

Cultural Heritage and Mediation:

The Use of ICT in the Communication of the Artistic Layers of the Church of Saint John the Baptist of Foz do Douro

Tiago Cruz, Marisa Santos

1. Introduction

The integration of Information and Communication Technology (ICT) into the dynamic landscape of knowledge access and organization stands as a critical catalyst for advancements in digital heritage. In alignment with the principles outlined in the Porto Santo Charter (2021), ICT extends the realms of participation and cultural democratization to the digital sphere. Approaches such as three-dimensional reconstructions and 360-degree visits, closely associated with the Seville Principles (2011) and the London Charter (Denard 2014), offer viable, nonintrusive, versatile and reversible solutions to the challenges in this domain.

As shown through an examination of the Church of Saint John the Baptist of Foz do Douro, drawing and digital drawing emerge as instrumental in comparing and assessing forms, chronologies, and functions. This implementation involves extracting information from diverse documentary and iconographic sources, transported into a virtual dimension such as urban design, scale, and layout, as well as interior and exterior design of buildings, along with an accurate representation of their placement in the environment, space, and landscape.

In our research project, centered on the exploration of cultural heritage and mediation, we establish a primary objective: To shed light on the transformative potential of state-of-the-art technological tools while contributing to the study of the Church of Saint John of Foz do Douro. Our aim is to uncover historical narratives while actively fostering resilient community connections with cultural heritage. This research seeks to redefine the community from passive observers to dynamic participants, through workshops and other participatory initiatives. The culmination of these efforts was an inclusive open event held at the Church of Saint John of Foz do Douro on November 7, 2023. Through this holistic approach, we seek

to integrate technology, history, and community engagement, fostering a comprehensive understanding and appreciation of cultural heritage.

Our methodology entails a meticulous exploration of the digital aspects of heritage, engaging with critical themes and navigating through relevant debates in the field. We adhere steadfastly to the best practices in digital heritage, ensuring a rigorous interpretation of sources, the construction of an extensive documentary collection, and a thorough review of existing literature. These components serve as the foundation of our research, intricately woven together to facilitate a detailed and multidimensional reconstruction of the historical and artistic narrative of the Church of Saint John of Foz do Douro. This approach allows us to capture the nuances of its history, providing a comprehensive understanding of the cultural significance embedded in its heritage. Alongside textual exploration, our methodology embraces the visual dimension through exploratory photographic surveys and advanced photogrammetry techniques, enhancing our understanding and representation of the built heritage.

While this approach presents many challenges to individual engagement with collective cultural heritage, requiring digital literacy and sensibility to interact with digital technologies, it significantly influences knowledge promotion and diffusion. Framing cultural heritage as an attribute of “quality of life,” contributes to the innovation of its relationship with society, enriching the experiential aspect. Leveraging ICT, this approach fosters rewarding, sensorially immersive activities, involving the five senses and enabling an understanding of history and the past from a sensorial, dynamic, and interactive perspective. It not only broadens the scope of research but also contributes to its dissemination in an interactive way to a wider and more diverse public. The multidisciplinary character of this approach is highlighted, combining digital humanities, history, art history, architecture, archiving, and information technologies.

The research methodology was guided by four principles that underpin the accuracy and transparency of our approach. First, we embraced interdisciplinary collaboration, enlisting expertise from diverse fields, including archivists and IT professionals, to gain comprehensive insights. Second, we prioritized transparency, ensuring openness in our research process, with the digitized sources from the Parish of Foz now available as open-source materials – an impactful outcome of our ongoing project. Third, we placed a significant emphasis on interpretation, recognizing the profound influence of cultural factors on our work, particularly in shaping digital-heritage representation. This influence is evident in the nuanced exploration of historical and artistic narratives. Last, our commitment led

us to prioritize evaluation, actively encouraging peer assessment to refine our research. As a result, the outputs are accessible, reflecting the objective of opening knowledge to the community, thereby enhancing the territory of digital democracy.

