measured using a total station theodolite and the photographs were rectified using software according to the measured coordinates by total station resulting in a scaled-bird's eye view of the pavements. Drawings were made with AutoCAD software on the photo-mosaic resulting from this process.

Figure 4 *Survey Drawings of the mosaic pavements in the Church*

In the light of the data obtained from the preserved parts, restitution proposals were created for the parts of the mosaics that do not exist today.

Figure 5 *Restitution Proposal Drawings of the mosaic pavements in the Church*

Subsequently, all mosaic survey drawings and restitution proposals were brought together with the architectural survey drawings.

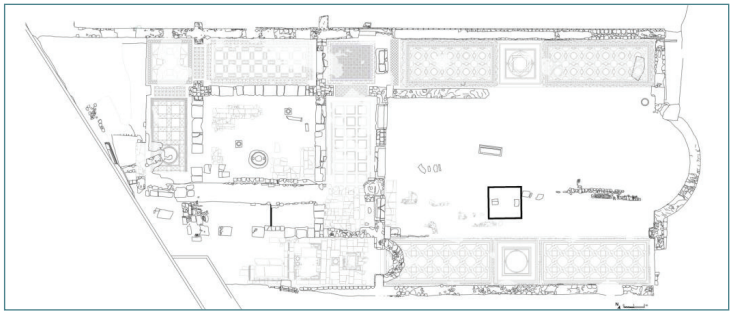

Figure 6 *Survey Plan of the Church*

The deterioration of the mosaics, the locations of the samples taken for mortar and *tessera* analyses, and the restoration applications are shown on these drawings.

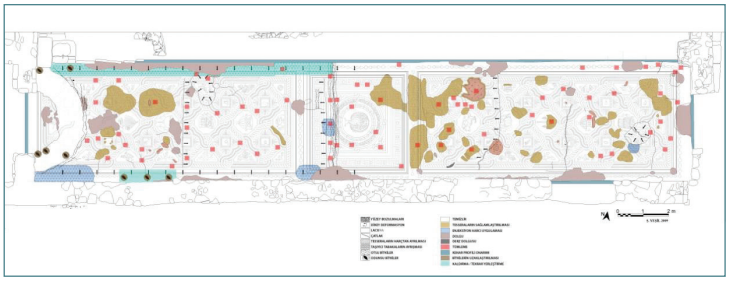

Figure 7 *Condition assessment and restoration interventions of Southern Aisle of the Church*

Written documentation was made through the survey forms used in the field. Each pavement and its individual panels have been described, including their technical and decorative characteristics, their state of preservation, as well as ancient and modern restoration. The use of a common terminology in mosaic documentation is an important issue that has long been emphasized in the field of science. In this context, the pattern definitions of the mosaics were made according to "Le Décor Géométrique de la Mosaïque Romaine", which is generally accepted by the International Association for the Study of Ancient Mosaics (Balmelle et al.1985; Balmelle et.al. 2002), the leading organization in mosaic research and corpus studies. It was also aimed to use a common terminology for the mosaic condition assessment forms. For this reason, the glossary developed by the Getty Conservation Institute and Israel Antiquities Authority (2003) for the "Mosaic in Situ Project" was utilized. The definitions in this dictionary, which is available as open source in English, French and Arabic, have been translated into Turkish and used in our forms. In this context, the technical specifications and the state of preservation of each mosaic floor in the basilica were determined by marking on the "Mosaic Condition Assessment Form".

In the photographic documentation, as in the written documentation, each pavement enclosed by the architecture is named according to its place in the basilica. Each pavement is coded with a number from west to east and a letter from north to south in pieces of approximately 1x1 m. The pavements were photographed and coded before, during and after the restoration according to the aforementioned order. For example, the pavement covering the south aisle is coded as "SA". The first 1x1 m square to the west of the pavement is labelled "A1". Accordingly, the first row is labelled A1, B1, C1 etc. and the following row towards the east is labelled A2, B2, C2 and so on.

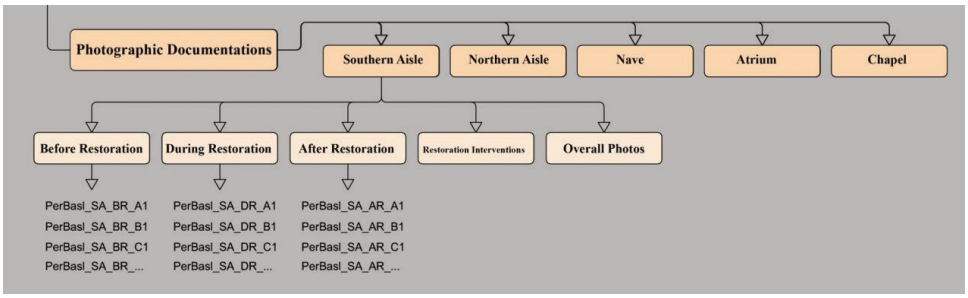

Figure 8 *Photographic Documentation scheme of the mosaic pavements in the Church*

According to this system, the coding is "PerBasl" for the Basilica of Perinthos, "SA" for the Sourthern aisle, "BR" for photographs taken before restoration, and finally the catalogue number of the photograph.

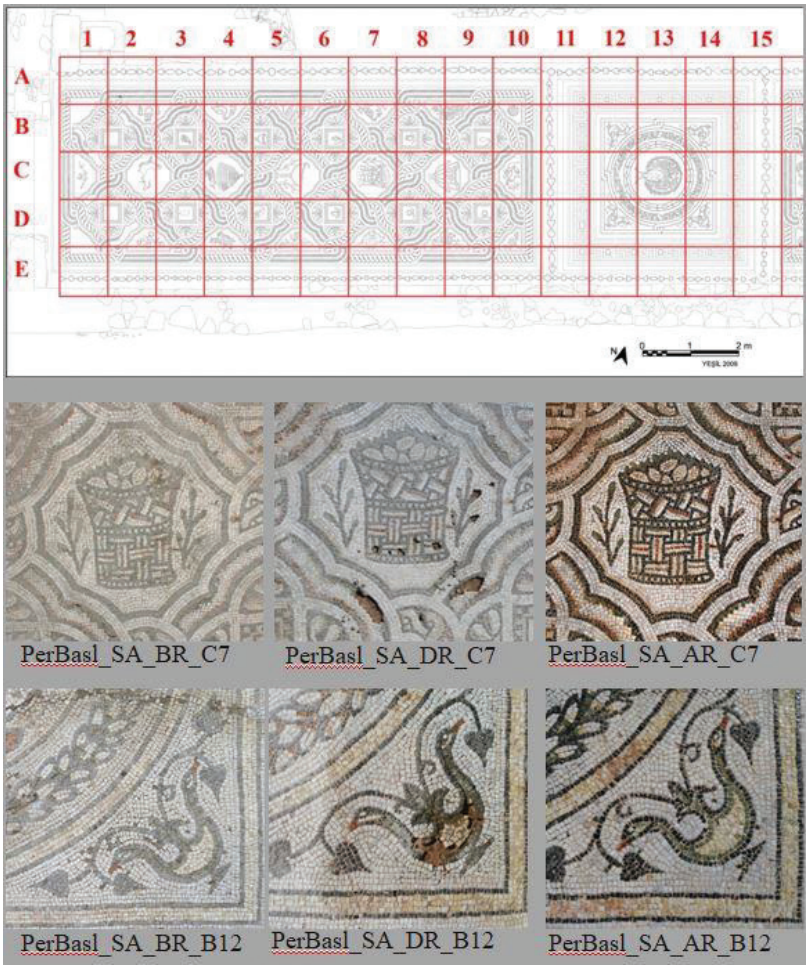

Figure 9 *Photographic Documentation of the mosaic pavements in the Church*

This system was also applied to the other pavements and to the photographs showing the conservation phases and after conservation.

Results

In the light of the experience gained during our work in the Basilica of Perinthos, the following can be concluded. In the years since the documentation of the mosaics of the Basilica of Perinthos, especially the methods of graphic documentation, or in other words surveying, have developed very rapidly. Today, methods such as 3D scanning and LIDAR, which can provide fast and precise documentation, have become much more accessible or affordable. We have started to use these methods frequently in new projects.

Choosing one of these methods is directly related to whether excavations are ongoing or completed at the time of documentation, whether the building is roofed or not, and the financial capabilities of the project. This experience has shown that no matter which method is used, it is important to develop a systematic approach in the first place. In this way, it is possible to avoid interruptions in the project and other problems that may arise. Another important issue is to create a common terminology, especially in documentation studies. In this way, it will be possible to facilitate communication and create a common working ground, which is one of the aims of the Narrate Project.

Acknowledgments

Studies were carried out in the Basilica of Perinthos-Herakleia under the supervision of the Tekirdağ Archeological Museum with the permission of the Ministry of Culture and Tourism, Directorate General for Cultural Heritage and Museums. The author would like to express her gratitude to N. Önder ÖZTÜRK, Director of the Tekirdağ Museum and former head of the excavation; Mehmet Akif IŞIN, former Director of the Tekirdağ Museum and former head of the excavation; and Prof. Dr. Zeynep KOÇEL-ERDEM, current Head of Excavation. The author would also like to thank Prof. Dr. Mustafa Hamdi SAYAR and Prof. Dr. Yegan KAHYA-SAYAR for their valuable scientific contributions.

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Churches and monasteries in the Bulgarian part of the Strandzha mountain – opportunities for digitization

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Keywords: Strandzha mountain, Cultural Heritage, Church, Monasteries, Documentation

Abstract

Today the area of the Strandzha Mountain is one of the least populated and therefore least explored in archaeological terms not only in Bulgaria but also in the Republic of Turkey. At the same time, in the past, it played an extremely important role, both for the capital of the Eastern Roman Empire Constantinople and for Bulgaria. The area hides many unexplored sites of early and medieval Christianity, while those from the late medieval and Ottoman period that have survived to the present day are in dire need of restoration and conservation. The article illustratively examines some of the most significant church sites in the region and the dire need to digitalize their surviving ecclesiastical heritage.

Church sites

Strandzha mountain is one of the most enigmatic places in Bulgaria. The mountain in the past was border area between Bulgaria and Eastern Roman empire, today is border region between Bulgaria and Turkey.[1] Despite the fact that this is the least archaeologically re-

1 Marinow, K. At the gates of the empire: Organization of the Byzantine borderland in the context of early medieval Bulgaria. In: *Continuation or Change? Borders and Frontiers in Late Antiquity and Medieval Europe: Landscape of Power Network, Military Organisation, and Commerce* (ed. G. Leighton, L. Różycki and P.Pranke). London and New York: Routledge, 2022, 143 – 165.

searched region of Bulgaria and discoveries related to early Christianity are rather random and sporadic, we can certainly say that in the period of the Sardician (311) and Milan edicts (313) we already have large Christian communities here. This is evidenced by the famous early Christian episcopal centers in the Black Sea Strandzha such as Midia, Viza, Agatopol, Urdoviza, Sozopol, Chrysosotira, Poros, Deultum, etc.[2] In most of them, numerous Christian temples and monasteries from the period 4-6 centuries have been discovered, which gives us reason to believe that an intensive mission was carried out by them in their adjacent areas, faithful to Christ's words: « Go, and make disciples of all nations, baptizing them in the name of the Father and of the Son and of the Holy Spirit,» (Matthew 28:19). The Church was carrying out a tremendous activity that would transform the ancient world. In this respect, the Strandzha region, part of Eastern Thrace, is not only not an exception, but is among those in which a dense network of temples and monasteries was created, some of which are extremely important and interesting for the overall history of the Church. I will mention only the monastery of St. Nicholas near Midia, today on the territory of the Republic of Turkey, the ancient Salmides, founded by immigrants from Sozopol.[3] The monastery of St. Nicholas was built in the 5th-6th century and is one of the best-preserved early monasteries not only in the Strandzha mountain region, but also in Europe in general. In Sozopol and the nearby surroundings, several early Christian temples (4th-6th centuries) have been discovered to this day, and large monasteries arose around four of them - the Imperial and Patriarchal Monastery «St. John the Forerunner», the monastery «St. Kirik and Yulita», the monastery «St. Nicholas the Wonderworker» and the monastery «St. Apostles».[4]

The situation is similar in the other mentioned and relatively well-studied urban centers from an archaeological point of view. The sporadic discoveries of early Christian temples in the nearby interior of the mountain, near the village of Ravna Gora, near the village of Bulgari, the village of Brodilovo, the village of Mladezhko, etc. also show that a systematic study will enjoy rich fruits.[5] In the Strandzha region, the transition from paganism to Christianity can be very well traced, as in quite many temples the altar tables were taken from ancient pagan temples. In other churches materials from destroyed pagan sanctuar-

2 Kaçar T. Early Christianity in the Black Sea: An Examination of the Literary Evidence. – *Colloquium Anatolicum*, 7, 2008, 197 – 216. Странджа – древност и съвремие. София: Международна асоциация Древна балканска зема, 1990, 32 – 37 [Strandzha - Antiquity and Modernity }.

3 Иванов С. В поисках Константинополя. Путеводитель по византийскому Стамбулу и окрестностям. Москва, 2011, 608 – 611 [In Search of Constantinople. A guide to Byzantine Istanbul and its surroundings].

4 Каравълчев, В. Островният манастир „Св. Йоан Предтеча" – една непрочетена страница от църковната ни история. – *Християнство и култура*, 90, 2014, 93 – 104 [The island monastery "St. John the Forerunner" - an unread page from our church history].

5 Димитров, Б. Странджа през средновековието (IV–XV век). В: *Културно историческо наследство на Странджа–Сакар* (ред. В. Фол). София, 1987, 23 – 40. [Strandja in the Middle Ages (IV-XV centuries)]. Аянов, Г. Странджа : Етнографски, географски и исторически проучвания. София, 1938 [Strandja : Ethnographic, geographical and historical studies].

ies were used in their construction. As an example, I will point to the church «St. Dimitar» in the village of Brashlyan, built in the 17th century, on the site where there was a Thracian sanctuary in ancient times. The church bears the marks of pre-revival local cult-sacred architecture, having been dug into the ground to comply with the requirements of the then Ottoman authorities for Christian buildings. The altar table of the temple is a reused pagan altar with the inscription: «This altar I erected to the god Zeus - Dionysus, (I) Lycomedes, son of Chrestus, priest of the great Bacchaeion, for my children, and for the honor I received by lot, for my Misty. Protect them, blessed Dionysus! « In the vestibule of the church «St. The Virgin» in Malko Tarnovo has an altar with the inscription /Straton/. In the same temple was found an ancient marble slab with a Greek inscription.

In the vestibule of the church «St. Virgin Marry» in Malko Tarnovo has an altar with the inscription /Straton/. In the same temple was found an ancient marble slab with a Greek inscription.

In the altar of the church in the village of Zvezdets, a column was found in the altar of the church with the following inscription found «...at my own expense, with the altar I raised.»[6]

In the 5th, beginning of 6th century, the process of Christianization in the mountains was already fully completed, the pagan temples ceased to function, and the fact that the Thracian and Bulgarian population under the Vitalianus with weapons defended not only the political injustice but also Orthodoxy, from which Emperor Anastasius retreated.[7] This also unequivocally speaks in support of this complete Christianization. Today, from this early flowering of Christianity, only ruins remain in the mountain, but on the other hand, there is no settlement in which a temple with the relevant utensils and icons from the Ottoman period has not been preserved.[8]

In the village of Zabernovo exist a church «St. ap. Luke». This is the oldest church preserved in the Bulgarian part of Strandzha. It is assumed that it was originally built during the 17th century.[9] It has one nave, one apse, with a porch and is half buried in the ground. The walls are built of stone, and the apse was added in a later period (1830). Five niches are built into the altar part, with a round window in the middle. On the west and south side of the church there is an open vestibule-nartex. In the southern part of the vestibule, in the

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6 Енциклопедичен справочник Малко Търново. Странджа (ред. С. Райчевски). Малко Търново, 2009, 12 – 20 [Encyclopaedic guide Malko Tarnovo. Strandja].

7 Runciman, S. A History of the First Bulgarian Empire. Columbia, 2018, 3 – 4.

8 Миланова, А. Църковната архитектура и каменна пластика в Странджа (По следите на странджанската научна експедиция 1955 г.). – ГСУ Център за Славяно-византийски проучвания „Иван Дуйчев". 99 (18), 2017, 583 – 606. [Church Architecture and Stone Sculpture in Strandja (In the Footsteps of the Strandja Scientific Expedition 1955)].

9 Тулешков Н. Култовата архитектура на Странджа от епохата на османското владичество. – В: Странджанско-Сакарски сборник. Т. II. Кн. 1. Малко Търново, 1984, 257 – 258. [The cult architecture of Strandja from the Ottoman era].

19th century, a room was added, which housed the cell school. In the immediate vicinity is the «Saint Petka» chapel, also called the Zabernov monastery. The feast of the chapel is celebrated on the first Friday after Easter. Then, according to the Bulgarian tradition, it is «Summer Saint Petka». At that time, the inhabitants of the villages of Kalovo and Zabernovo come here to celebrate the holiday. This church, as well as many others in the region dedicated to St Petka, clearly indicate where the relics of Reverend Petka Tarnovska passed by during their transportation from Epivat to Veliko Tarnovo during the reign of Tsar Ivan Asen II. In its present form, the temple was built in 1869, but in the immediate vicinity you can still see the traces of a much older monastery, agiasma and the fundaments of a tower. The monastery is located 5 km northwest of the village of Zabernovo and almost the same distance southeast of the village of Kalovo.

According to Goro Gorov (one of the great explorers of the Strandzha region), the Paroria monastery complex of St, Gregory of Sinai was located in the vicinity of Zabernovo until the 14th century. In the monastery, under the leadership of St Gregory, such great names as St. Theodosius of Turnovo, St. Romil of Bdin, St. Roman, David Dissipatos, etc. ventured. In 1925, V. Kiselkov convincingly proved that under the name Paroria should be understood Strandzha mountain, where there are abundant traces of intense cult life, and during the Middle Ages it was mainly concentrated in two large conglomerates, one of which is located between the villages of Kalovo, Gramatikovo and Zabernovo, with more than 20 chapels preserved to this day and localized ruins of three large monasteries.[10] One of them is Zabernovo monastery. The «Saint Petka» chapel was built on one of the alleged sites of the monastery. Just a few meters from the chapel, the foundations of an old temple, perhaps the catholicon of the monastery, can still be seen. About 100 m to the west are the ruins of numerous buildings, probably the remains of the monastery's residential buildings. Not far from the chapel «St. Petka» are the remains of another chapel «St. Marina». It is located on a steep and difficult-to-access terrain, which is believed to have served as a place of exile and penance for the monks of the Paroria Monastery. Among the local names of the surroundings near the chapel, there are names that show that there was a monastery here. These are «Kalugerska Polyana - meadow», «Manastiret» and «Manastirski Nivi - fields». These toponyms are not found on the old maps of the area and were probably known only to the inhabitants of Zabernovo and Kalovo.[11] The nature around the monastery is remarkable and unique, surrounded by intact forests, with centuries-old oak trees. In this area is also the thickest and probably the oldest tree in Strandzha - a 1000-year-old oak tree in the town of Tumbata. Here we should note that Strandzha was once covered with extremely dense and impassable forests, but massive logging has affected its present

10 Киселков.В. Средновековна Парория и Синаитовият манастир. – В: Сборник в чест на В. Златарски. София, 1925 104 – 118 [Medieval Paroria and the Monastery of st. Gregory of Sinai].

11 Стамов, Ж. Село Калово. История, бит, култура, етнография, родословия, фолклор. Бургас, 2007,45 – 50 [Kalovo Village. History, life, culture, ethnography, genealogies, folklore].

appearance, albeit to a lesser extent. I will just note that after the defeat at Leranto, a large part of the Ottoman fleet was rebuilt with wood from the mountain.[12]

Bulgari village - apart from the ruins of the early Christian church near the village, today the church «St. Constantine and Elena». It is located in the center of the village.[13] It was built of hewn stones in the second half of the 19th century. In 1903, during the Ilinden-Preobrazhensky Uprising, it was burned down along with the entire village. It was restored in 1910, today it is a cultural monument. The private ethnographic collection is remarkable both for the village of Bulgari and for the Strandzhan region. It is located in an old house in Strandzha, owned by Mara Shonkova. Get acquainted with the housing arrangement of the late 19th and early 20th century, with the life of large rural families, traditional clothing, authentic hand-made fabrics and many of the primitive knives that were used back then.

Vizica - In the church «St. Trinity» is kept an icon of St. Archangel Michael, which is the work of a painter from Trvavna, who painted in 1754 in other villages of Strandja, we have icons of the same painter in the village of Brodilovo.[14]

Kalovo - The church «St. George» in the village, which was recently restored, is also one of the oldest churches in Strandja, dating from the 18th century.[15]

Indje Voivoda – The temple of «Saint Prophet Elijah» is located in the almost deserted village of Indje Voivoda. The church has over 130 years of history. It was built on the site of an old church and to this day continues to preserve the traditions and faith of the few remaining residents - mostly elderly people. Two unique icons are kept in the temple. One is in the world Anna, about whom the locals say that when you put your hand on her, you feel warmth. The other is of Saint Christopher. She is one of the rare icons in Bulgaria. Along with the two unique icons, the church keeps nearly 200 more icons from different periods. Some of them are donations made by local people and guests of the village. The village celebrates the feast of St. Elijah. It is also one of the three villages in Strandzha, keeping the little-known custom of Cherkuvane, which takes place every first Monday of October.

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12 Граматиков, Г. Добив и търговия с дърва, дървен строителен материал и дървени въглища в българските земи през XV-XIX век. – *Исторически преглед*, 5-6, 2008, 52 – 87 [Harvesting and trade in wood, timber and charcoal in the Bulgarian lands in the 15th-19th centuries].

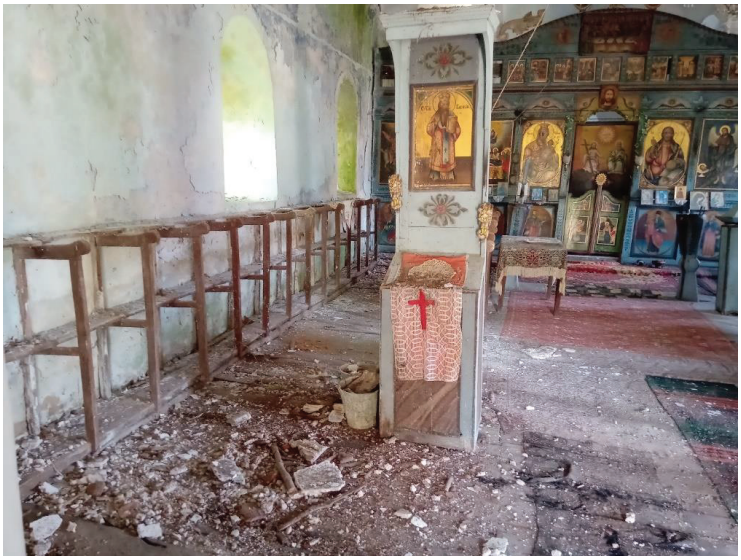
13 Село Българи – крепост Ургури. https://www.bulgariancastles.com/s-balgari-krepost-urguri/ Достъп 20.02.2024 [Bulgari village - Urguri fortress].

14 Дечева, Р. Проблеми на опазването на материалното културно- историческо наследство в Централна и Източна Странджа. В: „Културното наследство на Странджа – богатство, рискове, предизвикателства (ред. А. Николов). София: УИ „Св. Климент Охридски", 2019, с. 318 [Problems of the preservation of the material cultural and historical heritage in Central and Eastern Strandzha].

