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Venice Charter [re]framed: new heritage challenges

Carta de Veneza [re]enquadrada: novos desafios patrimoniais

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Editorial Editorial

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The Venice Charter sixty years on: legacy, relevance and new heritage challenges

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A Carta de Veneza sessenta anos depois: legado, relevância e novos desafios patrimoniais

The Venice Charter – *International Charter for the Conservation and Restoration of Monuments and Sites* – was adopted by ICOMOS – International Council of Monuments and Sites on 31 May 1964. Sixty years on, this document remains a fundamental landmark in the field of heritage safeguarding, to which heritage professionals, policymakers and communities across the world continue to turn in matters relating to the conservation and restoration of historic monuments and sites.

The new heritage challenges that have emerged over time have prompted the adoption of numerous documents dedicated to specific heritage themes, inevitably raising questions about the continued relevance of the Venice Charter. Yet, notwithstanding the debate that has been generated, the Charter endures as a reference point by virtue of its breadth and scope. That said, the rapid pace of technological and digital change, accelerating globalisation and transculturality, the mounting pressure of mass tourism, the re-functioning of buildings and spaces classified as cultural heritage, and the constantly shifting social, ecological and cultural dynamics of our time, together confront us with dilemmas to which the Venice Charter may no longer be able to offer adequate answers. Or does it, in fact, retain its relevance still?

This special issue of *Conservar Património*, entitled "Venice Charter [Re]Framed: New Heritage Challenges", aims to reflect on the legacy of the Venice Charter in the face of contemporary challenges, critically examining its principles in the light of twenty-first-century demands. To this end, a set of themes considered particularly pertinent to this debate has been brought together, fostering new heritage perspectives, questioning established values, and identifying opportunities for the enhancement and reinterpretation of heritage.

A first section, which may be described as "Revisiting the Venice Charter: Theoretical and Conceptual Frameworks", opens with Cornelius Holtorf, who proposes a reformulation of the philosophical foundations of the Venice Charter in light of the Anthropocene, arguing that the preservation of authentic remains of the past should give way to a perspective centred on the wellbeing of both human and non-human beings, in a contribution of considerable theoretical and programmatic scope. Paola Marini, Leo Schubert and Francesco Trovò present the "Proposal for a Venice Charter for Urban Culture", broadening the scope of the original Charter to encompass the socio-cultural and economic values of historic European cities, in a foundational document for the debate on the future of urban heritage. Romeo Carabelli and Georges-Henry Laffont test, in the Grand-Chambord territory, a process of co-production of knowledge between technicians, academics and heritage communities, proposing an original articulation between the principles of the Venice Charter and territorial planning tools. Elena Holzhausen addresses the growing urgency of the abandonment of religious monuments by the Catholic Church, proposing an original instrument for dialogue between owners, users and professionals, based on Vitruvian criteria, whose integration into the Venice Charter could represent a paradigm shift in the management of European religious heritage. Finally,

Clara Moura Soares and Mariana Penedo dos Santos assess, drawing on partially unpublished documentation, the two major conservation and restoration campaigns carried out on the Jerónimos Monastery, taking it as a laboratory for reflecting on the contemporary application of the Venice Charter's principles in the sustainable and interdisciplinary management of UNESCO World Heritage monuments.

A second section, devoted to "Transcultural and Contested Heritage", brings together three contributions that expand the geographical and cultural scope of the debate well beyond Western frameworks. Joaquim Rodrigues dos Santos and Sagara Jayasinghe offer a pioneering contribution on the dilemmas of safeguarding Goan Oratorian churches in Sri Lanka, demonstrating, from direct fieldwork experience, the urgent need to recontextualise the Venice Charter in the face of the complexity of transcultural heritages belonging to contested minorities. Mustapha Ben-Hamouche and Bahmed Mousselmal argue that the safeguarding of the tangible heritage of North African medinas is inseparable from the recognition of their Islamic principles as a structuring intangible dimension, offering an original non-Western perspective on the tangible/intangible duality established by UNESCO. Yiran Liu and Laura Pezzetti propose an innovative stratigraphic morphological analysis methodology applied to the historic urban space of Nanjing, recognising material absence as a constitutive dimension of heritage identity and offering relevant tools for the interpretation of urban heritage in non-Western cultural contexts.

A third section, "Urban Heritage and Adaptive Reuse", addresses some of the most pressing practical challenges facing heritage management today. Pınar Şahin examines the transformation of the ground floors of nineteenth-century apartment buildings in Beyoğlu, Istanbul, highlighting their importance as an interface between the historic built environment and public life, and contributing to a more nuanced debate on the acceptable limits of heritage re-functioning. Serengül Seçmen and Ege Cankurtaran analyse the participatory reuse project of the Zitomlin silos in Belgrade, demonstrating how community engagement can transform a disused industrial building into a vibrant cultural hub, in an inspiring example of the reconciliation of historical identity preservation with contemporary social needs. Maysoleen Al-Adayleh, Mariana Correia, Bruno Andrade and Firas Gandah address a significant gap in the literature by examining vandalism affecting the built heritage of Jordan, identifying lack of awareness as the principal motivation and proposing strategies grounded in community engagement, in a region that remains under-represented in international heritage research.

A fourth and final section, dedicated to "Documentation, Digital Technologies and Heritage", reflects the growing centrality of technological innovation in heritage practice and scholarship. Tiago Trindade Cruz, Teresa Cunha Ferreira and Joaquim Lopes Teixeira present an integrated digital documentation methodology applied to Álvaro Siza's Borges & Irmão Bank in Vila do Conde, constituting an unprecedented contribution to the safeguarding and dissemination of one of the most significant examples of twentieth-century Portuguese architecture. Marta Orszt, Luís Miguel Cotrim Mateus and team develop a parametric modelling and HBIM methodology applied to the stereotomic solutions of the National Palace of Mafra, advancing a line of research with considerable potential for application to other buildings of the same period and addressing a significant gap in the study of eighteenth-century Portuguese monumental architecture. António Ponte and Vera Gonçalves critically reflect on the limits of digital technologies in the perception of the *genius loci* of historic house museums, questioning whether immersive experiences can replace direct contact with spaces and objects, in a balanced and timely perspective within the current context of accelerated digitalisation in the museum sector. Finally, Inês de Carvalho Costa proposes and tests the unprecedented concept of "AI-created heritage", exploring its implications for cultural rights, in a pioneering article that opens an urgent debate on ethics, copyright and accessibility in a scenario of growing AI dominance in the heritage field.

It is our hope that this special issue of *Conservar Património* will foster critical dialogue, intellectual exchange and innovative thinking, exploring the intersections of heritage, society, inclusivity, resilience and sustainability, and contributing meaningful responses to the new heritage challenges of our time.

Acknowledgments

To commemorate the 60th anniversary of the Venice Charter, ARTIS – Institute of Art History, the School of Arts and Humanities at the University of Lisbon, and ICOMOS Portugal organised the international conference "The Venice Charter [Re]Framed: New Heritage Challenges", which took place from 27 to 30 May 2024 at the Faculty of Arts of the University of Lisbon. The authors are grateful to ARTIS – Institute of Art History, School of Arts and Humanities of the University of Lisbon and ICOMOS Portugal. This work is funded by Portuguese national funds through FCT – Foundation for Science and Technology, I.P., under project UID/04189/2025, of ARTIS – Institute of Art History, School of Arts and Humanities of the University of Lisbon (https://doi.org/10.54499/UID/04189/2025).

A Carta de Veneza – *Carta Internacional sobre a Conservação e o Restauro de Monumentos e Sítios* – foi adotada pelo ICOMOS – Conselho Internacional de Monumentos e Sítios, a 31 de maio de 1964. Sessenta anos volvidos, este documento continua a ser uma referência fundamental no domínio da salvaguarda do património a que profissionais, decisores políticos e comunidades de todo o mundo continuam a recorrer em matérias relacionadas com a conservação e o restauro de monumentos e sítios históricos.

Os novos desafios patrimoniais que foram surgindo ao longo do tempo conduziram à adopção de numerosos documentos dedicados a temáticas específicas do património, suscitando inevitavelmente questões sobre a contínua relevância da Carta de Veneza. Contudo, não obstante o debate gerado, a Carta mantém-se como ponto de referência pela sua amplitude e alcance. Ainda assim, o ritmo acelerado das transformações tecnológicas e digitais, a globalização e a transculturalidade crescentes, a intensa pressão do turismo de massas, a refuncionalização de edifícios e espaços classificados como património cultural, e as dinâmicas sociais, ecológicas e culturais em constante mutação do nosso tempo, confrontam-nos com dilemas aos quais a Carta de Veneza poderá já não conseguir oferecer respostas adequadas. Ou será que, afinal, mantém ainda a sua actualidade?

Este número especial de *Conservar Património*, intitulado "Venice Charter [Re]Framed: New Heritage Challenges", tem como objectivo reflectir sobre o legado da Carta de Veneza perante os desafios contemporâneos, examinando criticamente os seus princípios à luz das exigências do século XXI. Para o efeito, reuniu-se um conjunto de temáticas consideradas particularmente pertinentes para este debate, fomentando novas perspetivas patrimoniais, questionando valores estabelecidos, e identificando oportunidades para a valorização e reinterpretação do património.

Uma primeira secção, que poderá ser designada por "Revisitar a Carta de Veneza: Enquadramentos Teóricos e Conceptuais", abre com Cornelius Holtorf, que propõe uma reformulação das fundações filosóficas da Carta de Veneza à luz do Antropoceno, argumentando que a preservação de vestígios autênticos do passado deverá ceder lugar a uma perspectiva centrada no bem-estar de seres humanos e não humanos, numa contribuição de considerável alcance teórico e programático. Paola Marini, Leo Schubert e Francesco Trovò apresentam a "Proposta de uma Carta de Veneza para a Cultura Urbana", alargando o âmbito da Carta original para abranger os valores sociocultural e económico das cidades históricas europeias, num documento fundador do debate sobre o futuro do património urbano. Romeo Carabelli e Georges-Henry Laffont testam, no território de Grand-Chambord, um processo de coprodução de conhecimento entre técnicos, académicos e comunidades patrimoniais, propondo uma articulação original entre os princípios da Carta de Veneza e os instrumentos de planeamento territorial. Elena Holzhausen aborda a urgência crescente do abandono de monumentos religiosos pela Igreja Católica, propondo um instrumento original de diálogo entre proprietários, utilizadores e profissionais, baseado em critérios vitruvianos, cuja

integração na Carta de Veneza poderia representar uma mudança de paradigma na gestão do património religioso europeu. Por fim, Clara Moura Soares e Mariana Penedo dos Santos avaliam, com base em documentação parcialmente inédita, as duas grandes campanhas de conservação e restauro realizadas no Mosteiro dos Jerónimos, tomando-o como laboratório para reflectir sobre a aplicação contemporânea dos princípios da Carta de Veneza na gestão sustentável e interdisciplinar de monumentos Património Mundial da UNESCO.

Uma segunda secção, dedicada ao "Património Transcultural e Contestado", reúne três contribuições que ampliam o âmbito geográfico e cultural do debate muito além dos quadros ocidentais. Joaquim Rodrigues dos Santos e Sagara Jayasinghe oferecem uma contribuição pioneira sobre os dilemas da salvaguarda das igrejas oratorianas goesas no Sri Lanka, demonstrando, a partir de experiência directa de trabalho de campo, a necessidade urgente de recontextualizar a Carta de Veneza perante a complexidade de patrimónios transculturais pertencentes a minorias contestadas. Mustapha Ben-Hamouche e Bahmed Mousselmal argumentam que a salvaguarda do património tangível das medinas norte-africanas é inseparável do reconhecimento dos seus princípios islâmicos enquanto dimensão intangível estruturante, oferecendo uma perspectiva original não-ocidental sobre a dualidade tangível/intangível estabelecida pela UNESCO. Yiran Liu e Laura Pezzetti propõem uma metodologia inovadora de análise morfológica estratigráfica aplicada ao espaço urbano histórico de Nanquim, reconhecendo a ausência material como dimensão constitutiva da identidade patrimonial e oferecendo ferramentas relevantes para a interpretação do património urbano em contextos culturais não-ocidentais.

Uma terceira secção, "Património Urbano e Reutilização Adaptativa", aborda alguns dos desafios práticos mais prementes que a gestão do património enfrenta hoje. Pınar Şahin examina a transformação dos pisos térreos de edifícios de apartamentos do século XIX no bairro de Beyoğlu, em Istambul, destacando a sua importância como interface entre o ambiente construído histórico e a vida pública, e contribuindo para um debate mais matizado sobre os limites aceitáveis da refuncionalização do património. Serengül Seçmen e Ege Cankurtaran analisam o projecto de reutilização participativa dos silos Zitomlin em Belgrado, demonstrando como o envolvimento da comunidade pode transformar um edifício industrial desactivado num vibrante polo cultural, num exemplo inspirador de conciliação entre a preservação da identidade histórica e as necessidades sociais contemporâneas. Maysoleen Al-Adayleh, Mariana Correia, Bruno Andrade e Firas Gandah abordam uma lacuna significativa na literatura ao examinar o vandalismo que afecta o património construído da Jordânia, identificando a falta de sensibilização como principal motivação e propondo estratégias assentes no envolvimento comunitário, numa região que continua sub-representada na investigação internacional sobre o património.

Uma quarta e última secção, dedicada à "Documentação, Tecnologias Digitais e Património", reflecte a centralidade crescente da inovação tecnológica na prática e investigação patrimoniais. Tiago Trindade Cruz, Teresa Cunha Ferreira e Joaquim Lopes Teixeira apresentam uma metodologia integrada de documentação digital aplicada ao Banco Borges & Irmão de Álvaro Siza, em Vila do Conde, constituindo uma contribuição inédita para a salvaguarda e divulgação de um dos mais significativos exemplos da arquitectura portuguesa do século XX. Marta Orszt, Luís Miguel Cotrim Mateus e equipa desenvolvem uma metodologia de modelação paramétrica e HBIM aplicada às soluções estereotómicas do Palácio Nacional de Mafra, avançando uma linha de investigação com considerável potencial de aplicação a outros edifícios do mesmo período e colmatando uma lacuna significativa no estudo da arquitectura monumental portuguesa do século XVIII. António Ponte e Vera Gonçalves reflectem criticamente sobre os limites das tecnologias digitais na perceção do genius loci das casas-museu históricas, questionando se as experiências imersivas podem substituir o contacto direto com os espaços e objectos, numa perspectiva equilibrada e oportuna no actual contexto de digitalização acelerada do sector museológico. Por fim, Inês de Carvalho Costa propõe e testa o conceito inédito de "património criado por IA", explorando

as suas implicações para os direitos culturais, num artigo pioneiro que abre um debate urgente sobre ética, direitos de autor e acessibilidade num cenário de crescente domínio da IA no campo do património.

É nosso desejo que este número especial de Conservar Património fomente o diálogo crítico, o intercâmbio intelectual e o pensamento inovador, explorando as intersecções entre o património, a sociedade, a inclusividade, a resiliência e a sustentabilidade, e contribuindo com respostas significativas para os novos desafios patrimoniais do nosso tempo.

Agradecimentos

Em comemoração do 60º aniversário da Carta de Veneza, a ARTIS - Instituto de História da Arte, Escola de Artes e Humanidades da Universidade de Lisboa e o ICOMOS Portugal organizaram a conferência internacional "The Venice Charter [Re]Framed: New Heritage Challenges", que decorreu entre 27 e 30 de maio de 2024, na Faculdade de Letras da Universidade de Lisboa. Os autores agradecem a ARTIS – Instituto de História da Arte, Faculdade de Letras da Universidade de Lisboa e ICOMOS Portugal. Este trabalho foi financiado por fundos nacionais portugueses através da FCT – Fundação para a Ciência e Tecnologia, I.P., com o projecto UID/04189/2025, do ARTIS – Instituto de História da Arte, Faculdade de Letras, Universidade de Lisboa (https://doi.org/10.54499/UID/04189/2025).