1.1. Framework of the Project

This article is a constituent part of a comprehensive project led by Ana Cristina Sousa, supported by the CITCEM Research Unit¹ as part of a scientific-research initiative. The collaboration of Carlos Sousa Pereira, founding partner of the company Detalhar (Pereira, n.d.), was instrumental in the development of 360-degree tours and the integration of the outcomes into an open-source platform.

In addition to presenting the achieved results of the reconstruction model and 360-degree tours, our project undertook the digitizing and dissemination of historical documents from the Foz do Douro Parish Archive, a crucial repository preserving a significant portion of the church's history. Thanks to this project they are now accessible to the public on an open-source platform (Direção Regional de Cultura do Norte 2022). This crucial step, with the collected information, laid the foundation for the digital reconstruction of the church's different phases. Further, to accomplish the objective of knowledge dissemination, the project has been showcased to the general public and the community at two distinct public events. The first presentation occurred at the "First International Meeting on Communication and Digital Mediation of Heritage" in Porto in October 2023 (CITCEM 2023). In a context of enriching experiences and blending digital humanities, art, and culture, the event aimed to foster discussions on best practices in the digital-heritage field. The international meeting was part, as well, of the abovementioned initiative supported by the CITCEM Research Unit.

As indicated by the title, this article centers on the comprehensive utilization and integration of ICT throughout the entire process. Our research integrates various techniques and instruments that effectively illustrate this integration. The present article unfolds, in a structured progression of sections, the main topics of the project, starting with a comprehensive exploration of cultural heritage and mediation. Subsequently, we delve into the methodology employed, followed by an in-depth examination of the Church of Foz, the focal point of the present investigation. Within this

¹ Project funded by CITCEM's base budget - UIDB/04059/2020. Reference: 001.ISJB Proj.

framework, we will offer insights into the achieved results, with a particular focus on the 360-degree tours and digital reconstruction. The use of ICT has helped achieve our project goals by preserving and sharing important historical documents, making them more accessible and improving our understanding of the cultural heritage of the Church of Foz do Douro.

2. Foz do Douro Parish Church: A Building with History

Foz do Douro is located next to Barra do Douro, at the point where the Douro River flows into the Atlantic Ocean. For centuries, this territory was a transit point for people and goods destined for the customs house in the riverside area of the city of Porto and the piers of the port.

Despite today being integrated into the city of Porto, Foz do Douro was a *couto* (territory) of the Benedictine Monastery of Santo Tirso between the thirteenth century and 1834, the year of the suppression of religious orders in Portugal. The type of administration to which this territory has been subject, as well as its geographical characteristics, have endowed it with particular traits, such as the devotions and cultural practices rooted in the community.

Over the course of six centuries, this territory was occupied by members of the Benedictine Order, who founded and refounded sacred spaces and abolished cults linked to the order such as Saint Scholastica, Saint Gertrude, and Saint Benedict. Yet the presence of a community dedicated to fishing stands out, which asked for protection of the waters of Our Lady of the Light, Saint Bartholomew, and Saint John the Baptist. Despite being smaller, this community still occupies the quarter of Cantareira.

The grant made by Afonso Henriques, first king of Portugal, of the “(...) hermemita de Sancto Iohanne de foze de Dorio” to Dom Roberto and his companions from Riba Paiva dates back to 1145 (Câmara Municipal de Matosinhos 1978, 105). In 1196, King Sancho I and Queen Dulce signed a donation letter of the Monastery of São Salvador de Bouças, which at the time administered Foz do Douro, in favor of their daughter Princess Mafalda. The princess donated the hermitage of Saint John the Baptist to the Benedictine Monastery of Santo Tirso, in July of 1211 (Câmara Municipal de Matosinhos 1978, 123-131).

These are the first written references to the small hermitage erected next to the Douro riverbank. During the sixteenth century, this building was replaced by a Renaissance church by Abbot Miguel da Silva (1527-1546). This benefactor with a humanist spirit was abbot commander of the Monastery of Santo Tirso and Bishop of Viseu. Returning from Rome,

where he had contact with important Renaissance figures, he carried out a cultural renewal project in Foz do Douro, giving the responsibility to the builder Francisco de Cremona (Abreu 2010, 561-562). Among the various structures built, there are still traces of the old Renaissance church and the lighthouse chapel of São Miguel-o-Anjo in Cantareira.