15 Николов, А. Нови сведения за иконните и ръкописно-документалните богатства на Странджа по материали от четири теренни проучвания. В: „Културното наследство на Странджа – богатство, рискове, предизвикателства (ред. А. Николов). София: УИ „Св. Климент Охридски", 2019, 173 – 174 [New Information on the Iconic and Manuscript-Documentary Treasures of Strandzha from Four Field Studies].

Brashlyan – The church of «St. Dimitar». The gates of the temple are from the 18th century - Trvavna masters - the royal doors in the church «St. Dimitar» 15 in the village of Brashlyan, which can tentatively be attributed to the late 18th - early 19th centuries based on their exceptional similarity with the royal doors of the church «St. St. Constantine and Elena» in the village of Dolno Lukovo, commune. Ivaylovgrad, painted approx. 1806.[16]

Brodilovo - The Church of Saint Panteleimon is a large and dignified church. Built in 1911, it was declared a cultural monument. It is located in the north-eastern part of the village of Brodilovo. It houses one of the last carved iconostases in Strandzha, a masterpiece of the local carver - the teacher Janis. Due to the poor state of the church, it was not operational for 25 years. For a long time, the icons from the iconostasis and the old icon collection were stored in the hall and storage room of the local community center. They were handed over with inventories from mayor to mayor when the local government changed. Some of the icons were restored years ago, but due to the inappropriate storage conditions, a new restoration was necessary. In 2011, with funds from the state, the municipality and a little help from the church board, a major repair was carried out in the temple, conservation and restoration of the iconostasis and 40 more icons, including all the icons of the royal order. There should also be an old icon of St. George here - 1754 of the royal order, as well as from the same time of St. Arch. Michael.[17]



16 Николов, А. Нови сведения за иконните… с. 174, бел. 15

17 Гергова, И. Тревненски майстори по Южното Черноморие и Странджа през XVIII век. В: „Културното наследство на Странджа – богатство, рискове, предизвикателства (ред. А. Николов). София: УИ „Св. Климент Охридски“, 2019, 208 – 210 [Trevna Zograph- masters on the Southern Black Sea Coast and Strandzha in the XVIII century].

Figure 1 *The temple in the village of Golyamo Bukovo*

Golyamo Bukovo - Based on documentary materials from the State Archives - Gabrovo, it was established that a large part of the icons in the church of the village of Golyamo Bukovo (1884) were the work of the Trvavna painter Todor Genkov (1854–1922).[18] The royal icons of Christ and the Mother of God in the church of «St. Bogoroditsa» in the

18 Николов, А. Нови сведения за иконните… с. 176.

village of Yasna Polyana. In the illustrations I show, you can see the condition of the temple 6 years ago, as I found it during one of my tours of the area. Praise God, measures were taken, the icons were put away, and today the church has already been repaired. Above the village is the only monastery operating today in Strandzha, « The Life-giving Spring». There is evidence that the monastery existed in the 12th century, and not far from it, according to local people, there are remains of an early Christian temple. Here, too, there is a hypothesis that it may have been some of the hermitages to the great Parorian monastery of St. Gregory of Sinai. In the church of the monastery, icons are kept mainly from the 19th and early 20th centuries.[19]

Yasna Polyana – Here worked famous Tryavna painter Todor Genkov (1854–1922). The royal icons of Christ and the Mother of God in the church of «St. Bogoroditsa» were painted by him.[20]

Sredets - The «All Saints» Church was built in 1858, with a Sultan's decree, on the site of an old church.[21] St. Sophronius of Vratca served here for some time.

Malko Tarnovo - the five royal icons painted in 1832 from the original iconostasis of the church «St. Uspenie Bogorodichno» in Malko Tarnovo, which are associated with the work of Ivan Zahariev - the third son of Zahari Stari - Tryavna family. We should note that the church built in 1830 is on the site of an older church dating from 1754. The Historical Museum of the city keeps many valuable icons from the 17-18-19 and the beginning of the 20th century, church utensils and parts of altar partitions - iconostasis of temples from Strandzha.[22]

Village of Novo Panicharevo - The Church «Holy Trinity» in the village was built in 1881and possess extremely valuable and rare icons.[23]

Conclusions

In my report I have briefly touched upon just a few of the most interesting and remarkable temples which have survived and are still functional to this day. We must note that there is almost no settlement in the Strandzha region without a church or even more preserved to this day, as well as the presence of several chapels in the vicinity of each settlement.

Most of the temples are from the period of the 18th – 19th and beginning of the 20th century, and a large part were built or restored at the end of the existence of the Ottoman

19 Горов, Г. Къде е било местонахождението на Синаитовия манастир в Средновековната Парория. – Духовна култура 9 – 10, 1972, 51 – 68.

20 Василиев, А. Български възрожденски майстори живописци, резбари, строители. София, 1965, 79–80.

21 Миланова, А. Църковната архитектура…, с. 611.

22 Николов, А. Нови сведения за иконните… с. 172.

23 Дечева, Р. Проблеми на опазването…, с. 313.

Empire. They keep many extremely valuable icons, many of which are dated tens, even hundreds of years before the construction of the temple in which they are located. In addition to icons, a number of them contain valuable utensils and liturgical books, which, despite the fact that they are not particularly old, contain valuable attributions. A large part of the heritage of the Parish Holy Monasteries no longer exists today, but there is an assumption that several medieval collections in the libraries of various countries came from there. Unfortunately, much of this extraordinary ecclesiastical wealth is still not properly inventoried; it is scattered and stored in a number of state institutions - town halls, local ethnographic collections, private individuals responsible for the opening and closing of temples, etc. The need to digitise and properly catalogue these valuables is immense and cannot be delayed. Many of the priceless relics need urgent conservation and restoration. It is regrettable to note that there are many artefacts that we can consider irretrievably lost to a large part of society, they are in the possession of private collectors or have fallen victim to our insufficient attitude towards their preservation and conservation.

Below I attach some photographs of the state of the temple in the village of Golyamo Bukovo during our visit there in 2016. Praise God, measures were then taken and the temple was repaired. Unfortunately, it is not the only one in such a state.

Conservation methodology of polychrome wooden altarpiece in Yeniköy Panagia Orthodox Church in Istanbul

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Keywords: Conservation, Orthodox Church, Restoration

Abstract

Yeniköy Panagia Church is constructed in 1837 and was first decorated during that period. Templon wall, despot throne, one wooden altarpiece and one marble altar are among the first decorative-liturgical elements inside the church. In 1880's two more wooden altars were added to the inner decoration. The wooden altarpieces of Panagia Church have many layers of over-paint and over-gilding that changed drastically the symbolic polychromy of their authentic architectural surfaces. The authentic colors and paint layers were partially preserved under several layers of paint, pastes, candle soot or dirt. Removing of recent inappropriate over-paint layers revealed the original polychromy of the architectural surfaces. However, preserving the authentic surfaces without reconstructing them is a huge challenge and conservator has to convince the community that aged decorative surface is actually aesthetic and has its own value. This paper aims to discuss the conservation methodology of polychrome wooden altarpieces, with a special emphasis on minimum intervention and authenticity concept.

Introduction

Panagia Church in Yeniköy was built in 1837 with the edict given by the Ottoman Sultan Mahmud II upon the request of Stefanos Karateodori, Mahmud the Second's personal doctor. [1] The church was planned as a three-nave building with rubble stone masonry walls. (Fig. 1) The middle nave, which is wider than the side naves, is covered with a timber-structured *bağdadi* vault. (Fig. 2 and 3) The side naves are covered with flat wooden beamed ceilings. The building underwent repairs in the second half of the 19th century and the first half of the 20th century. During these repairs, the interior decoration and interior colors of the building were changed and adapted to the fashion of the period. (Fig. 4 and 5) The yellow flowers on the earlier light blue background on the apsis wall were replaced by the stars drawn on a dark blue background at the end of the 19th century. (Fig. 5) The 20th century paint layer on this authentic decoration was removed during the repairs done in the previous years. A yellow-brown marble imitation paint layer, which can be dated to the first half of the 20th century, was painted over the 19th century light blue and blue-green paint layers. (Fig. 4)

The space in front of the apse on the East side of the church is separated from the main space of the church by the Templon wall. (Fig. 2) The Templon wall is a timber construction and is the carrier of many wooden icons decorated with wooden moldings, pilasters, profiles, column capitals, and floral motifs in Baroque and Neo-Classical style. Apart from the Templon wall, there are four altars standing against the outer walls in the Southern and Western naves of the church, three of which are wooden and one is a marble altar. This paper focuses on the conservation methodology of three wooden altarpieces, including research on the authentic decorative techniques of the altars, and development of the conservation concept.

Figure 1 The Western (entrance) facade of Panagia Church (http://www.bkmim.com/proje-detay.asp?proje=panayiarum)

Figure 2 The Northern-Southern cross-section of Panagia Church looking towards the Templon wall (http://www.bkmim.com/proje-detay.asp?proje=panayiarum)

Figure 3 Inner space of Panagia Church (Photo: Koruma Akademisi)

Figure 4 Three decoration layers seen on the South wall of the Church

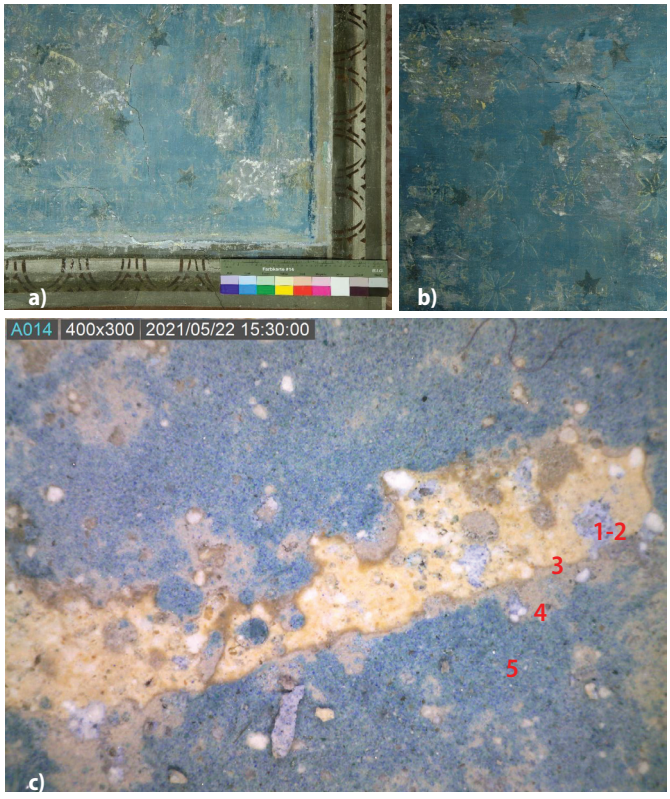


Figure 5 a) and b) The paint layers on the absis wall that indicate two different decoration periods and c) the paint layers viewed with Dinolite digital microscope (1. and 2. layer white primer and light blue background, 3. layer yellow flower leaf, 4. layer grey primer, 5. layer dark blue background)

Wooden Altars in the Southern and Northern Naves

There are two wooden altars standing against the outer wall in the Southern nave of the Panagia Church. One of these altars is positioned closer to the Templon wall and was manufactured to fit perfectly on the wall between the two windows. This 1st wooden altar is decorated with wooden panels, Baroque style columns and moldings, with painted and gilded surfaces. Besides Baroque style carvings this alter has some Empire style decorations, like torches and vases on the pedestal cassettes, ribbons on the columns or vases on the crown that were very popular during the first half of the 19th century. 1st Altar carries two icons, a big and a small one. (Fig. 6)

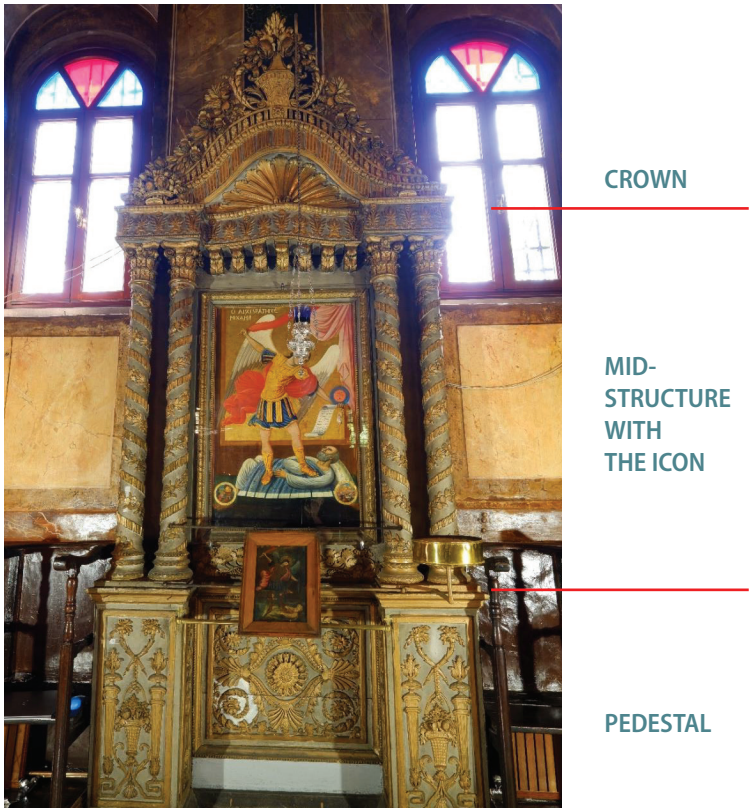


Figure 6 *1st Wooden altar standing against the Southern wall (Photo: Koruma Akademisi)*

The second wooden altar (2nd Altar), which stands against the same (Southern) wall and is closer to the church entrance, is decorated with Baroque and Eclectic style carved wooden columns, and with plant and animal moldings, with painted and gilded surfaces. 2nd Altar is larger than the first altar, exceeding the wall space between the windows and was produced with a style prevailing in the second half of the 19th century. The fact that it was not

designed architecturally in accordance with the wall spaces also suggests that this altar is a later addition to the Church of Panagia. This altar carries one big icon. (Fig. 7a)

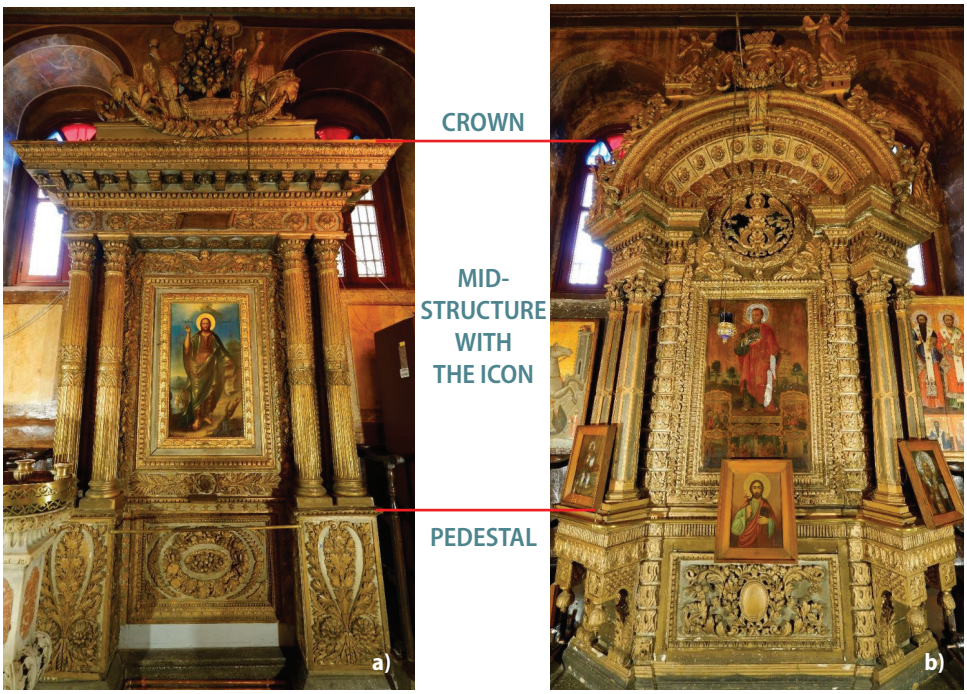


Figure 7 *a) 2nd Altar standing against the Southern wall and b) 3rd altar standing against the Northern wall (Photo: Koruma Akademisi)*

There are two altars standing against the outer wall in the Northern nave. The one closer to the Templon wall (3rd Altar) is an Eclectic style wooden altar with carved columns, moldings, painted and gilded surfaces. Similar to the 2nd altar, this altar does not fit into the wall space between the windows and partially covers the windows. This altar carries one big and three small icons. (Fig. 7b)

All three altars consist of three parts: the pedestal, the middle structure with the icon demarcated by the columns, and the crown. (Fig. 6 and 7)

Decoration Techniques and Preservation State of Painted and Gilded Surfaces of Wooden Altars

Research Methodology

Detailed documentation was made with 3D Laser Scanner (Faro) to document the current state of preservation of the altars. The three-dimensional measurements were supported

by professional photography in order to produce orthophoto images of the altars. Thus, the determination of the preservation condition helped to shape the conservation approach and will be an important document for future conservations as well.

In order to understand the decoration techniques used on the altar surfaces, paint stratigraphy research was made on different elements of each altar (column, pedestal, profile, frame, floral moldings, flat wooden surfaces). The decoration techniques, which emerged as a result of the paint stratigraphy research, were documented with photographs and a Dinolite digital microscope with (x200) times image magnification. Although similarities were noticed in the decoration techniques of the altars during this documentation, it was determined that each altar has its own decoration technique.

Decoration Techniques and Preservation State of Painted and Gilded Surfaces of the 1st Altar

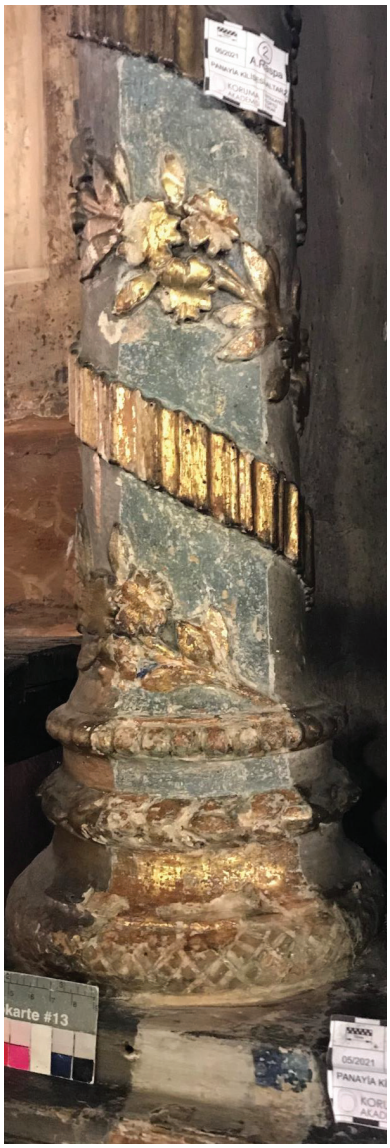
Two paint and gilding layers stratigraphy research lines were chosen for investigation of decoration techniques. One of those is 10 cm wide, and the other is 5 cm wide. First investigation line is passing through the columns and the pedestal of the altar. (Fig. 8) The stratigraphy research showed that a gesso (thin gypsum plaster with rabbit skin glue binder) layer was applied on all wooden surfaces of the column (flat and carved), and a thin layer of red bole (red clay with rabbit skin glue binder) was applied on top of it. After this wooden moldings and carved surfaces (like ribbon and flower carvings) were covered with golden leaf. (Fig. 9) On the flat surfaces of the column, a thin layer of light blue paint was applied over the red bole to form a background. Red bole layer was seen through the thin blue layer causing the marble effect on the surface. This decoration technique was frequently applied in the 19th century to imitate marble surfaces. The blue paint has a soot layer above due to the candles burnt for years in front of the altar. (Fig. 9) Thick oil putty layer has recently been applied on the original decoration layers. The carved elements covered with oil putty were then painted with copper gilding while the flat surfaces of the column were painted with a gray oil paint.

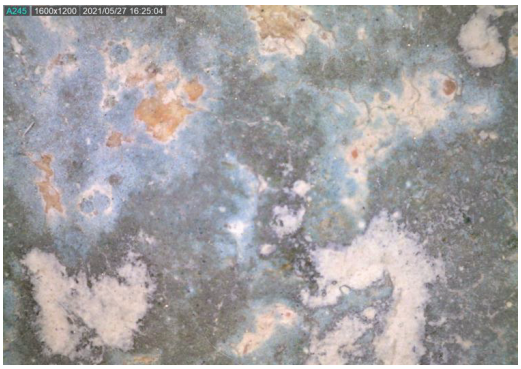
In addition to the 10 cm wide stratigraphy research line on the pedestal of the altar under the columns, a 5 cm wide research line was opened on the pedestal under the icon. (Fig. 10 and 11) It is seen that the flat surfaces are painted in a way to create a marble-like texture like the texture on the columns, and the molded and carved surfaces are covered with red bole and golden leaf. However, unlike the columns, the pedestal's authentic light blue paint layer was overpainted with dark blue paint at the end of the 19th or beginning of the 20th century. It is possible that this decoration period coincided with the period when the apsis wall was painted dark blue. The dark blue paint layer on this altar is very thin and got stuck to the recent oily putty layer above it. For this reason, it was not possible to remove the oil putty layer without damaging the dark blue paint layer on this altar. In the middle part of the pedestal under the icon, the dark blue paint has almost completely

disappeared under the oil putty layer. (Fig. 11) Thus, three decoration periods are encountered on the surface of the 1st altar, similar to the decoration layers on the interior wall of the church; These can be summarized as the light blue decoration period, the dark blue decoration period and the most current gray-beige period. Although all of these three periods are found on the base of the altar, it is seen that the columns were never painted in dark blue.

The stratigraphy research showed that the gilded surfaces of the 1st altar pedestal were covered with brown or white oily putty and sometimes painted with yellow paint. This putty has damaged the original gilded layers a lot, especially the original gilded layer on the moldings in the upper parts of the pedestal has almost completely disappeared. (Fig. 10) Recently applied copper gilding was applied on this oil putty layer. The putty and authentic gilding layers turned green due to the oxidization of copper.

Figure 8 *Paint stratigraphy research line and authentic decoration layers found under the most current oil putty, paint and copper gilding layers (Photo: Koruma Akademisi)*





Decoration layers of columns' painted surfaces
(1st layer) gesso / Bole (red) /
Light blue paint / Soot

Oil putty / Grey paint (the most current layers)

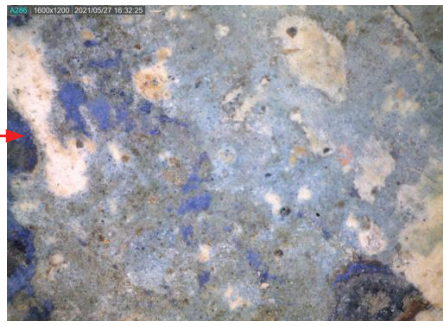
Decoration layers of columns' gilded surfaces
(1st layer) gesso / Bole (red) Golden leaf

Oil putty Copper gilding - imitation
(the most current layers)

Figure 9 *The painted and gilded decoration layers of the 1st altar's columns and their images under (x200) magnification (Dinolite digital microscope)*

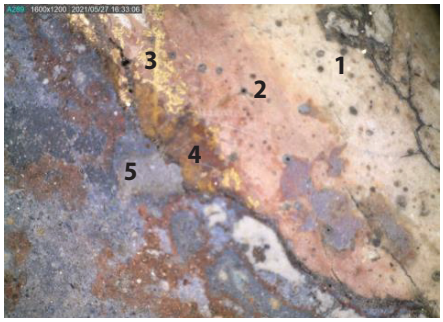
Decoration stratigraphy research could not be carried out on the altar's crown surfaces, but it is expected that the surfaces and decoration layers in the upper parts will be in a better condition. Both gildings and paint layers deteriorate faster in areas open to human contact.