Beyond the 1964 Venice Charter: cultural heritage as regeneration (ever changing never less than whole)

Para além da Carta de Veneza de 1964: património cultural como regeneração (em constante mudança, mas sempre completo)

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Abstract

In the age of climate change, even cultural heritage and the meaning of the past must be rethought to meet contemporary and future needs. This task is already being addressed encompassing studies of cultural heritage in relation to the Anthropocene, people-centred approaches, and post-human perspectives, which I build on here. From an archaeological perspective, I ask what it means to imagine a framework for cultural heritage that is inspired by the notion of regeneration embracing continuous change and transformation in relation to both natural and cultural heritage. In this perspective, what matters is not safeguarding authentic remains of the past such as monuments and sites, but to ensure the preconditions for the wellbeing of fellow human and non-human beings living under changing circumstances in the present and the future. I conclude with discussion of some implications of what such a life-centred perspective may mean for future practices of heritage management beyond central principles of the 1964 Venice Charter.

KEYWORDS

Anthropocene
Climate change
Cultural heritage management
Heritage futures
People-centred approaches
Post-human perspectives

Resumo

Na era das alterações climáticas, até mesmo o património cultural e o significado do passado devem ser repensados para atender às necessidades contemporâneas e futuras. Essa tarefa já está a ser abordada, com estudos sobre o património cultural em relação ao Antropoceno, abordagens centradas nas pessoas e perspetivas pós-humanas, nas quais me baseio. De uma perspetiva arqueológica, questiono o que significa imaginar um quadro para o património cultural inspirado na noção de regeneração, que abrange a mudança e a transformação contínuas em relação ao património natural e cultural. Nesta perspetiva, o importante não é salvaguardar vestígios autênticos do passado (monumentos e sítios), mas garantir as condições prévias para o bem-estar dos seres humanos e não humanos que vivem em circunstâncias variáveis, no presente e no futuro. Concluo, discutindo algumas implicações do que essa perspetiva centrada na vida pode significar para as práticas futuras de gestão do património, além dos princípios centrais da Carta de Veneza de 1964.

PALAVRAS-CHAVE

Antropoceno
Alterações climáticas
Gestão do património cultural
Futuro do património
Abordagens centradas nas pessoas
Perspetivas pós-humanas

Beyond Venice

The 1964 Venice Charter (ICOMOS 1965) focuses on the conservation and restoration of historic monuments, i.e. a subsection of what today would be called tangible cultural heritage. It states that it considers historic monuments as "living witnesses of their age-old traditions" (Preamble) and that the underlying intention is to safeguard them "as historical evidence" (Art. 3). As a consequence, the Charter established an approach to conservation characterised by minimal intervention, a strong emphasis on preserving the authenticity and original fabric of monuments, and respect for the accumulated contributions of all historical periods. It advocated that any restorative work should be distinguishable from the original, refrain from conjecture, and be fully documented. The Charter further stressed the importance of maintaining historic monuments in the distinct "setting in which it occurs" (Art. 7). Although these principles were occasionally challenged [1-3] as well as further developed [4], they remain the baseline for modern conservation and restoration of tangible cultural heritage, among others affecting the care for historic buildings and museum collections.

Today, six decades later, experts in heritage and conservation are increasingly inspired by new concepts like the Anthropocene, people-centred approaches, post-human thinking, and the climate crisis [5-11]. These perspectives, partly resulting from an appreciation of new futures that are radically different from anything humanity has ever witnessed, have led to an interesting challenge: it is no longer self-evident that the past still matters at all [12]. By implication, safeguarding sites and monuments as historical evidence may have lost its significance too.

What, then, matters instead? In the contemporary world, scholars and practitioners in the cultural heritage sector are increasingly attentive to the socio-cultural and environmental contexts that shape, and indeed define, tangible cultural heritage [13-14]. Consequently, the setting is not merely the historical and aesthetic frame within which a monument or site "occurs," but it is the very condition that brings it into being, imparts specific meanings, and determines its significance.

In the present paper, I am asking what that recent change in perspective exactly consists of and what it implies for conservation and restoration and thus for the future significance of the canonical 1964 Venice Charter. I will introduce a concept of regeneration for cultural heritage management that extends common meanings of the term established in relation to derelict urban contexts. Conservation as regeneration takes us beyond concepts such as preservation and material authenticity which have been central to the conservation discourse represented by the Venice Charter. This approach offers a new perspective on how cultural heritage can actively contribute to the well-being of both human and non-human beings on our planet.

Heritage changes

If indeed the wider significance of the past and of cultural heritage is rapidly changing in the present for the future, this has some wide-ranging implications for conservation and restoration of historical monuments and sites. Elsewhere I have been identifying in this context a "Climate Heritage Paradox" which consists of two contradictions that cannot be resolved in current practice and demand a re-conceptualization of the very notion of cultural heritage and how we manage it [11]. Here I extend my discussion of one of them.

It is deeply paradoxical that cultural heritage often inspires stakeholders and audiences to value continuities rather than transformations and to take comfort and gain resilience from looking backward rather than forward [15] – precisely as humanity is facing change, including a climate crisis, and increasingly becomes aware of a need for transformation of existing ways of life. Taking a global picture, continuities are increasingly negatively valued and the future lies in change [16]. But cultural heritage remains deeply immersed in a paradigm of sameness

and identity, exemplified by the principles of the Venice Charter governing the conservation and restoration of historic monuments and sites "as living witnesses" of the past, "in the full richness of their authenticity" (Preamble). Given the climate crisis and other challenges ahead, the focus needs to shift from safeguarding evidence of people's origins in distinct cultural contexts deriving from the past to improving the prospects of human beings as a lifeform on Earth through distinct transformations for the future. Cultural heritage, after all, includes not only what we happen to inherit from the past but also what we are knowingly leaving behind for the future.

There is a risk that "culturalist understandings and frameworks", combined with "a general understanding of heritage as a fixed and inherently conservative category", result in heritage acting "as a potential barrier to change and adaptation, manifesting a kind of cultural drag" [17, p. 49]. When cultural heritage hinders necessary transformations, slows down adaptive change and promotes backward-looking attitudes it creates a barrier to constructive conversations about change and acts as an obstacle for climate adaptation [18].

It is indicative that the International Council of Monuments and Sites (ICOMOS), which considers the Venice Charter as its foundational text, chose the theme "Heritage Changes" for the Scientific Symposium held during the twenty-first Triennial General Assembly in 2023 in Sydney, Australia. Similarly revealing is the title of the former Assistant Director General for Culture of UNESCO, Francesco Bandarin's [19], authoritative account of heritage in the contemporary world: "Changing Heritage". I agree with those experts who have recently been acknowledging the need for "a fundamental rethink and transformation of cultural heritage management and policy" [20] and who have been advocating for "transformative continuity" [21], "transformative change" [22], "curating transformation" [23], "managed retreat" [24], "curated decay" [25], "adaptive release" [18], "decay without mourning" [26], and "averting loss aversion" [27-28]. At this point, cultural heritage management is rethinking its emphasis on preservation and shifts priorities from preventing or minimizing change, as is evident in the Venice Charter, to embracing and actively managing change and transformation [7, 29-34]. Change has, of course, long been at the very core of conservation and restoration. What distinguished various approaches in past and present conservation theory and practice is the extent to which change should be prevented, camouflaged or reversible [35]. Maybe the big question to be asked today is why any original conditions should have a special significance in the first place [1, 29].

Acknowledging these emerging changes of perspective in the cultural heritage sector, I suggest adopting the concept of regeneration in cultural heritage management. This paper is intended as one contribution to exploring further what it might mean to imagine a cultural heritage that is predominantly about change, embracing and facilitating adaptive transformation and recreating our cultural waypoints for a new reality. – In doing so, I need to clarify at the outset that my understanding of regeneration goes beyond established meanings of the term in relation to the built environment, cultural heritage, or conservation [31], not the least the revitalization or environmental rehabilitation of derelict urban areas and adaptive reuses of preserved historic buildings [36]. When relating to historic monuments and sites, such initiatives often involve the conservation or restoration of cultural heritage in line with the principles of the Venice Charter. My own focus here is different: I care about life not about loss.

Regenerating cultural heritage

Many times, in the summer in Sweden, where I live and work, the natural vegetation around archaeological sites can be so dense and abundant that it takes considerable concentration or advanced technologies like Lidar scanning to filter out nearly all you see so that the faint remains of historic monuments and other features that form "the archaeology" will emerge. It strikes me that one important skill of the Swedish archaeologists, both in their research and in

public outreach, is to try and "unsee" what are perhaps the most prominent aspects of the sites they are working on: whether that is the rich growth of vegetation, the manifold micro creatures, or other natural features and associated ecosystems that dominate the site. Only after unseeing everything else will the slight elevations of the ground or the barely discernible patterns of some stones emerge for the observer, indicating an archaeological site. When excavating, archaeologists can find that the overwhelming vegetation on the surface of the site continues below the surface. There may be plants and roots of various strengths, from tree stumps to dense rhizomes of tiny roots, providing habitats for a variety of small creatures and mirroring the abundance and variety of life above the surface. Often, Swedish archaeologists are excavating with secateurs as much as with trowels. They consider these thriving life forms as disturbing: not only disturbing the proper view of archaeological sites but also the proper progress of archaeological excavations [37].

Archaeologists share with many other historical researchers that they set out to recover and represent the past from its preserved remains. But in the environment containing archaeological sites different processes are at work. Ecosystems of many lifeforms are renewed in a process of continuous recreation, effectively regenerating life at the site all the time. Archaeological sites are part of these processes.

This is reaffirmed by Robert Irwin's Central Garden at the Getty Centre in Los Angeles, USA. First opened in 1997 and as an artwork included in the collections of the J. Paul Getty Museum, the garden is never complete but an ongoing process of organic growth and transformation (Figure 1). It cannot be conserved without embracing change. Besides the impact of natural rhythms of day and night, there are seasonal changes that are actively managed by a team of gardeners and involve extensive replanting. In addition, Getty chief horticulturalist Jackie Flor also acknowledges that there are long-term transformations gradually emerging: she notes that she can only follow Irwin's intentions if accepting that the garden "is ever changing," not the least responding to climate change [38]. She follows the same approach as Irwin did, who said that "we're playing it as we go" [39, p. 46], stating that "I spend a lot of time looking, and then the garden eventually tells you what it wants" [38]. Wild animals, including a few ducks that make their way into the garden's pond, were not intended by Irwin but are tolerated now to thrive in this habitat, too.

Although Irwin established some specific rules and structures that will persist, he accepted that the world is about surprise and change. His garden, he said, is "real" and "better than what you can plan" in the sense that it is "living in the world," "has the strength to survive being lived in" and "make its way in the world", wondering "who knows what it will be fifty years from now?" [39, pp. 58, 132-133]. This attitude extends even to the not-living materials Irwin used in the garden: stones, teak, rails of bronze – which all "improve with age" [39, p. 70]. Irwin's dedication to his daughter Anna-Grace in the garden makes the time fifty years in the future very explicit [39, p. 133]. The plants, of course, also build on processes of gardening and breeding that go back many years in the past [39, p. 46] That is why the garden is "ever changing never less than whole" and "ever present never twice the same", as Irwin put it [39, p. 83]. It might be said that the garden is sustainable to the extent that it continues to change and keeps regenerating life. Something similar could be said about food art that may involve transformations of the artwork as a result of ongoing ecological processes [40]. I am arguing that such processes are also applicable to many other forms of cultural heritage.

Figure 1. Robert Irwin's Central Garden at the Getty Centre in Los Angeles, USA (1997-). This mixed media sculpture in the form of a garden is about feelings and about perceptions of colour, texture, structures, contrasts, and processes of change over time. Robert Irwin, Central Garden, 1997 (Photo: Jackie Flor).

Regeneration means "create again" and involves processes of remaking [41]. Continuous regeneration results in comprehensive transformation. The concept is used widely and may be applied to ecosystems, populations, and communities; genomes, cells, and organisms of any species; a building or an urban area (as noted earlier); a human's spirit; any kind of system. In my view, the central point about regeneration in relation to cultural heritage is not "how" a monument or site has changed or will change, but the recognition "that" it is subject to transformation at all times. This aspect is shared by natural and cultural heritage even though it is often overlooked in cultural contexts. In other words, focusing on regeneration makes us see monuments and sites, like trees and other lifeforms, as processes in contemporary landscapes realizing repeatedly their changing potential over time, not as outcomes of distinctive acts of creation and living witnesses of the past now threatened by loss and damage [26, 31, 34, 42-43]. Similarly, the social anthropologist Tim Ingold [44, p. 3] points to the significance in appreciating all life of the distinction between succeeding "generations", one after another, and continuous "generation" (or here regeneration) involving development and change, seemingly extending into eternity.

In the present context, we can therefore contrast two ways of describing tangible cultural heritage and its management (Table 1). According to the spirit of the 1964 Venice Charter on conservation and restoration, monuments and sites are authentic remains of the past in a given setting, to be safeguarded against threats of loss or damage, with a minimum of intervention. They are considered valuable as historical evidence and living witnesses of the past, to be appreciated as works of art and researched to represent the past. But taking the perspective of the living ecosystems, of which heritage sites form a part, we see manifold life-forms in continuous processes of change and transformation, regenerating life and realizing their potentials in specific environments. Archaeologists are often blind to these processes, although their work directly affects the ecosystem of the sites, e.g. by cutting roots, sieving soil, and leaving behind apple cores.

Table 1. Two ways of describing some principles of cultural heritage management.

Conservation	Regeneration
Doctrines of cultural heritage management, e.g. Venice Charter	Processes in living ecosystems, e.g. at natural and cultural heritage sites
Authentic remains preserved from the past, e.g. monuments and sites	Environment containing manifold lifeforms
Living witnesses of the past, minimum of intervention	Ever present, ever changing eco-systems
Safeguarding what is threatened by loss or damage	Allowing transformation and the realisation of existing potential
Acts of research recovering the past and representing what is gone	Continuous processes of renewal and recreation, regenerating life

As an addendum to the Venice Charter, ICOMOS adopted in 1982 the Florence Charter on historic gardens. Although the latter reaffirms the former, it also acknowledges in Article 2 that gardens are "primarily vegetal and therefore living, which means that they are perishable and renewable" and that their authenticity must embrace "the cycle of seasons" and "the growth and decay of nature." If monuments, too, are "living" entities, as the Venice Charter has it, they are probably best governed in line with natural processes as well [45]. After all, even culture and its monuments are renewable and eventually perishing [36, p. 147].

While immersed in continuous processes of natural regeneration, plants are commonly rooted in soil. There are intimate connections also between our lives as humans – past, present, and future – and the soil below us, which contains numerous remains of objects created in the past or lasting into the future. Although the soil is recognized as an archive of scientific data about life in the past and an agent in ongoing archaeological formation processes, these wider relations are commonly ignored by archaeologists who are digging in the soil but suffering from "plant" and "soil blindness", disregarding the significance of the soil as a living and multi-temporal heritage [6, 46-47]. As Fredengren [6, p. 275] put it, "[s]oils are multispecies historical archives, constantly on the move to become something else", being affected by erosion, decay and regeneration emerging from ecological relations with human and non-human entities. Related ideas are expressed in Fabrice Hyber's art installation *Homme de terre*, the Man of Earth (Figure 2).

Botanist and author Robin Wall Kimmerer [48] wrote from a very personal perspective what may be said about the Man of Earth: "The happy truth is that when I am an ancestor. I will be soil. Human become humus. I view that as a wonderful outcome, to mingle with roots and translucent springtails, become entangled in mycorrhizal networks and commune with bits of ancient mountains. This is company I relish for eternity!".