Around 1570, the Renaissance church began to be enclosed within the Fort of Foz do Douro. This military building was erected to defend the Portuguese coast. Despite the construction of the fort, the Renaissance church and monastic residence continued to be used until 1640 or 1643. The Benedictines then abandoned their church and looked for a new place to settle. The construction of the current parish church is the result of this historical moment.

On August 25, 1640, the monk André Marques de Almeida donated the land for the new church. On the site, there were old residential structures that were adapted to liturgical use. However, the structures proved to be very fragile, and the construction of a new nave began. In 1645, a chancel was already in place on the north side. These fragile structures soon showed serious damage, which led to the construction of buttresses on the façade of the church. This solution turned out not to be effective, and the construction of a new nave began, whose side walls were already erected by 1667 (Santos 2022, 173).

The current architectural composition is the result of a long process of transformation. The structure mentioned in 1667 corresponds to the side walls, which initially included six side chapels, with two more added during the eighteenth century. In July 2022, traces of mural painting and the presence of old altar stones on the back of the current altarpieces were found. At the beginning of the eighteenth century, gilded altarpieces hid the previous painting and reused some of the old altar stones for structural support (Santos 2022, 217-218).

Initially, the church nave received a wooden covering. Between 1728 and 1733, the wooden covering was replaced by the lunette vault, its sections marked by a round arch in stonework, interspersed with ribs that intersect in the center. The opening of the current lighting corresponds to the eighteenth-century intervention on the roof which, consequently, led to the elevation of the nave. So far, no remains have been found that indicate how this sacred space was illuminated before 1728. The existence of the primitive wooden ceiling is evoked by a cornice line visible on the west façade and inside the church (Santos 2022, 195).

Between 1709 and 1712, the construction of a new main chapel began, which replaced the construction from the time of the monk André Marques

de Almeida. This construction sparked a quarrel between the Benedictines of Foz do Douro and the Santa Casa da Misericórdia do Porto, the faithful custodian of the donor's will. Despite the dispute, the main chapel was completed in 1725/1727. The triumphal arch was closed in 1732 with the coat of arms of the Benedictine Order and the donor's emblazoned stone, perpetuating the memory of his legacy to this day (Santos 2022, 195-203).

Along with the work on the main chapel and triumphal arch, work on the vault, upper choir, and façade was carried out simultaneously. During this period, the sacred space was a true construction site. The church we know today was only completed in 1733 (Santos 2022, 202).

Understanding this evolution is only possible through the analysis of the documentation found in the Foz do Douro Parish Archive and the Porto District Archive and by reading the material remains that have come down to us. Also, through interviews and direct contact with the community, we started to understand the importance of this church in local history. We began an in-depth academic investigation that culminated in the doctoral thesis "*Silêncio... a Foz vai doirando lentamente...*" *Território, Devoção e Práticas Culturais da Foz do Douro.*" Because our research was academic, we also had to create mechanisms that integrated the local community into the processes of historical reconstitution. In this context, the 360-degree virtual tour and the three-dimensional reconstitution of the church were born, which are practical results of a scientific work.

3. The Foz do Douro Community As an Agent of Heritage Co-Creation

Communities are fundamental agents for the identification, valorization, and preservation of cultural heritage. Before any "heritagization" process, communities must recognize historical, artistic, social, identity, and mnemonic values in their cultural assets. According to the Krakow Charter (2000), the concept of identity is a collective reference that brings together values from the current and past experiences of a community (Krakow Charter 2000). The notion of identity is then a socially elaborated dimension, which is associated with the individual trajectory of each member of the community (Sobral 1998, 40). Therefore, "while memory contributes to the maintenance of group identity, it is the group identity that allows the construction of collective memory. At every moment in the present it functions as a representation of the past." (Almeida, 2016, 21.)