There are flight holes on the entire surface of the altar, and dust spills are occasionally encountered from these flight holes. Therefore, it should be taken into consideration that wood borers may be still active.



Decoration layers of pedestal's painted surfaces
(1st layer) gesso / Bole (red) / Light blue paint
Green paint / Dark blue paint

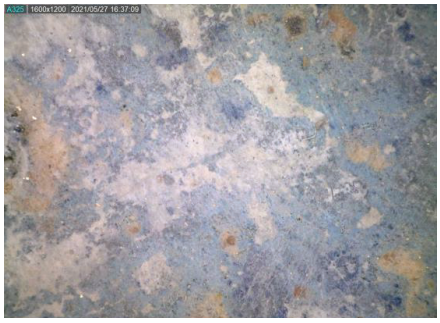
Oil putty Grey paint
(the most current paint layers)



Decoration layers of pedestal's moldings
(1st layer) gesso / Bole (red) / Gilding
Brown oil putty / Dark blue paint

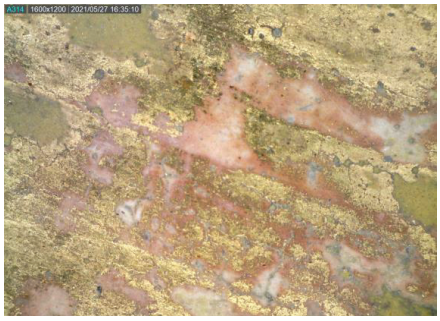
Oil putty Copper gilding
(the most current decoration layers)

Figure 10 The paint and gilding layers detected on the pedestal of the 1st altar and their images under (x200) magnification (Dinolite digital microscope).



Decoration layers of pedestal's painted surfaces
(1st layer) gesso / Bole (red) / Light blue paint
Green paint (very thin layer) / Dark blue paint

Oil putty / Grey paint (most recent layers)



Decoration layers of pedestal's frame surfaces
(1st layer) gesso / Bole (red) / Golden leaf
Yellow paint

Oil putty Copper gilding (most recent layers)

Decoration layers of pedestal's carved timber surfaces
(1st layer) gesso / Bole (red) / Golden leaf

Oil putty

Figure 11 The paint and gilding layers detected on the mid-pedestal surface of the 1st altar and their image under (x200) magnification (Dinolite digital microscope)

Conservation Concept and Conservation Methodology of Wooden Altars

1. *Conservation Concept*

The main objective of the conservation was to keep intervention to a minimum, yet restore the physical integrity of the altarpiece. This was achieved through bringing the aesthetics of the aged authentic surfaces back, without re-constructing them to their state when they were first painted or gilded in the mid-19th century. Natural ageing is a testimony to the trace of the time and should be respected. Moreover, aged authentic surfaces have their own aesthetics which one expects to experience in a historic environment of Panagia Church.

2. *Conservation Methodology to Restore the Polychromy*

Restore the authentic three-dimensional polychromy of the altarpiece's surface

The over-paint and copper gilding applied over the mid-19th century original decorative layer was removed using different solvents, tested prior to application. The authentic water gilding and paint layers were present under the over paint with all their integrity. (Fig. 12) Only the wood carvings on the pedestal part of altarpiece have lost partially the original gilded layer.

Figure 12 a) Removal of overpaint and b) over painted column and column after removal of over paint and over gilding (Photos: Koruma Akademisi)

Pedestal cassettes lost almost half of the original 19th century water-based gilding. Re-gilding the worn-out areas would favor the newly gilded surfaces over the original

ones, bringing them to the front. Thus, instead of re-gilding, retouching with watercolors was applied. In that way the original gilded areas are distinguished when one looks closely, because they have a stronger shining surface. (Fig. 13)

Figure 13 *The cassette on the pedestal part of the altar a) before and b) after retouching*

Chromatic reintegration was carried out with the application of watercolor paint on surfaces where paint layer was missing and white gesso priming was affecting the perception of the authentic surfaces. This retouching aimed only to neutralize the effect of the white stains. Newly applied paint is lighter in color than the original one and was never applied on the original painted or gilded surfaces. (Fig. 14)

Figure 14 *The wooden altarpiece a) before and b) after the conservation*

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Challenges of Documentation and Preservation of Ecclesiastical Artifacts

Damage Assessment for Conserving Architectural Heritage at Risk

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Keywords: Damage Assessment, Risk, Heritage, Earthquake, Architectural Conservation

Abstract

The historical environment, cultural assets, and especially historic buildings are vulnerable to disasters. They require a comprehensive interdisciplinary conservation plan to mitigate potential risks. Earthquakes are significant disasters that lead to severe loss of life and extensive damage to the built environment. Therefore, damage assessments of historic buildings are crucial for making post-disaster decisions and implementing remedial measures. Such assessments are essential for collecting data on-site and determining the necessity of emergency actions. Following the February earthquakes occurred in Turkey, damage assessments of historical religious monuments were conducted under various initiatives and projects. According to the personal experience gained in the field, these assessments are vital not only for planning remedial measures and conservation actions but also for enhancing the social resilience of the community. This paper explains the general framework of the damage assessment form and elucidates the post-disaster conditions of Adıyaman and Surrounding Provinces Ancient Syriac Metropolitanate (St. Peter and St. Paul Church), Antakya Greek Orthodox Church, Antakya Synagogue, and Antakya Grand Mosque (Ulu Cami). It highlights the importance of their values and their role in fostering the community's social resilience. Historical surroundings and cultural heritage carry both historical values and social values that contribute to a resilient environment. Thus, damage assessment activities are crucial for revealing conditions and determining whether cultural heritage assets are at risk. To achieve these goals, participative conservation actions and risk man-

agement plans are necessary, engaging communities in the ongoing effort to protect and revive cultural assets.

Introduction

United Nation Office for Disaster Risk Reduction (UNDRR) defines disaster as a serious disruption of the functions in the community causing widespread human, material, economic or environmental losses exceeding the ability of the affected society to cope using its own resources (UNDRR, n.d.). Disasters are sometimes considered external shocks; however, exposure, vulnerability and hazard play interwoven role on the impact. Disaster risk is therefore considered with the numbers of people and assets exposed to the hazard, and their vulnerability to damage (UNDRR, 2015). The historical environment, cultural assets and especially historic buildings are vulnerable to the disaster, and they need comprehensive interdisciplinary conservation plan against the possible risks.

Disaster risk management involves three stages which are before, during and after disasters. After the disaster, the damage assessment activities play an important role for the aftershock management. All the policies need to be set after the risk are decided by the disaster and its effect. They are defined by The International Council for Science (ICSU) and listed in the following. There are seven titles for disaster types.

- **meteorological:** hurricanes, tornadoes, heatwaves, lightning, fire;
- **hydrological:** floods, flash-floods, tsunamis;
- **geological:** volcanoes, earthquakes, mass movement (falls, slides, slumps);
- **astrophysical:** meteorites;
- **biological:** epidemics, pests;
- **human-induced:** armed conflict, fire, pollution, infrastructure failure or collapse, civil unrest and terrorism;
- **climate change:** increased storm frequency and severity, glacial lake outburst floods (UNESCO World Heritage Center, 2010)

Since 2000, there are major disasters hit the historical tissue and therefore the conservation plan need to cover risk preparedness and management. In 2003, the earthquake hit Bam, Iran, with the official death toll exceeded 26,000 and 75,000 left homeless (Manafpour, 2008). Moreover, a total of 13 buildings were destroyed in the huge Cowgate fire which occurred on December 7, 2002. On the other hand, due to the attack in Afghanistan the Buddhas of Bamiyan were destroyed and lost completely in March 2001. Another disaster happened In Bangladesh where super cyclone Sidr ravaged the entire south and southwestern coast with peaking winds over 220 km an hour on November 15, 2007. According to the report the death toll is significantly less (approximately 3,406) however the damage

on the agricultural areas and infrastructure is severe (GoB, 2008) In addition to aforesaid event, In November 2019, 80 per cent of Venice was flooded. The height of water reached 1.87 metres which is the highest level since 1966. The result could be summarised that more than 50 churches flooded (Mann, 2021).

Earthquakes are significant disasters that lead to severe loss of life and extensive damage to the built environment. Research is being conducted in the fields of architecture and engineering after the severe ones occurred in Europe, Asia, America and North Africa. There were damages and loss of lives in the seismic prone zone of Italy. An earthquake occurred in Abruzzo on 6 April 2009. It was rated 6.3 on the moment magnitude scale. According to the research, about 100,000 buildings were damaged and 67,000 people were left homeless (Alexandre and Magni 2013). Earthquakes have also caused severe damages in Haiti, Chile, Peru, Syria, Nepal, Morrocco and Japan. It can be illustrated by the 15 August 2007 Pisco earthquake. Historic monuments were damaged after the devastating earthquake. Also, on 30 July 2021, there was another earthquake hit the settlements close to the border of Peru and Ecuador.

The religious historic buildings are important for sustaining the intangible heritage. It can be illustrated by the Church of Santiago Apóstol in Kuñotambo and the project objectives. The seismic events heavily damaged the church's roof, walls, and foundation, causing the cease of function. The Getty Conservation Institute has focused on this problem through its Seismic Retrofitting Project. The goal is to adapt high-tech retrofitting techniques to improve the ability of earthen structures against seismic activity. It is a promising project to conserve the local and authentic material through the technological tools. Susan Macdonald, head of field projects at the Conservation Institute states that "*It also demonstrates how conservation professionals can work effectively with a local community to protect a treasured part of their cultural heritage from a long-term threat*." It shows the importance of sustaining local materials and construction techniques (Torrealva and Cancino, 2015; Sivak, 2019).

After the disasters, the damage assessment for the historic buildings is essential for the post decisions, governing the risk and remedial measures for the structures. Therefore, damage assessment forms become essential to collect all the data on site rapidly. The Italian approach could be a good example for the developing peculiar forms in different regions. In Italy, earthquake damage assessment is structured into several distinct levels, each escalating in detail and complexity to effectively address both immediate needs and long-term recovery strategies. Level 0 involves rapid post-earthquake inspections, immediate civil protection operations, and macroeconomic evaluations of the earthquake's effects, serving as a preliminary response to ensure public safety and evaluate overall impact. Level 1 expands this with a complete post-earthquake inspection, macro seismic intensity assessments, and detailed evaluations of damage and usability of structures. Level 2 focuses on a more analytical approach, including territorial vulnerability analysis, definition of vulnerability indices, and predictions that help forecast potential

future impacts. The most comprehensive, Level 3, involves an in-depth vulnerability analysis, surveys of the wall system to identify specific failure mechanisms both in-plane and out-of-plane, and concludes with strategizing interventions to mitigate risk and enhance structural resilience. Each level builds upon the previous, providing a thorough framework that guides emergency management through systematic assessment and informed decision-making (Veneto Region, n.d.).

The Aedes card used starting from the 1997 Umbria-Marche earthquake and the successive seismic events. The form is for the rapid detection of damage, the recommendation of remedial measures and the evaluation of the post-seismic usability of buildings (masonry, reinforced concrete or steel framed or partitioned) of buildings for houses and/or services. This card cannot be applied to industrial, monumental buildings (churches, for which another type of card exists), or other artefacts (such as, for example, tanks), and other infrastructure works (Civil Protection Department, n.d.).

On the other hand, GLABEC is the acronym for Working Group for the prevention of cultural heritage from natural risks. It is an inter-ministerial body, in which representatives of the Department of Civil Protection (2 representatives), the Ministry for Cultural Heritage and Activities (2 representatives) and the Ministry of the Interior (1 representative) participate. Established by interministerial decree in 1999, it deals with the protection of cultural heritage in risk areas. Its main tasks also include the definition of the forms for the survey of damage to assets of historical/artistic interest. Three models have currently been prepared and published in the official gazette of the Italian Republic: A-DC for the survey of damage to churches (of historical/artistic interest); B-DP for the survey of damage to palaces historic buildings; C-BM for the survey of damage to movable property (Modena et. al, 2010).

Moreover, in southeast Turkey on February 6, 2023, two significant earthquakes with magnitudes of 7.7 and 7.6 struck the Pazarcık and Elbistan districts of Kahramanmaraş, Turkey, causing substantial loss of life and damage (Kandilli Observatory and Earthquake Research Institute, 2023). On February 20, 2023, another earthquake with a magnitude of Mw: 6.4 occurred in Yayladağı (Hatay). The earthquakes caused severe loss of life and heavy damage in 11 provinces. Kahramanmaraş, Hatay, Adıyaman, Gaziantep, Malatya, Kilis, Diyarbakır, Adana, Osmaniye, Şanlıurfa and Elazığ. There are approximately 8,500 historical pieces in the earthquake-affected region, as detailed in the table below. As of 25.02.2023, 2,863 structures out of 8,444 historical pieces were inspected; 169 were destroyed, 535 were severely damaged, 390 were moderately damaged, 721 were lightly damaged, and 1,048 were non-damaged (Presidency of Strategy and Budget, 2023).

The damage assessment for became an issue after the shock. The damage assessment form was designed based on AEDES card. During the field survey of Damage Assessment project funded by HERITΛGE and Aliph Foundation, the form has been used for various cases and it evolved. Due the experience gained during the assessment; the form became more enriched including the peculiar to the traditional construction techniques and unpredictable conditions. In this paper, the importance of damage assessment is discussed

based on the experience of ICOMOS Turkey and Directorate General of Foundation collaboration (15 – 18 February,2023); World Monument Fund and the Association for the Conservation of Cultural Heritage field survey for Antakya in June 2023, and Damage Assessment project supported by HERITAGE, ALIPH Foundaton and Association for the Conservation of Cultural Heritage (KMKD) (Almaç and Parlak, 2024; Kishali and Parlak 2024 and Almaç and Parlak 2024b).

Damage Assessment after the 6th of February Earthquakes in Turkey

Directorate General of Foundations (DGF) called ICOMOS Turkey to ask volunteer for participating damage assessment of historical buildings belong to DGF in the field. Seven experts (Esra Ekşi Balcı, Ahmet Türer, Nisa Semiz, Süheyla Koç, Erkan Kambek, Umut Almaç, Emre Kishalı) replied positively to take part of the call. Total 182 Cultural Properties of the DGF were assessed between 15 – 18 February. The European Macroseismic Scale 1998 (EMS-98) was used to determine damage levels in masonry structures. According to the scale, level 1 indicates no damage, level 2 light damage, level 3 moderate damage, level 4 severe damage, and level 5 indicates collapse (Copernicus Emergency Management Service, 2023). This study combined levels 4 and 5, and the assessments were considered together. Six cultural assets were inaccessible (Antakya), with 55 undamaged, 31 lightly damaged, 25 moderately damaged, and 64 heavily damaged or collapsed. Additionally, experts from the Ministry of Culture and Tourism inspected listed historical buildings. At the same time, the Middle East Technical University's Center for Research and Application of Historical Environment Values (TAÇDAM) conducted fieldwork in the historical center

of Antakya, publishing a report containing observations, assessments, and recommendations for public access. Istanbul Technical University, Yıldız Technical University, Istanbul University Faculty of Architecture, and the World Monuments Fund and KMKD conducted separate damage assessments in the historical urban fabric of Antakya.

In terms of cultural heritage preservation, the Heritage Management Organization (HERITAGE) and the Association for the Conservation of Cultural Heritage (KMKD) have started initiatives in Adana, Adıyaman, and Kahramanmaraş. During site of Damage Assessment, the aforesaid form has been evolved and became more peculiar to the traditional construction techniques. In the form there are 8 parts which can be listed in the following.

1. General information about the structure
2. A. Function and intensity of use
   - B. Relationship with neighbouring building
   - C. Land
   - D. Geometric Information
3. Information on vertical load-bearing elements (Wall and feet)
   - Information about the roof-covering system
   - Stairs
   - Irregular buildings in terms of load-bearing system
4. Damage levels
5. Damage types
6. Preliminary intervention recommendations (Can be made until final restoration applications)
7. Sensitivity of assessment
8. Other findings and sketches regarding the structure

Social Resilience with Damaged Buildings

Cultural heritage, historical environment and cultural properties are the essential elements for social resilience and the community. Religious structures play a vital role in post-earthquake areas for a multitude of reasons. Historical mosques (slightly or no damaged ones) are the places used as temporary shelters for the people. Firstly, they hold significant conservation values, often being key cultural and historical sites. In the aftermath of a disaster, these structures frequently serve as temporary shelters, providing a house for those displaced. Additionally, they can become pivotal sources for sanitary works, offering essential services crucial in crisis situations. Beyond their physical utility, religious structures offer immense psychological comfort to affected communities, aiding in emotional recovery

and acting as a cornerstone for social resilience. However, the damage sustained during earthquakes can lead to a loss of authenticity and values, posing significant challenges for heritage conservation. Furthermore, these structures often serve as open laboratories for assessing cultural heritage, allowing experts to gather real-world data on damage and recovery processes, which is essential for future preservation efforts. In this paper, Adıyaman and Surrounding Provinces Ancient Syriac Metropolitanate (St. Peter and St. Paul Church), Antakya Greek Orthodox Church, Antakya Synagogue and Antakya Grand Mosque (Ulu Cami) are selected as case studies to show the importance of damage assessment.

The Adıyaman Ancient Syriac Metropolitanate building, located in Adıyaman, completed in 1883. Over the years, it has undergone several restorations, notably in 1905, 1953, and 2001, to preserve its structural integrity and historical value (Adıyaman Metropolitanate, n.d.). Due to the last earthquakes, the building has faced significant challenges, including the partial collapse of the east wall. This collapse has resulted in stones falling onto the wooden altar, causing damage (Figure 1). Additionally, in the arched wall of the last congregation section, issues such as vertical separation, shear cracks, and falling stones have been observed at the southwest and southeast corners. To enhance safety and stability, the columns inside the structure have been connected to the walls with tension bars, which helps prevent potential collapse of the interior space (Figure 2).

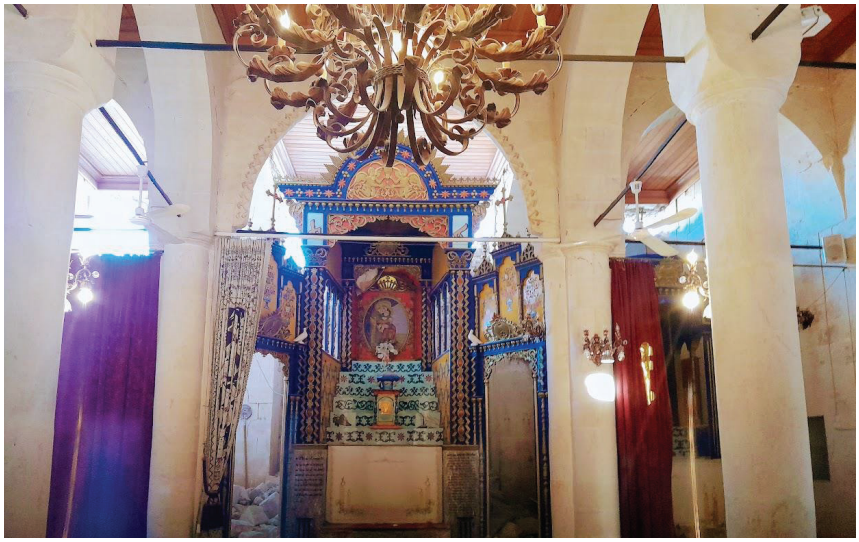

Figure 1 *Adıyaman Ancient Syriac Metropolitanate damaged wooden altar (Personal archive, February 2023)*

Greek Orthodox Church structure, a timber church originally stood at the location but was destroyed during the 1872 Amik earthquake. In its place, the current structure was built towards the end of the 19th century, employing a masonry technique with stone

walls featuring ashlar on both faces and a core of rubble stone and mortar. The church has been severely damaged due to the earthquakes (Figure 3). The covering of the structure has been lost. The upper parts of the walls are missing; they have wide cracks, and discontinuities. The stones are scattered, and iron clamps could be observed. The tie rods were seen in the rubble were broken (WMF, 2023).

Figure 2 Adıyaman Ancient Syriac Metropolitanate after remedial measures. Interior of church (Personal archive, September 2023)

Figure 3 Antakya Greek Orthodox Church after the February Earthquake (Personal archive, June 2023)

There were some important movable cultural heritage assets, depicting scenes like the ascension of the Virgin Mary, the entrance to Jerusalem, the baptism of Jesus, and the Pantocrator—a depiction of Jesus. Along with these, lamps, other liturgical materials, and numerous religious books, including manuscript Bibles, were recovered. These items are currently being cleaned and documented in a temporary excavation house warehouse and will eventually be returned to the relevant parties through the Hatay Archaeology Museum. On the first anniversary of the earthquake, the Christian community gathered at the church to pray and commemorate the 63 lives lost. 2023 Easter was marked more as a commemorative occasion than a celebration, reflecting the mood following the disaster. Some artifacts remain buried under the rubble for a long time (Independent Türkçe, 2024).

Antakya Synagogue is located on Kurtuluş Cadde, between a group of buildings known to have been constructed during the French period. The synagogue, damaged by the last earthquake was built of cut stone. The exact construction date of the synagogue is unknown. However, the inscription on the entrance of the study hall states, "This house was built in the year 5650 (1890) in memory of the late Yitshak Swid" (WMF, 2023). The damages observed in the structure are both in-plane and out-of-plane mechanisms. the opening of bed-head joints and the formation of vertical and diagonal cracks. The damage is also observed in the connection of the timber roof and southern masonry walls (Figure 4). The west façade of the main hall has partially collapsed. The structural elements did not provide adequate resistance against out-of-plane forces, leading to the occurrence of out-of-plane mechanisms (WMF, 2023).

Figure 4 *Antakya Synagogue damaged load bearing walls (Personal archive, June 2023)*

Antakya Grand Mosque, which is known to have been built in the 7th century, is surrounded by madrasah rooms. The fountain in the courtyard is a 19th century work. The minaret, narthex and northern wall of the mosque were destroyed completely after the

earthquake (Figure 5). It was restored after 1872 earthquake. Originally Memluks buildings during Ottoman Era intervened several times. The damaged artefacts, architectural features, graveyards stones were under the rubble, and they were collected and stored immediately (Figure 6) (Temiz, 2019).

Field studies have demonstrated the therapeutic aspect of the historical environment for those who have experienced and survived earthquakes. Despite significant destruction, economic and social vitality has been observed in the centers of historical environments, particularly in areas containing foundation works. The interest of survivors in the city's religious structures, which hold high cultural significance, their inspections of these buildings, and their inquiries about the condition of these structures underscore the critical role architectural heritage plays in psychological healing. Historically significant mosques if not severely damaged, have served as shelters for families whose homes were destroyed, offering a temporary refuge for these families and a place to store their belongings, highlighting the varied implications of decisions made in damage assessments (Figure 7). The presence of facilities like ablution areas and toilets in these historic places of worship has facilitated access to water for earthquake victims, significantly impacting the public. Additionally, heating systems in these buildings have provided protection from external conditions. Considering incidents like theft, the security of historic mosques has led to their use as temporary shelters. Therefore, the careful consideration of the usability level of historic religious buildings or baths post-earthquake is crucial, necessitating a balance between conservation, intervention, and use shaped by seismic events. The preservation of movable cultural assets should also be considered in emergency planning, ensuring they are not overlooked.