In this sense, humans are part of the processes of regeneration that are going on all around, and underneath them (Figure 1). Similarly, a much-cited but unprovenanced meme on the internet has it that in reality, plants are actually farming us humans by giving us oxygen daily until we eventually decompose so they can consume us. Wall Kimmerer's confession evokes eternity while also appreciating that the seemingly timeless processes and principles of regeneration are about experiencing the very moment when the past, the future, and maybe time altogether disappear: "If there is meaning in the past and in the (…) future, it is captured in the moment. When you have all the time in the world, you can spend it, not on going somewhere, but on being where you are. So I stretch out, close my eyes, and listen to the rain" [49, p. 296].

This sentiment may be shared, in certain moments, by the archaeologist who is working in the soil of a site, engaging with its many living beings, and exposed to the rain that keeps sustaining life. I mean that quite literally, thinking of thriving ecosystems, not of the soil and roots as metaphors for the autochthonous growth of a people and nation from time immemorial, i.e. the nationalistic framework from which the concern with cultural heritage emerged two centuries ago [47].

Figure 2. Human becoming humus. Fabrice Hyber, Homme de terre, 2010/2022, as displayed in the exhibition La Vallée, Fondation Cartier pour l'art contemporain (2023). Charcoal, oil paint, pastel on canvas, plastic, bones, metal, wood, dirt (Photo: Cornelius Holtorf).

A people-centred approach

If regeneration makes us focus on the moment, exploring tangible cultural heritage in terms of regeneration can sever the links of cultural heritage to past times that according to Zoltán Simon [12] are increasingly redundant and may no longer matter. Incidentally, Simon's important paper misses an important aspect concerning cultural heritage which could strengthen his point further. In a discussion of the contemporary significance of various kinds of past, he covered "the present past" (the legacy of the past refusing to go away), "the associated past" (identity claims made with reference to the past), and "the inherited past" (the past received from past generations and preserved for future ones). But he ignored that cultural heritage, despite the term, has already some time ago come to replace the past in significance in contemporary society [50]. Heritage is not what has been inherited from the past at all, but a present-day manifestation of what is collectively remembered about the past in a given contemporary context.

In other words, monuments and sites are primarily not significant, as the Venice Charter has it, as historical evidence and witnesses of the past. Instead, they are living, yet in another sense as implied in the Charter. Laurajane Smith [51, p. 2] emphasized that cultural heritage is not so much "a thing", but "a cultural and social process, which engages with acts of remembering that work to create ways to understand and engage with the present". In such a framework, the link of historic monuments and sites, as tangible cultural heritage, to the past cannot be established through dating and is not about appreciating its age: therefore, cultural heritage is not linked to "age-old traditions," to refer to another phrase occurring in the Venice Charter. Instead, cultural heritage possesses what may be called pastness, i. e. the quality of a

given object to be "of the past" in a given social and cultural context [52, p. 500]. Accordingly, the values and uses of cultural heritage are not inherent and timeless (as historical evidence witnessing the past) but they change over time according to their varying social and cultural contexts in which pastness is regularly re-framed. These contexts are the actual settings of cultural heritage that first give meaning to cultural heritage and define its significance.

Taking this perspective means taking a people-centred view of cultural heritage which is increasingly prevalent in the cultural heritage sector and means a shift away from principles on conservation, reconstruction and restoration such as those enshrined in the Venice Charter. As Rebecca Madgin and James Lesh stated plainly at the start of their introduction to a volume entitled *People-Centred Methodologies for Heritage Conservation*, "The field of Critical Heritage Studies has largely moved away from seeing the value of heritage as objective and material-centric and only capable of being evaluated by experts" [53, p. 1].

In the past few decades, we have been seeing a major shift from object-centred to people-centred approaches: from conserving the inherent properties of cultural heritage to managing its attributed values, from acknowledging the special responsibility of experts for taking care of cultural heritage to recognizing the ethical duty to listen to and involve the people affected by heritage, and from the need to protect monuments and sites to the opportunity to use them for people's benefit. If anything ought to be conserved or restored through cultural heritage it is people's lives. In a nutshell, cultural heritage and the past are today definitely not what they used to be.

The title of a chapter by Thompson and Wijesuriya [14] sums up this shift nicely: from "sustaining heritage" to "heritage sustaining broader societal wellbeing and benefits". The changes between these two perspectives are part of a larger shift of priorities and approaches in the cultural heritage sector. Whereas the 1964 Venice Charter builds on conservation principles that are expert driven and aim at ensuring care for the survival and wellbeing of monuments and sites, the 1994 Nara Document on Authenticity [4] introduced a new paradigm foregrounding cultural diversity and principles of managing continuity and change that are society driven and aim at the care of heritage to enhance the wellbeing of people and society. Other policy documents such as the 2013 Hangzhou Declaration [54] added further dimensions to this significant change of culture and heritage increasingly serving the needs of humanity.

This shift towards people-centred approaches meant that cultural heritage is about serving the lives of living people not about dead people. It has been of great importance in supranational and transnational discussions on cultural heritage management in recent decades, e.g. those facilitated by UNESCO, the International Council of Monuments and Sites (ICOMOS), the International Center for the Study of the Preservation and Restoration of Cultural Property (ICCROM), and the World Bank [8, 19]. Related strategies are also found in the 2000 Council of Europe Landscape Convention and in the 2005 Council of Europe Framework Convention on the Value of Cultural Heritage for Society (Faro Convention).

Three decades after Nara [4], today it may be time to rethink some principles of conservation and restoration once again. In an age called the Anthropocene by some, when human thriving is questioned by a fast-accelerating climate crisis, it is hardly surprising that post-human sensibilities abound that reframe the nature-culture nexus. This is where regeneration comes in.

Towards a life-centred perspective

Human beings are part of larger environments subsuming what we are used to be calling nature and culture but what is in fact impossible to divide into such categories [33]. For one, humans contain entire ecosystems within their very bodies. An average human mouth contains about one thousand times more bacteria than the number of people alive today [55, p. 255]. There are no strict boundaries between species, including the human species. The human body may be

called "transcorporeal", blurring the boundary between the body and its surroundings, merging people, places, and various substances, which are all regenerating together [56, p. 59]. These substances may be organic, such as bacteria and fungi, or inorganic, as in the case of tattooing ink and of stable isotopes that biomolecular archaeology can identify in human bone samples. Such isotopes originate from human diet, entangling nature and culture in meshwork, and literally pointing to the fact that "you are what you eat" [56, pp. 59-60; 57, p. 802]. The human body also contains DNA from a variety of species. Humans, as holobionts, can be seen as multispecies ecosystems and we all are bodies of continuously evolving beings. In a certain way, the excavating archaeologists are themselves, as embodied beings, descendants of many of the creatures that were co-inhabiting the site during prehistory as well as bodily ancestors of many creatures who are going to live around the site in the future.

By the same token, human bodies, including human DNA, become distributed in the surrounding landscape, e.g. through faeces, decomposing bodies or body parts, or various bodily fluids [56, pp. 61-62; 47]. In a way, the prehistoric inhabitants of archaeological sites may therefore still be very present in the immediate vicinity of the excavation area. By the same token, a part of the archaeologist never leaves the site. Moreover, some of the ancestors of the flora and fauna that occur today at an archaeological site may already have existed there in prehistory. Given environmental and cultural changes over time, it is likely that a continuous process of growth and regeneration led to a gradual change of species. The point is that the contemporary ecosystems at an archaeological site are the outcome of a long history of continuous development, with species changing according to varying conditions. The species present today relate to those that inhabited the area in prehistory, much as the site links human occupation across different periods, even in the absence of evidence for direct continuity of settlement or human ancestry.

In a paper significantly titled "Growing Concerns: Plants and Their Roots in the Past", the archaeologist Stein Farstadvoll [43] argued that plants at historic sites are not recolonizing or rewilding an originally sterile site, but they may lie dormant for long whiles and at certain points reappear, haunting sites like vegetarian ghosts. Consequently, ruins are not overgrowing but just growing; they are fulfilling astonishing potentials that have been present even before any historic building ever was constructed in the same location [43, p. 183]. In that sense, from the plants' perspective, ancient sites are not gradually decaying and disintegrating but embodying what Farstadvoll [43, pp. 184-185] calls "negative entropy": a vibrant ecology where the vegetation is continuously "developing, emerging and persisting, often in bewilderingly[!] different ways". Elsewhere, Farstadvoll [42, pp. 328, 331] took this approach further to reflect more on how heritage "affects and is affected by non-humans such as plants, animals, minerals and fungi", emerging "through a wide array of organisms and things". Looking closer at "the ecological complexity of heritage environments that sometimes get left behind in the hunt for a pristine past", led him to appreciating that this "is not a heritage that asserts comforting histories about who we were or are, but rather one that makes visible the inheritance of an uncertain future" [42, p. 345].

What is more, gardens, features in the landscape, tangible cultural heritage such as buildings, and human beings share more characteristics with each other than we commonly realize. Tim Ingold [58] proposed once that people and buildings, like mountains, clouds, and waves in the ocean, are persistent, continuously re-born and constantly growing, going through ever new transformations and regenerations. This is also true for fungi which, according to Robert Macfarlane [59, p. 102] "do strange things to time, because it is not easy to say where a fungus ends or begins, when it is born or when it dies". In this view, all these entities' modes of existence have no beginning or end but are punctuated by various events and persistent processes of transformation and regeneration continuously carrying on. They all continually evolve and grow, not the least in meaning and significance. The very practices of managing cultural heritage and conducting cultural heritage studies, exemplify such regenerative transformations too, not the least when concrete changes result from

designations as historical monument or cultural heritage. To understand these transformations, we need to ask at any specific point in time: what is being maintained and used? What is adapted to new purposes and how? And what is abandoned or substituted? As Ingold [44, pp. 41-42] put it, we should care more about what is underway in a world that keeps turning than what might be extracted from a stack of (re-)sources piled up underneath the surface.

Tangible cultural heritage should cease to be considered and treated as physical objects that are created at one point in the past and then lost, or instead preserved, at another, more recent point in time. Ancient monuments and sites, like gardens, people and trees, are not objects but processes. It is revealing that many of the archaeologists' soil samples dissected from the site's historical layers contain viable seeds that start growing without much delay… (Figure 3). Tangible cultural heritage is not something completed which lasts for a certain period of time, but they are continuously being reappreciated and recreated, transforming their character and significance, from their first imagined existence to the most recent appreciation of what they have become. That is why change is so important to appreciate in cultural heritage studies and management. As in natural ecosystems, even an act of destruction means change and can involve creation and change, sometimes enhancing value rather than reducing it [27-28].

In sum, an ancient site and its human and non-human occupants, past, present, and future, cannot be strictly divided but they conjoin with each other – not in the sense of replacement and succession of generations but in the sense of continuous regeneration: renewal, growth, and development of life [44]. Natural and cultural environments are intertwined in fluid processes of creative transformation and regeneration. It seems unwarranted to separate them, whether in academic analysis, in heritage management, or in biological categories such as species, when they are, in fact, interconnected processes of life.

Figure 3. An archaeological site in a process of adaptive change in new circumstances, blurring boundaries between nature and culture (photo: Joakim Palmqvist 2022).

My life-centred perspective in this paper thus points to the pertinence, and some implications, of such post-human and cross-temporal thinking in the Anthropocene. Historical evidence in the human environment, also known as the archaeological record, is a more-than-human record that is always already truly mixed and contains all sorts of entities and processes: human and non-human, living and material [13, p. 193].

Concluding discussion: the life we long for

I argued in this paper that managing cultural heritage, as shown in Robert Irwin's Central Garden at the Getty Centre, needs to facilitate regular updating in a creative process of continuous regeneration and adaptation to changing circumstances. Change and transformation, as it occurs in living ecosystems – even when it involves conflicts of interest, as it often does – ought to be embraced and promoted in heritage too, especially when it is situated within them. It might be said that cultural heritage is a motor and manifestation of change and regeneration over time, not their victim.

Monuments and sites, whether above or below the surface, mirror people's changing circumstances, aspirations and ways of life over time. They may at times stand in opposition to one another, yet they are always embedded in processes of continuous transformation. Such places represent the full complexity and richness arising from the human capacity to cope with and care for the world, as well as from the resilience of non-human lifeforms within evolving ecosystems [60, p. 40]. Cultural heritage offers one arena for appreciating the mutability and resilience of life on Earth. The values of cultural heritage are not necessarily best enhanced or maintained by conservation of its fabric, but often through enabling timely change and transformation [30]. Indeed, an aspiration to contain change can readily turn into compulsive loss aversion [27].

These insights highlight the need to reassess former certainties in cultural heritage management, such as the preference for preserving authentic fabric as a witness to the past, which is enshrined in the 1964 Venice Charter. Recent scholarship in Heritage Studies emphasizes new, emerging priorities, including the responsibility to manage heritage in ways that contribute to creating desirable futures, not the least inspired by intergenerational fairness [8, 15, 19, 28, 34]. In this spirit, it might be said that "What matters is not so much preventing or minimizing loss and damage of the human legacy inherited from the past but to ensure the preconditions for the wellbeing of fellow human and indeed non-human beings living under changing circumstances in the present and the future" [11, p. 274].

A focus on growth and regeneration challenges rigid separations between past, present, and future. Historicist attempts to interpret the present and future primarily through insights about the past have been questioned, even within debates among historians [12, pp. 49-50]. These shifts open the way for new perceptions, uses, and ways of caring for cultural heritage. Prioritizing regeneration of human and non-human life may mean putting modernist attitudes to one side. As Ingold [44, pp. 124-125] suggested, "The future is not, after all, a problem to be solved. It is, rather, the life we long for…".

At a time when the future of humanity is challenged by the consequences of climate change as well as other major challenges and when the nations of the world have agreed on an ambitious *Pact for the Futures* [16], more might be done for culture and cultural heritage to be considered as part of the solution rather than another casualty. Embracing change in relation to tangible cultural heritage can help make people more resilient and societies more sustainable [15].

Monuments and sites, when understood more as living ecosystems than as "historical evidence" or "living witnesses" of the past situated within a fixed "setting," can serve as reminders of the potential that comes from embracing uncertainty and trusting in the remarkable regenerative capacities of living beings to adapt to changing circumstances and co-shape the world to come. This perspective entails a temporality of continuous renewal,

recreation, and regeneration which is very different from the temporality structured around the opposition between conservation and loss implied in the Venice Charter. It also implies not only a people-centred approach, now widely accepted, but also a broader life-centred perspective, which remains relatively new. From this standpoint, what ought to be conserved, and where necessary restored, is not the monument or site itself, but the well-being of people in their societies and the sustainable relationships between human and non-human life forms under changing conditions.

In sum, cultural heritage embodies change and development of human and non-human life in processes of continuous regeneration. These processes are fluid and shifting – like people change with age, trees change as they grow, and clouds change as they are driven along by the wind. As Robert Irwin put it so succinctly, monuments and sites, like gardens, are ever present, never twice the same. Lets manage them accordingly, enabling and celebrating organic change and the life it generates, timelessly.

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From the Venice Charter of 1964 to the Venice Appeal for a renewed urban culture

Da Carta de Veneza de 1964 ao Apelo de Veneza por uma cultura urbana renovada

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Abstract

The 1964 Venice Charter contains very clear articles about the objectives of including aspects of the context of the main monuments in the scope of protection. After more than 50 years of work on the restoration, education, and valorisation of the city, the International Private Committee for the Safeguarding of Venice drew up, with the participation of various institutions and scholars, the *Proposal for a Venice Charter for Urban Culture*. The initiative originated in Venice, an exemplary case for questioning the future of cities, given the many challenges its preservation entails. The lagoon city emblematically represents the value of historical European cities to be protected not only for historical-artistic elements but also for socio-economic aspects, as a place marked by cultural diversity, individual and community wellbeing, social justice and cohesion, and a differentiated, sustainable, and efficient economy, integrating the approach of only material conservation of cultural heritage.