Cultural assets are fundamental elements for the construction of collective memory and the development of identity as a community. The historical narrative that is created is transmitted and developed from generation to

generation (Ballart Hernández and Tresserras Juan 2001, 12). To continue as part of this narrative, cultural assets have to be seen with prospective value and not just as remembrance. To continue to be part of this legacy, they have to be recognized by the community, which must be aware of their preservation and appreciation. The inherent selection is made by the community itself, influenced by the ideologies and social values specific to each era, as well as relationships maintained with the past in the form of memory and history.

As a legacy, cultural assets require identification and subsequent investigation, which inevitably implies valorization. To identify these assets, oral memory records are often used. The community acts as a witness, recalling events from collective memory that the individual “I” has not seen but remembers together (Halbwachs 1990, 25).

The Foz do Douro community identifies its parish church as a repository of memories and stories. The memory of the Benedictine legacy, devotions linked to the sea and religious rituals, such as the procession of *Nosso Senhor dos Passos*, were passed down from generation to generation. The church connects to the community through affection. Believers turn to her in days of distress, but also at festive moments, such as weddings and baptisms.

The community’s active involvement is pivotal to the vitality of this locale. To cultivate even stronger community engagement, a series of activities was developed. Among them is the creation of training for adults, entitled “Involvement of Communities in the Valorization of Local Heritage” (FLUP 2022), included in the multidisciplinary training program of the University of Porto, under the Recovery and Resilience Program of the Portuguese government. The communities of Foz do Douro and Saint Peter of Afurada (Vila Nova de Gaia) were invited to discover and study their cultural assets through direct contact with the territories. This training was conducted in partnership with Cátia Oliveira, under the scientific direction of Maria Leonor Botelho and Ana Cristina Sousa (FLUP).

The geographical potential of these places, connected by the Douro River, a means of survival and communication for communities among themselves and with territories beyond the horizon, is closely related to the practices and know-how linked to riverine and maritime activities, protected for devotions that encourage cultural rites and religious manifestations. The materiality of these practices – images, sacred spaces, liturgical objects, boats and fishing tools – today reflects a reality showing a tangible and intangible heritage character that must be valued and safeguarded, with

the main agents of this process and its communication being the communities themselves.

This training fits into Objective 4 of the 2030 Agenda, which aims to guarantee inclusive and equitable high-quality education, promoting lifelong learning opportunities. In line with the document *Heritage and the Sustainable Development Goals: Policy, Guidance for Heritage and Development Actors* (Labadi et al. 2021), heritage provides support for the development of essential and transferable skills, such as creative thinking and personal skills and interpersonal skills that are necessary for a knowledge-based society.

Between 2022 and 2023, three guided tours were carried out at the parish church of Foz do Douro. During these tours, the process of building the church was discussed and the devotional images and gilded altarpieces were identified and analyzed. One of these visits was paid for and all the money raised went toward the work on conservation and restoration of the church. This work is crucial because the church's vault is seriously damaged (Paróquia de S. João da Foz 2023).

Figure 1. Guided tour of the church



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Two conferences were also held, promoted by UF Aldoar, Foz do Douro, e Nevogilde, titled *Seven Waves: the cult of Saint Bartholomew in Foz do Douro*, as part of the Foz'Art cultural event, and *Foz do Douro: territory, image and devotional practices*, at the VII Foz do Douro Literaturismo meeting. These presentations brought together members of the local community and political figures crucial to the preservation of local cultural assets.

The research carried out allowed the development of the project financed by CITCEM, which we described in subsection 1.1 of this article. This project consisted of the digitization of the parish archive, the creation of a 360-degree visit to the church and the three-dimensional reconstruction of the construction phases of this sacred space. These models allow greater democratization of knowledge about local heritage.

The scientific research carried out and all activities developed with and for the community demonstrate the importance of the active role of the local community in the co-production of cultural heritage and in the construction and transformation of *genius loci*.