Figure 5 Antakya Grand Mosque (Personal archive, June 2023)

Figure 6 Antakya Grand Mosque. The rescue of artefacts and graveyard stones (Personal archive, June 2023)

Figure 7 Birecik Sancak Mosque after the earthquake (Personal archive, February 2023)

Conclusions

In conclusion, cultural heritage (CH) embodies universal values that require a diligent conservation plan. The damage mechanisms affecting these historical buildings include multifaceted factors such as abandonment, material degradation, and inappropriate workmanship. To effectively safeguard our heritage, a comprehensive understanding of CH is essential, encompassing its history, movable and immovable cultural assets, structural materials, architectural features, ground conditions, and construction techniques. Moreover, preserving both the tangible and intangible cultural properties for disaster management is crucial. This involves maintaining the connection between tangible features and intangible heritage and actively working towards the preservation and recovery of heritage values. Historical surroundings and cultural heritage not only carry historical and aged values but also bolster social values that create a resilient environment. Therefore, damage assessment activities are important to reveal conditions and determine whether cultural heritage assets are at risk. To achieve these goals, participative conservation actions and risk management plans are necessary, engaging communities in the ongoing effort to protect and revive cultural assets.

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Athos' Endangered Archives: The Preservation of Simonopetra's Ottoman Collection through Digitisation and Cataloguing

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Keywords: Simonopetra Monastery, Ottoman archive, preservation, digitisation, cataloguing

Abstract

This study investigates methods and processes for the digitisation and cataloguing through the case study of a 16th-century document of the endangered Ottoman archival collection of the mid-13th century monastery of Simonopetra which is situated on the Athonite peninsula, designated a World Heritage Site by UNESCO since 1988.

Introduction

This study examines the Ottoman archival collection of the mid-13th century monastery of Simonopetra which is situated on the Athonite peninsula which UNESCO designated a World Heritage Site since 1988 (ICOMOS, 1987) due to it representing a place of outstanding historic, cultural, artistic, and natural value (Papadopoulos, 1991). Simonopetra Monastery's Ottoman archive comprises approximately 680 documents of varying types, dimensions, and states of preservation which date from the mid-16th to the early 20th centuries. A first systematic digitisation of the Ottoman archive was undertaken by Prof. Vasillis Dimitriadis in collaboration with the University of Crete in the 1990s. In 2023, the

entire archive was re-digitised using high resolution equipment and methods to achieve clear standards. Despite the digitisation which has increased accessibility, very few of the Ottoman archival documents have been the subject of scholarly publications (Dimitriadis, 1991; Kotzageorgis & Simonopetritis, 2017; Simonopetritis, 2014; Simonopetritis, 2022).

The objectives of this article are twofold. Firstly, to document the potential of cataloguing and digitisation methodology for the accessing and preservation of an archival collection which can be classified as endangered. Secondly, to assess whether these methodologies and processes can be improved based on the discussion of a case study in the form of one 16th century document from the Monastery's Ottoman archival collection. These objectives are also a core component of the **SI.M.ON.A**: **SI**monopetra **M**onastery **O**tto-ma**N A**rchive project which aims to publish a complete catalogue with transliterations, translations, and annotations of the full Ottoman archive in addition to holding exhibitions, lectures, and publications which is to be undertaken in various phases over four years (2023-2027).

Methodology of Digitisation

Digitisation projects in archives and libraries often follow imaging standards which include characteristics such as reproduction scale accuracy, colour accuracy, etc. These are now well defined thanks to initiatives such as FADGI[1], Metamorfoze,[2] and ISO/TC42/JGW26.[3] They introduce robust methods for analysing imaging systems quality in a cultural heritage photographic environment. For many projects, the defined threshold of fit for purpose digital facsimile would be of the highest importance so all these standards allow for a certain degree of tolerance to make sure the standards are also achievable; whereas others would define what is fit for purpose. Decisions may be made to choose an approach based on specific factors such as the type of material. The above-mentioned standards help with that. In the current technological environment, many photographic cameras can be calibrated to produce images fitting the essential criteria. Thanks to democratisation of technology and development of photographic processes, during the past two decades, the access to high resolution imaging has improved and so has the ease of creating digital archives.[4] As far as the quality of content creation is concerned, photographers' skills, knowledge, and understanding of the imaging standards are of primary importance.

When digitising special collections, simple photographs of text might create satisfactory reproductions for reading purposes. However, whenever more complicated materi-

1 https://www.digitizationguidelines.gov/still-image/
2 https://www.metamorfoze.nl/english/digitization
3 www.imaging.org/IST/IST/Standards/Materials.aspx
4 specialcollections-blog.lib.cam.ac.uk/?p=25222

al is digitised or the research questions might exceed the best digitisation practice, additional visual data can be generated using advanced photography techniques focusing on features and materiality of the cultural heritage object (Pawlikowski, 2023). Publication of text resources raises the series of consecutive research questions concerning materiality, many of which can also be answered with photographic techniques but of a different nature. Many are also easily accessible to skilled photographers with minimal investment in specialist equipment. As Melissa Terras has emphasised, "[s]ince the 1970s, GLAM have been undertaking digitization, using the affordances of digital networked infrastructure to improve the management of, increase engagement with, and provide access to heritage collections." (Terras, 2022).

The main difficulty when digitising special collections is the physical state of the material. As a case in point is a court document (*ḥüccet*) issued by the Islamic judge of Sidrekabsı dating from *evā'il-i cemezi'l-evvel* 998 / 8-17 March 1590 (figure 1) (SMOA, no. 70). The document is an original and is written in *ta'līk* script on paper measuring 38.8 x 21.7 cm. It is in a poor state of preservation with tears at the edges of the six creases where the document was folded, with missing upper and lower sections, and with extensive stains and water damage. The document was pasted onto paper which is green in colour with an avian and floral motif in gold, the edges of which shows signs of wear and tear. It can be postulated that the document's poor state of preservation can be attributed to its use as a legal document to prove Simonopetra Monastery's property rights. It is also the main factor for scoping the project requirements because the handling of fragile items is the most time-consuming part of it.

Oversized material could be photographed and stitched to create full size derivatives without compromising the full-scale resolution of the camera. Multiple photographs should be taken and digitally stitched together to create one high resolution facsimile. That would help significantly with analysing the design patterns and motifs in greater detail.

The surface of the backing shows the signs of some past treatments, which significantly changed its original condition. This resulted in visible tears, discoloration, and rubbing of the material. Perhaps it would be possible to uncover more information using photographic processes called luminosity masking where a dynamic range of tonalities can be separated to extremes and show the features of the object that are otherwise invisible (Benson, 2019). The method, often used in landscape and night photography, can reveal the most surprising effects when employed to investigate cultural heritage objects.

Results

The significance of the analysed document pertains to both the physical features as well as the contents. As concerns the former, the type of paper onto which the document has been pasted, its colour, and motifs can help to determine its dating, provenance, and thereby the

monastic contacts and Athonite trade networks.[5] Regarding the latter, significant prosopographical data can be obtained from the three seals stamped below the three ratifications as well as from the main body of the document. The seals contain the full name of the Ottoman official which the formulaic written ratifications often omit.

To examine the surface texture of the paper or textile, the cultural heritage photographer easily uses the methods of photometric stereoscopy, or its relative method called Reflectance Transformation Imaging (RTI). These are techniques which take advantage of different views of an object with the camera affixed into one position while consecutive photographs are taken using raking light at different angles. Once images are rendered as a map of normals, different angles of reflected light represent the degree of texture contrast. Then they might also be combined into an interactive digital object which allows researchers to alter the light angle manually in search of the object's features. Those digital objects will give a visual representation which could allow further accurate analysis such as thread count or density plotting.

Following the accurate digitisation, the cataloguing of the document with full transliteration and translation reveals firstly that it is one of the few from the 16th century in which women are mentioned. Secondly, it reveals the Muslim and Christian actors, the names of Simonopetritis monks, the nature of the transaction, and details of the immovable properties which are the subject of the transaction. In summary, two Muslim sisters, Fahri and 'Ayni, conducted a property transaction with Orthodox Christians called Nephon, priest monk (hieromonk) Gavril, Antonios, Ioannis, and Evgenios who were notable Simonopetrites monks and elders. The sisters are described as the daughters of 'Ali and inhabitants of Revenikeia Village (Megali Panagia) situated in central Chalkidiki. Their two legal representatives were mentioned as 'Ali Bey son of Mustafa and the police officer Hüseyin son of Abdullah, while the case witnesses were Yusuf son of Abdullah, Derviş son of Derviş, Hasan Bali, and Mustafa son of Abdi.

The two sisters sold to the monks the usufruct of arable fields, watermill plots, and houses for a total of 25,000 *akçes*. They collected the said amount from the monks without any discrepancy and agreed that the court should deliver to them a judicial transcript for the sale. The Simonospetritis monks validated in person the declaration made by the two sisters' representatives. Consequently, the court ruled that the sale was valid and gave permission for the purchase. The judicial proceedings and judgement were recorded in writing as proof and placed into the hands of the purchasers so that the legal validation of the property sale may be referenced when needed. The document was ratified by the following three judges: Ahmed bin Süleyman of Salonica, Abdu'r-rahim

5 The topic of the provenance and motifs of the paper and textile onto which some of the Ottoman archival documents from the collection have been pasted will be the subject of another study.

bin Amr of Salonica, Sidrekabsı, and Karaferye, and the deputy judge of Sidrekabsı Abdu'l-kadir bin Abdu's-selam.

Discussion

In addition to the preservation and extraction of data through digitisation and cataloguing, a significant benefit of the former would be to provide open access to the high-resolution images combined with metadata of Simonopetra Monastery's Ottoman archival collection. Beyond simple preservation, accessibility to religious and cultural heritage in the form of archival collections is a principle emphasised by UNESCO's Memory of the World programme as follows: "The world's documentary heritage belongs to all, should be fully preserved and protected for all and, with due recognition of cultural mores and practicalities, should be permanently accessible to all without hindrance."[6] Furthermore, Melissa Terras highlights the vast creative potential of mass-digitised cultural heritage datasets as well as the opportunities that such initiatives offer (Terras et al., 2021).

For the publication of a complete catalogue of the entire Ottoman archival collection, it is necessary to undertake systematic cataloguing of four elements which are description, transliteration, translation, and annotation. It is essential to adopt a multi-dimensional approach due to the diversity of document type and the long time-span dating from the mid-16th to the early 20th centuries in which the documents were issued by the central and provincial Ottoman legal administration. The first dimension is an individualistic one in which each document will be considered a unit for the purposes of cataloguing. The second dimension is a holistic one in which documents from the same period will be used to determine precise prosopographical data in addition to answering major thematic and periodic gaps in the study of Mount Athos during the Ottoman era.

Conclusion

The digitisation process can be improved by answering additional research questions with advanced imaging techniques as shown in the above example. These can give a good overview of the materiality of the object and lay background before implementing even more advanced scientific methods for ink and pigment identification. The digitisation process is an invaluable initial phase followed by cataloguing to facilitate the preservation and accessibility of both the high-resolution images and the metadata of an endangered and unique Ottoman collection from the Athonite archives. There is also a great potential for knowledge exchange among the monastic community and for the introduction of advanced imaging and processing methods to those who work with manuscripts on a frequent basis, so more items can be digitised, analysed, and accessed.

6 https://www.unesco.org/en/memory-world

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Appendices

Figure 1 Court document (*ḥ*üccet) of evā'il-i cemezi'l-evvel 998 / 8-17 March 1590. Courtesy of Simonopetra Monastery Ottoman Archive, catalogue no. 70

Balamand Digital Heritage: "St Joseph of Damascus Manuscript Conservation Center"

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Abstract

The Patriarchal Monastery of Our Lady of Balamand sets apart a building, on the southwest side of the main church, for the "St Joseph of Damascus Manuscript Conservation Center", a highly specialized center established to digitalize the Manuscript Collections and Archives in all the Antiochian Sea, as well as preserving, conserving, and restoring them.

The concern for preserving the heritage in Balamand started when Patriarch Ignatius IV, of thrice blessed memory, was abbot bishop of the Patriarchal Monastery of Our Lady of Balamand. He benefited from the help of Fr. Fayez Freijat to publish a catalogue of Balamand collection of manuscripts in 1972. Later, when Metropolitan Ignatius Hazim of Latakia became Patriarch Ignatius IV of Antioch and All the East, he founded the "University of Balamand" (UOB) next to the monastery and established "The Orthodox Study Center" in Beirut, after the civil war in Lebanon was near its end. In 1993 the University of Balamand published an updated catalogue of Balamand collection of manuscripts. When Bishop John Yazigi, present time Patriarch John X, became abbot of the Patriarchal Monastery of Our Lady of Balamand and dean of the Faculty of Theology in the University of Balamand, digitalization of the Balamand manuscript collection started in April 2003, upon the signing of the agreement by Bishop John as abbot and dean of Theology in the University of Balamand, president Elie Salem of

the University of Balamand and the Hill Museum & Manuscript Library (HMML) in the St John University & Abbey, Minnesota, USA, represented by Fr Columba Stewart.

Although the agreement was solely for the Balamand collection of manuscripts, it extended to include many manuscript collections in the monasteries and Archdioceses across the Antiochian See. By 2010 most of manuscript collections in Lebanon were digitalized, and only few monasteries and Archdioceses in Syria. The break of war in Syria in 2011, prevented the commencement of digitalization in Syria.

Balamand digital heritage collection

Digitalization started in the library of the Faculty of Theology (UOB) in 2003. But abbot Isaac Barakat established in 2010 a separate institute to carry the whole task of digitalization and preservation, conservation, and restoration of manuscripts and archives in the whole Antiochian See. Patriarch Ignatius IV blessed the idea and issued a decree establishing this institute by the name: "St Joseph of Damascus Manuscript Conservation Center", after the great martyr saint and scholar (+1860).

The center has several functions, to name a few:

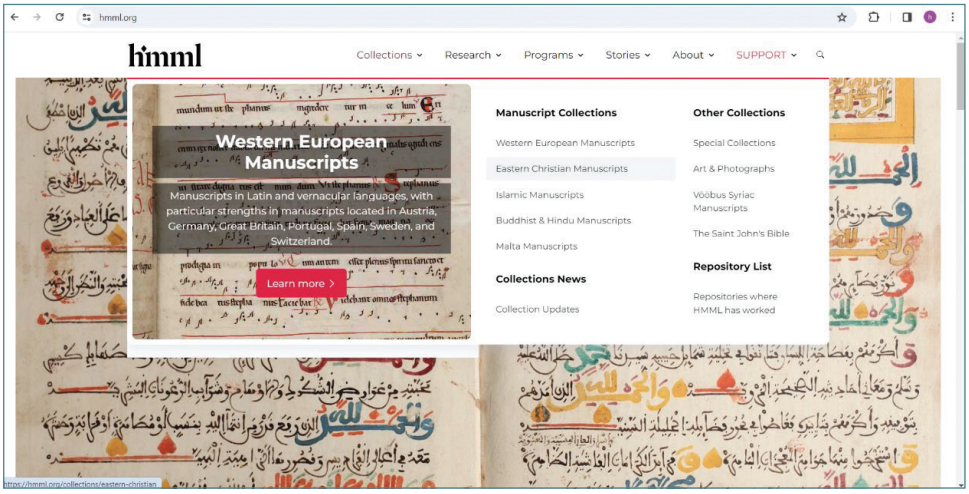
1. Cleaning and disinfecting manuscripts and archive, then preserve them in a suitable environment of temperature and humidity, to prevent their deterioration,
2. Make paper in the old oriental way to use it in restoration of old worn manuscripts and archives. This locally made, acid free paper, is used by the archeological department in the University of Balamand to keep small archeological objects,
3. Neutralize acidity of manuscripts' papers and old archive,
4. Clean stains and rotten spots caused by improper storage,
5. Revive the damaged manuscripts and archive, through restoration,
6. Digitalize the manuscripts and archives with high quality camera, and rename the images to make it indicate its location & number,
7. Store the digital images in a digital data bank for the rich Antiochian Heritage, in an independent advanced server,
8. Obtain in digital form all Antiochian Heritage, in different languages, which is scattered in many museums and libraries outside Antioch,
9. Update all printed catalogues of the manuscripts, published by the "Institute of History, Archeology and Near Eastern Studies" (known previously as: "Orthodox Study Center"), establishing an electronic database, available for scholars and searchable,
10. Encourage the scholars to make researches and publish studies on Antiochian heritage, revealing its contents, accentuations, fonts, sewing, binding, and remarks on margins that uncover historical, social, and economical information,

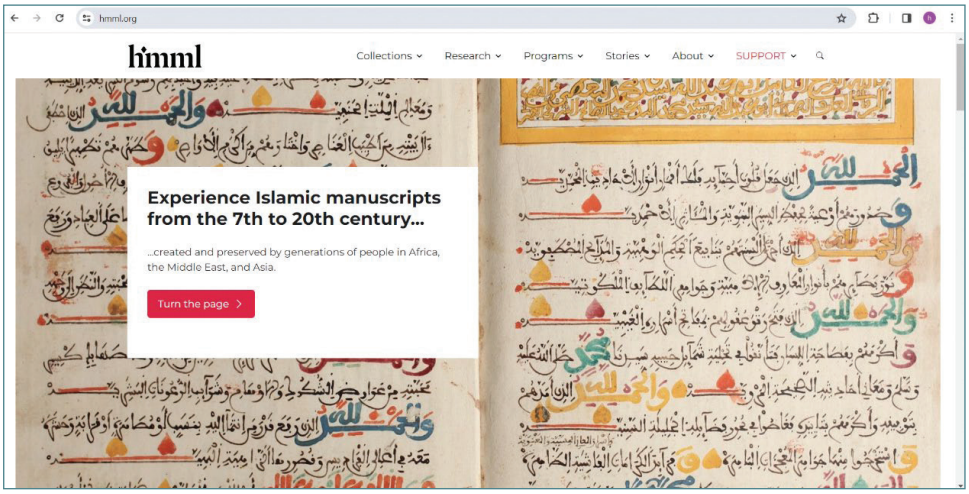
11. Train graduate students, through planned workshops, on reading manuscripts as a prime source of data for their field of interest,
12. Raise awareness on Heritage preserved in manuscripts and archives.

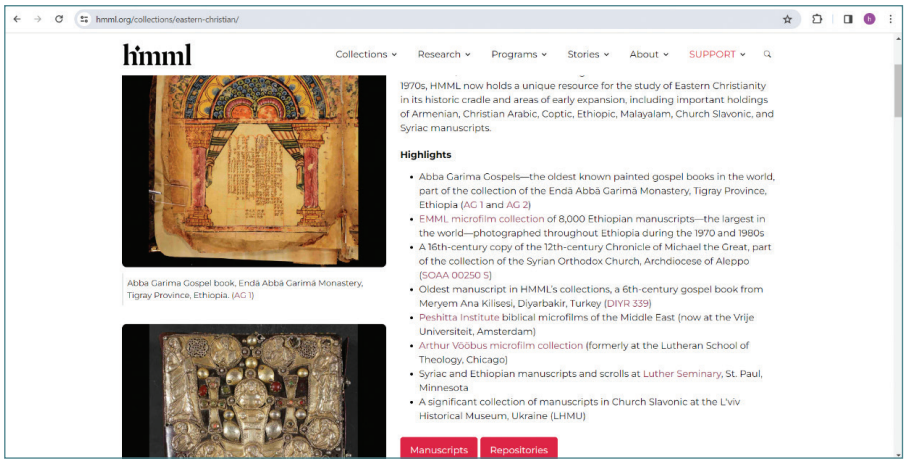
The digital heritage preserved in "St Joseph of Damascus manuscript Conservation Center" are available for researchers if the center over the intranet, and also displayed on the reading room provided by HMML on its website: https://hmml.org/.

Here is a demonstration on how to search for Balamand digital heritage collection on HMML:

Table 1 *Demonstration on how to search for Balamand digital heritage collection*