KEYWORDS
Cultural heritage
Historic city management
UNESCO sites
Venice
Over tourism

Resumo

A Carta de Veneza de 1964 contém artigos muito claros sobre os objetivos para incluir aspetos do contexto dos principais monumentos no âmbito da proteção. Após mais de 50 anos de trabalho em restauro, educação e valorização da cidade, o Comité Internacional Privado para a Salvaguarda de Veneza elaborou, com a participação de várias instituições e académicos, a *Proposta para uma Carta de Veneza para a Cultura Urbana*. A iniciativa teve origem em Veneza, um caso exemplar para questionar o futuro das cidades, dados os muitos desafios que a sua preservação implica. A cidade lacustre representa emblematicamente o valor das cidades históricas europeias a serem protegidas não só pelos seus elementos histórico-artísticos, mas também pelos seus aspetos socioeconómicos, como um local marcado pela diversidade cultural, pelo bem-estar individual e comunitário, pela justiça social e coesão, e por uma economia diferenciada, sustentável e eficiente, integrando a abordagem da conservação apenas material do património cultural.

PALAVRAS-CHAVE
Património cultural
Gestão de cidades históricas
Sítios da UNESCO
Veneza
Excesso de turismo

Introduction

As we can easily guess from a view from the bell towers of the ancient city of Venice, shown in Figure 1, exactly the same view that Jacopo De Barbari saw in 1500, which then gave rise to his bird's-eye view of the city,

> *Venice is the historical work of an entire community in which every construction mobilized a plurality of skills, responsibilities, performances, that is, of men, within the city and the State, and in the continental countries across the sea: a plurality that appears envisaged and regulated by laws and decrees, organized by schools and guilds, prepared by drawings and surveys, acknowledged by letters and expense notes, and finally enhanced by an iconography that lovingly describes the many workers engaged in the most diverse jobs of the construction site of each yet simple building* [1].

As Paolo Maretto, an important scholar of historic buildings in Venice, explains, the lagoon city and its stones can be the subject of multiple narratives and meanings, representing an exceptional field of study and experimentation. Other authors have also focused attention on choral values of diffuse architecture, such as Egle Renata Trincato [2], famous for her unsurpassed 1948 study Venezia minore, and Roberto Pane [3], who was among the drafters of the 1964 Venice Charter, and formulated the concept of "architectural literature," extending to his discipline the Benedetto Croce's categories [4] of poetry and literature and laying the groundwork for the broadening of protection from the isolated monument to the environmental whole.

Figure 1. View of Venice from San Moisè bell tower, 2021 (photo: Francesco Trovò).

Figure 2. View of Venice St. Mark square: *a)* after Aqua Granda with a level of 194 cm s.m.m.,1966; *b)* similar position the day after the second highest tide ever recorded, which reached 187 cm. The MOSE will be activated next year, 2019 (photo: Francesco Trovò).

These principles can be found, in the 1964 Charter, where, in particular we find both the foundations for a widespread and extended safeguard not only of the pieces of courtly architecture, but also of the connective pieces of fabric, which substantiate the aims of value recognition and protection of the historic urban passage, and the objectives of restoration intervention, which summarize the achievements of a tradition on the still immature discipline that will find full development in the following decades.

In addition to initiating a process of raising awareness about the fate of Venice, the 1966 flood, known as the *Aqua Granda*, of which an iconic image is shown in Figure 2, unexpectedly repeated itself in 2019 (Figure 3), was instrumental in securing the attention of the Italian State to the city, which defined Venice as a problem of preeminent national interest, and enacted a series of Special Laws for Venice [5], through which legislative and economic support was secured for the achievement of goals to protect the city and support its citizens.

Special legislation has been responsible for conferring coordination related to the objectives and measures of protection, providing the economic tools to operate, and Law 798/84 [6-8] has allowed for considerable spending availability.

In 1987 Venice was inscribed on the UNESCO List of World Heritage Sites, based on all six cultural selection criteria (I-VI) for the exceptional nature of its cultural values, consisting of a historical, archaeological, urban, architectural, artistic heritage, and cultural traditions, integrated in an equally extraordinary environmental, natural, and landscape context [9-10].

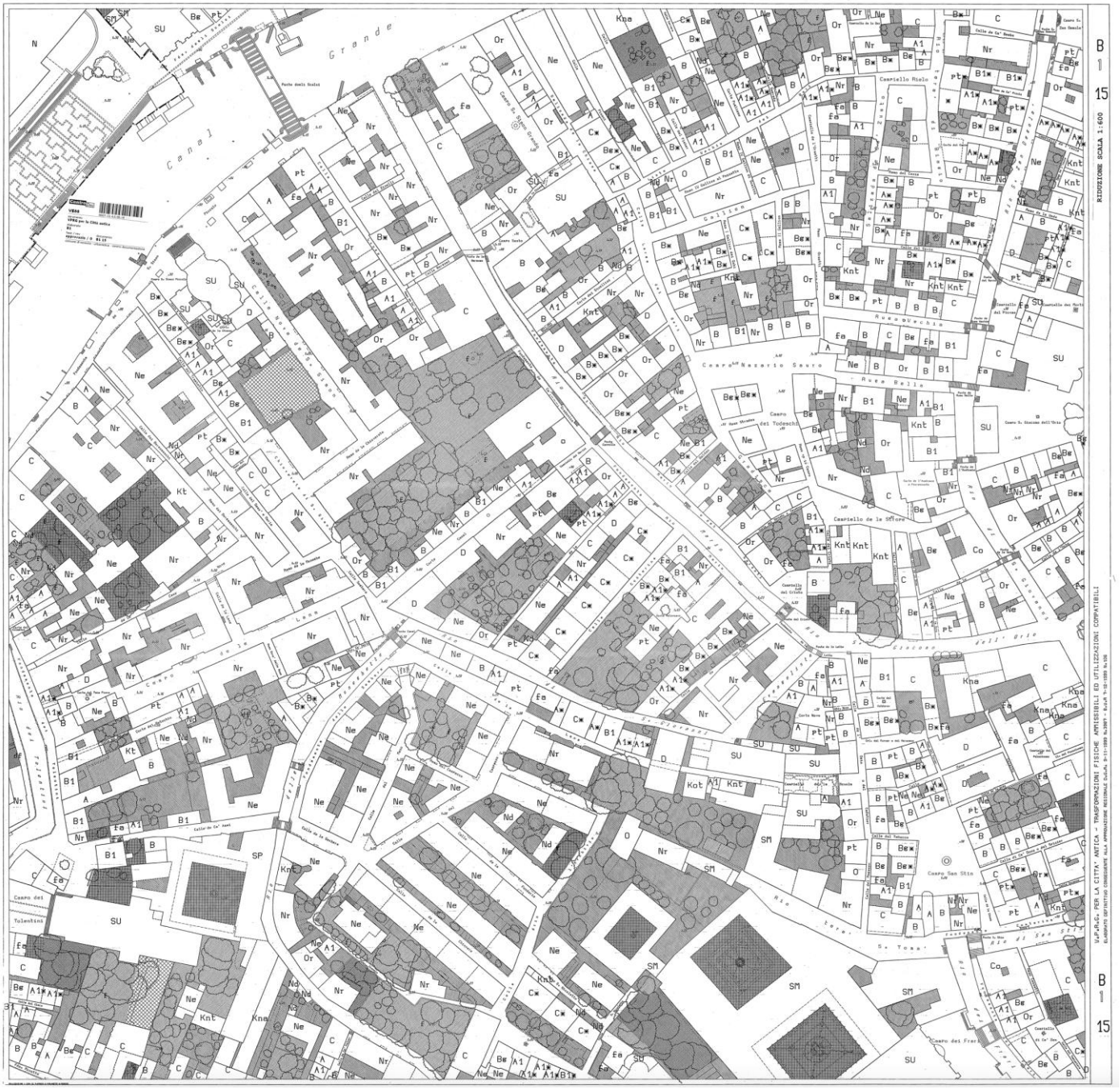

Figure 3. Municipality of Venice. PRG Variant for the Ancient City. Each building unit is classified according to typological criteria.

In 1999, with a serious delay, the PRG Variant for the Ancient City was approved [11], the approach of which would complement the already established protective action exercised by the local Superintendency. Figure 3 shows an extract from the municipal plan, in which the classifications of each building unit according to typological criteria are visible, while Figure 4 shows the area of the city of Venice and its lagoon subject to the protection provisions of the state law, which covers an area of 550 square kilometers of the landscape.

In this context, the preservation of the city and the related means of preserving it assumed centrality. During this period from 1966 to the first decade of the 2000s, interventions on historic buildings were numerous and frequent. The 1964 Charter certainly had a positive role in directing interventions on cultural heritage, but at the same time, was less effective on interventions of the connective building fabric.

Figure 4. Ministry of Culture, Municipality of Venice and its Lagoon, Superintendency. Map showing the landscape protection area corresponding to the entire Venice Lagoon.

Protecting Venice from 1966 to the present: the role of Private Committees

If upstream of the drafting of the Venice Charter stand twenty years of field work, debates, confrontations, failures, and victories in the immense undertaking to rebuild the European cultural heritage deeply wounded by the two world wars that followed in the first half of the twentieth century, immediately downstream of its dissemination lies a very serious environmental disaster that, despite repeated historical precedents, was perceived as exceptional and in which the warnings of the climate change that would emerge in all its severity only in the following decades were not read.

In the first days of November 1966, the flooding of the Arno River in Florence and the *Acqua Granda* in Venice jeopardized the very survival of two cities symbolic in the world of the entire continent, Florence and Venice, and, arousing deep emotion, attracted international attention (especially, in truth, towards the former). The director of UNESCO then made a poignant appeal to the solidarity of the 120 member states of the United Nations Educational, Scientific and Cultural Organization and the cultural and research institutes, and invited writers, artists, musicians, historians and critics, all those «and they are legions» he said, «whose works have been inspired by the treasures of Florence and Venice» to donate a part of what they had received, knowing fully well that they could never settle their spiritual debt.

One of the most important results of the UNESCO Campaign is the founding of the International Private Committees for the Safeguarding of Venice. René Maheu's invitation was, in fact, promptly taken up by personalities linked for different reasons to our country; among the first, a monument man like Colonel James A. Gray, founder of what was to become the *World Monument Fund* and, like Piero Gazzola, involved in the rescue of the Nubian temples, and Ashley Clarke, British ambassador to Italy from 1953 to 1962. They established an extraordinary harmony with Francesco Valcanover, since 1966 *Soprintendente alle Gallerie e alle opere d'arte per le province di Venezia, Belluno, Padova, Rovigo, Treviso, Vicenza*, who on the one hand was able to set up and manage vast construction sites with extraordinary vision and energy and on the other was able to cultivate and enhance these international relations.

Figure 5. One of the Association's most recent interventions concerned the restoration of Canova's cenotaph in the Frari Basilica (funding committee Venice in Peril Fund).

Thus, 53 committees from 12 nations (Australia, Belgium, Denmark, France, Germany, Italy, Japan, Netherlands, Sweden, Switzerland, UK, USA) were established within a short period of time: raising funds, mostly private, in their countries, and not interrupting their action, over a period of almost sixty years the Committees have carried out no less than 2,000 restorations, with an approximate value of about 300 million euro. They have financed and continue to finance not only restorations of entire buildings or individual works of art, but also studies, research, interventions in the archival field, academic publications, exhibitions, museum layouts, and educational and training initiatives. Figure 5 shows one of the monuments recently restored thanks to the support of the International Committees for the Safeguarding of Venice: Canova's tomb inside the Basilica dei Frari.

Until 2016 the Private Committees operated together with UNESCO, since 1987 through the Association that brings them together with the primary purpose of facilitating that relationship and that with the Superintendencies, while since 2017, having ceased their formal relationship with the international body, they have been acting on the basis of an agreement with the Ministry of Culture, which recognizes and encourages their work with respect to public heritage or that usable by the public.

There are now 26 active Committees from 11 nations (gone are from Belgium and Japan; from Austria and Russia have joined) and they carry out dozens of projects worth several million euros each year. In addition to its economic size, the work of the International Private Committees for the Safeguard of Venice has other characteristics, equally, if not more important: the timeliness, the benefits of which clearly emerged in the aftermath of the high water of 2019; the flexibility which, combined with the expertise of the Superintendencies and professionals, has resulted in exemplary achievements, capable of guiding subsequent developments as well, especially in the field of restoration; the work it provides to researchers,

artisans and specialized firms; fidelity, an expression of the bond and commitment that the whole world has to Venice and a manifestation of that very large international segment of the enlarged 'heritage community' which, as enshrined in the Faro Convention, has the right to enjoy such a common heritage and at the same time the duty to be responsible for it, regardless of belonging.

As noted in the "Pietro Torta for the restoration of Venice" Award (edition 2023), established in 1974 by the Ateneo Veneto in memory of engineer Pietro Torta (1896-1973), a passionate enthusiast of the restoration of the architectural heritage of the lagoon city, member of the Ateneo Veneto and for many years President of the Order of Engineers of Venice, [12], the Private Committees have worked humbly, although proudly, grateful for the opportunity offered to them by the State and the City to offer their contribution to the common goal of safeguarding, always keeping aloof from the most cogent political debate, but expressing their opinion through observations and recommendations and, above all, through their unceasing work. Indeed, they understand that all the efforts made so far would be in vain where a medium-term strategy is not implemented to secure the lagoon, the city, and their inhabitants. The spirit that animates the Private Committees is that the built city, the *urbs*, cannot live without the environment in which it stands and without those who inhabit it, the *civitas*. The pandemic, the climate emergency and the rampant phenomenon of tourism have contributed to making Venice even more emblematic of the global challenges humanity is facing and at the same time have made it a possible model, an advanced laboratory of European recovery, in which culture understood in a broad sense plays a central role.

The 1964 *Carta di Venezia* for Venice

With the 1999 Urban Plan, the ancient city is divided into typological classes by building, associating with each of them a series of permitted and prohibited transformations, the relevance of which is decisive for 90 percent of Venetian buildings, i.e., for all unrestricted fabric construction. The instrument has undoubtedly allowed a certain preservation of the city, even, precisely because of the nature of the typological setting, the Variant is ineffective with respect to preserving the authenticity of the subject.

Article 1 of the Charter states "The notion of historic monument includes both the isolated architectural creation and the urban or landscape environment that constitutes the testimony of a particular civilization, significant development, or historical event. This notion applies not only to large works but also to modest works that, over time, have acquired cultural significance (...)".

This concept was reiterated in Article 6 for which "The preservation of a monument implies that of its environmental condition. When a traditional environment subsists, that will be preserved; any new construction, destruction, and use that may alter the volume and colour relationships will also be banned".

The Charter also contemplates situations of integration and substitution of matter, as well described in Article 12, for which "The elements intended to replace the missing parts must harmoniously integrate into the whole, distinguishing themselves, however, from the original parts, so that the restoration does not falsify the monument, and are respected, both the aesthetic and the historical instance" and in Article 13: "Additions cannot be tolerated if they do not respect all the interesting parts of the building, its traditional environment, the balance of its whole, and its relationship with its surroundings".

If physical preservation is thus reflected in the Charter, both with reference to the individual monument protected by the laws on the preservation of Cultural Heritage and to the related built environment, which is in any case traceable to the objectives of landscape protection, the same cannot be said with respect to the attention that the issue of the use of the built heritage requires.

Although Article 5 of the Charter states that "the preservation of monuments is always favoured by their use in functions that are useful to society" as long as they are compatible with protection, today it is evident how this issue takes on a significant and wholly underestimated impact on the more general objective of physical preservation, particularly in the presence of *overtourism* and real estate and commercial dynamics such as to undermine *civitas* itself.