4. Digital Narratives for Cultural Heritage and Mediation

In the realm of digital communication, the fusion of differing forms of narrative with technological advancements has given rise to transformative possibilities. Digital narratives and storytelling, as elucidated by Salmon (2008), harness the potentialities inherent in technological development, new media, and the internet. This convergence stimulates the development of innovative models of narrative production and diverse forms of narrative construction, as expounded by Gétrudix-Barrio et al. (2011, 158). The dynamic intersection of narrative techniques and technological platforms represents a profound shift in the landscape of digital communication, offering a spectrum of creative avenues for constructing and disseminating narratives in contemporary contexts.

Mudge et al. (2017, 1) emphasize the capacity of digital representations to convey elements of cultural heritage through various types of digital representations, defined by their use, such as art and entertainment, visualization, and digital replicas of our living world. Within this context, the emergence of new multimedia communication exemplifies the dynamic evolution of communication modes within the digital realm, as highlighted by Matias (2016, 15). The combination of narrative techniques with digital platforms, and with the involvement of text, sound, video, images, and interactive content, opens undefined possibilities and narrative paths, creating opportunities for immersive and captivating experiences with

our heritage. This transcends conventional limits, enriching the methods through which we engage with the narratives of our collective history.

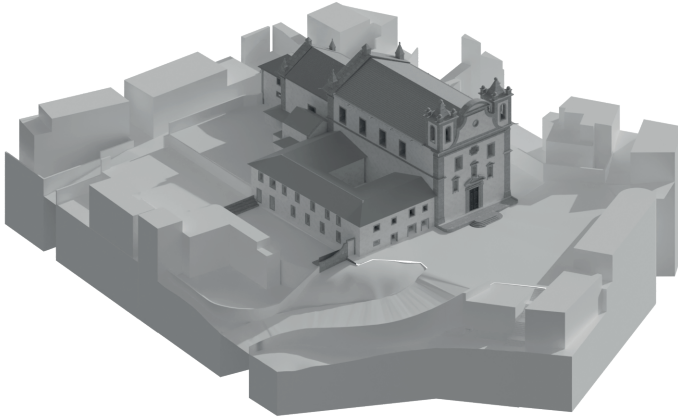
4.1. 360-Degree Tours

The 360-degree church visit unfolds as an immersive virtual experience, meticulously designed to engage visitors with a plethora of features. Through user-friendly navigation instructions, points-of-interest markers, historical context, multimedia elements, and contact information, participants are seamlessly guided through a virtual exploration of the Church of Saint John the Baptist in Foz do Douro. Along with a comprehensive encounter with the church, these features also extend an invitation, encouraging individuals to embark on physical visits to the actual site. The seamless integration of virtual and physical experiences enhances the overall engagement, allowing individuals to explore the church's history and architecture in both the digital and tangible realms.

In parallel with the visual aspects, the integration of audio elements further intensifies the immersive quality of the virtual tour. Meticulously curated audio recordings, including historical narrations, and explanations of key architectural features provide visitors with a multisensory experience. The careful selection and placement of audio elements contributes to a narrative that guides users through the virtual space, fostering a deeper connection with the cultural and historical significance of the church.

The 360-degree visit comprises aerial views from Foz do Douro, providing a panoramic perspective of the church's placement within the territory, including its previous location near the Douro River. This approach offers a comprehensive view of the complete exterior volumetry, facilitating an analysis of its relationship with the topography and preexisting surroundings. The audio narrative aids in understanding the connections between the building and its contexts. Opting for the narrated guided tour provides an opportunity to delve deeper into the narrative, but visitors also have the flexibility to explore the spaces independently. Choosing the guided tour leads to the church's interior, where the visit begins with a comprehensive view of the nave. It proceeds with a balanced journey, alternating spatial views with details, including the altars and pieces used for religious rituals. Marisa Santos created the narration, with supervision on the texts by Ana Sousa. Carlos Pereira was responsible for all the captions. The video synthesis of the 3D model was developed by Tiago Cruz and is integrated into the 360-degree visit.