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Programs
Stories
About
SUPPORT
1970s, HMML now holds a unique resource for the study of Eastern Christianity in its historic cradle and areas of early expansion, including important holdings of Armenian, Christian Arabic, Coptic, Ethiopic, Malayalam, Church Slavonic, and Syriac manuscripts.
Highlights
Abba Garima Gospels—the oldest known painted gospel books in the world, part of the collection of the Endā Abbā Garimā Monastery, Tigray Province, Ethiopia (AG 1 and AG 2)
EMML microfilm collection of 8,000 Ethiopian manuscripts—the largest in the world—photographed throughout Ethiopia during the 1970 and 1980s
A 16th-century copy of the 12th-century Chronicle of Michael the Great, part of the collection of the Syrian Orthodox Church, Archdiocese of Aleppo (SOAA 00250 S)
Oldest manuscript in HMML's collections, a 6th-century gospel book from Meryem Ana Kilisesi, Diyarbakir, Turkey (DIYR 339)
Peshitta Institute biblical microfilms of the Middle East (now at the Vrije Universiteit, Amsterdam)
Arthur Vööbus microfilm collection (formerly at the Lutheran School of Theology, Chicago)
Syriac and Ethiopian manuscripts and scrolls at Luther Seminary, St. Paul, Minnesota
A significant collection of manuscripts in Church Slavonic at the L'viv Historical Museum, Ukraine (LHMU)
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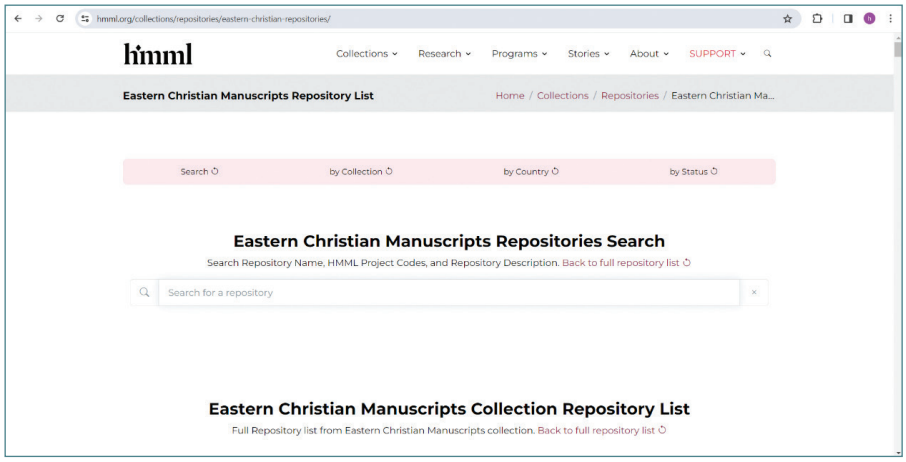
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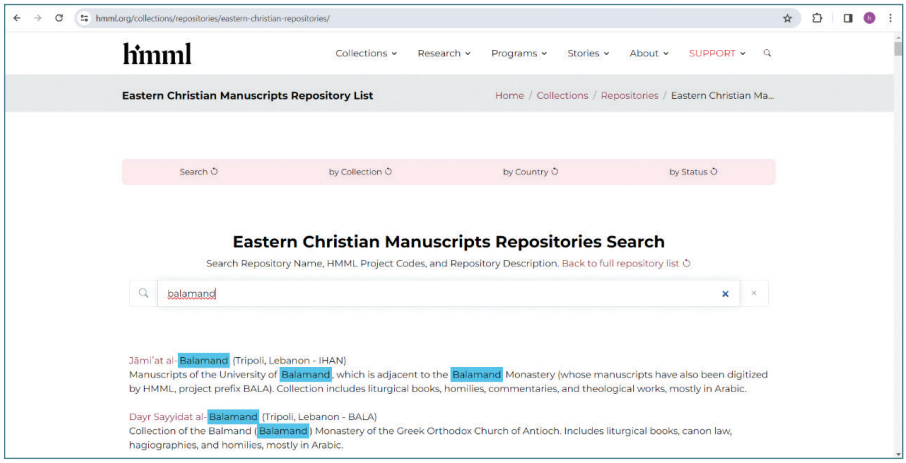
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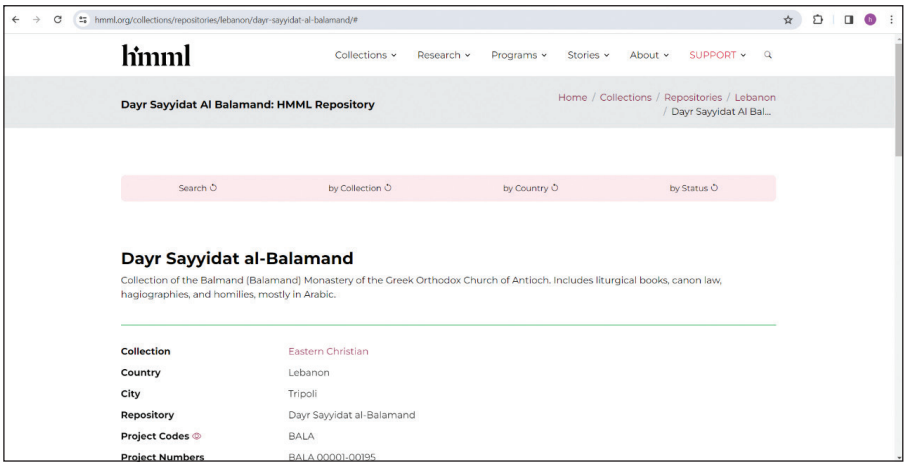
Dayr Sayyidat al-Balamand (Tripoli, Lebanon - BALA)
Collection of the Balmand (Balamand) Monastery of the Greek Orthodox Church of Antioch. Includes liturgical books, canon law, hagiographies, and homilies, mostly in Arabic.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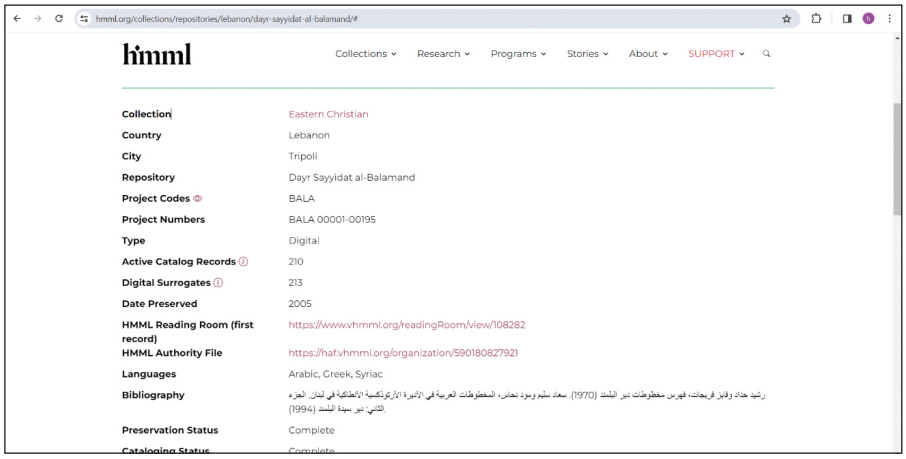
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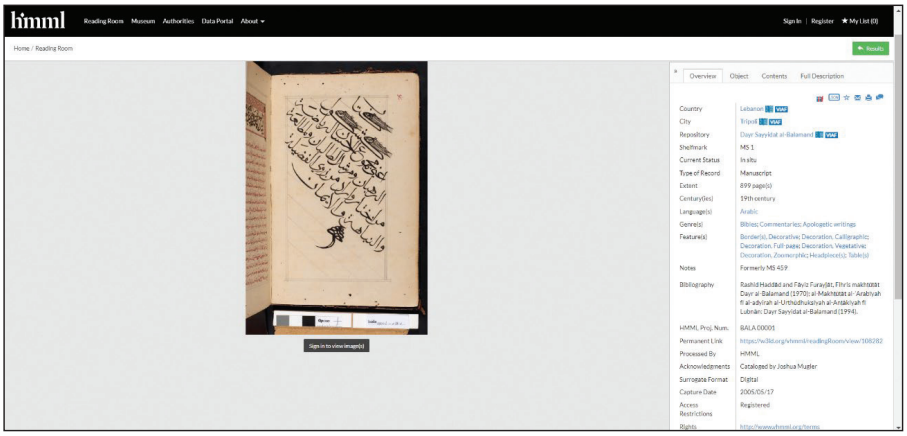
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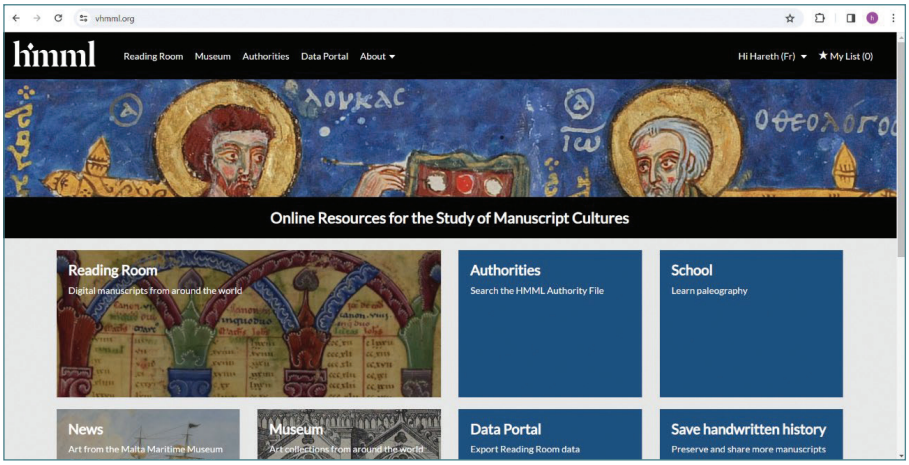

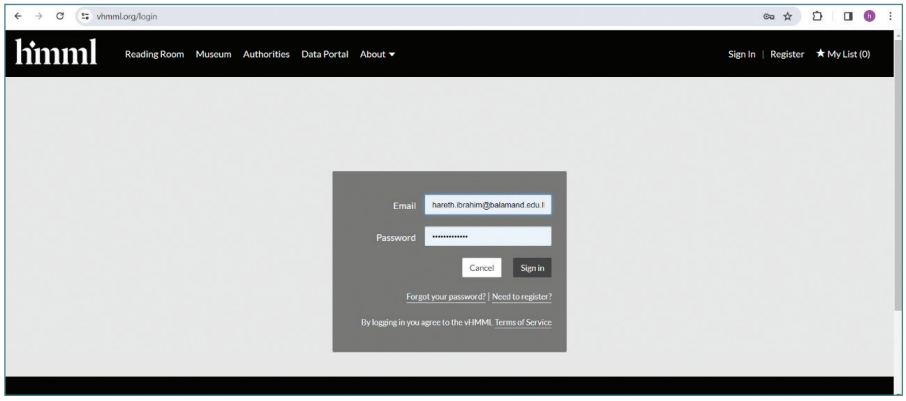

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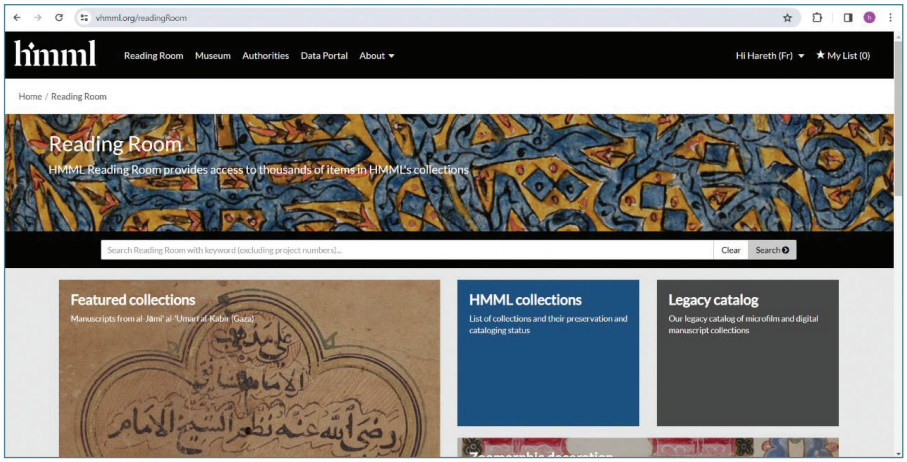

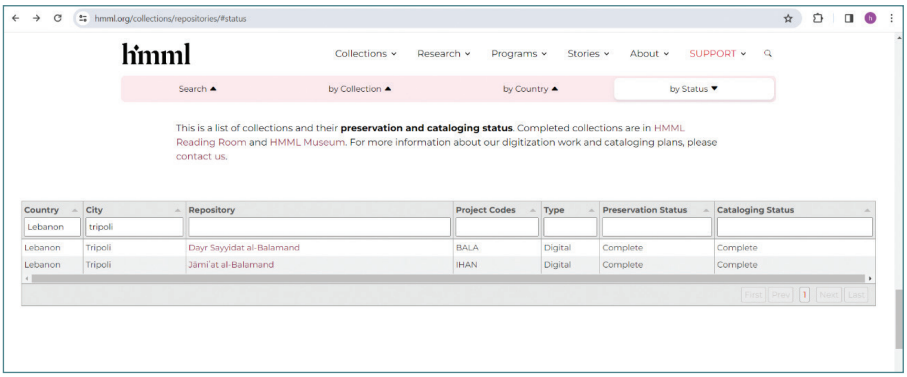
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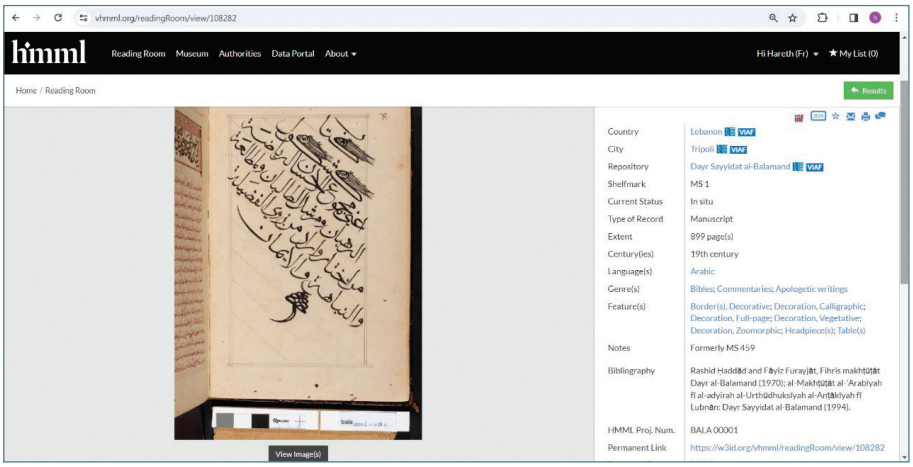
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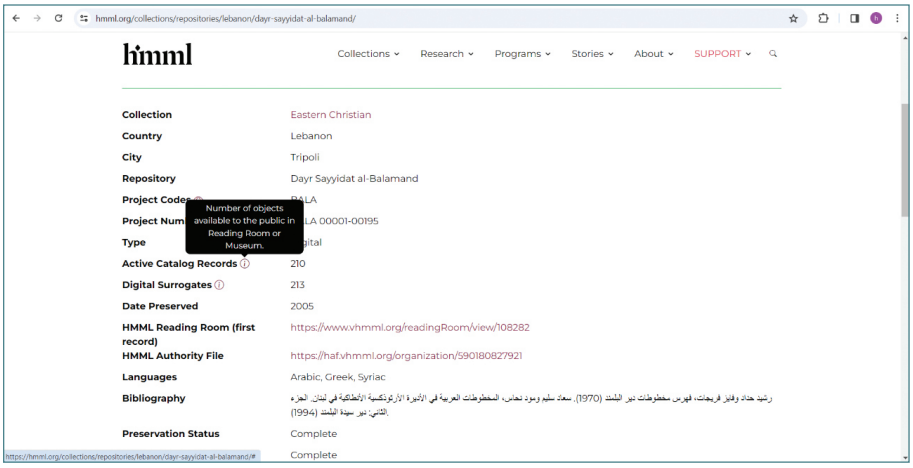
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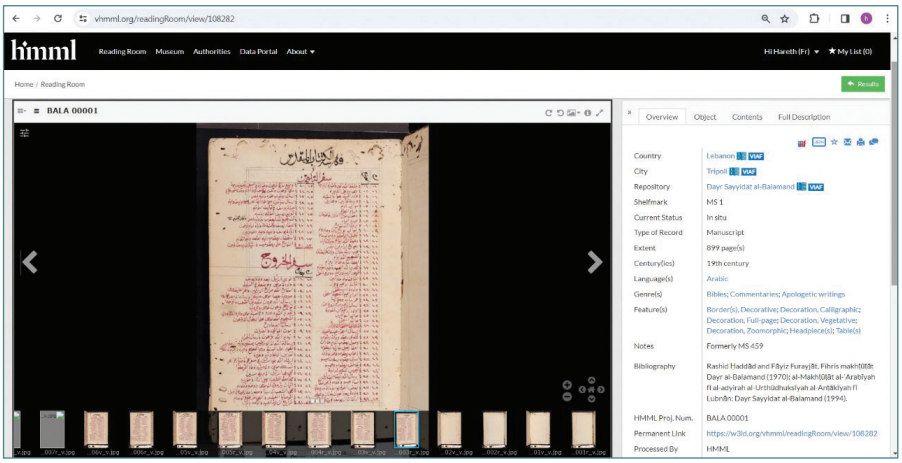
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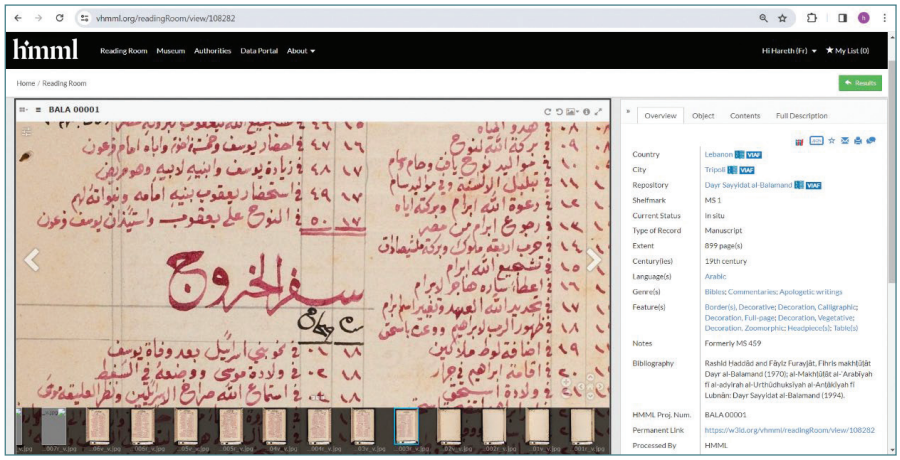
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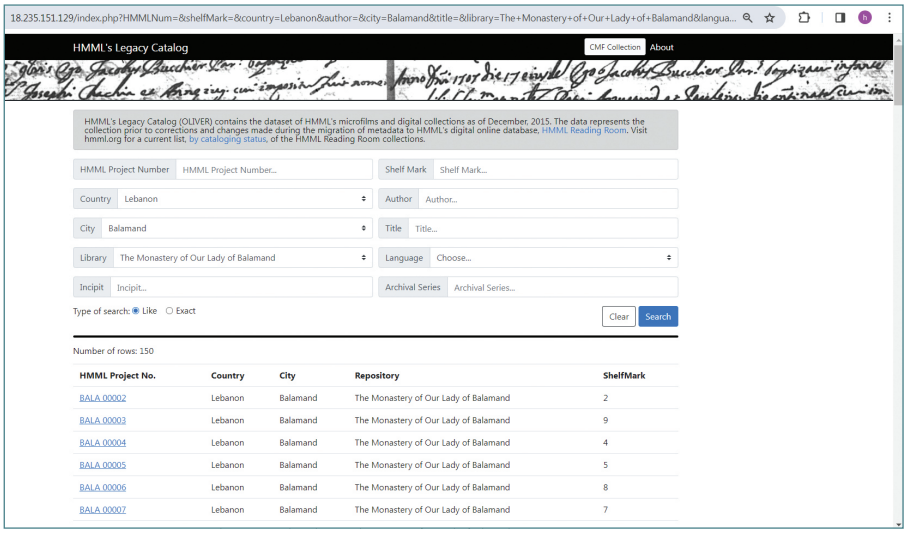
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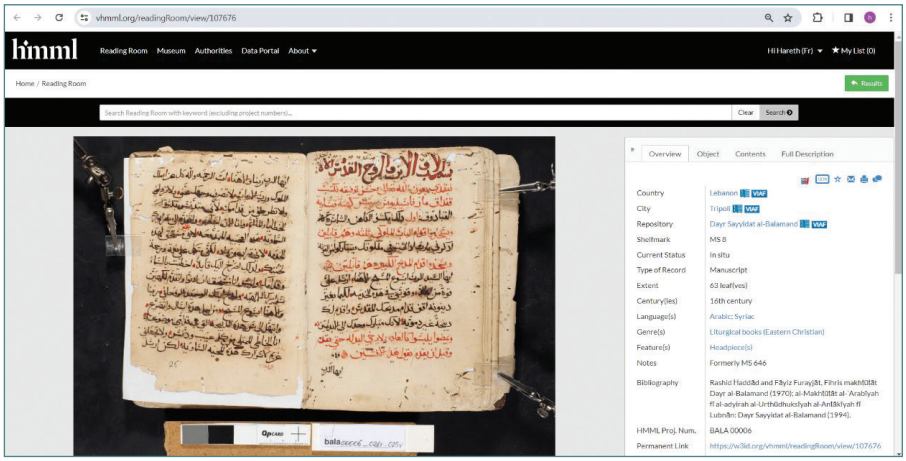

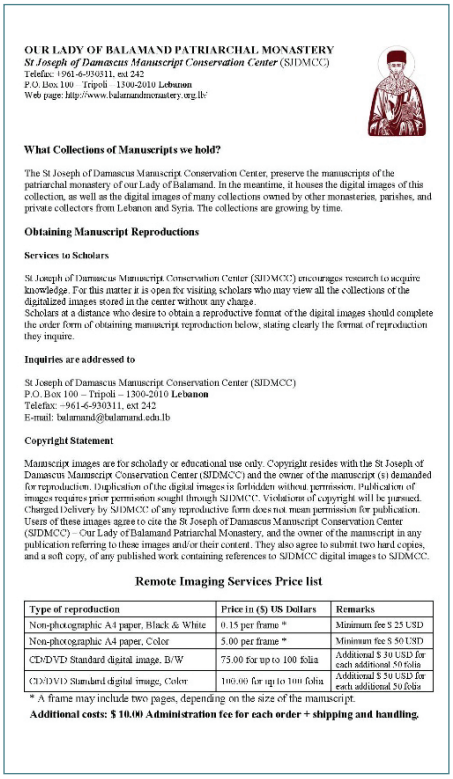

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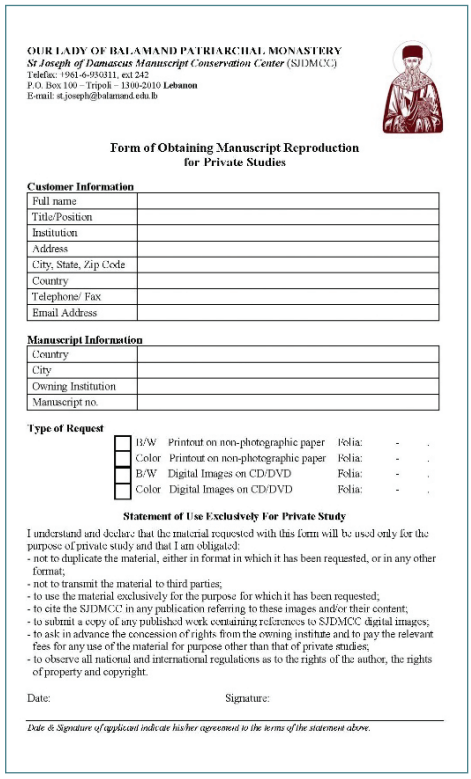

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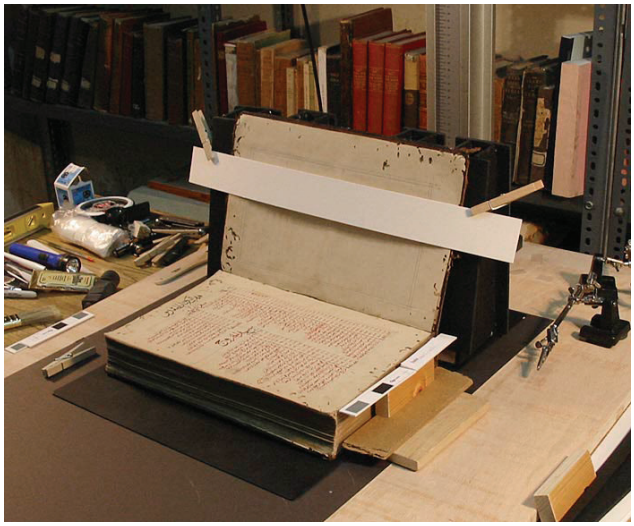

Figure 1 *Digitalization of Balamand manuscript collection, in 2003, at library of Faculty of Theology (UOB)*

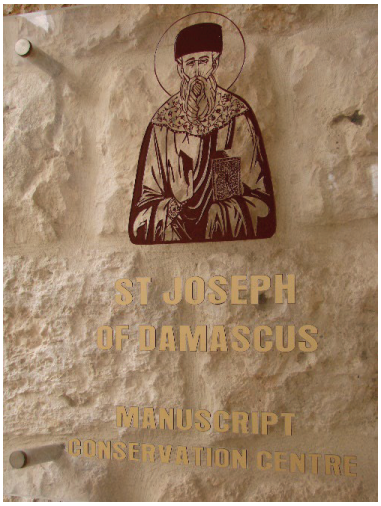

Figure 2 *The signboard of the Center, established in 2010*

Figure 3 *Specially equipped storage Room, with appropriate temperature and humidity*

Figure 4 *Paper making, old ways*

Figure 5 *Digitalization, & digital data preserved*

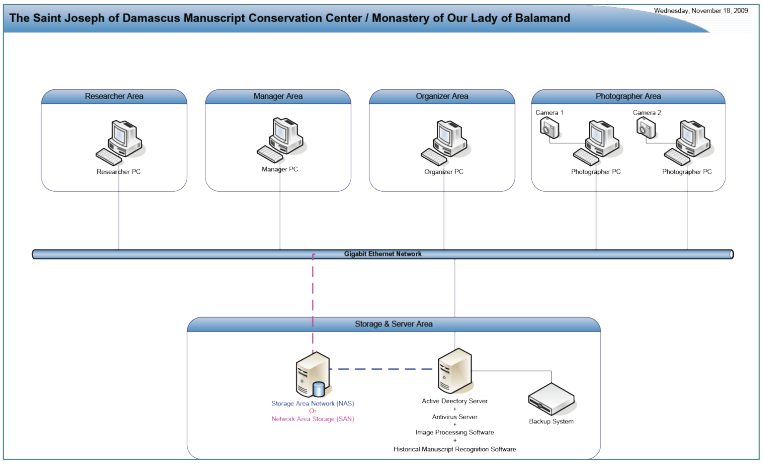

Figure 6 *Layout plan of Internal Network*

The St Joseph of Damascus Manuscript Conservation Center restores and preserves the Balamand treasures of manuscripts, which the monks cared for, in scribing and decorating them through the centuries, as well as collection of manuscripts of many monasteries and archdiocese in Lebanon and Syria. The center also restores and preserves the valuable archives of Balamand, and other monasteries, which includes correspondences and property records that shows enhancement and growth through time.

