

Digital Media Art and Archaeologies of the Invisible: The Case of Mãe Soberana in Dialogue with Zielinski

Andreia Isabel Mendonça

Pintassilgo

Universidade do Algarve

Faro, Continente, Portugal

andreiapintassilgo@hotmail.com

Ana Soares

Universidade do Algarve

Faro, Portugal

asoares@ualg.pt

Maria Guerriero

Universidade do Algarve

Faro, Portugal

mcguerriero@ualg.pt

Abstract

Digital media art, an artistic expression emerging from contemporary technological culture, signals a revolution in how cultural experiences are transmitted and lived. In this context, the case “*Mãe Soberana* – Our Lady of Piety,” in Loulé, exemplifies the convergence between art, technology, and intangible heritage. Using tools such as augmented reality, video art, QR codes, and artificial intelligence (AI), the project proposes an interactive and participatory reinterpretation of Marian devotion, integrating memory, faith, and innovation. Inspired by Zielinski’s Media Archaeology, the study adopts a non-linear reading of technological history and explores relationships between the visible and the invisible, the sacred and the digital. The methodology combines an a/r/tographic, qualitative, and participatory approach, involving the local community in building digital narratives and safeguarding intangible cultural heritage. This proposal resonates directly with Siegfried Zielinski’s Media Archaeology diagram by adopting a non-linear reading of media history and valuing the multiplicity of trajectories, layers, and technologies. Devotion to *Mãe Soberana* is reinterpreted as a hybrid territory of artistic expression, where digital technologies are not merely mediation tools but devices for creation, evocation, and participation. The research proposes an archaeology of the invisible, revealing symbolic and affective layers of the devotion through technological mediation. It thus contributes to reflection on the ethical and critical integration of digital art in the valorization of intangible cultural heritage.

CCS Concepts

• **Applied computing** → Arts and humanities; Media arts; • **Human-centered computing** → Human computer interaction (HCI); Interaction paradigms; Mixed / augmented reality; Interaction design; Interaction design process and methods; Participatory design.

Keywords

Media Archaeology, Intangible Heritage, Mãe Soberana, Mediation

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1 Introduction

The development of contemporary creativity is tied to the ubiquity of digital technology [1], challenging traditional artistic practices and redefining modes of aesthetic and social participation. In this context, devotion to Our Lady of Piety – *Mãe Soberana* [2] [3] constitutes a paradigmatic example of the convergence between art, technology, and intangible cultural heritage (ICH).

Based on Zielinski’s “media archaeology” [4], this article investigates how digital media art can reconfigure ways of experiencing and communicating the sacred, articulating past, present, and future through transmedia narratives that expand the participatory dimension, building bridges between tradition and innovation. Zielinski’s approach privileges non-linear readings and multiple layers of mediation, offering fertile ground for reflecting on materiality and memory in digital media. Devotion to Our Lady of Piety, inscribed since 2020 in the national ICH inventory, includes unique rituals, music, lexicon, and iconography that express Loulé’s cultural identity. This research proposes its digital reinterpretation, promoting a plural and collaborative reading of local culture.

In this sense, it is important to emphasize digitization as a form of participatory safeguarding of intangible heritage, as advocated by UNESCO [5] and Parry [6], who see technological mediation as an instrument to strengthen community engagement in the active preservation of their cultural inheritance. The reflection presented here makes it possible to question contemporary artistic practices, dematerialize creative processes, and assess the impact of new collaborative narratives on the public and the community. What challenges do these emerging languages pose to digital media art and, in particular, to the *Mãe Soberana* case?

2 Framework

2.1 Media archaeology

Media archaeology rejects the linearity and determinism of technological narratives, proposing instead a disruptive, discontinuous, and plural approach [4] [7]. This perspective privileges the critical excavation of forgotten, alternative, or marginal media, revealing the temporal and cultural complexity of media practices. In this context, devotion to Our Lady of Piety – *Mãe Soberana* can be understood as an act of symbolic and technological excavation, in



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which invisible layers of memory, faith, and devotion are reactivated through digital media art.

Zielinski's approach is aligned with the concept of the media's "temporal depth" [8], underscoring that technological innovation does not replace the past but reinscribes it—transforming each new medium into a process of remediation and cultural re-inscription. These digital artistic practices also become an archaeological exercise in which the present critically dialogues with the materialities and sensibilities of the past. Zielinski's media archaeology rejects historical linearity and proposes a discontinuous, multidimensional view of media [4]. By exploring forgotten, marginal, or experimental forms of mediation, this approach offers critical tools for thinking about artistic practices that operate outside traditional models. The *Mãe Soberana* case is understood, in this context, as an act of symbolic and technological excavation capable of reanimating the invisible layers of collective memory while also revealing almost five hundred years of the manifestation's history.