Proposal for a Venice Charter for urban culture

Well before the 60th anniversary of the adoption of the Venice Charter, as early as 2020 the Association of Private Committees, chaired by Paola Marini, who succeeded Alvise Zorzi and Umberto Marcello del Majno, took up a suggestion by Leo Schubert and drafted, with the participation of numerous institutions and qualified scholars, the proposal for a widely shared document to promote and support the effort so that cities under protection for their cultural value preserve and recover the characteristics of harmony with nature, inhabited place, high quality of life, cultural diversity, individual and community well-being, social justice and cohesion, and differentiated, sustainable and efficient economy.

The work around the proposal for a charter of Venice for urban culture can be traced back to the event of the city's second flooding on November 12, 2019, which once again further highlighted the fragility of Venice, threatened by the effects of climate change, *overturism*, and still waiting for the Mo.S.E. to be in operation, so much so that it prompted further debate on whether to put the city and the lagoon on the list of endangered sites [13-14].

The following year, with the COVID pandemic, the extreme fragility of a mainly tourism-based economy was highlighted, raising urgent questions about the socio-economic future of the city and reopening glimpses in historical perspective related to what has been put in place in the past for the preservation of the city but also to resume the many reflections around its future. Figure 6 is a testament to the condition of the city during the pandemic: places that are usually crowded every day of the year are now only visible in the architecture that characterizes them.

Figure 6. St. Mark square empty during the COVID pandemic, 2020 (photo: Francesco Trovò).

In this context in harmony with the 2018 Davos Declaration in which European states commit themselves to fostering a supportive policy for the culture of quality construction, and taking into account the 2005 Faro Convention on the value of cultural heritage for society [15] the *Venice Charter for Urban Culture* [16] was drafted. Its purpose is to try to direct, on a basis of shared principles, a series of measures capable of preserving and developing urban culture to be transformed into concrete legislative measures and direct actions.

Thanks to the initiative and with the support of the Association of International Private Committees for the Safeguarding of Venice, a series of meetings were held for the creation and sharing of a document initially called the Venice Appeal for Urban Culture, with the hope that it could become a Charter based on an extensive consensus of insiders, citizens, and local institutions. The initiation of the document's drafting was reported at a first public meeting held on 1 October 2020 at the little theater of Palazzo Grassi in Venice with various sponsorships (Swiss Confederation, Consulate General of Switzerland in Milan, and the German Center for Venetian Studies, in charge of Culture and Mass Media of the Federal Republic of Germany). The final version was presented in Venice on 22 September 2021 at the European Cultural Heritage Summit and at Biennale Architettura on 26 September 2021 (Figure 7) as part of the Resilient Communities meetings organized at the Italian Pavilion. Contributing to the document were Bruno Buratti, Brigadier General of the Guardia di Finanza; Emanuela Carpani, Soprintendente, Soprintendenza Archeologia, belle Arti e paesaggio per il Comune di Venezia e laguna; Marita Liebermann, Director Deutsches Studienzentrum in Venedig; Rainer Nagel, Director Bundesstiftung Baukultur; Sergio Pascolo, urban planner; Nicola Pellicani, PD deputy, Environment, Territory and Public Works Committee; Sneška Quaedvlieg - Mihailović, Europa Nostra Secretary General; Erminia Sciacchitano, Ministry of Culture; Leo Schubert, architect; Francesco Trovò, Soprintendenza Archeologia, belle Arti e paesaggio per il Comune di Venezia e laguna; Paolo Vitti, Europa Nostra; Mariella Zoppi, professor emerita University of Florence.

Figure 7. Promotional banner for the event sharing Venice's appeal for a renewed urban culture, presented at the 2021 Biennale Exhibition.

What emerged from the discussion is that the density, plurality, and diversity of functions in historic cities are elements that testify to their stratifications, underpinning the quality of the built environment and secular resilience as population centres. Conservation and innovation, elements that have always coexisted in historic cities, are not as opposed, but complementary, in a logic of contemporary sustainability. It is no coincidence that the document was born in Venice: the lagoon city epitomizes many of the urgent and unresolved issues of historic cities: in parallel with the enormous efforts made or underway for its physical survival (protection against rising sea levels and thus the effects of climate change and continuous restoration to counteract the partly natural physical decay) the tangible and intangible heritage is confronted with the economy of tourism, which tends to monopolize the socio-economic sphere, with the risk of compromising or losing the complexity and potential of its social meanings and values. With the same trend as the sea level rises, the ancient city has been losing its inhabitants for more than half a century. Even if it succeeds in physically preserving it, in the period of a very few generations Venice could lose most of its resident citizens.

Right from the preamble of the Charter, it is evident that the tangible and intangible urban heritage of historic cities represents a model of ecological and social sustainability established over centuries and at high risk of disappearing within a generation by turning historic cities into a mere commodity.

The document frequently refers to the word culture, which calls up the complex of social, political, and economic institutions, artistic activities and spiritual and religious manifestations that characterize the life and material evidence of a society. Among its main purposes is recalled the importance of "Fostering, disseminating, preserving, and passing on the heritage and urban culture of historic cities": they are still partly inhabited places where daily city life is conducted with the presence of a multiplicity of functions stratified over time and thickened over a contained area and tended to be within walking distance. Urban culture is made up of material and immaterial evidence multiplied through historical continuity. Through study and comparison with other settlement realities, its advantages and disadvantages can be understood with the aim of addressing current challenges. Other purposes made explicit in the paper include "raising awareness of the risks involved in the loss of the culture and urban heritage of historic cities, such as depopulation, the degradation of the social and physical fabric of abandoned places or the radical transformation of places of residence into places for short stays, with the loss of the sense of belonging to communities, the meanings of monuments, places of worship and memory, the resulting loss of identity and possible cultural comparisons and the loss of legality, land consumption and environmental damage caused by new subdivisions and transportation infrastructure outside the centres".

Of particular importance are the benefits that arise from the «conserving and accumulating the quality and multiplicity of urban tangible and intangible heritage to ensure a higher quality of life rather than reducing it to a few predominantly commercial and receptive (leisure/tourist) or only tertiary functions», together the greatest threats of cities that attract large masses of visitors, whether because of their urban quality or their importance in the collective imagination. Finally, all of the following are recalled in order to promote their dissemination "the forms of sustainability handed down by the urban culture of historic cities such as the minimal use of resources accompanied by the continuous reuse of the built environment (…) such as saving land through density, pedestrian and public transport mobility favoured by compactness and proximity; the use of local resources and ecological construction techniques in addition to respect for the environment; the plurality and coexistence of the functions needed by resident communities, including the protection of the economic fabric of proximity".

All of this gives long-term cohesion and social welfare for which historic cities are the most striking testimony: they often outlive their host states in longevity. Next, the «measures to protect the culture and urban heritage of historic cities» necessary to achieve the purposes

already listed are set forth. It takes generations to create the set of urban functions necessary for city life; it only takes a few years to destroy them.

In addition to recalling the importance of knowledge of the tangible and intangible elements that make up the historic city, on which the preservation of culture and heritage depends, the document calls for "identifying and analysing the negative, evolving actions that lead to the destruction of urban culture and heritage and counter them. They may be, in addition to physical destruction due to conflict, natural disasters and climate change, relocation of residence, services and necessary commercial fabric and workplaces, oversized mobility infrastructure and *overtourism*". Figure 8 shows the extremely high number of tourists in the most important areas of the city, to the extent that parking and transit areas are completely saturated.

Figure 8. Numerous tourists pass through the city every day of the year, concentrating in particular on the route Ferrovia/P.le Roma - Rialto - San Marco, 2018 (photo: Francesco Trovò).

One part of the document concerns local administrators and the citizenry, calling on them to put in place "short-term actions to combat pollution, intensive and parasitic exploitation, the formation and consolidation of rents of position, the destruction and abuse of material goods, the expulsion of services to citizens, the privatization of public land and the removal, through change of destination, of areas from public usability and residency in favour of their commercial exploitation, with no return for the community, with strict observance of the already existing protection regulations".

Finally, some factors are listed that can favour the development of a new culture, here understood as a complex of manifestations of social life, capable of counteracting problems that limit its full expression.

This new culture must therefore be encouraged by adhering to the objective of sustainability in its three different declinations: social, economic and ecological.

It should be implemented on the basis of the fundamental role of the protection of diversity and historical stratifications, through the maintenance and preservation of material and immaterial urban heritage.

Innovation and renovation should be encouraged, but by including, rather than excluding, history, prioritizing the search for compatibility of functions both with the material aspects of buildings and urban spaces, and with their functions in the context of the community, because of pre-existing functions.

These objectives cannot disregard the dissemination and enhancement of citizen services so as to ensure the presence in the city of the buildings and the institutions that support them, such as public offices, health services, schools and universities, sports facilities, and at the same time in the private sphere the economic, commercial, in general the activities at the basis of the residency of a community and the satisfaction of its primary needs in the territory.

In this logic, a culture of legality must be defended and fostered, understood as respect for the rules of carrying out the daily activities of a community and those of behaviour and civil coexistence, as an indispensable garrison, capable of governing even the dynamics of tourism in order that the balance with the other functions of the city is not altered and directed toward the quality of supply.

Conclusion

The final part of the charter contains a series of proposals and measures to be taken for the development of culture and urban heritage in historic cities. While short-term actions allow a response to immediate challenges, issues related to climate change, tourist pressure, socio-economic transformation of old towns, and the impacts of some new projects require long-term planning and evaluation. Among the new elements expressed by the charter is the strong call for the need to build policies and measures at the national and local level capable of fostering the conditions for a growth in residency, the true supporting element for the care and conservation of historic cities, along with other aspects related to work, culture and ecology, which the charter highlights.

In support of these purposes, regulatory tools should be fostered and developed «for the definition of land use, with particular reference to the role of urban plans» and the already evolved regulatory framework on Cultural Heritage should also be improved so that it is supplemented with indications also on intangible assets and referring to the protection and development of socio-cultural issues. It is not enough to preserve buildings, museum collections, the historic urban landscape, which are very fragile (Figure 9): the charter makes it clear that the economic and commercial fabric also contributes to the preservation of the identity values of urban agglomerations over time, and at the same time indicates the instruments to be introduced to achieve this goal.

Figure 9. Venice and its urban system of canals, bridges and foundations is very fragile and requires continuous maintenance, 2019 (photo: Francesco Trovò).

To support the onerous commitment of private cultural property owners, state aid tied to socially responsible use is desirable, as adopted, for example, by the Special Laws for the Preservation of Venice, where residential use for private property benefiting from grants was a binding condition for the duration of 15 years.

To this end, it is necessary to provide "fiscal measures and instruments to incentivize residency (reliefs) or disincentivize intensive exploitation of assets and resources (polluter pays principle)".

The charter encourages public-private collaboration to implement «forms of collaboration between citizens and the public administration for the care, management and redevelopment of common goods» of which the more than fifty years of working with local authorities and carrying out excellent work of the International Private Committees for the Safeguarding of Venice is a significant example. In these times when public funding for culture and in particular for the restoration of historic buildings is scarce, the achievement of objectives for the goal of conservation also depends on the ability to form public-private partnerships, and therefore, as the charter points out, on how to pursue this target.

Examples are buildings given in concession by municipalities or the state to foundations for a predetermined period of time in return for carrying out exemplary restoration and use. Huge potential exists in Italy, given the many abandoned public properties in prime locations, often sold at auction without criteria for their future use [17]. In addition, great emphasis is placed in the charter on opportunities related to "interdisciplinary, national, and supranational exchanges in order to compare different experiences and promote the spread of awareness of the importance of the role of UNESCO governance policies (Steering Committee, Heritage Impact Assessment procedures, etc.)".

The critical gaze of experts from outside the local realities and the discussion of whether to put a city on the list of endangered world heritage sites allow for fruitful comparisons and media visibility that can generate political pressure and incentivize new solutions to problems that have been unsolved for decades.

Finally, education, research, and outreach dissemination through museums, libraries, archives, theatres, cinemas, and other institutions are to be considered decisive for the

transmission of culture by contributing concretely to the quality of life in the city. It is noted that foundations such as the *Bundesstiftung Baukultur* in Germany [15] or the recently established *Stiftung Baukultur Schweiz*, which came into being as a result of the 2018 Davos Declaration, that are concerned with the promotion, research and dissemination around the issues addressed above, are still too rare.

Italy, with its exceptional built heritage and long-standing culture of preservation could play a key role in the European scene, Venice, thanks to its Architecture Biennale, could be a privileged place to host a foundation dealing specifically with urban culture, its preservation and development.

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Integrating and managing the local dimension of heritage: the challenge of linking the Venice Charter with territorial planning tools in France

Integrar e gerir a dimensão local do património: o desafio de conectar a Carta de Veneza às ferramentas de planeamento territorial em França

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Abstract

Even if the Venice Charter is an essential reference, a limited reformulation may prove useful. We present here a reflection on a possible evolution focused on the co-production of knowledge and expertise between technicians, academics and heritage communities. This proposal invites thinking about heritage as an interface between conservation and planning tools. The wills of the Venice Charter could interact towards a better recognition of the social dimension of heritage through a revaluation of the heritage community. In the Grand-Chambord area (France), we tested a process that seems capable to facilitate the integration of the social dimensions of heritage into planning tools. This method, that could be adapted to other cases, is based on a reframing of the initial vision of the Venice Charter by linking it to the population wills of each area. This specific adaptation would allow territorial transformation respecting the heritage values of our landscapes.

KEYWORDS
France
Inventory
Register
Planning tools
Heritage community
Landscapes

Resumo

Mesmo que a Carta de Veneza seja uma referência essencial, uma reformulação limitada pode revelar-se útil. Apresentamos aqui uma reflexão sobre uma possível evolução centrada na coprodução de conhecimento e especialização entre técnicos, académicos e comunidades patrimoniais. Esta proposta convida a pensar no património como uma interface entre ferramentas de conservação e planeamento. As intenções da Carta de Veneza poderiam interagir no sentido de um melhor reconhecimento da dimensão social do património através de uma reavaliação da comunidade patrimonial. Na área de Grand-Chambord (França), testámos um processo que parece capaz de facilitar a integração das dimensões sociais do património nas ferramentas de planeamento. Este método, que poderia ser adaptado a outros casos, baseia-se numa reformulação da visão inicial da Carta de Veneza, ligando-a às vontades da população de cada área. Esta adaptação específica permitiria uma transformação territorial que respeita os valores patrimoniais das nossas paisagens.

PALAVRAS-CHAVE
França
Inventório
Registo
Ferramentas de planeamento
Comunidade patrimonial
Paisagens

Preamble

The Venice Charter is a crucial document for cultural heritage, even if its direct focus is on monuments, and it is still an important player in the development of the concept of heritage and its management. It was born when the USSR existed, May '68 was not yet a possibility, modern colonialism was still alive and Asian countries had not yet emerged. We should keep in mind that the Venice Charter was written in four original versions (English, French, Italian and Russian) and immediately some questions about the existing differences of interpretation appear [1-3]. Moreover, all the translations in the world came from these different texts, realising some consistent differences in translation issues [4-5].

The changes of the last six decades have meant that heritage has become a multifaceted issue, closely linked to local lifestyles and economies. The term "heritage" has become "heritages", changing from a singular monumental vision to a multiplicity of elements that make up the tangible cultural heritage. It is essential to recognise and manage this diversity; in this paper we revisit the subject after many authors, using their experience and adding our own. We propose an approach aimed at establishing a more proactive contact between the current property regime and spatial planning instruments.

The introduction – broadening the heritage base – deals with the link between the planning instruments of heritage protection and the concepts contained in the Venice Charter, the former linked to the complexity of the contemporary world and the latter linked to an outdated moment in our history. Of course, we are not the first to understand the change in the patrimonial vision during these 60 years.