The importance of manuscripts and archives in revealing the authentic heritage of our fathers, was a decisive factor in seeking its digitalization with best available technologies, to keep a good back-up copy of it, to preserve it from being lost or deteriorated by natural decay or theft, first, and second to present a digital copy for scholars and researchers to explore its historical, social and economic values.

The "Center" was the fruit of accumulated hard work over long years, with a clear vision and one main objective: to learn and save our heritage (of the Church and of interacting communities).

Figure 7
Detaching old manuscript papers

Figure 8 Manual restoration

Figure 9 MOU with Mount Sinai Foundation, Signed on 23 May 2013

Figure 10 MOU with Computer Science department in University of Balamand – Faculty of Science, signed on 17 July 2013

Figure 11 One document before cleaning

Figure 12 During the cleaning process

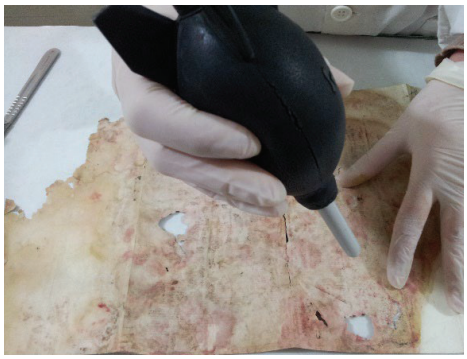

Figure 13 Blowing dust

Figure 14 Brushing

Figure 15 Recovering a hidden Colophon. BMs 133, bala00128_149v

Figure 16 Another recovered Colophon

Figure 17 De-acidification of a booklet

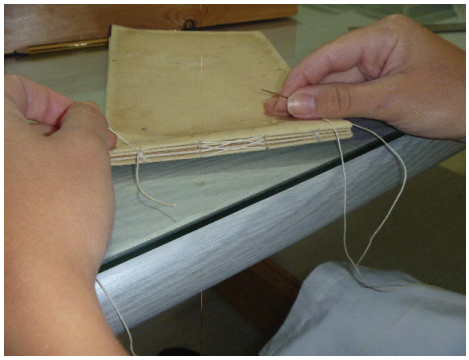

Figure 18 Binding a restored booklet

Figure 19 A difficult case of restoration

Figure 20 A difficult case of restoration

Figure 21 Detection of icon in the binder of a 1453 A.D. Greek Arabic Triodion

Figure 22 Inspection of the icon by a specialist

Figure 23 Patriarch of Antioch with Patriarch of Alexandria and Archbishop of Cyprus

Figure 24 President of the Lebanese University

Figure 25 Cleaning of one spot

Figure 26 Inspection of protection layer

Figure 27 Participants in one Workshop

Figure 28 Graduates of one workshop

Figure 29 President of Iasi University (Romania)

Figure 30 Russian Imperial Association

Table 2 Doctoral Workshops with many partners


FORMATION DOCTORALE

Histoire des textes arabes anciens

du 27 février au 2 mars 2012
à Beyrouth, Kaslik et Balamand

Workshop sessions of February 2012, in collaboration with 9 international & national academic Institutions.


FORMATION DOCTORALE

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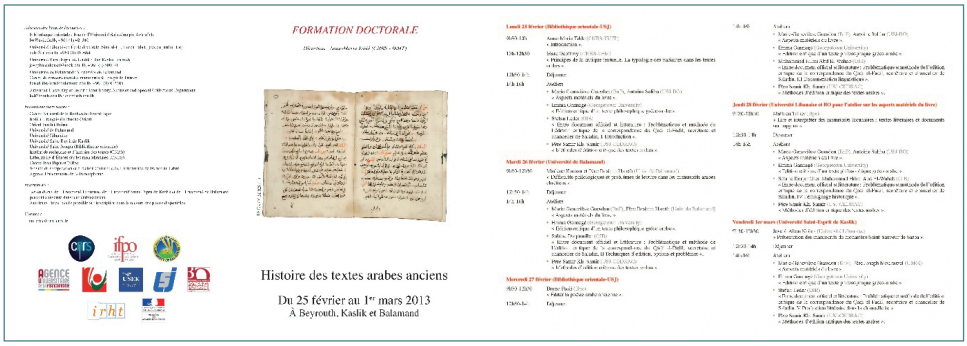
Du 18 au 23 juin 2012
À Beyrouth, Kaslik et Balamand

Workshop session of June 2012, in collaboration with 9 international & national academic Institutions.


FORMATION DOCTORALE

Histoire des textes arabes anciens

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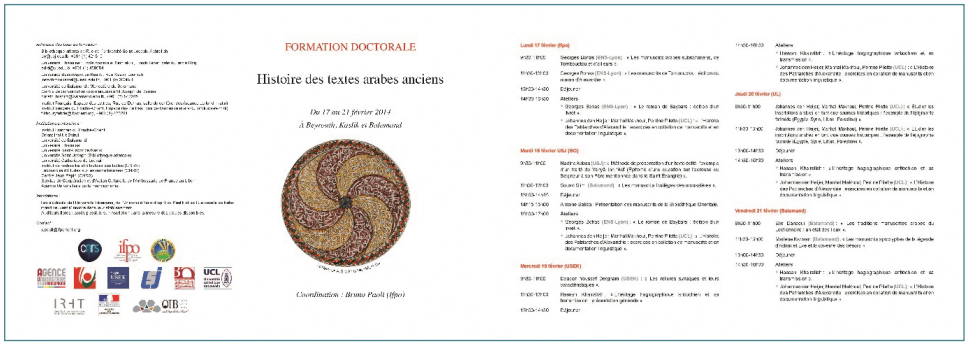
FORMATION DOCTORALE

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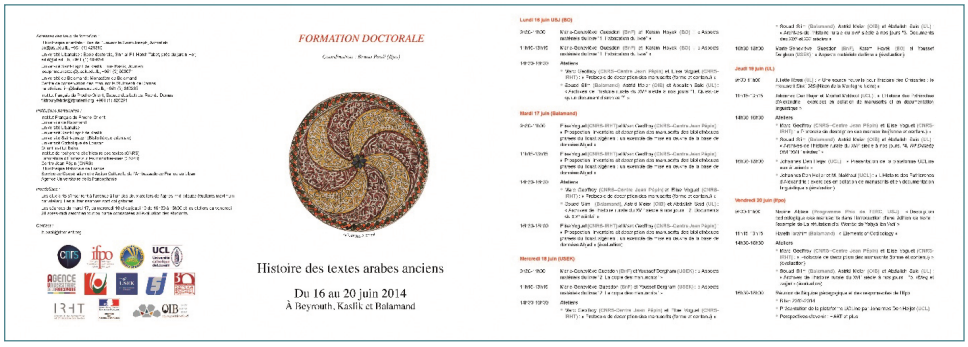
Du 17 au 21 février 2014
À Beyrouth, Kaslik et Balamand

Coordination : Bruno Pasili (ifpo)

Workshop session of Feb 2014, *in collaboration with 9 international & national academic Institutions.*

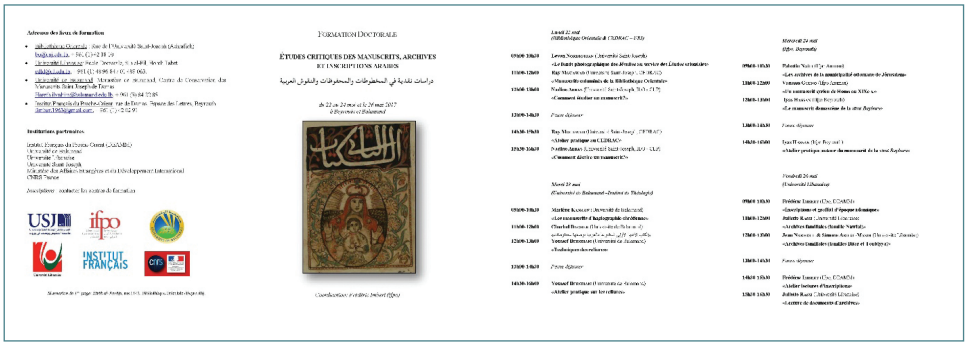

FORMATION DOCTORALE

Histoire des textes arabes anciens

Du 16 au 20 juin 2014
À Beyrouth, Kaslik et Balamand

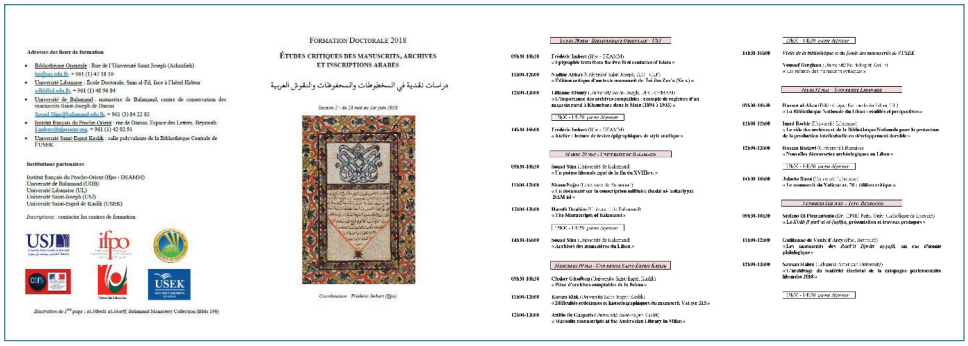
Workshop session of June 2014, *i collaboration with 9 international & national academic Institutions.*

Workshop session of Feb 2017, in collaboration with 7 international & national academic Institutions.



Workshop session of May 2017, in collaboration with 7 international & national academic Institutions.

Workshop session of March 2018, in collaboration with 7 international & national academic Institutions.



FORMATION DOCTORALE 2018

ÉTUDES CRITIQUES DES MANUSCRITS, ARCHIVES ET INSCRIPTIONS ARABES

دراسات نقدية في المخطوطات والمحفوظات والنقوش العربية

Session 2 : du 13 mai au 1er juin 2018

Coordination : Frédéric Imbert (Ifpo)

Workshop session of May-June 2018, in collaboration with 5 international & national academic Institutions.

FORMATION DOCTORALE 2019

ÉTUDES CRITIQUES DES MANUSCRITS, ARCHIVES ET INSCRIPTIONS ARABES

دراسات نقدية في المخطوطات والمحفوظات والنقوش العربية

Session 1 : du 04 au 08 février 2019
à Beyrouth, Kaslik et Balamand

Coordination : Frédéric Imbert (Ifpo)

Workshop session of February 2019, in collaboration with 5 international & national academic Institutions.

3D Documentation of UNESCO Monument, Church of the Savior, Thessaloniki, Greece

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Keywords: Cultural Heritage, 3D laser Scanning, Documentation, Digitization, Temples

Abstract

The Church of the Savior, Transfiguration of Christ, (Naos Metamorphoseos tou Sotiros), is a byzantine monument sited in Thessaloniki, Greece. It was built around 1350 (Papagiannopoulos, 1983) and in 1988 was listed in UNESCO (United Nations Educational, Scientific and Cultural Organization World Heritage Sites)[1]. In 1978, Thessaloniki experienced a massive earthquake that resulted in significant damage to the church. Subsequently, the initial steps of restoration were undertaken, and the temple has since been successfully restored and is now operational.

Our approach was to produce an accurate and precise 3D model of the monument to monitor and simplify future restoration processes, evaluate the potential risks of future hazards and propose protective measures against climate change-related threats like flooding, given the temple's vulnerable layout position. In order to produce the 3D model of the temple, terrestrial laser scanning using the Leica BLK 360 was undertaken. This method ensures precise and rapid measurements, taking into consideration the monument's

1 https://whc.unesco.org/en/list/456/

structure and its surrounding area. Our basic methodology workplan, included three basic steps: onsite measurement with the laser scanner, initial processing in the field and the final processing in the office for the production of the 3D representation of the temple. In detail, the first step was to define a route in order to put the instrument in crucial positions so as to encircle the exterior of the entire monument and minimize unscanned parts of temple. As the wall paintings in the interior dome of the church are of great importance, our data collection included the laser scanning of the interior part of the temple as well. It was essential to perform complementary scans for the dome to ensure better overlap between the exterior and interior spaces. The final processing using the appropriate software started with uploading the scans, aligning, refining the point clouds and finally exporting images and the 3D representation of the temple with orthorectified views.

The produced dense point cloud enables us to obtain detailed documentation for the temple and measure the facades, views, and internal objects of the monument with great reliability. It is a valuable tool for the restoration process as it provides the detailed monitoring of any previous damages and moreover the scan data of the 3D representation of the temple can be revisited to extract any additional information without the need for costly and time-consuming returns to site. In conclusion utilizing laser scanning for 3D visualization can contribute to the early identification of potential damage, facilitate targeted restoration efforts, and, overall, contribute to the preservation of at-risk cultural heritage. As a prospective measure, 3D printing could serve as a tool for examining the texture and current condition of the monument.

Introduction

Cultural Heritage (CH) conservation is of great importance as it serves to protect and preserve the cultural, historical, and architectural treasures that form the foundation of our collective identity. UNESCO has highlighted the importance of supporting creativity and safeguarding of these invaluable assets in order to address the challenges of our time, from climate change to ever more complex emergencies and conflicts (UNESCO, 2024). With CH conservation, we ensure that future generations can learn from, appreciate, and be inspired by the achievements and experiences of the past (Nilson & Thorell, 2018), (Spennemann & Graham, 2007). Additionally, it offers a sense of continuity and belonging and for this reason the conservation procedures reinforce the cultural diversity and promote mutual understanding among different communities. Tacon and Baker in their study (Taçon & Baker, 2019) highlighted that interacting with different forms of heritage can impact both the individual and the community well-being. Furthermore, CH has been included in the United Nations' Sustainable Development Goals[2] (SDGs) as it supports sustainable devel-

2 https://sdgs.un.org/goals

opment by maintaining the cultural landscapes and historical environments that contribute to local economies.

In recent years the implementation of advanced technologies has revolutionized the field of CH conservation. Among these, 3D digital documentation has emerged as a powerful tool, offering precise and comprehensive means to capture, analyze, and share detailed representations of historical monuments (Cabrera-Revuelta et al., 2024), (Dimitriou & Kontovourkis, 2024), (Reinoso-Gordo et al., 2021). Using Terrestrial Laser Scanners (TLS) in particular, in order to collect extensive building data is becoming more popular and increasingly common in the fields of architecture and heritage documentation, as these advanced scanning devices use laser technology to capture highly accurate 3D data. The point clouds generated by these scanners offer a valuable tool for evaluating the current state of the measured buildings (Reinoso-Gordo et al., 2021), (Costantino et al., 2020) alongside with their detailed documentation. This technology is particularly beneficial for historical buildings, as it provides non-invasive and precise measurements that can detect possible changes or deformations over time. TLS data can be used to create detailed 3D models, which serve as critical references for restoration and conservation efforts (Mandelli et al., 2017). Moreover, these models facilitate the analysis of structural integrity, helping experts to assess potential risks and plan maintenance more effectively.

The case study of the Church of the Savior in Thessaloniki, Greece

This study focuses on the 3D digital documentation of the Church of the Savior, an UNESCO monument located in Thessaloniki, Greece. The Church is situated on Egnatia Street near the Byzantine Kamara Gate on the eastern side of Thessaloniki's old city. It is one of the 15 Paleochristian and Byzantine monuments of Thessaloniki that were added to the UNESCO World Heritage List in 1988.

The church was originally dedicated to the Virgin Mary and was likely a private structure. Due to its small size, it was converted into a mosque during the Turkish Occupation. Architecturally, it represents the rare 'cross-in-church' tetraconch type, featuring four conches within its square ground plan with a large dome on its ceiling (fig.2). A coin found within the walls allowed the archaeologists to date the church around 1350[3].

In 1978, Thessaloniki experienced a massive earthquake that resulted in significant damage to the church. The archaeological investigation and restoration work that followed uncovered new evidence, enabling archaeologists to reveal the church's original architectural form. The temple has since been successfully restored and is now operational.

Our approach was to produce an accurate and precise 3D model of the monument to monitor and simplify future restoration processes, evaluate the potential risks of future

3 https://www.religiousgreece.gr/en/attractions/church-transfiguration-christ

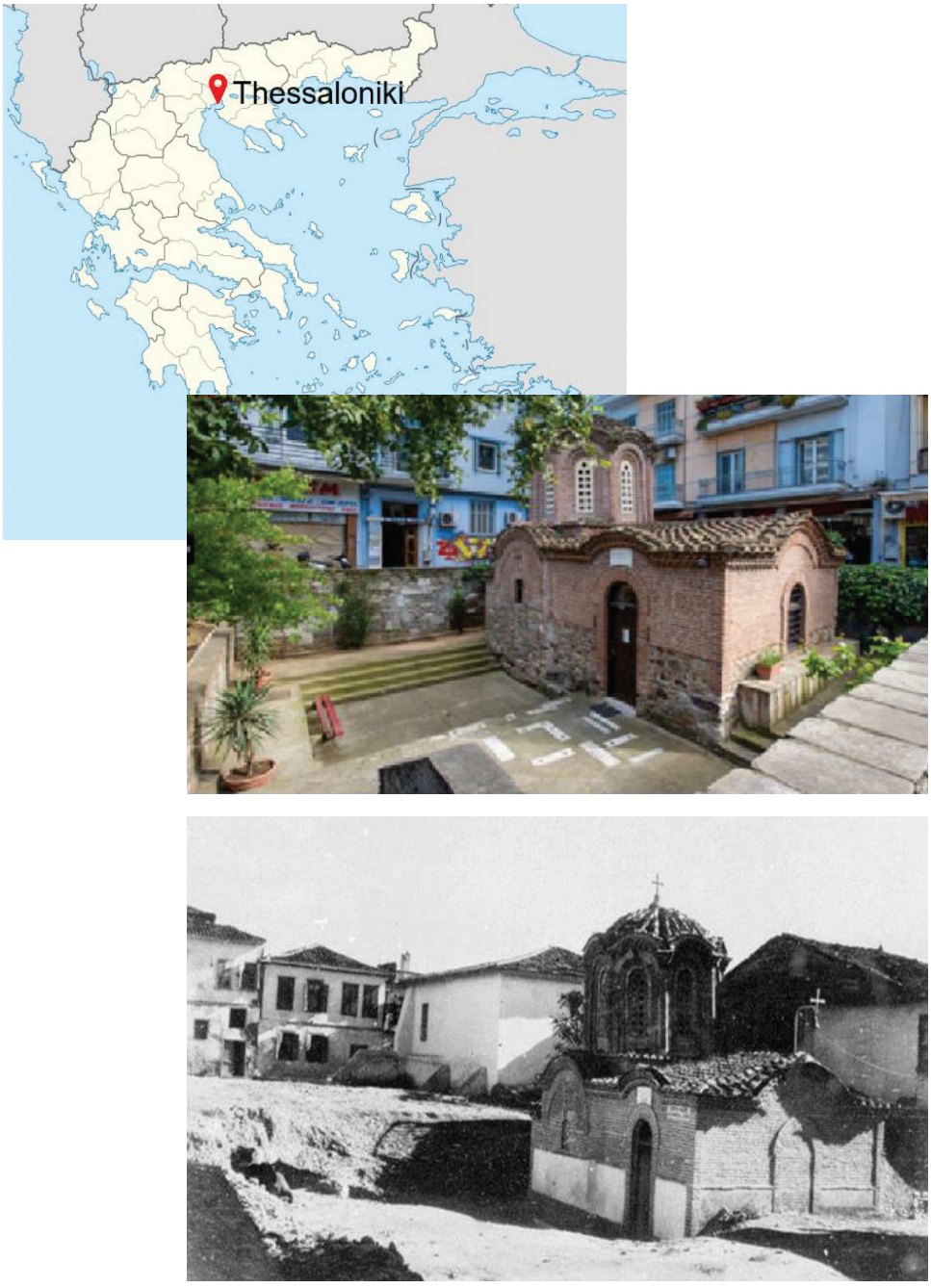

Figure 1 The Church of the Savior is situated in Thessaloniki in Greece. (Image sources: https://www.religiousgreece.gr, https://www.facebook.com/naostousotirosxristou/?ref=page_internal)

Figure 2 *Details of the large dome (a) and the internal part of the Church (b).*
(Image source: https://www.religiousgreece.gr)

hazards and propose protective measures against climate change-related threats like flooding, given the temple's vulnerable layout position.

Methodology

Our basic methodology workplan consisted of two distinct phases: onsite data acquisition and office-based processing. The first phase involved gathering detailed information in the field using Terrestrial Laser Scanner. The second phase focused on processing and analyzing the collected data in the office to derive accurate and comprehensive data. This systematic approach ensured a thorough and precise documentation process.

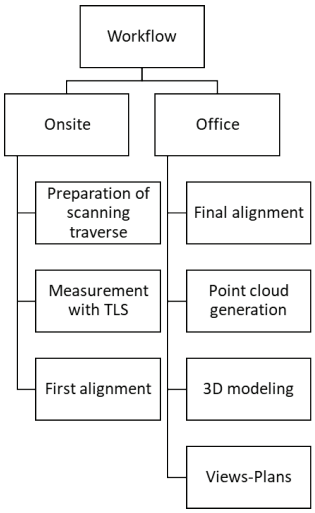

Figure 3 *Workflow of 3D documentation of the Church of the Savior*

The equipment which has been used was a Leica BLK-360 Terrestrial Laser Scanner (fig.4a). This instrument is easily portable, weighs about 1kg, and it is used with a tripod and an I-Pad Pro that supports the data acquisition and the initial data control in the field. This device can capture 680,000 points per second and at the same time, it captures panoramic images in every set-up.

In our case, 15 setups were performed. Due to the significant importance of the wall paintings in the dome, 2 setups were conducted inside the temple. Initially, a scanning traverse was prepared to strategically position the instrument in key locations, ensuring full coverage of the monument's exterior and minimizing unscanned areas (fig.4b). Once the scanner was positioned, the user could remotely control the entire process using the Cyclone Field[4] appli-

4 https://leica-geosystems.com/products/laser-scanners/software/leica-cyclone/leica-cyclone-field-360

cation. It is important to avoid approaching the scanning area during operations as moving objects can cause 'noise' into the final product. Each scan typically takes about 5 minutes to complete. Once the Leica BLK360 device finishes two scans, a critical step is the initial field alignment using the Cyclone Register 360[5] application (fig.5). This process aids in assessing the distribution of setups and ensuring sufficient overlap between scans.