2.2 Digital media art and technological convergence

Digital media art is a transdisciplinary field that integrates artistic, scientific, and technological practices, reflecting the media convergence described by Jenkins [9] and deepened by Paul [10]. This convergence manifests in the fusion of languages—sound, image, text, and video—and in the creation of immersive and interactive experiences that transform the spectator into an active participant in the artistic process.

In the context of the *Mãe Soberana* project, this convergence translates into the creation of a hybrid territory [11], where the sanctuary and the digital space intertwine. The result is an expanded aesthetic experience that articulates the physical, the symbolic, and the virtual, shaping new forms of cultural and spiritual mediation.

2.3 Intangible cultural heritage and participatory digitalization

The digital transformation of cultural processes has introduced new ways to preserve, communicate, and experience intangible cultural heritage. Beyond simple documentation, contemporary digitization is proposed as a form of participatory safeguarding in which communities cease to be mere objects of recording and become co-authors of their own representation [5].

In this context, digital media art practices converge with the principles advocated by UNESCO by promoting inclusive, collaborative, and critical processes of cultural mediation. The interaction between technology and heritage does not replace ritual but amplifies it, creating spaces of collective memory and forms of intergenerational transmission.

Parry argues that digital heritage initiatives should be understood not as mere technical projects but as acts of social curatorship in which the public participates in building cultural meaning [6]. Thus, integrating technologies such as augmented reality, QR codes, or artificial intelligence in the *Mãe Soberana* case helps reconfigure community experience, making the sacred more accessible and relational.

Digitization therefore plays a dual role: it is an instrument of preservation and a means of creative reinterpretation, in keeping with an archaeological and participatory approach to media.

3 Methodology

The study follows a qualitative, exploratory approach grounded in a/r/tography and the use of a digital logbook as a reflective device. A/r/tography develops as an open, interactive communication system with dynamic characteristics that articulate relationships between disciplines through contexts, narratives, memories, dialogues, and collective encounters, fostering sensitive and focused communication [12]. As a methodology, a/r/tography combines the roles of artist, researcher, and teacher, articulating reflective and participatory practices [13]. This approach allows integration of lived experience with theoretical analysis, promoting an immersive view of the articulation between digital media art and cultural heritage. Data collection took place between April and September 2024 through participant observation, audiovisual recording, informal interviews with community members, and collection of existing archives at the Loulé Museum and Municipal Archive [14]. About 25 participants took part—devotees, local artists, cultural technicians, and members of the event's organization—in laboratory workshops.

The workshops focused on exploring augmented reality, video, and sound resources, as well as gathering testimonies about the experience of the devotion to *Mãe Soberana*. All meetings were documented in a digital logbook, allowing cross-referencing of visual, sonic, and textual observations.

The analysis followed qualitative criteria centered on three main dimensions:

- **Interaction** – modes of participation and engagement of participants in digital practices.
- **Aesthetic perception** – evaluation of participants' emotional and symbolic reactions.
- **Community involvement and cultural impact** – identification of perceived transformations in the relationship between technology, faith, and collective memory. The project's impact was assessed descriptively and interpretively, privileging narrative and experiential density over quantitative metrics. This choice is consistent with the artistic and participatory nature of the research, allowing us to understand how digital technologies foster co-authorship, mediation, and safeguarding of intangible heritage.

4 The *Mãe Soberana* case study

4.1 Context and objectives

Devotion to Our Lady of Piety – *Mãe Soberana* is a tradition deeply rooted in the community of Loulé and represents one of the most emblematic religious expressions in southern Portugal. The research proposes to reinterpret this manifestation through immersive digital experiences that articulate faith, memory, and innovation.

The main objective is to broaden access to and understanding of intangible heritage through interactive and inclusive technologies, promoting the participation of the local community in the production and mediation of digital content.

Table 1: Digital Tools and Languages

Technology	Main function	Practical application in the project
<i>Artivive</i> (App)	Activate Augmented Reality Content	Overlays digital videos and images onto the iconography and spaces dedicated to the devotion to Our Lady of Piety.
QR codes	Access to contextual information and narrative	Directs visitors to oral testimonies, historical records, and audiovisual elements.
Augmented Reality (AR)	Creation of immersive experiences	Integrates visual and sonic elements that reconstruct moments and rituals of the manifestation.
Artificial Intelligence (AI)	Image generation and fusion	Produces visual compositions by combining historical photographs, contemporary records, and symbolic textures linked to the devotion and to the author's lived memories.
Video and Sound	Documentation and artistic creation	Includes real-time capture and soundscapes that evoke the procession, music, prayers to Our Lady of Piety calling for rain, chants, and orations.
Digital narrative portals	Structuring the immersive route	Organize the different layers of access to interactive content.