In the section "A theme and a field project to test it", we indicate the ground on which we have been working, pointing out the importance of local heritage. It can act as a bridge between the monumental dimension of the Venice Charter and the current dimension of heritage, which is more open and attentive to smaller issues and societies.

The knowledge and recognition of the built heritage is a fundamental act in the management of the territorial heritage, also because it is a topical moment to think about the actions of the heritage and their link with the people and their organisations.

We then present an experiment that we have had the opportunity to carry out, which leads us to consider the Venice Charter as a solid reference for heritage management, but an enrichment would allow it to continue to be an important and recognised point of reference in heritage valorisation.

Broadening the heritage base

This text addresses the need for change that has emerged in the 60 years since the Venice Charter was established, particularly in relation to the relationship with the inhabitants and the different perspectives on heritage.

This diversity is perhaps accentuated by the emergence of a weak postmodern thought [6]. Regarding heritage issues, a less monumental and normative way of thinking is gradually emerging, more interested in community will and knowledge [7-8].

Charged with a spiritual message from the past, humanity's monumental heritage remains as a living testimony to its ancient traditions. As modern society becomes more aware of human values, it regards these traditions as a common heritage. In relation to future generations, society recognises its shared responsibility to preserve and transmit this heritage in all its rich authenticity.

The Venice Charter definitively establishes the link between humanity and tangible traces of the past. It highlights the inherent link between technology, knowledge and heritage conservation, and emphasises the need for continuous conservation efforts.

At the end of the first quarter of the twenty first century, we have witnessed a change in the approach to heritage. The monumental heritage outlined in the Venice Charter was enriched by many other less monumental elements. In addition, the concept of valorisation was adopted for heritage conservation.

In France, classified heritage, which is recognised as such, is now joined by heritage that can be described as minor – but which we prefer to call "local heritage". This heritage is a fundamental part of the daily life of local people and is more closely linked to them than the heritage classified by the French State. It is noteworthy that the Charter does not yet clearly integrate the living spaces and daily experiences of individuals [9-11]. In our view, this implies considering the territory as a living heritage as well as a lived heritage, as was later done with the UNESCO "HUL" recommendation [12].

These new conditions, unknown to the authors of the Charter, lead us to consider the integration of the heritage issue into territorial management tools, to effectively enhance patrimonial objects. The changes in the concept of heritage and its valorisation raise the question of how to develop tools that can make the system work in the real world.

This action reveals strong links with the development of ideas related to communities of inhabitants that can establish commons, as discussed by Lucie K. Morisset, as well as with the concept of commons presented by Elinor Ostrom [13-15].

After 60 years as an indispensable reference, amended several times to ensure its integrity and adaptability to local and global changes, a reorientation of the Venice Charter could be useful. Here we present a reflection that could, in the long term, lead to a new evolution of the Charter. It focuses on the co-production of knowledge and expertise between technicians, academics and the heritage community. This approach can fully integrate local and listed heritage [16].

This reflection invites us to consider the heritage issue as an interface between the preservation of the built heritage – the central focus of the Venice Charter – and the planning tools that organise landscape transformations - the process of translating the Venice Charter into lived territories.

This link between the Venice Charter, heritage and planning tools could help to achieve greater recognition of the social dimension of heritage by strengthening the role of the heritage community.

As part of our research in partnership with the *Inventaire* (the official French national register of recognised cultural heritage), we propose a flexible tool that can incorporate the social and territorial aspects of heritage [13]. This contribution is based on the collaborative work carried out in the Grand Chambord area, where elected representatives, technicians and residents have experimented with this type of arena.

This method cannot be reproduced in its current form and should be adapted on a case-by-case basis, re-framing the original vision of the Venice Charter and linking it to national planning instruments. This specific adaptation would make it possible to transform landscapes while respecting their heritage values.

A theme and a field project to test it

We have identified a nodal point in this process of transformation, a point that affects the notion of heritage as well as all the spatial planning tools and the way in which national heritage is recognised and managed. A system in constant flux.

To address this issue in a real action on the ground, we had the opportunity to be supported by the Centre Val de Loire region within the framework of a project entitled *Patrimoine culturel de proximité, Bien Commun pour la construction territorial* (PBC – Local Cultural heritage, a common good for territorial development).

The research consortium includes researchers from the Universities of Tours and Orleans (UMR CITERES and CRJ Pothier) and institutional partners (Communauté de Communes du Grand Chambord – CCGC in text, CAUE 41, Mission Val de Loire). Two *départements* in the centre of France were chosen for the project: Loir-et-Cher and Indre-et-Loire.

Recognising and listing local heritage

This research action proposed the hypothesis that the change in the patrimonial sphere could be transferred to the sphere of territorial transformation, with a change in the act of recognising and characterising the existing buildings, the whole set of existing buildings that are potentially active in territorial development. Even if not directly inspired, this process is not far from the identification of the Burra Charter [17-18], including the technical needs of planning issues.

It was therefore decided to characterise the local architectural inheritance through a different and innovative process.

This objective responds not only to the evolution of the heritage field and the actions undertaken at its various institutional levels, but also to the strong cultural link that each of us has with our heritage. It is so strong that we have direct access to heritage judgement. We identify and evaluate heritage through experience; our culture and life experiences lead us to approach the complexity of heritage in an almost instinctive way.

These evaluations, assessments, judgments and translations of forms of appropriation are valuable both for measuring changes in heritage and for helping to make heritage sustainable.

From then on, the PBC research-action aimed to report on and explain how these actions were constructed and carried out, to identify the levers that would enable the heritage characterization process to be appropriated by a multitude of players, including those described as "non-experts". We proposed to deconstruct part of the heritage identification mechanism for a better understanding and to reconfigure it to make it easy to use, a necessary transformation to keep the idea of heritage away from "only-monuments".

Indeed, we formulate the hypothesis that through the characterization of items, it is possible to enrich the heritage of several entities otherwise excluded. We imagine this transformation as the transition from a formal National Inventory to a kind of census, involving the entire population of a given territory.

The concept of heritage, as it is conceived and characterised today, has evolved over the last two centuries, thanks in particular to the contribution of numerous thinkers such as Viollet-le-Duc [19], John Ruskin [20], William Morris [21], Gustavo Giovannoni [22], and, more recently, Alberto Magnaghi [10].

This history of heritage and its construction and stabilisation as a concept teaches us that heritage, in all its dimensions and complexity, is constantly changing, as is clearly shown by the developments between the major international documents that define it: the Athens and Venice Charters, the First and Second International Congresses of Architects and Technicians of Historic Monuments 1931 and 1964 [16], the 1972 UNESCO Convention Concerning the Protection of the World Cultural and Natural Heritage [23] and, closer to home, the 2003 UNESCO Convention for the Safeguarding of the Intangible Cultural Heritage [24] and the 2011 Recommendations on Historic Urban Landscapes [12].

These elements form an international framework. However, we should also take into account national frameworks – for example, we are directly affected by the French tradition, from the law of 31 December 1913 on historical monuments on historical monuments to the LCAP law of 2016, which is also influenced by international documents such as the conventions of the Council of Europe, such as the Faro Convention of 2005 – although France has not yet ratified it.

At the same time, much thought is being given to the appropriation of heritage by those who can benefit from it, encounter it daily and use it in some way [14, 25]. These trends pave the way for a broader concept of heritage, closer to the inhabitants and considering their daily

experiences. To encourage and structure this new perception of heritage, to "invent" heritage [26], the characterisation of "normal" objects, those of local everyday life, becomes more useful, heuristic and interesting. A broader and more collaborative recognition of heritage [27] will enable the construction of a future shared narrative about it.

As we have just emphasised, heritage is constantly evolving over time and with society. It is embedded in space and therefore varies according to the territory. The relationship between heritage and territory is therefore strong [28], and in the PBC project we give it an important place. For this reason, our analytical, methodological and reflexive interest is focused on the proximity heritage, a subset of the material heritage bequeathed to us by previous generations, which has a tangible and perceptible materiality and is meaningful both for an individual and for a community [25].

In our view, the interest in evoking, invoking and mobilising local heritage lies in the fact that this component of cultural heritage, in addition to being a concrete illustration of the above, interacts with the daily lives of the inhabitants. Without denying the importance of monumental or already widely recognised heritage (such as listed or classified monuments), we are interested in what is sometimes called "small", "local" or "neighbourhood" heritage, which is often not recognised as heritage.

With this notion of local heritage, we are aiming at the component of material heritage that interacts with the experience of the communities and societies for which this heritage is a reference. This is how we interpret the Town Planning Code (*Code de l'urbanisme*), which states that "French territory is the common heritage of the nation. The public authorities are its custodians and guarantors within the limits of their powers" (Art. L. 101-1: *Le territoire français est le patrimoine commun de la nation. Les collectivités publiques en sont les gestionnaires et les garantes dans le cadre de leurs compétences*). In this way, the local heritage shared by a community is inextricably linked to a territory and its local life, to its protection and its active promotion.

Following this line of thought, the territory is based on the positive and balanced development of communities, a process in which heritage plays an increasingly important role. Having been considered as an object to be preserved and then as an essential element in the constitution of the nation [26, 29], heritage has become a resource for the construction and development of territories. Participating consciously and, why not, actively in this territorial construction through heritage seems to be an opportunity for individuals, communities and institutional actors to articulate social needs with the crises and transitions of the twenty first century.

To meet these challenges, the PBC consortium proposed to test a conceptual and operational tool to help raise awareness of heritage, linking institutional heritage and neighbourhood heritage, symbolic values and using values to contribute to the co-construction of territories, involving some experts but also as many elected representatives, technicians, associations and residents as possible.

Aware of various risks and abuses, however, we remain vigilant about the practices of heritage characterisation and recognition, to allow the benefits of a new identity-based heritage development, while limiting the risk of fetishising it. Indeed, as we have studied and highlighted, this drift can express ideological positions and be very – or even too – strongly linked to exclusive communities or overly targeted interests. The rhizome nature [30] of heritage is certainly a potential, but also a risk, in this search for polyarchic constructions of both heritage and territory.

It is in the light of these objectives and points of vigilance that we feel it is worthwhile to report here on the work carried out specifically with the Great Chambord Area (CCGC) and the *Inventaire* of the *Centre VdL* region.

Knowledge and recognition of the built heritage: a fundamental act in the management of territorial heritage. The *Inventaire* has not only studied the monumental heritage, much of which is protected by the laws on historical monuments. Since its creation, it has paid particular attention to vernacular architecture, the small-scale and local heritage made up of

farms, houses, mills, wash-houses, wayside crosses, etc. This heritage is exceptionally protected as a Historic Monument and is rarely protected as a *Site Patrimonial Remarquable* (or the former *Secteurs Sauvegardés or ZPPAUP/AVAP*) when it is located in lightly and moderately urbanised areas. However, this heritage is taken into account, preserved and protected by a *Plan local d'urbanisme* (PLU), a planning document that sets out a development project for a commune or group of communes (PLUi - a ministerial decree came into force on 1 January 2016 modernising the PLU with the aim of moving from regulatory to project-based urban planning).

"To survey, to study, to make known" is the motto of the *Inventaire*, a motto that remains common to the various regional services. These studies take various forms: basic studies, topographical or thematic studies, preliminary studies, etc. They are included in the various national inventory databases available online (named: *Mérimée, Palissy, Mémoire*). They can also be the subject of scientific reports, scientific publications (the journal: *Les cahiers du Patrimoine*), publications aimed at a wider public (the magazine: *Images du Patrimoine*) and tourist publications (the guides: *Parcours du Patrimoine*).

What the historical analysis of the specific work of the *Inventaire* – and more generally of the evolution of the construction of the heritage fact – shows is the gradual emergence of an interest in a heritage diagnosis that is not a register of individual objects, monuments, landscapes, but a set of structural rules that keep alive the identity of the territory itself and guarantee its reproduction [10].

Conducting a heritage census differs from “simply” compiling a collection of information in that it is a fundamental unit for understanding both the territorial dynamics underway and the issues raised by the heritage. Moreover, this diagnosis can be taken into account in the definition of territorial planning tools, as it becomes a means of giving a collective meaning to the many individual entities.

For the *Inventaire*, the diagnosis of the heritage should bring it closer to the problems of regional planning. Although the link between the *Inventaire* and regional planning has a long history [13], it is still difficult to make it work effectively. The Centre Val de Loire is a case in point, both because it illustrates this desire to link heritage and the region, and because it forms part of the basis of the PBC project.

As part of its relationship with the local representative in charge of heritage management (UDAP), the *Inventaire* took part in the characterisation of the heritage of the commune of La Riche as part of the drafting of a new PLU. In this field, the local demand for support and interpretation of the heritage provided an opportunity to reflect on a new methodology aimed at providing evaluation elements capable of supporting decision-making. It was necessary to identify characterisation criteria that would support this assessment: this led to the so-called “ERIC” method [13], conceived by the head of the regional office of *Inventaire* – at that time M. Claude Quillivic – and previously tested in the field. It is based on the criteria of exceptionality, rarity, integrity and contextuality.

Exceptionality, to indicate exceptionalities as opposed to normal buildings. Originally intended for monuments, it was quickly restricted because it was not entirely relevant and could be replaced in any case. Rarity, to indicate the scarcity of this type of building, through the activities carried out inside or the architectural type. The presence of more or less similar elements influences their treatment. Integrity, a simplified estimate of the materiality of the element, this indicator is also important to manage its possible transformations. Contextuality, this is an attempt to indicate whether the building in question – remember that the analysis is carried out on a building scale – has some links with the buildings surrounding it, to enrich its vision and the future way of acting.

A “real life” test

Our aim was, and still is, to carry out work that integrates the diversity of heritage and, at the same time, supports decision-making in spatial planning. This method, which is experimental

and not to be used systematically, has its own rules, but it proposes to support the management of local heritage that is not formally protected.

The first test on field for this method was done in 2015/2016, by its inventor, M. Claude Quillivic – director of the *Inventaire* of *Region Centre Val de Loire* – in the municipality of La Riche (37) within the framework of the implementation of the local PLU. The coverage was about the whole municipality's historical envelope – the part called "compact" and present on nineteenth century maps. Subsequently, and thanks to the PBC project, it was possible to propose a more consequential work carried out between 2017 and 2020 on the communes that compose the *Communauté de Communes du Grand Chambord* (https://www.grandchambord.fr/ 17 municipalities at that time, now 16 – 20 609 inhabitants at the 2021 census, 433 sq.k.). Having previously organised together with the *Inventaire* the data collection sheet for ERIC, an engineer was hired between June 2017 and May 2018 to carry out the building information capture of the 17 communes (for practical reasons of time, we limited ourselves to the areas of dense built-up areas, without taking into account the isolated buildings on the territory). The data integrated the technical G.I.S. of the CCGC by the company Pilote41 (today Pilote-OET – https://pilote-oet.fr/) in charge of the data management of the Loiret Department (41), in this way, information were made available to the communal technicians. The work involved a constant exchange with the 17 mayors – during the usual Monday's institutional meeting - and with the CCGC technicians. Sessions to present the work were organised in all municipalities during 2019 and the exchanges had to be stopped because of the COVID19 pandemic time.

The method proposes the use of relatively simple and configurable criteria to participate in a sort of rating system that helps to create groupings of properties that can theoretically enjoy the same territorial status.

One of the criteria chosen was that of Exceptionality, which lost its status during the field exercise, confirming the distance of the concept of heritage from the Exceptionality that characterises monumental heritage.

Exceptionality primarily concerns historical monuments that are already officially recognised as heritage and for which a selection has already been made. These works can therefore be considered exceptional in the sense that they are the exception to the rule, and this criterion makes it possible to distinguish them from the outset and give them special treatment. Exceptionality is linked above all to the history and distinction of the work and can be the subject of legal protection.