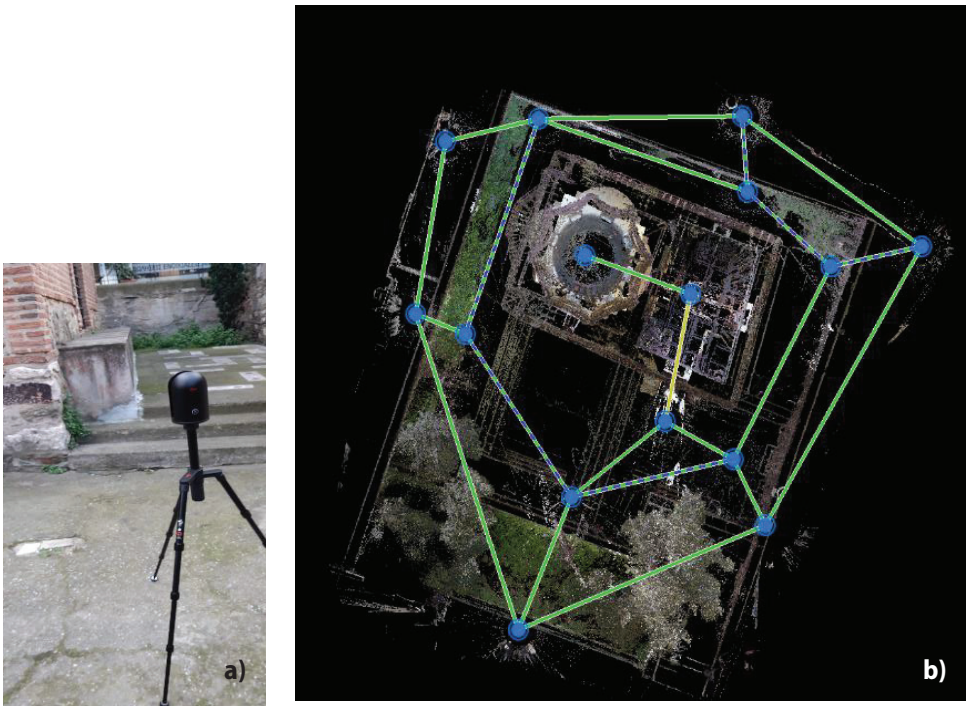

Figure 4 *(a) Leica BLK-360 Terrestrial Laser Scanner and (b) Layout of Scanner position and linking*

The data processing in the office focuses on generating a 3D representation of the examined monument. Initially, the scans were imported into the Cyclone software for performing the refined final alignment. The most convenient and accurate method involves aligning two scans and check the error between them for accuracy. Given the instrument's capabilities, this error must be less than 0.010 m and at the same time it is crucial to take into consideration the errors between setups during this process. Once all scan pairs are aligned, the software creates a bundle including all scans that were taken in the field.

5 https://leica-geosystems.com/products/laser-scanners/software/leica-cyclone/leica-cyclone-register-360

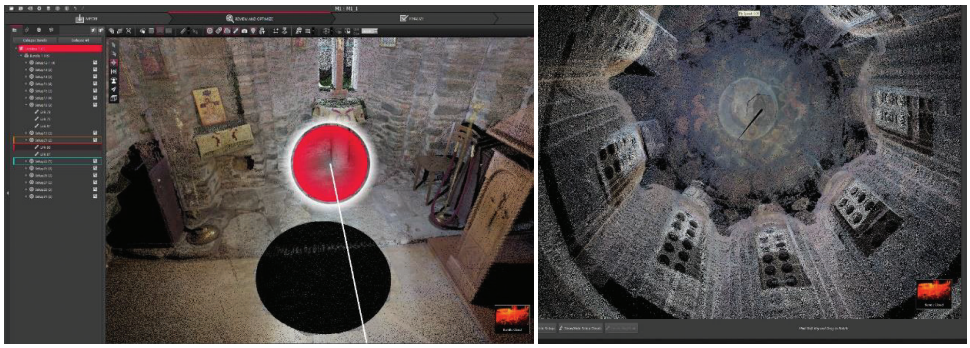

Figure 5 *Snapshots of processing inside Cyclone software*

A critical step in the process of creating the 3D model is the quality control of the results. This includes evaluating the percentage of overlapping coverage and verifying the error within the bundle (table 1). The quality control ensures that the results of the 3D modeling process are more reliable and additionally it helps identifying and addressing potential issues early in the workflow.

Table 1 *Results of the quality control*

Bundle error	0.006 m
Overlap	46%
Strength	81%
Cloud-to-cloud	0.006 m

Once the quality control process is completed and reports documenting the quality indices are generated, the next step involves creating the 3D point cloud. Due to its location in the city center of Thessaloniki, urban buildings, trees and other surroundings were introducing noise into the final 3D output of the Church. To address this, it was necessary to remove as much of the unwanted background as possible, and isolate the monument (fig.6). Figures 7 and 8 show the final point cloud (fig.7) and examples of measurements that can be performed to provide distance information (fig.8).

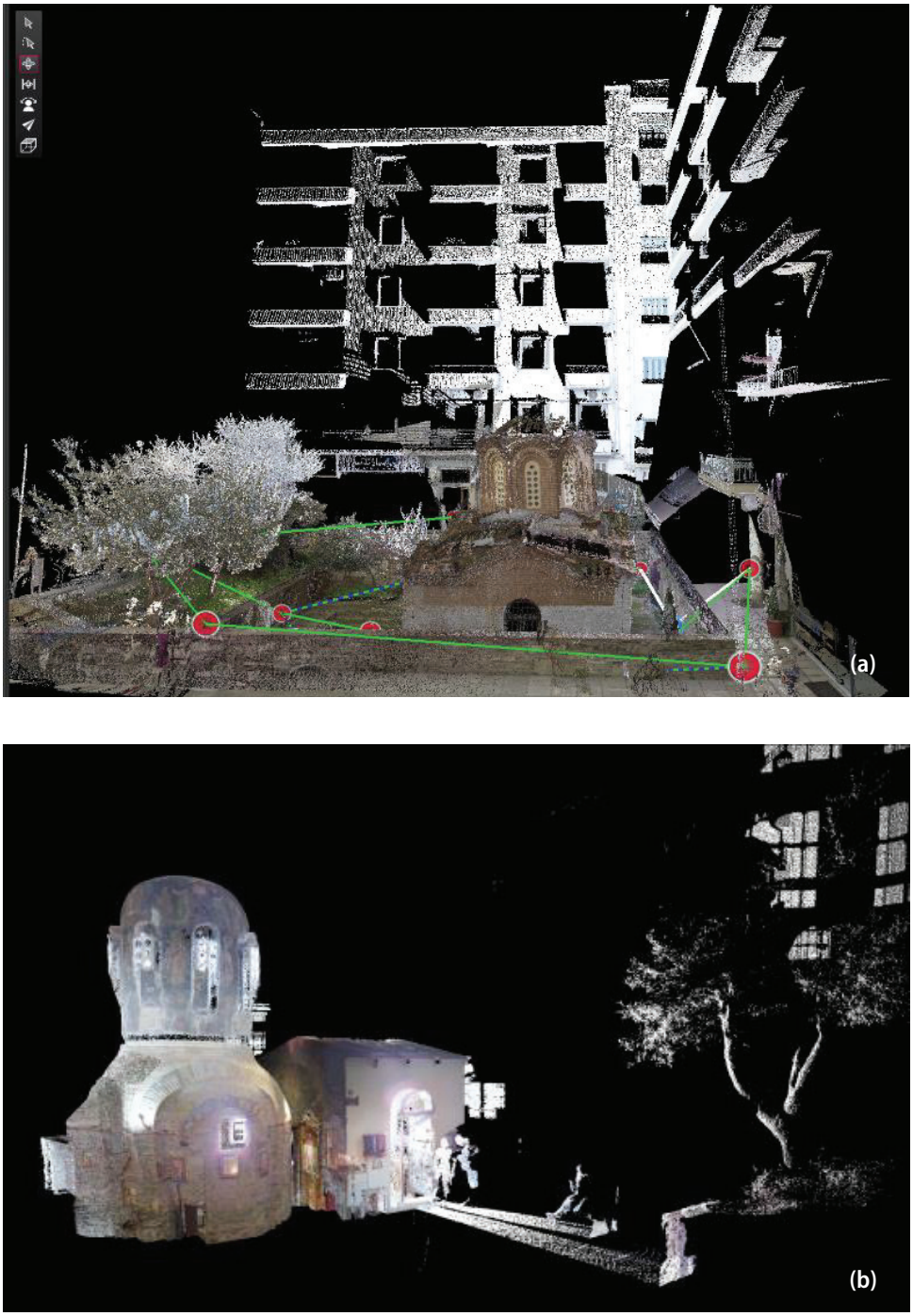

Figure 6 Snapshots of exterior (a) and interior (b) scans inside Cyclone software, where the unwanted surrounding background is present

Figure 7 *3D point cloud of the exterior part of the Church*

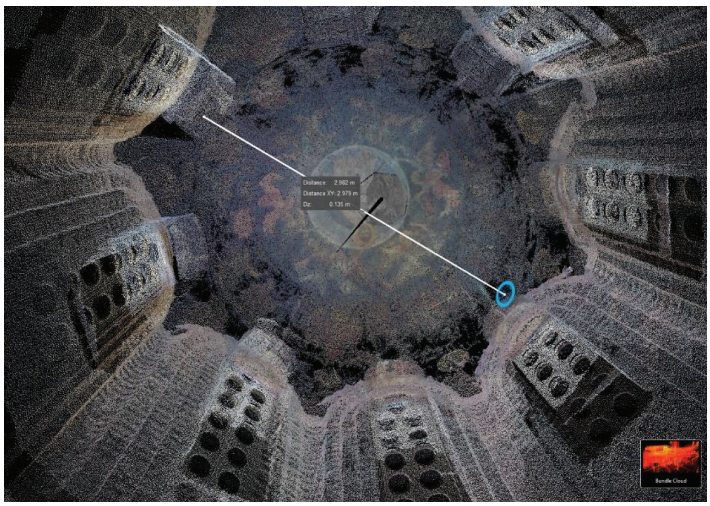

Figure 8 *Distance measurements from the point cloud*

Results

The final point cloud was used in order to create the 3D-model of the monument. For this purpose, the AgiSoft Metashape Professional software was utilized, aiming to produce a detailed and precise representation of the Church (fig.9). This process was crucial for acquiring information and understanding the structure of the monument, identifying vulnerable areas and planning targeted restoration or other necessary measures. (Tavantzis et al., 2023)

Figure 9 *North view of the 3D Model, retrieved from Agisoft Metashape*

In addition, orthorectified views of the facades were produced (see example in fig.10), which were then integrated into CAD software for additional processing, vector design, and inspection of vulnerable areas such as joints. These views offer precise measurements and provide dimensional data.

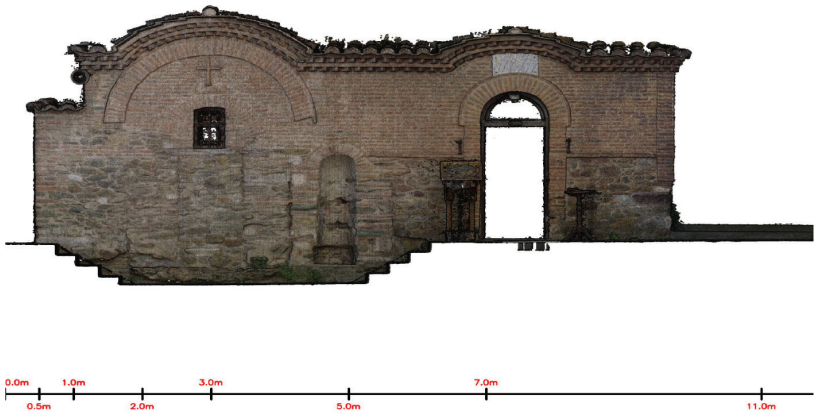

Figure 10 *Orthorectified façade of the Church with its graphical scale*

Discussion

The accurate digital documentation of the Church of the Savior that was performed in this study, resulted in the creation of a 3D model and orthorectified views of the facades of the Church. These products are valuable tools for several reasons; they provide precise measurements of dimensions, angles, and distances that are crucial for planning restoration work; they enable close inspection of vulnerable areas such as joints, cracks, or damaged sections, aiding in the identification of structural issues that require attention. By integrating these views into CAD software, restoration teams can overlay design plans and assess proposed changes. On the other hand, the 3D visual representation of the Church helps assessing potential risks of future hazards and facilitates its maintenance planning more effectively, as it is easier to propose protective measures against climate change-related threats such as flooding. Moreover, it enables communication among stakeholders, including architects, engineers, historians, and conservationists, and guarantees smooth collaboration on restoration strategies.

Finally, these products serve as archival records that document the current state of the monument. This documentation is invaluable for research and future preservation as it ensures that crucial information is captured and retained.

Acknowledgments

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The Future of Digital Documentation of Ecclesiastical Treasures

Design of data models and reference ontologies on ecclesiastical domain: the case study of the NARRATE platform

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Keywords: Ecclesiastical heritage, data models, CIDOC-CRM

Abstract

The design of data models and reference ontologies plays a crucial role in creating database schemas that accurately describe ecclesiastical cultural treasures through semantic metadata. This paper delves into the intricacies of designing data models and reference ontologies within the ecclesiastical domain, using the CIDOC Conceptual Reference Model (CIDOC-CRM) as a framework. The NARRATE platform serves as a specific case study to illustrate these concepts. By developing these data models and reference ontologies, we can establish database schemas that meticulously and precisely represent ecclesiastical cultural treasures, ensuring they are grounded in detailed semantic metadata.

Introduction

In today's digital age, the way we collect, manage, and analyze data has transformed significantly across various fields. One area poised to greatly benefit from these advancements is the ecclesiastical heritage domain. Digital documentation and management of

ecclesiastical data open up new avenues for preserving, enhancing, and sharing cultural heritage. However, due to the complexity and diversity of data in this context, developing specialized data models and reference ontologies is essential for accurate and consistent information representation.

This paper focuses on designing data models and reference ontologies specifically for the ecclesiastical domain within the framework of the Digital Recording and Documentation of Ecclesiastical Cultural Treasures in Monasteries and Temples project, also known as the NARRATE project. By addressing the unique requirements and characteristics of ecclesiastical heritage data, our aim is to create robust frameworks that facilitate effective data integration, interoperability, and retrieval. These models and ontologies will not only improve the management of ecclesiastical information but also support advanced research and analysis, contributing to the broader goals of preserving and making cultural heritage more accessible.

Our work involves a comprehensive analysis of existing data standards and ontologies in related fields, as well as an in-depth examination of the specific needs of the ecclesiastical domain. By leveraging modern techniques in data modeling and ontology engineering, we seek to address gaps in current practices and offer a comprehensive solution for digitally managing ecclesiastical heritage. To implement and evaluate the core NARRATE framework, we design semantic-based data models that will serve as the foundation for an ecclesiastical-centered data repository and discovery service, using open-source tools and standard data exchange mechanisms like CIDOC-CRM.

What is CIDOC Conceptual Reference Model (CRM)

The CIDOC Conceptual Reference Model (CRM) is a formal framework created by the International Committee for Documentation (CIDOC) under the International Council of Museums (ICOM). It is designed to provide a standardized way of describing cultural heritage information, allowing for the seamless integration, mediation, and exchange of data from diverse sources. This model helps in the reconstruction and interpretation of historical contexts in a way that is accessible and meaningful to people.

The primary goal of the CRM is to offer precise semantic definitions and clarifications that can transform scattered and localized information into a unified global resource. By establishing a formal ontology, the CRM defines the underlying semantics of database schemas and structured documents, ensuring that different cultural heritage documentation systems can work together consistently and interoperably. This enables institutions to share and integrate their data more effectively, enhancing the overall understanding and appreciation of cultural heritage across the world.

Documentation of ecclesiastical heritage

The ecclesiastical domain encompasses a rich tapestry of religious institutions, practices, beliefs, and historical narratives, each presenting unique challenges and opportunities for data representation and knowledge organization. This study explores the NARRATE platform, a sophisticated digital repository for ecclesiastical data, and delves into the process of enhancing the CIDOC Conceptual Reference Model (CRM) to develop a data model tailored to the intricate requirements of the ecclesiastical sphere. Drawing from information science, theology, and semantic web technologies, this paper highlights the critical considerations in designing ontologies that capture the nuanced semantics and complex interrelations inherent in ecclesiastical data.

Documenting ecclesiastical heritage involves recording both tangible and intangible aspects of religious culture. This includes physical artifacts like manuscripts, icons, and architectural structures, as well as rituals, liturgies, oral traditions, and theological teachings. Integrating these diverse elements requires a robust and flexible data model capable of capturing the rich contextual information that defines ecclesiastical heritage.

The NARRATE platform addresses these complexities by leveraging the CIDOC CRM, which provides a standardized framework for cultural heritage documentation. By extending the CIDOC CRM to include entities and relationships specific to the ecclesiastical context, the NARRATE project ensures that all relevant aspects of ecclesiastical heritage are accurately represented. This includes detailed descriptions of religious artifacts, the historical context of their creation and use, and their preservation conditions. To achieve comprehensive documentation, the project incorporates advanced digitization techniques such as 3D scanning and high-resolution photography. These technologies enable the creation of detailed digital representations of ecclesiastical artifacts, enriched with metadata describing their physical characteristics, provenance, and cultural significance. Multimedia elements, such as audio recordings of liturgical chants and video documentation of religious ceremonies, provide a richer, more immersive experience for users exploring the digital archive.

Additionally, the NARRATE platform includes tools for semantic annotation, allowing researchers and curators to link related pieces of information and create a network of interconnected data. This facilitates a deeper understanding of the relationships between different elements of ecclesiastical heritage and supports advanced analytical capabilities. For instance, users can explore connections between specific artifacts and the religious practices or historical events they are associated with, providing a holistic view of ecclesiastical culture.

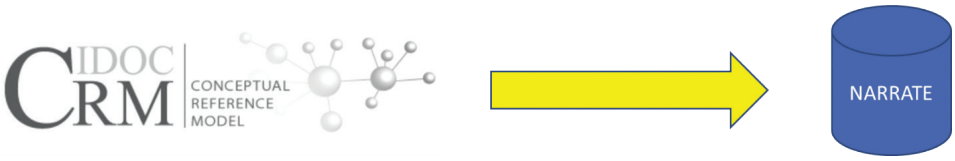
By synthesizing theoretical frameworks, empirical analyses, and practical implementations, this study significantly contributes to the broader discourse on data modeling and ontology design within specialized domains. It offers valuable insights and methodologies for researchers, practitioners, and stakeholders engaged in the digitization and preservation of ecclesiastical heritage and knowledge. The NARRATE project not only enhances the management of ecclesiastical information but also supports the preservation and dissemination of cultural heritage, ensuring that these treasures are accessible to future generations.

NARRATE framework implementation

To implement the core NARRATE framework, a crucial element is a semantic-based data model. Semantics, in this context, refers to information with a clearly defined meaning (Stuckenschmidt and Van Harmelen, 2005). This clarity is essential because the information needs to be easily discoverable through the NARRATE data discovery service. This service will help users find, access, and explore data within the NARRATE project for analysis, reporting, or other purposes (Czerwinski and Zhao, 1999). Our goal is to create data models and reference ontologies that will support the development of database schemas, which will describe ecclesiastical cultural treasures using semantic metadata descriptions. Semantic metadata descriptions involve using standardized vocabularies and ontologies that clearly define meanings and relationships between terms (Duval et al., 2002). After thoroughly reviewing recognized data models and their implementation in various projects, we chose the CIDOC Conceptual Reference Model (CRM). This model is a theoretical and practical tool for information integration in the field of cultural heritage.

The CIDOC CRM is a formal ontology designed for the integration, mediation, and interchange of diverse cultural heritage information. It plays a crucial role in enabling the exchange and integration of data from different sources, facilitating the reconstruction and interpretation of historical narratives on a human scale. The primary aim of this ontology is to provide the semantic definitions and clarifications needed to unify disparate, localized information sources into a coherent global resource. By defining the underlying semantics of database schemas and structured documents through a formal ontology, CIDOC CRM establishes a common understanding and framework for interpreting and exchanging cultural heritage information across various domains and disciplines.

The methodological approach adopted towards implementing NARRATE framework is illustrated in Figure 1.



STEP 1: *Identify CIDOC CRM base Entities & Properties involved in NARRATE semantic-and ontological-based data models*
STEP 2: *Investigate ontology (vocabularies) terms in ecclesiastic resources*
STEP 3: *Enrich the above with findings from NARRATE Work Package 2*
STEP 4: *Produce material for creating database schemas that will implement NARRATE framework*

Figure 1 Towards implementing NARRATE framework

The most demanding Step 2 required:

a. A thorough literature review of ecclesiastic resources, including religious texts, theological studies, historical documents, and academic papers. Special attention was paid to the terminology used to describe concepts, doctrines, rituals, and practices within ecclesiastic contexts,
b. Guidance from experts in ecclesiastic studies, such as theologians, religious scholars, or historians specializing in religious traditions, that provided valuable insights into the terminology and concepts specific to ecclesiastic vocabularies and
c. Exploration on digital databases and repositories that focus on ecclesiastic texts and resources, from institutions and academic organizations providing online access to historical documents, theological treatises, and religious texts.

The major ENTITIES of the CIDOC CRM data model that were selected to be adopted in NARRATE database development are depicted in blue rectangles with yellow letters in Figure 2 and are presented in Table 1.

Table 1 *Major CIDOC-CRM entities adopted in NARRATE data model*

ENTITY	Description – application in NARRATE project
TITLE	comprises textual strings that within a cultural context can be clearly identified as titles
APELLATION	identifies a specific instance or category within a certain context
LANGUAGE	represents multiple language support

IDENTIFIER	identifies instances uniquely and permanently within the context of one or more organizations
INFORMATION OBJECT	includes the description of the ecclesiastical treasure with no word limits, and provides a short and an extended version
DOCUMENT	provides different descriptions according to the different user profiles, includes photos, creates specifications for the image creation, e.g., image resolution
TIME-SPAN	comprises abstract temporal extents, having a beginning, an end and a duration
TYPE	includes information about the kind of an object
HUMAN-MADE THING	includes information about the creator of an object
BEGINNING OF EXISTENCE	includes information about the beginning of existence of an object and its biography, which is accessible only by the ecclesiastical treasure owner/s
MATERIAL	includes information about the materials an object was created
DIMENSION	includes information about the dimensions of an object
INSCRIPTION	includes information about object's inscription
EVENT	includes information about pertinent religious events or rituals, e.g., litanies (photos and videos would be desirable to be included) as well as its previous documentation/s and its relevant bibliography
PLACE	include information about an object's place in a church or a museum
CONDITION ASSESSMENT	provides information about an object's state of preservation
MODIFICATION	provides information about an object's conservation and includes photos before and after its conservation
CURATION ACTIVITY	includes information concerning curation activities

All these entities identified to be adopted in NARRATE data model may be connected through the whole CIDOC CRM Entities diagram. However, there are entities that need to be added for connectivity reasons. These entities act like a glue between the previously selected entities and are represented in yellow rectangles and blue letters. These entities include the initial CRM ENTITY of the CIDOC-CRM model which is directly connected with

3 of the above selected entities, the TEMPORAL and PERIOD entity which completes the EVENTS related to the history of an object, the ACTIVITY entity which connects the EVENT entity with its potential MODIFICATIONS and CURATION activities and the ATTRIBUTE ENTITY with its CONDITION ASSESSMENT. The PERSISTENT ITEM entity and the THING entity relate to the HUMAN MADE THING entity which is subsequently connected with the INFORMATION OBJECT entity via CONCEPTUAL OBJECT and SYMBOLIC OBJECT entities. Finally, the LINGUISTIC ENTITY is associated with the inscription of an object.