4.2 Digital tools and languages

Digital tools and languages the development of contemporary creativity is tied to the ubiquity of digital technology [1], challenging traditional artistic practices and redefining modes of aesthetic and social participation. In this context, devotion to Our Lady of Piety – *Mãe Soberana* constitutes a paradigmatic example of the convergence between art, technology, and intangible cultural heritage (ICH) (Table 1).

The use of generative AI was explored experimentally, especially in creating characters fused from historical and contemporary images, such as the peasant woman who appears in the video art's introduction.

This technique sought not only aesthetic creation but also the poetic reconstruction of collective memory, making visible the relationships between past and present. Water, a central symbol of the devotion, was treated as a visual and sonic metaphor of transition and transformation—linking fertility and hope, the original themes of the devotion, to the Algarve's current environmental concerns.

The artifact is thus mediated by digital layers, becoming an expanded territory of aesthetic and community experience, in which the visitor actively participates in constructing the narrative and symbolic configuration of the sacred space.

4.3 Water and symbolism

Among the technologies used are the *Artivive* app, augmented reality, QR codes, and narrative portals. These tools enable constant interactivity with the artifact, creating a close relationship between the visitor and the atmosphere of the festivities dedicated to Our

Lady of Piety – *Mãe Soberana*. Rainwater, a symbol associated with this Marian devotion, is treated as an element of transition between past and present, material and immaterial.

5 Thematic analysis

5.1 Digital artistic communities

Active participation by the local community is the project's core. Through collaborative workshops, testimony collection, and co-creation of digital content, Loulé's residents become narrative agents and symbolic curators of the devotion [9]. More than mere participants, community members take on the role of co-authors of a shared digital heritage, in a process that reflects the participatory and relational ethics of digital culture [15]. This model inverts the logic of vertical mediation, enabling heritage safeguarding to be built horizontally, collaboratively, and in a socially situated way.

5.2 Digital technologies and creative processes

The project uses digital technologies not only as instruments of representation but as devices for meaning-making. Technological mediation acts as a space of symbolic translation in which the visible and the invisible, the sensorial and the immaterial, are intertwined [16]. Augmented reality becomes a means of re-enchanting space, reactivating memories and affects, and inviting visitors to a poetic and critical immersion. Thus, technology ceases to be a mere technical support and becomes integrated as artistic and cognitive material.

5.3 Territories of digital art

The Sanctuary of Our Lady of Piety becomes a hybrid territory [10], where the physical space dialogues with digital layers of image, sound, and interactivity. This process of virtualization expands the artistic and devotional territory, breaking geographic and symbolic boundaries and offering visitors an amplified aesthetic experience.

Nevertheless, critical reflection is needed: to what extent can the virtualization of the sacred displace the ritual and affective sense of religious experience? This tension between physical presence and technological mediation requires rethinking the role of digital art as a tool for translating the spiritual—not as a substitute, but as a sensitive mediator between the tangible and the transcendent.

5.4 Digital Narratives

The devotion's narrative is reconstructed from visual, sonic, and textual fragments, presented in a non-linear and interactive way. Users build their own path, activating content through mobile and sensory interfaces [17].

This approach aligns with the concept of participatory narrative [18] [19], in which stories emerge from the interaction between creators and audiences. By turning the visitor into a co-author of the experience, the project proposes an aesthetics of engagement that unites memory, imagination, and community sharing.

5.5 Digital Narratives

The *Mãe Soberana* case is inscribed in the tradition of electronic art and new media, establishing a dialogue between ancestral devotional practices and contemporary artistic languages [20]. Rather than replacing the devotion, digital media art reinscribes it in the present, updating its symbolic and social meanings and demonstrating how new media can serve the creative preservation of intangible heritage.

6 Comparison with other cases

Using a case-study methodology, three examples of Marian and religious manifestations in the Iberian Peninsula were analyzed—Sanctuary of Fátima, Holy Week in Braga, and the *Romería del Rocío*—with the aim of understanding different strategies of digital mediation, institutionalization, and community participation. This analysis situates the *Mãe Soberana* project in a broader Iberian context, highlighting its singularities as a participatory, artistic proposal for safeguarding intangible heritage.