For this reason, that of being "already" a recognised heritage asset, this character is avoided in the field test because, in the end, there is no longer any need to indicate the exceptional character of a monumental heritage asset. The other three variables (rarity, integrity and contextuality) do not contradict the notion of neraby heritage, thus confirming their role. As we told, the first – rarity – indicates the quantity of similar properties present in each territory, the second – integrity – the material condition of the property, and the third - contextuality – the integration – or not – of a property in a series of properties that benefit from being considered together.

The interest and originality of the "ERIC" method lay in the integration of an evaluation logic based on comparison, which is rarely proposed in other methodologies. To improve it, we have defined an evaluation system that associates a scale of values (from 1 to 3) to each criterion, reflecting the Rarity, Integrity and Contextuality of the work in question. Only Exceptionality (which can only have a value of 0 or 1) has become an overall useless variable and is destined to disappear.

Critical review of field experience

At the *Rendez-vous du Val de Loire* in 2015 (a heritage event organized by the *Mission Val de Loire Patrimoine Mondial*), the CCGC management team had already shown an interest in the

participatory approach applied to heritage in particular. At the time, it was producing a PLUi on heritage and, during the event, it was particularly interested in the presentations of the two inventories and diagnoses already carried out using this type of tool (the communes of Luynes and La-Riche). This interest is linked to the CCGC's desire to become part of the *Grands Sites de France* network with a view to long-term regional development. The heritage assessment was carried out within the CCGC and the results are convincing. Both the local population and the institutional players have been supported in their efforts to include the local heritage in the inventory of heritage sites for regional development.

The project was implemented from January 2017 to December 2020, and the specific "ERIC" field work lasted 12 months from June 2017. During this time, the maintenance of the Exceptionality criterion was quickly questioned. Indeed, we observed that it "interfered" or interacted too much with the sensitive or emotional dimension of local heritage. The use of a rare, and therefore recognised, building to discuss the value attributed to local heritage only provoked conflict and tension, and failed to reveal the significance of local heritage.

Furthermore, to describe a local heritage item as "exceptional" would be, on the one hand, to accept a kind of immutability of the heritage dimension of a building, which would be at odds with a relational and evolving heritage fact, and, on the other hand, to refer to an element that is "already classified" because it is exceptional and does not require recognition work as such. The field test of rarity has proved to be ambivalent, being positive in some cases and negative in others [27]. Indeed, rarity seems to be contextual, flirting with the criterion of contextuality. It varies not only according to the individual, although a kind of consensus has been observed on many occasions, but also, if not above all, according to the territorial scale that is openly used or suggested to assess the value of local heritage. Finally, rarity also varies according to the architectural element in question, its nature and whether or not it has a strong local character.

Integrity, for its part, has come to be seen as a judgement about the condition of a building based on a relationship between a current state and an initial state, whether real or imagined. Integrity is therefore a relationship with the otherness of a heritage, both in terms of its materiality and its image. Thus, while on the surface the characterisation of a property by this criterion may appear simple (it proposes to compare two states and to indicate the unchanged material proportion between these two situations), on the ground it is complex, because the evaluation of the degree of transformation of the property is quite complex, since it involves physical and symbolic elements. Finally, the fourth variable, contextuality, allows us to qualify the relationship between the good and other goods in the immediate vicinity. It is the idea of coherence, the production of a motif, a sequence that is as important in the characterisation of the heritage as the building itself.

This criterion has proved to be a point of discussion between residents and experts, some of whom have different scales of value and use different elements. While for the experts in the inventory or the elected representatives, contextuality refers to a line of facades, a layout, etc., for the residents it refers to an atmosphere or any other characterisation in the sensitive or aesthetic register [13].

In the end, after the field experience carried out in 2017 and 2018 within the CCGC, the method proved to be particularly encouraging for starting a dialogue between elected representatives and the local population. Based on simple criteria that are easy to understand, it allowed the inhabitants to "give a name" to the non-formalised knowledge that local actors possess but are often unable to define and share.

The experience of the elected representatives and the inhabitants is highlighted and given meaning, something that is often underestimated and unfortunately often marginalised when it comes to major monuments.

This is the case of the *Château de Chambord*, which is seen both as an attractive and dynamic feature of the area and as a "special issue" for the municipalities of the CCGC. The monumental – and recognised – heritage ends up overshadowing the small-scale heritage, which then

suffers from a lack of interest, which is particularly noticeable during the European Heritage Days. Finally, the participatory diagnosis carried out within the CCGC has highlighted elements of heritage in the local fabric that had previously been undervalued.

Towards a new edition for the Venice Charter?

Like several other authors, we show that the Venice Charter, as it stands, is a document of its time which, at first sight, should be rewritten. However, in view of the numerous documents produced over the last six decades, which have successively and partially addressed situations not initially included in the original text, it would certainly be a gaffe to produce a new version.

Indeed, on the one hand, the plasticity of the Charter is a guarantee that the heritage issue can evolve in line with transitions of all kinds. On the other hand, the Charter's internal solidity, despite the constant need to respond to specific cases and new ways of thinking about heritage in relation to territory, makes it an evergreen and ever-powerful tool that can be articulated with other documents and tools adapted to each spatial situation. In the medium term, therefore, the aim is to update the effectiveness of the Venice Charter. This is only sketched out here, highlighting the need to consider local heritage within the framework of the Venice Charter.

In many countries, and particularly in France, heritage has developed as a popular concept, but also as a constitutive element of territorial production [31]. The field of heritage has continued to expand over the last forty years [32].

Another observation is that the relationship with heritage is often imbued with a strong emotional and individual charge [29, 33]. It could even be argued that emotion is proof of the existence of heritage [34]. It's a complex reality that we have explored in the PBC project, and one that we believe can help renew the debate on how to consider the links that are forged between residents and heritage, so that symbolic and use values can coexist. In time, this debate could lead to proposals for amendments to the Venice Charter.

However, there is still a long way to go, for how can we give a common meaning to this local heritage, since it is based on the diversity of emotions to be shared? How can we integrate relational values into the process of identification, characterisation and recognition, so that it is shared and recognised by all?

Like territory, heritage is essentially defined by mechanisms of appropriation [35] and by a "mode of action by which individuals collectively compose and experience a common good through the relationships they maintain with the outside world, in ways of knowing and valuing the space that is their own and that they share" [36].

Thus, a first step would be to share expertise in an "equivalence of intelligences" [37] between residents, institutional actors and researchers, so that heritage becomes an asset whose value to others is recognised by all, and the need to share these values and build a common frame of reference that allows this encounter between uses (bottom up) and symbolism (top down).

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Does reading the Venice Charter help the good Lord when He moves out? Considerations for expanding the Venice Charter to prevent the loss of church monuments

Será que ler a Carta de Veneza ajuda o bom Deus quando Ele se muda? Considerações para expandir a Carta de Veneza de modo a evitar a perda de monumentos da igreja

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Abstract

The Catholic Church owns too many monuments and too few members to maintain them. A true loss for our society is looming. Experts in preservation, politicians, and Church officials are aware of the problem. They respond with resolutions and guideline documents. The compliance of the Charter exerts a restraining influence on the development of responsible strategies for dealing with the abandonment of monuments. Examining the situation of the Church, shows the importance to enhance the priority of this desideratum. Holzhausen is developing an instrument from Vitruvius's criteria for buildings (*firmitas*, *utilitas*, *venustas*) to address it. She complements the terms with *historia* to achieve and reinforce the heritage conservation emphasis. Holzhausen's concept enables a process of dialogue between owners, users and professionals when a decision on disposal of a monument becomes necessary. The inclusion of this concept in the Charter would be decisive and should warrant a sustained shift in perspective.

KEYWORDS
Church preservation
Guidelines
Reuse
Venice Charter
Vitruvian principles
Monument criteria

Resumo

A Igreja Católica possui demasiados monumentos e poucos membros para os manter. Uma verdadeira perda para a nossa sociedade está iminente. Especialistas em preservação, políticos e responsáveis da Igreja estão cientes do problema. Respondem com resoluções e documentos orientadores. O cumprimento da Carta exerce uma influência restritiva no desenvolvimento de estratégias responsáveis para lidar com o abandono de monumentos. A análise da situação da Igreja mostra a importância de reforçar a prioridade deste desiderato. Holzhausen está a desenvolver um instrumento a partir dos critérios Vitruvianos para edifícios (*firmitas*, *utilitas*, *venustas*) para abordar esta questão. Complementa os termos com *historia* para alcançar e reforçar a ênfase na conservação do património. O conceito de Holzhausen permite um diálogo entre proprietários, utilizadores e profissionais quando é necessário tomar uma decisão sobre a alienação de um monumento. A inclusão deste conceito na Carta seria decisiva e deveria justificar uma mudança sustentada de perspetiva.

PALAVRAS-CHAVE
Preservação de igrejas
Diretrizes
Reutilização
Carta de Veneza
Princípios Vitruvianos
Critérios para monumentos

Introduction

For quite some time, the Catholic Church in the German-speaking region has been grappling with two phenomena. Dealing with both is challenging. Both phenomena concern listed churches. On the one hand, the redundancy of places of worship has increased steadily for the past ten years. Sparce worshipers attend the church services. As a result, the remaining congregation feels lost in the large space. Furthermore, the overall willingness to engage in building preservation is decreasing. Nevertheless, the maintenance costs remain the same, whether 400 people attend the service or only 40. This creates an economic bottleneck that has already pushed some dioceses into insolvency. On the other hand, there is the phenomenon of mass emotionalization / sensibility when churches – whether due to force majeure or by decision of the owners – are in danger of being destroyed. The fire at Notre-Dame in Paris is the best example for this special mass emotivity. The whole world held its breath on April 15, 2019. Agnostics, devout Catholics, members of other religious communities, and people without religious affiliation gathered, specifically in Paris, candles were lit, and people flocked together to mourn. This happened in other corners of the world as well, the pain was universal.

In Germany, two amateur videos showing, the demolition of the Neo-Romanesque parish church in Immerath, a small village near the Dutch border, reached over a million viewers (Figure 1).

The late historicist building stands so prominently in the landscape, characterized by its typically low horizon, that the local population referred to their parish church as the cathedral of Immerath. This ecclesiastically incorrect term reflects both its significance for the people and its landscape-shaping impact. This prominent church made way for a lignite mine. In newspaper articles, on radio – and television broadcasts, burst of emotions were captured and nourished. For a moment, Germany saw itself reflected in Immerath (Figure 2).

The catholic church hardly has any practical strategies to cope with either of the two phenomena. The power of solidarity and identification dissipates, church attendance at Sunday Mass continues to decline, leading dioceses to divest themselves of further buildings. The process of divestment evokes solidarity again, which then dissipates, it is leading to a vicious cycle. Only an open, dialogical discourse about the purpose of monuments can interrupt this turbulent process and at the same time foster the power of general identification. The following will demonstrate, what happens when there are no valid criteria and what requirements criteria must meet. In a next step, the role of the Venice Charter regarding the identified desideratum will be examined. Finally, a valid proposal for criteria and their implementation into the Venice Charter will be put up for discussion. The argumentation is based on case studies from the Archdiocese of Vienna. However, the scope of both the problem and the potential applicability of the proposed solution significantly transcends the regional boundaries of the Archdiocese of Vienna and the German-speaking territories. It should be noted that due to the concordat between German-speaking countries and the Vatican, the issue of structural maintenance has a more direct impact on parish communities. Therefore, organisations like TRANSARA were founded in Germany [2]. This group of volunteer experts sees itself as a dialogue-seeking counterpart to the church owners. They aim to engage in constructive conversations, bridging the gap between their expertise and the interests of the religious institutions that own the properties in question. With the same aim the *Kirchenmanifest* was published in 2024 [3]. This document brings the importance of religious buildings for society as a whole, regardless of their religious affiliation in a dogmatic sense, into the focus of the public. Up to now almost 22400 people signed it.

Even though it seems to be a more pressing problem in German speaking countries, the decision which church to keep, and which to give will inevitably arise across nearly every country in Europe. The situations observed in the Netherlands and France already indicate that this is a problem of Europe-wide significance.

Figure 1. Immerath: *a)* demolition; *b)* police protection; *c)* protests; *d)* demolition of the altar (Photos: K. Heinz Laufs).

Figure 2. The "Cathedral" of Immerath (Photo: J. Bakker [1]).

The analysis and the cross-regional insights of the first reuse of a church in the Archdiocese of Vienna

The Archdiocese of Vienna, like all others, faces the task of divesting itself of buildings to preserve others. By examining the genesis of the first disposals in the Archdiocese of Vienna, certain problem areas can be highlighted.

A pilot project in 2014 ended in a dispute between the local parish priest, the diocesan leadership, and the people living in the urban neighbourhoods. The disagreement became public knowledge.

The Archbishop of Vienna was vindicated, but undeserved damage was borne by the Church leadership, the community, and even the protected building, which has since lost its character through the reuse [4]. For this reason, the head of the diocesan construction office and I, as diocesan conservator, were tasked to produce a catalogue of criteria in order to support the decision-making process regarding disposals. A seemingly simple task: since Immanuel Kant's seminal writings on judgment, we know how difficult it is to judge without stable criteria. Stability of criteria can only be achieved where comparable foundational experiences exist. Immanuel Kant refers to it as the problem between a priori and a posteriori criterion [5]. In the decision-making bodies of the Archdiocese of Vienna, an architectural assessment of buildings was presented, based on a concept from the City of Vienna and the Czech City of Brno [6]. This was developed to classify endangered post-war buildings in the region between Vienna and Brno. Through this classification, the buildings to be preserved were to be identified. The precise checklist included essential structural questions, down to the number and quality of electrical outlets. The catalogue was very useful for an architecture firm. It is well suited and

necessary for planning and decision making. However, for the decision-makers in the Archdiocese of Vienna, the criteria catalogue was of little use. Therefore, the concept was shelved. What had happened? While the criteria demonstrated clear structure and strong domain expertise, they were drawn from the experiences of specialised actors rather than from those of the authorities within the Archdiocese.

Regarding the task: what appears to be simple is not. Criteria must be formulated in a way that is neither too general nor too detailed. Furthermore, there needs to be a dialogical alignment of a contrasting range of experience from which the criteria are derived. Additionally, the criteria must be grouped to assign them to the scope of experience of certain professions or perspectives nourished by specific experience. The reason is that an architect assesses a building differently than the local parish priest or the bishop does. The perspective of the state monument conservator is again a quite different one. If there is no prior alignment of experiences and especially no consensus on which field of experiences should be included, the criteria cannot achieve stability, and applicability becomes unattainable. Against this background, the failure of the initial task of the diocesan leadership in the Archdiocese of Vienna must be reconsidered.

Due to the lack of consensus regarding the level of detail, the different perspectives on the buildings to be examined, and the lack of exchange about the images drawn from one's own horizon of experience, this submission project was destined to fail.

Both the emotional reactions of the public to the endangerment of post-war church buildings and the reactions of stakeholders in the specific project of the Archdiocese of Vienna clearly demonstrate that criteria must encompass all aspects of the building, that are relevant for the specific building under consideration, especially for all stakeholders. Because architecture is more than just buildings, it is a living space, zone of memory, point of identification, sometimes even art, and very often a projection surface for ideas, worldviews, and much more. The requirement is to find a system that is not so general as to slide into arbitrariness. Similarly, it must not be too narrowly defined, as this would exclude the perspectives of others.

When tolerance leads to monument loss: reflections on the impact of theological motifs in the abandoning decisions of sacred monuments

Following this unanalysed dilemma of criteria, the diocesan leadership of the Archdiocese of Vienna made decisions on further church disposals without explicitly formulated criteria. Due to financial constraints, a process was initiated in 2022 that led to the decommissioning of one of Austria's most architecturally remarkable churches, located at the intersection of modern and postmodern design. The parish church at the Schöpfwerk, dedicated to St. Francis of Assisi, was handed over to the Serbian Orthodox Church. The building, designed by Vienna architect Victor Hufnagel between 1979 and 1981, is an integral part and centre of a large residential complex (Figure 3).