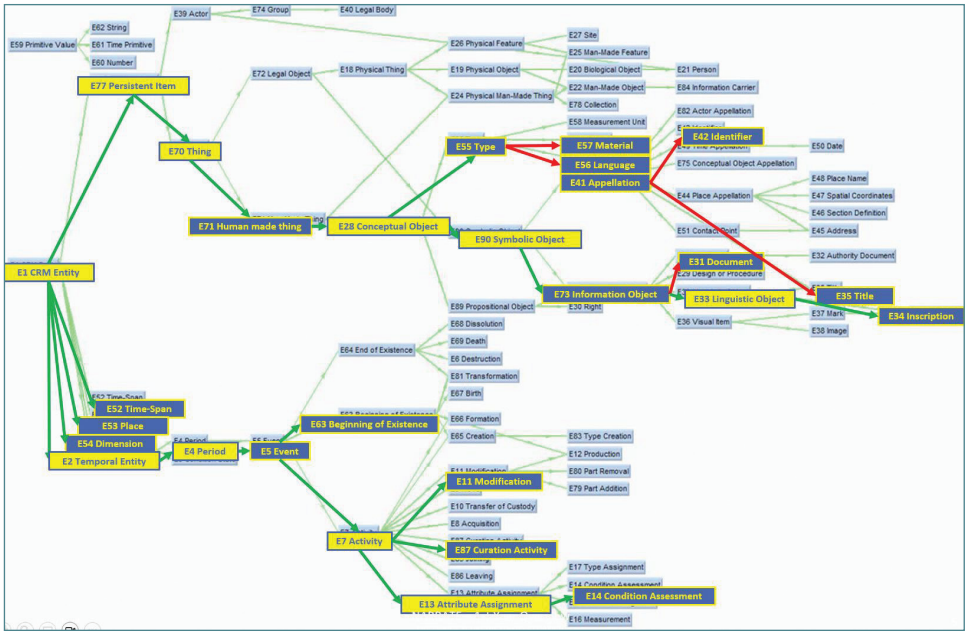


Figure 2 *Selected entities of CIDOC-CRM model*

For the design and development of the NARRATE database, each selected entity from the CIDOC CRM data model will be represented as a table in a relational database, such as PostgreSQL. Each table will include a primary key to uniquely identify each record, along with other attributes relevant to each entity, ensuring a comprehensive and precise representation of the data. Once the database tables are implemented, we will define foreign key relationships to accurately represent properties and associations between entities. Additionally, we will normalize the database to reduce redundancy and improve data integrity, which is crucial for maintaining the database's efficiency and consistency over time. To further enhance the functionality and accessibility of the NARRATE database, we will implement advanced querying capabilities using SQL, enabling users to perform complex searches and retrieve data efficiently. This will support detailed research and analysis. We will also incorporate indexing strategies to improve query performance, ensuring swift and

efficient data access. Robust data security measures, including user authentication and authorization protocols, will be put in place to protect sensitive ecclesiastical information from unauthorized access and potential breaches. Regular backups will be scheduled to prevent data loss and ensure the long-term preservation of digitized records.

A user-friendly interface will be developed to allow seamless interaction with the database. Designed to accommodate users with varying levels of technical expertise, this interface will provide intuitive navigation and easy data access. Features such as guided search options, metadata filters, and visual data representations will be integrated to enhance the user experience and facilitate the exploration of the rich ecclesiastical heritage documented in the NARRATE project.

To ensure the sustainability and continuous improvement of the NARRATE framework, we will establish a feedback mechanism that allows users to report issues, suggest enhancements, and share their experiences. This feedback will be invaluable for refining the system, addressing user needs, and maintaining the database's relevance and accuracy over time. By implementing these measures, the NARRATE project aims to create a comprehensive, secure, and user-centric digital repository. This repository will not only preserve ecclesiastical cultural treasures but also make them accessible and valuable to a wide range of stakeholders, including researchers, historians, and the general public.

Conclusions

The CIDOC-CRM is a sophisticated data model that provides a common and extensible semantic framework for integrating evidence-based cultural heritage information. Transforming this high-level model into a low-level relational database schema involves applying specific design rules to ensure future interoperability with other CIDOC-CRM compliant projects. This transformation is not straightforward or unique, but aims to maintain the semantic richness and support potential interoperability. The development and implementation of the NARRATE framework underscore the importance of using standardized ontologies for consistent and accurate documentation of ecclesiastical cultural heritage. Leveraging the CIDOC-CRM, we have crafted a detailed model that facilitates the integration, mediation, and interchange of diverse cultural heritage data. This model enhances data interoperability and aids in reconstructing and interpreting historical narratives, contributing to a coherent global resource.

Our database design can handle the complexities and nuances of ecclesiastical heritage information. By incorporating entities such as titles, appellations, languages, and identifiers, and addressing aspects like time-span, material, and condition assessment, the NARRATE framework adopts a holistic approach to cultural heritage documentation. This comprehensive strategy is crucial for maintaining the integrity and reliability of the data, ensuring its long-term preservation and accessibility. The implementation of this framework sets a valuable precedent for future projects in

the cultural heritage domain. It highlights the necessity of a structured and standardized approach to data modeling and ontology design, significantly contributing to the broader goals of cultural heritage preservation and accessibility. The insights and methodologies developed through this project can serve as a valuable reference for researchers, practitioners, and stakeholders engaged in digitizing and preserving cultural heritage.

By addressing the challenges of data integration and interoperability, the NARRATE project demonstrates the potential of semantic-based data models in enhancing the management and dissemination of cultural heritage information. This work supports advanced analytical and research activities and promotes the broader dissemination and appreciation of ecclesiastical heritage, ensuring that these cultural treasures are preserved for future generations.

Acknowledgments

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An icon, a site, a book: We and the digital representations of church cultural heritage

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Keywords: Photography, Churches, Documentation, Ecclesiastical heritage

Abstract

Along with Olya Gluschenko, we started photographing aspects of the religious life since 2005, while we were settling in Greece, after a period of living mainly in Russia. The similarities and the differences of the religious landscape in these two Orthodox –but ultimately quite different– countries, shaped our approach to a great extent. We kept on photographing religious subjects around the world at a rather leisurely pace but gradually our approach became more systematic and focused, especially when, in 2014, we had to produce a book and a CD of recordings of the local chanting. Gradually our relations with the local Metropolis of Demetrias and the Volos Academy for Theological Studies intensified, and the photographs of religious subjects increased; a turning point in this process was the creation of an Instagram account on behalf of Volos Academy in 2020, which provided an outlet for the photos that have been accumulated over all those years. At the end of 2021, this outlet, which had also been extended to Facebook, was dubbed as an "online museum" and, in late 2022, about 200 of these photos were published as a book.

Today we continue to photograph churches, in a more organized and somehow more "formal" approach, and in closer cooperation with the Metropolis, anticipating a more complete mapping of the churches of the area. In the meantime, it happened to me to deal with the digitization of older photographic and sound archives –some related with the religious topic, some not–confronting a number of relevant questions; among them

I must mention the archive of Spyros Panagiotopoulos, who photographed in Pelion in 1999, commissioned by the Metropolis. This presentation will try to draw together some common issues of these experiences.

Photographing Churches

As it already became clear, our approach was, in principle, empirical. We don't have any formal training, neither as photographers, nor as historians, archaeologists, theologians or anything related; I got a master's degree in Social Anthropology along the way, which helped me systematize some of the knowledge I had accumulated. We started out as hobbyists and remain, at least in our minds, hobbyists. We photograph what we like and we enjoy it, like a kind of psychotherapy. This lack of an academic background has positive sides. We often see things that go unnoticed; the plastic flowers, the fluorescent light bulb, the archaeologists' gauze, the cell phone that provides a bourdon for the chanter. We shape our thinking based on what we observe, and not on some theoretical model. Along the way, as our involvement has become more institutional, we have found that many theoretical models are impossible to apply in practice, as the recording by technological means now supersedes textual methods. I should mention here that older ways of recording take the inadequacy of the photographic media for granted and favor the textual approach, the same way it happened earlier with musical notation and sound recordings. As an example, I will mention that Panagiotopoulos, who worked extensively in the area of the Metropolis of Demetrias, practically sampled the churches he visited rather than photographing in detail, because this was the only possibility given the technology of that time, and it was just 25 years ago. Today this is no longer the case, photography is not an auxiliary but a main means, but it is uncertain to what extent this has been understood in the Greek ecclesiastical world.

The fact that Olya comes from a different cultural context –born and raised in Russia – adds one of the dimensions to our work, what is called in anthropology the "etic point of view", that is, the view of outsider. I don't come from a religious background either; I'm generally approaching the Church critically, but observing Olya I realize that many elements of the Church world are a part of my culture and I had never thought about it. The two approaches –the insiders and the outsiders view– complement each other and illuminate each other, as it's long ago realized by the anthropologists. The outsider and the insider observe different things in the same spaces, in the same situations.

Photographs, in themselves, have certain characteristics and a "life of their own", if we can term it. All kinds of recordings capture much more than what man who performs them has in mind; in other words, any kind of recorder –photographer, sound engineer, etc.– performs the recording, but the recording itself surpasses him. Many times, we have photographed things that were not visible to the naked eye, while many times we realized that in the same spaces, the two of us saw different things. Many times, also, the passing of

time has revealed details that were not noticed from the first moment. The characteristics of the photographic media are furthermore shaped by the characteristics of the digital media. With storage costs reduced to zero, today one can have photographs of churches, frescos, portable icons, details, rituals, persons, the environment, the outcasts, everything, even the process of recording itself. Two or three thousand photos are the usual result of a fruitful visit to a church, always with a feeling that something is still missing, calling for a second visit; and this, let me remind, is just our amateur approach. However, each recording is unique; each church, each icon is a little different on each visit. It depends on the light, the time of the day, the season of the year, the church calendar. "No man ever steps in the same river twice, for it is not the same river and he is not the same man", a saying that was attributed to Heraclitus. Recordings of rituals are another parameter, and it should be noted that we have not yet engaged in video recordings or recordings of oral testimonies from the church world, which are obviously also an important part of the heritage. In any case, we must keep in mind that a recording can never replace reality, but in many cases the recording is all that is left to us.

The need of metadata

Having started as hobbyists, at some point we found ourselves facing the need for metadata. Which is this chapel, which is this village, which is the depicted saint, who is the priest or the chanter? How can I retrieve data that I did not record a decade ago? Here, the internet played a very important role, both with the web mapping platforms (e.g., the well-known Google Maps), and also with the website organized by Vangelis (today Fr. Panteleimon) Konstantas and Alexandros Iatridis for the Metropolis of Demetrias, and which is still accessible, although it hasn't been updated over a decade. In the process, all these means proved to be even more valuable than they appear at first glance; the development of a collective intelligence, where everyone contributes their knowledge and everyone can be informed by the knowledge of others, is of enormous importance when the ventures expand to large dimensions. By the way, this shared approach of information contains a deeply Christian understanding, which is the total opposite of the "information stinginess" of the pre-modern times. I also started to build my own database little by little, so that I could manage the material that was accumulating. I have so far recorded over 500 temples and chapels; I estimate their total number within the Metropolis of Demetrias to be over 1500. This material not yet released publicly, not even in beta form, but it has to find its way out. Not all of these temples and chapels are of archaeological interest, but various elements of historical importance are scattered almost everywhere. But we must not forget that finally the concept of ecclesiastical heritage is not limited to archaeological and historical aspects. The recording of the present, i.e. what an ethnographer would attempt, seems to me also to be a fascinating work.

Our amateur and low-profile starting point had another positive side. The church world in Greece –in fact, not only the church world– is in rather bad terms with the digital media and often shows a technophobia; conservative voices, who want to see the web as a threat rather than an opportunity, are a large, perhaps dominant, group, while for many the use of digital media is limited to childish communication apps. Therefore, some proposals that had been made to the Academy for Theological Studies for large, expensive databases were rejected and, to be honest, this was a wise decision; since basic knowledge of data management was absent, among most of the Academy associates. On the contrary, the small, "hobbyist" unit moved forward, showing along the way that it does not involve important risks, but instead offers opportunities to get acquainted and spread information, and in deed using means that are not reduced to the church space but on the contrary help in connecting the church space with the rest of the world, such as e.g., social media. I should mention here that within four years, since the beginning of 2020, the online audience of the Academy has increased fivefold; and the posting of icons based on the Christian calendar and not on some kind of scientific criteria works as a point of contact with an audience motivated by faith more than knowledge, which numerically is anything but negligible. Over time, we see that our photographing activities become more and more welcome in the church circles, and sometimes spark a local interest, which is especially welcome given the amount of material to be recorded. Many priests ask us to go and photograph their churches, however we also encounter cases of suspicion both towards the photographic medium itself, and towards the central administration of the Metropolis, which is sometimes perceived as distant and alien.

Limits of "ecclesiastical heritage"

One more question we have to face is the limits of the "ecclesiastical heritage". In the churches one can find ancient relics, newer interventions and items of daily use, all together, side by side. Which one of them is the "heritage"? We tend to treat the contemporary elements as invisible, but when we visited India in 2011, we realized that the contemporary part of the ancient temples isn't invisible at all. A church, as well as the Hindu temple, is possibly ancient, or at least pretty old, but it's still serving its religious purpose; it's not a museum artifact. The electric bulb at the iconostasis, or the plastic bottle with the oil parked on some fresco are also elements of the heritage; they guarantee that the place is still holding its religious function. The ecclesiastical heritage, finally, is the coherent whole of all these seemingly irrelevant items, and if we want to be precise, even the surrounding space –the view, the vegetation, the human interventions– is also part of the heritage. Photographing –or, in any way, recording– this heritage must take all these aspects into account; it is not only art history, it is also ethnography that we have to do here. The imprint of the past is interwoven with the life of the present, but we should not think of any imprint as identical with the past life.

Time turns out to be a very important dimension. Over the years, one can observe what remains constant and what changes, and also can observe the rhetoric that develops about stability and change. The present always contains elements of the past, and this refers both to the real past and an imaginary one. The criteria, however, always belong to the present. Just as an example, we have seen the cantors wearing once again the *sticharion*; this was not the case in post war years anywhere in our area and most probably all over Greece. We have seen the uncovered stonewalls develop into a dominant fashion; this also was not the case in earlier decades and in earlier centuries, when the non-plastered wall was just a sign of poverty or of neglect. We observed the prayers of the priest during the *proskomidi* becoming audible in the congregation. Old became a kind of quality and even invaded everyday life. We have essentially a comeback, a new "old"; but any kind of return means change, as Bohlman very characteristically observes.

Capacities of the photographing technology

Changes in the capacities of the photographing technology should also be included in this discussion. With the older technologies, i.e., the photographic films –let's not mention the even older hand sketches– the selection of the topics necessarily preceded the documentation; because of its limitations, the documentation had to focus on what was already been decided to be important, representative, etc. Nowadays, with the advent of the digital media, documentation can be freed from such prejudices; and many times, the seemingly insignificant turns out to carry particular features, bringing up new elements and ways of thinking. At this point, we must not forget that the beautiful and the important are not timeless concepts, but clearly depend on place and time. It far from clear, for example, whether a singer like Umm Kalthum is perceived as great in the Western European milieu, or whether a painter like Jackson Pollock has any fans in India. Things that were once considered great, today are reviled and treated as virtually forbidden and vice versa; the Renaissance shadings that once crept into orthodox iconography are such an example. With the possibilities offered by digital media, today we can have many different points of view somehow present all the time; and since we have the capability, I would say it is our duty to do so.

Conclusions

At this point, the question of the future becomes also important. We know –to a certain extent– what was considered important in the past, we know what is considered important today, but can we predict what will be important in the future? The answer is obviously no, so what we are called to do is not to despise and not to "leave out" things that may turn out on the way to be important. The production of, e.g., contemporary, sometimes untrained painters, the chanting with west-European harmonies or the architecture of prefab church-

es in the post-earthquake period –few of which still remain today– are relevant examples. Almost always, the importance of a particular technique or a work of art is co-determined by the rest of the artistic production; whether it remains a rare case or it has become a commonplace, whether it has found successors or it has remained unique, etc. All of these questions, in fact, are questions of quantity; the quantity of works, which interferes with the quantity of records.

As our photographs for the needs of the Metropolis of Demetrias and the Academy for Theological Studies are still on the rise, we ourselves face personal questions. Things considered to be monumental –often deprived of their contexts– occupy an increasingly central place in our photography, pushing aside the details we used to chase in the past. We are now struggling to find ways to manage this dichotomy and we have somehow divided our roles, yet a conflict is always lurking. Are we sure that the "clean", "neutral" photography of monuments is what we need? Is it what we care about?

Each photograph, each recording, in itself, is made by concrete people, in concrete places, at concrete times; and as cultural anthropology –and traditional physics– has found, you can never isolate the observed from the observer, the same way you cannot isolate the dance from the dancer.

Late Antique and Medieval Christian Monuments of Thrace – a need for digitalization

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Keywords: Christian, architectural, monuments, digitalization, corpus

Abstract

This text presents the main problems related to the study, publication and status of various Christian architectural monuments from the province of Thrace. The necessity of compiling a digital corpus of Christian monuments, both for the province of Thrace and for the rest of the Balkan provinces, is shown. The newly created corpus for the monuments of the Holy Land is briefly presented, which could serve as an example in the preparation of the corresponding corpus for the province of Thrace.

Christian architectural monuments in the province of Thrace

The Christian architectural monuments located in the province of Thrace are an important part of the general cultural heritage of the Church for several reasons, one of which is the proximity to Constantinople, which was an undisputed center during Late antiquity and the Middle Ages. To better understand the need for the documentation and digitalization of these monuments, it is necessary to consider some specific features of the architectural heritage in this province and the current state of monument research.

The Bulgarian territory of the province of Thrace is rich in monuments from all eras, including Christian monuments from the early Christian era to the present day. Unlike the

neighboring province of Macedonia or Constantinople, there are almost no fully preserved temples from the early Christian era and very few from the medieval period. Most monuments mainly date back to the 19th century. The lack of well-preserved Christian monuments in today's Bulgaria can be attributed to natural disasters such as earthquakes, fires, and floods, as well as military conflicts and building activities that often led to the destruction of old buildings to make way for larger temples. The proximity of the province of Thrace to Constantinople, the capital of the Byzantine Empire, also contributed to the loss of monuments due to various conquerors ravaging the region in their attempts to capture the capital. As a result, many Christian monuments are remnants of buildings with low superstructures and are often only partially preserved.

However, some monuments of great importance have been preserved on the territory of the province. One notable early Christian church near Filipopol in Thrace is well-preserved with a high superstructure near Perushtitsa (Panayotova, 1956). Additionally, the medieval Bachkovo monastery and its ossuary are iconic monuments for the province of Thrace. The frescoes of the Bachkovo ossuary have been published in a monograph by Elka Bakalova (Bakalova, 2003).

Another challenge faced by researchers of Christian architectural monuments, and one that underscores the need for digitalization of this architectural heritage, is the uneven research and publication of these monuments. The difference with studies of Christian art is conspicuous. In recent years, the Institute for the Study of Arts has significantly contributed to Christian art in Bulgaria, particularly in the province of Thrace. They have published Corpuses of Christian Art from the 16th to the 19th century (Gergova et al, 2006, Kuiumdzhiev et al, 2012), the study «Greek Painters in Bulgaria after 1453» (Mutafov et al, 2008). However, in Christian archaeology, a major issue is the lack of detailed publications of individual monuments and a comprehensive corpus that includes Christian monuments from various eras. The partial or lack of publication of many monuments poses a significant obstacle for researchers of Christian architectural heritage. It can be challenging for researchers to place a monument within the specific context of the province and in the broader Christian context. This results in gaps on the geographical map that hinder comprehensive understanding. While the reasons for the limited research on Christian monuments are complex and varied, it is important to focus on potential solutions to improve the situation.

The following few interesting monuments located in the Bulgarian territory of the province of Thrace show the various degrees to which these monuments have been published and preserved. An intriguing monument located near the border with the Republic of Turkey in the village of Voden is the early Christian martyrium (Tancheva-Vasileva, 1993, 1998). Originating from a natural cave where burial chambers for several martyrs were created, a cruciform martyrium was constructed above the cave, followed by a small seven-nave temple. It is believed that it likely evolved into a monastery in the Middle Ages. The publications feature black and white photographs, and some unclear plans, making it challenging to fully grasp the complexity of the site.

In the same area, two other interesting monuments are two rock churches. One is in the village of Matochina, believed to have been constructed in the 10th century with a rectangular plan and a vaulted ceiling. This church was in use until 1934 (Aladzhov, 1981). Another rock church in Mihalich also dating back to the 10th century, features a triconchal plan with a dome and a height of 6 meters. It is not published. Both churches warrant further study to place them in historical and geographical contexts, as the existing publications are more popular rather than specialized.

The early Christian churches in Polski Gradec, in the region of Galabovo (Borisov, 2013), have been extensively researched and published. The first church was built in the mid-4th century, replaced by a second basilica at the end of the century. These basilicas are examined within the context of the settlement and early Christian architecture in Bulgaria. While these monuments are well-presented, a significant concern arises from the village's proximity to coal mines near Galabovo. The potential threat of excavations near the archaeological site underscores the importance of not only documenting but also digitizing these locations for the preservation of the monuments.

The comprehensive study and publication of 10 early Christian basilicas in Dioclетianopol provide a good example of a thorough examination and presentation of Christian monuments within a late antique settlement. These temples, dating from the mid-4th to the 6th century, offer valuable insights for researchers and could potentially be included in a corpus of early Christian temples. Access to these monuments is crucial for further study and understanding of late antique Christian architecture (Madzharov, 1993).

The early Christian martyrium of Augusta Trajana (Nikolov, 1980. Nikolov, Kalchev, 1992) has been well-studied and published, albeit partially preserved. On the other hand, the basilica in the village of Kran, dating from the second half of the fourth century, has gaps in its publication, hindering interpretations (Tabakova-Tsanova, Ovcharov, 1975). Unfortunately, like many other monuments, nothing remains preserved from this basilica today.

The importance of documentation

The varying levels of documentation and preservation of individual Christian monuments underscore the importance of timely and thorough documentation, as well as digitization of archaeological research results to prevent the loss of valuable information about these monuments. It is essential for as to work closely with regional museums to ensure the proper documentation and preservation of monuments. In cases where monuments were studied many years ago but remain partially published or unpublished, there is an opportunity to create new publications based on archaeological journals. However, this effort must be led by the archaeologists responsible for the specific territory. While processing information about well-researched, published, and accessible monuments is more straightforward, the task of documenting and preserving less documented or deteriorated sites is equally important for the overall understanding and preservation of our cultural heritage.

The compilation of a Corpus of the early Christian, medieval, and late medieval Christian monuments in the province of Thrace would be a good start for the compilation of the Corpus for all the provinces of the Balkans. I consider it appropriate to point out a new Corpus of early Christian temples that was recently completed. It is about the Digital Corpus of Early Christian Churches and Monasteries in the Holy Land, developed under a project financed by the Israel Science Foundation, led by Joseph Patrich, and completed in 2021 (The Hebrew University in Jerusalem, 2024).

The structure of this digital corpus is presented clearly (Patrich, Di Segni, 2023). The preliminary results are also published (Patrich et al, 2020). I think this new digital corpus can be used as an example in the compilation of a digital corpus of the Christian monuments from the province of Thrace because it contains criteria that correspond to the modern level of archeology and its related sciences, and also to modern principles in digitization. Another important task in the realization of this corpus should be the formation of international teams composed of specialists from the modern countries in which the late antique province of Thrace falls - Bulgaria, Greece, and Turkey.

Conclusions

Compiling a single corpus or separate corpora of Christian monuments is indeed a valuable initiative that can foster collaboration and teamwork among scholars from various disciplines. This cooperative approach is essential in today's research landscape and can greatly enhance the documentation, accessibility, and understanding of individual monuments. By creating a comprehensive corpus of Christian monuments, researchers can gain a more complete picture of different aspects of Christian culture. This centralized resource would make information readily available to all scholars without restrictions, facilitating research and study in the field. Additionally, such corpora can help guide non-specialists in identifying which monuments are significant and worthy of further examination.

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