Figure 2. Three-dimensional modeling of the church



This holistic approach to construction, combining both visual and auditory elements, reinforces our commitment to delivering a rich and meaningful exploration of the Church of Saint John the Baptist in Foz do Douro, both in the digital realm and as an invitation for physical visits to the site. As we proceed, the focus will shift to the intricate process of digital reconstruction, where we will delve into the meticulous construction of the digital model.

4.2. Digital Reconstruction

The methodical creation of the digital reconstruction, depicting various phases in the evolution of the church of Foz do Douro, was guided by a harmonious blend of traditional drawing techniques and cutting-edge digital drawing methods. The integration of drawing as a research instrument assumes a pivotal role, seamlessly connecting the realms of conceptualization and visualization. This facilitates the exploration of diverse research hypotheses and propels the development of intricate three-dimensional models. Within the context of a virtual church, fundamental concepts such as knowing, informing, signifying, representing, and presenting emerge as central to this dynamic process. Despite the evident digital emphasis, our methodology remains firmly anchored in tangible architectural surveys, which include on-site assessments of architectural volumes, including the ornate altars.

Embracing a multi-scale methodology, the use of drawing as an instrument of research becomes a means of in-depth exploration regarding the materials and the built heritage of the church. This approach facilitates a thorough exploration and fosters a comprehensive understanding of its intricate details. The integration of laser-scanner survey captures becomes indispensable in this context, unveiling the artistic layers of the church. The presentation of preliminary results encompasses exterior views, wireframe interior lines, and perspectives from key vantage points such as the high choir, entrance, main altar, and beyond, providing insightful analyses of the church's diverse artistic layers, offering valuable insights into its rich heritage, and contributing to a profound understanding and appreciation of its architectural narrative.

5. Conclusion

Given the historical and cultural importance of Foz do Douro, a locale steeped in centuries of cultural and religious significance, the parish church stands as a repository of a diverse artistic heritage. This encompasses a rich array of artistic expressions, including painting, sculpture, finely crafted altarpieces, and elaborate metalwork. The church serves as a testament to the enduring legacy of artistic endeavors throughout the centuries, reflecting the cultural tapestry and religious traditions that have shaped Foz do Douro's identity. The amalgamation of these artistic elements contributes to the church's unique and multifaceted historical and cultural significance. Our project makes known the historical, artistic, and devotional importance of this sacred space through digital media.

The process of constructing a virtual representation of architectural structures entails a nuanced extraction of multifaceted dimensions, encapsulating a methodological approach firmly grounded in meticulous documentation. This scientific amalgamation not only serves as an important visual medium but also underscores the intricacies of the research methodology applied, fostering a comprehensive understanding of architectural heritage. Through this scientific lens, the virtual representation becomes a gateway to a deeper appreciation and exploration of the architectural narrative.

Our research project, centered on cultural heritage and mediation, redefines communities as active participants rather than passive observers. It culminated in an inclusive ceremony at the Church of Saint John in Foz do Douro that emphasized the integration of technology, history, and community engagement. The objective is to cultivate a comprehen-

sive understanding and appreciation of cultural heritage. As we navigate the landscape of digital heritage, our work not only expands the research domain but actively contributes to its interactive dissemination across diverse audiences. The multidisciplinary nature of our approach, weaving together digital humanities, history, art history, architecture, archiving, and information technologies, underscores the depth and complexity of our exploration into the artistic layers of the Church of Saint John the Baptist in Foz do Douro.

In conclusion, the synergistic integration of cultural heritage and mediation emerges as a seminal force in the dissemination of architectural heritage, reconciling scholarly research, interpretative endeavors, and compelling public presentation. The digital exercises we present are also a form of mnemonic preservation of the building itself. Currently, the roof has serious structural damage, putting the building, the artistic assets it houses, and the devotees who seek spiritual comfort in this place at risk. Fortunately, a conservation and restoration project is being carried out.

This innovative method not only furnishes a pragmatic and nonintrusive avenue but also distinguishes itself through its inherent adaptability and reversibility, thereby presenting a versatile solution conducive to the exploration of a myriad of hypotheses.

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