6.1 Our Lady of Fátima

Fátima is the largest Marian pilgrimage center in Portugal and one of the most relevant worldwide. Its institutional communication is strongly structured and centralized, reflecting a model of hierarchical mediation of the sacred. The official website of the Sanctuary of Fátima presents a cohesive visual identity, accessible language, and a diverse offering of religious and cultural content. Live broadcasts of celebrations and the availability of digital resources (“Pray with the Message of Fátima”) exemplify a strategy of global presence and symbolic standardization.

However, this logic tends to reinforce a vertical communication model guided by institutional authority and an experience of faith mediated at a distance. In contrast, the *Mãe Soberana* project

proposes participatory, decentralized, community-based mediation in which the digital is used not to reproduce the devotion but to reconfigure the collective experience of devotion.

6.2 Holy Week in Braga

Holy Week in Braga constitutes an intermediate model between tradition and innovation. The official site combines historical documentation and immersive visual narrative, reinforcing the event's touristic and heritage dimension. The valorization of the procession as an urban spectacle reveals a tendency toward spectacular ritualization [21], where religious heritage is also a platform for cultural identity and territorial promotion. Although it integrates digital mediations, community participation remains mediated by religious and municipal institutions, contrasting with the direct and co-authorial engagement observed in Loulé.

6.3 Romería del Rocío (Andalusia, Spain)

The *Romería del Rocío*, in Huelva, Spain, exemplifies a hybrid model in which devotion, spectacle, and popular tradition coexist. The confraternity's digital presence privileges symbolic and affective dissemination, sustained by the pilgrimage's identity-based and emotional dimension. Here, technology acts as an extension of community faith and not merely as a communication instrument. This approach resonates with the *Mãe Soberana* project, which likewise mobilizes digital resources to reconnect dispersed communities and update devotional practices in hybrid environments.

6.4 Comparative Synthesis

The comparative reading shows that the *Mãe Soberana* project stands out for its balanced integration of technology and community, adopting a critical stance toward the spectacularization of the sacred (Table 2). Fátima stands out for its international scale and strong institutionalization, with vertical communication and a focus on devotion. Braga presents medium mediation and a hybrid character, combining religiosity and spectacle. *El Rocío* combines popular tradition and international scope, with moderate use of digital platforms and high collective participation, sustaining a community-based, emotional model. *Mãe Soberana*, in turn, is distinguished by technological innovation and participatory engagement, promoting horizontal, collaborative communication. Loulé fits into a paradigm of participatory media art in which technology becomes a device for co-creation and collective memory. We thus observe a shift from hierarchical, devotional models to more participatory practices, digitally mediated and community-centered.

7 Final Considerations

The *Mãe Soberana* project demonstrates how digital media art can expand the experience of intangible heritage, promoting dialogue between tradition and innovation. From the standpoint of media archaeology, this research proposes a symbolic excavation of the invisible layers of faith, history, and memory, reconfiguring the relationship between art, technology, and spirituality. The digital devices used here—augmented reality, artificial intelligence, video, and sound—do not replace the sacred but expand its perception, making it accessible in sensitive, critical, and collaborative ways.

Table 2: Comparative Analysis

Case	Scale & Institutionalization	Digital Mediation Community Participation Communication Model
Fátima (PT)	International; strongly institutionalized	High. with global streaming and online content. Limited, centered on devotees. Vertical, centralized, hierarchical.
Braga (PT)	Regional/national; municipal & religious support	Medium. Multimedia and touristic outreach. Partial, mediated by institutions Hybrid, between ritual and spectacle.
El Rocío (ES)	National/international; traditional and popular	Medium; use of community platforms and confraternity sites. High; collective and spontaneous organization. Community-based and emotional.
Mãe Soberana (PT)	Local/regional; community focus	High; AR, QR, AI, video, and sound. High; co-creation and participatory workshops. Horizontal and collaborative.

The project’s participatory dimension, centered on the Loulé community, reveals that digital media art can act as cultural and social mediator, strengthening identity-based and emotional ties. From a scientific perspective, the study shows how digital media art can function as a living instrument for safeguarding intangible heritage by combining preservation and creation, memory and innovation. By integrating co-authorship practices and technological mediation, the project helps rethink contemporary paradigms of participatory cultural mediation. Future work envisions ongoing iterations, exploring the development of new immersive experiences and applying public-reception metrics to assess the aesthetic, social, and heritage impact of these practices.

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