Figure 3. The church at the Schöpfwerk: *a)* its surroundings; *b)* inside the original Catholic church at the Schöpfwerk before adaptation to the Serbian Orthodox Church (Photos: Referat für Kunst und Denkmalpflege, Erzdiözese Wien).

Conceptually, the church, like the other components of the complex, is entirely geared towards the needs of the local population. Through the choice of facade materials, the church simultaneously defines the public space and provides the settlement with a centre. It was designed as a central building in line with the Second Vatican Council, with functional ancillary rooms that facilitate community life optimally. The architectural self-conception post the Second Vatican Council was embodied in the architecture across all areas. The interior fittings completely eschewed illustrative ornamentation. The church was adorned with ceramics by artist Franz Josef Altenburg in a way that preserved the static framework of the structure. This building represents a synthesis where building technology meets craftsmanship and reduction meets design. It is worth noting that the artist Altenburg was awarded the prestigious Austrian State Prize for Art, the highest honour bestowed by the Republic of Austria to artists, just the year preceding the disposal of the church. The building is under monument protection. The noteworthiness of this building according to architectural historians, architects, monument conservators, or artists, is so evident that the decision to give it to the Serbian orthodox church accepting all necessary changes in nearby future is incomprehensible to any specialist in architecture. In this case, experts in architectural art did not focus on the usage situation or the faith-immanent decision logic. However, from an internal Church perspective, the decision parameters for the responsible parties in the Archdiocese of Vienna appear quite different: fewer mass attendees, an aging Austrian population, an increasingly non-Catholic residential population, high costs of maintenance of the infrastructure and the structural integrity of the building, and the low personal attachment of decision-makers to buildings of this nature may carry more weight than any assessment by experts in architectural art. Additionally, with the Serbian Church's interest in the building, the central aspect of a religious continued use could be optimally addressed. Therefore, desecration becomes obsolete, and the place remains as a site of prayer and Eucharistic celebration. The preservation of churches as places of sacramental activity emerges as a central criterion for the decisions of the incumbent Archbishop of Vienna, Cardinal Christoph Schönborn. Almost all efforts to reduce the building burden for the Archdiocese of Vienna were resolved in this way. Thus, Cardinal Schönborn lives out a central statement of faith in his practical decisions, as formulated by Pope Francis in the encyclical Evangelii Gaudium. In paragraph 223, late Jesuit Pope Francis (José Maria Bergoglio) emphasises giving precedence to time and processes in human communities over spatial and static considerations [7, p. 223]. In concrete terms, this means that a church handed over to the Serbian Orthodox Church enables further prayers and spiritual experiences for people, even if they no longer take place within the Catholic sphere.

According to Catholic belief, these spiritual experiences and prayers have a lasting influence on future society. The disposal of protected churches to Orthodox communities highlights a contradiction between the intention of the Venice Charter and the genuine catholic intention to preserve churches as places of prayer and sacramental life. The Venice Charter's intention is to keep the church in its authentic physical appearance and the catholic intention is to keep the site as a place of worship with all the necessary changes. The general and unsolvable contradiction is obvious. On top of that, Austrian legislation applies unique provisions to religious buildings, often to the detriment of the monument. This warrants closer examination of the Austrian monument protection laws. With those provisions, religious communities are guaranteed the ability to make changes to historical buildings insofar as they are necessary for the practice of their religion [8, §5/4 of the 2025 Heritage Protection Amendment]. For the Catholic Church, these are primarily changes affecting liturgical practices derived from the demands of the Second Vatican Council and the accessibility of the buildings. The church at the Schöpfwerk was built in the spirit of the liturgy of the Second Vatican Council. Accordingly, no modifications are required to accommodate Catholic use. Based on this fact, any application from the community or diocesan representatives in this area would have been rejected if submitted. For the church at the Schöpfwerk, this means that as long as this space is a Catholic church, the monument protection office does not need to approve changes that significantly alter the character of the architecture. However, once the building is in the possession of the Serbian Orthodox Church, the legal situation changes fundamentally. Because in Orthodoxy, an iconostasis is required, and the fixed altar facing the people becomes obsolete. Furthermore, sculptures and paintings are no longer needed. In return, a complete fresco decoration in the icon tradition is required, as such images in Orthodox theology are not merely decorative but carry a deep religious message imbued with the character of holiness. As a result, the Federal Monuments Office is likely to grant an application from the Serbian Orthodox community of the church at the Schöpfwerk under §4 Abs.5. Consequently, the indoor space will completely lose the character that distinguishes it as a listed monument.

The already implemented modifications, characterized by the introduction of orthodox liturgical furnishings and the strategic incorporation of textiles, serve as a clear indicator of the extensive alterations that are anticipated. These preliminary adjustments provide insight into the scope and nature of the impending transformation of the sacred space (Figure 4).

This example shows that the lack of alignment of each stakeholder's own criteria with that of the others leads to entrenched positions and ultimately to a condemnation of the Catholic Church's decision in the professional world and an unwillingness of the church owners to engage with the experts in architecture and urban planning. The professional world of monument preservation and architecture must engage with the Church's logic, and the Church leadership must seek dialogue in advance with someone who can explain the position on monument preservation. This can help identify buildings that have a high level of identification for the general population, including those who are estranged from the Church. This proposal should be tested in pilot projects, that in the best-case scenario, lead to role models. In this way, the vicious circle described at the beginning can be interrupted.

In the case of the church at the Schöpfwerk, this mutual misunderstanding and its effects, as well as the failure of a systematic architectural criteria catalogue, show how urgently criteria are needed, and how carefully they must be considered so that we can leave those monuments to future generations so that they can convincingly experience the artistic and historical significance of our era in their own materiality. The motives behind decommissioning churches often stand in irreconcilable tension with the prevailing societal aim of safeguarding architectural heritage for future generations. This goal conflict can only be negotiated in dialogue with adequate criteria. It is the question of use that must be reflected upon. Conflicting motives cannot be resolved through alignment of criteria alone. Here, society and the state must examine how important preservation is to them and then take appropriate action. A successful reuse might not be the same for different players. So, the Schöpfwerk

project can be deemed successful when evaluated through the prism of religious studies and pastoral theology. From this perspective, it serves as a role model. However, when examined through the lens of architectural history or heritage conservation, the project presents a markedly different profile. This dichotomy underscores the importance of interdisciplinary approaches in project assessment. The key question is, if a reuse project of a sacred building can be successful through both lenses. Examinations of published public opinions on reuse projects don't show that.

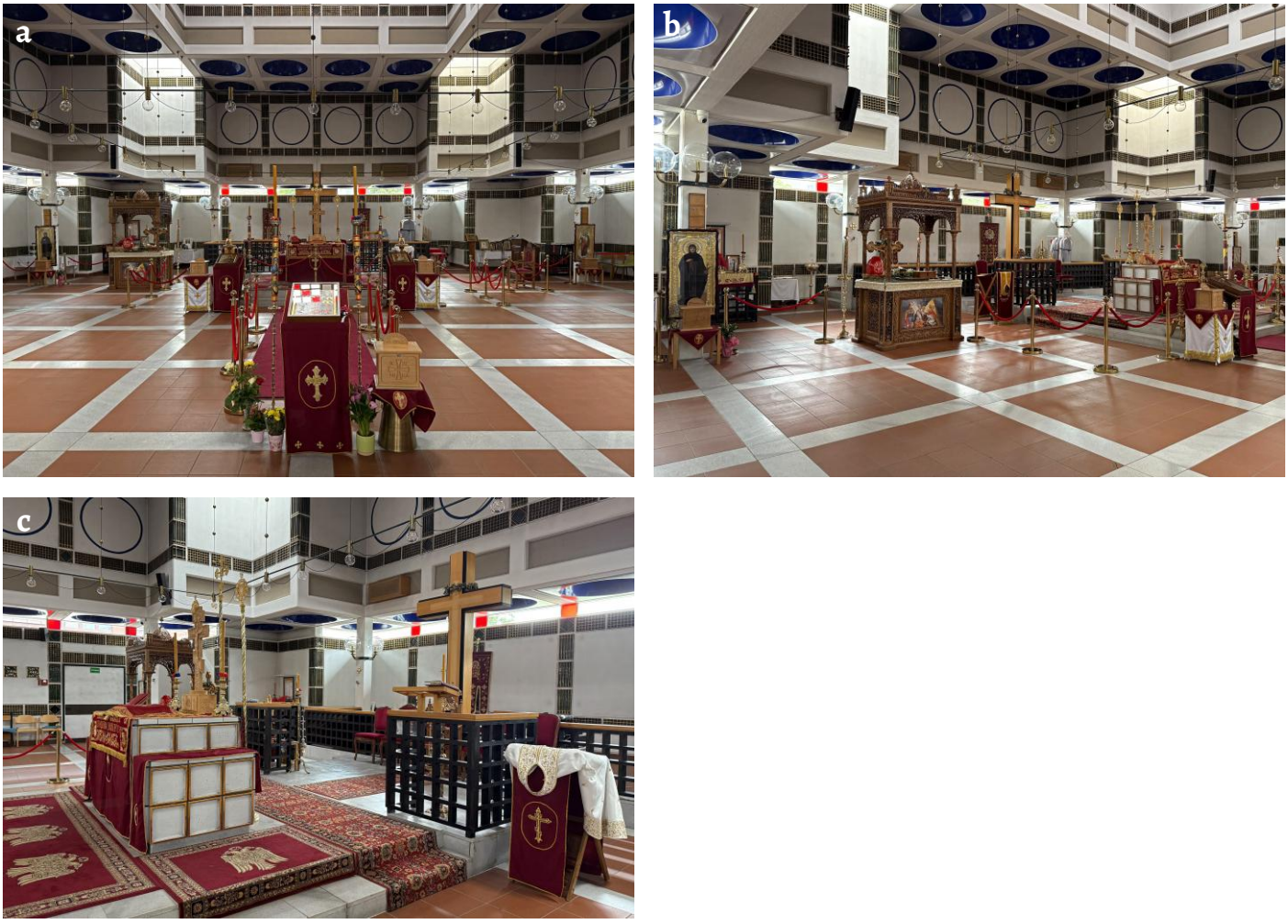

Figure 4. Inside the church at the Schöpfwerk in use by the Serbian Orthodox community: *a)* without architectural change but with added orthodox church furniture; *b)* with the liturgical obligatory defined places; *c)* with interventions creating an invisible iconostasis (Photos: Referat für Kunst und Denkmalpflege, Erzdiözese Wien).

Power, impact, and limitations of the Venice Charter regarding the disposal of churches

The cited case studies, process analyses, and public reactions have shown that church monument preservation in Europe is at a crucial turning point. Two decisions need to be made. Church owners must decide, under economic pressure, which buildings to relinquish. And society must decide which buildings it wants to preserve in accordance with the Venice Charter, even if they are no longer used for their original purpose.

This decision must then be supported by corresponding actions. The Venice Charter is a fundamental document for the thoughtful treatment of monuments in their inherited substance. It was and is formative in shaping awareness and remains an important basis for monument discourse to this day, as well as it is influential in shaping modes of thought. The

exploration of its origins has shown that the Charter essentially arose from a shortage caused by the war in Europe [9-12] and was heavily influenced by French and English concepts of monuments [13]. In the international community's debate over successor documents [14-15], it becomes clear that the focus on substance stems for a European perspective with partly colonial roots [16], which limits the term of what preservation is, and the concept of cultural heritage.

The intercultural discourse on preservation of substance in its utmost integrity as a paradigm for World Heritage is indispensable. In the debate over which sacred buildings should be relinquished, larger questions about cultural heritage tend to fade into the background.

It needs to be examined whether the systematic approach also applies to other concepts of monuments. It is worth noting that the Charter does not provide an approach to the question of how to consciously deal with the disposal of monuments. The same applies to the subsequent documents [10-12]. All these documents are based on consensus, reached through intensive debates on how to preserve. Hans Rudolf Mayer addresses, for the first time in his concluding summary of the Vienna Conference on the fiftieth anniversary of the Venice Charter, the necessity of considering what should no longer be preserved in the future [17]. He points out that the Charter does not provide an answer to this but also emphasizes the singular effectiveness of this document to this day. I share his assessment, albeit with a second connotation. On the one hand, there is Mayer's intended tribute to the Charter as the foundation for the successful preservation of cultural heritage worldwide. On the other hand, the effect of the exclusive focus on preservation as the goal in all successor documents is evident.

In the struggle to preserve churches in Europe, a series of documents have emerged focusing on sacred buildings. The publishers range from the Catholic Church itself to academic and governmental organizations. This diversified authorship clearly indicates that the necessity for action is recognized by multiple societal stakeholders across different domains. What unites all documents is, on the one hand, the addressing of the issue of church disposal, and on the other hand, either the implicit or explicit reference to the Venice Charter. The documents analysed below are not exhaustive but represent a subset of relevant documents. The selection criteria include binding or advisory status, frequency of citation, and applicability as practical implementation guides.

In 2005, the Parliamentary Assembly of the Council of Europe adopted a resolution on redundant religious buildings [18]. The aim is the best possible preservation of endangered sacred buildings. The resolution emphasises that churches are often an integral part of cultural heritage. In this document the Parliamentary Assembly applies to both religious and state authorities to do everything possible to preserve redundant churches and find appropriate reuse.

Groundbreaking is the understanding that this task does not solely fall to religious communities as owners but is also the responsibility of the member states. The Council of Europe underlines the need to support projects aimed at repurposing religious buildings. Furthermore, the Parliamentary Assembly calls for the provision of funds or tax benefits for the restoration, repair, and maintenance of religious buildings, whether in use or redundant, to ensure they are not abandoned. Although tax relief for religious communities would be a significant support, the question of which buildings to relinquish is not addressed. "Providing funds or tax benefits for the restoration, repair, and maintenance of religious buildings, whether in use or redundant, in order to ensure they are not abandoned" [18].

Papers from the ICCROM Forum 2003 on the preservation of living religious buildings [19] deal with the importance and impact of sacred buildings but do not address the necessity of disposing buildings. Christina Carlo Stella, an art expert from the Vatican, highlighted in her publication the significance of church cultural heritage as a meeting point for dialogue about craftsmanship and the inherited inventory. She also focuses on what objects are on site, how they should be preserved, and how intercommunication concerning their embodied religious content can take place. The collection of objects of religious art and criteria for the disposal of buildings by the Catholic Church are also not addressed by her [20]. Her argumentation is in line with those of the already discussed documents.

Led by Cardinal Gianfranco Ravasi, the Pontifical Council for Culture of the Roman Curia (this institution is now incorporated into the Dicastery for Culture and Education), released in 2018 guidelines for the decommissioning and secular use of Catholic churches [21].

In this singular document of the Catholic Church, he addresses the concern that churches could be misused outside their primary purpose. He implicitly mentions the possibility of political or unilateral cultural loading without further elaborating on this. He explicitly addresses inappropriate use. In English and French, the term "sordid" is used, a clear and tight interpretation of what inappropriate means.

In another section, he highlights the importance of churches beyond their sacramental use for celebrating the Eucharist: "The termination of the liturgical use of a church space does not automatically reduce it to a meaningless and arbitrarily convertible building; its significance acquired over time and its actual presence in the community are indeed not reducible to technical or financial data." [21]. He thus addresses an important criterion outside the economic considerations: the urban, historical, and identity-building power of such buildings, even when they are profaned. According to Ravasi, the power of some churches as landmarks must always be considered. The Notre-Dame phenomenon is strong proof for that.

In a separate paragraph, Ravasi notes that in some cases, the canonical practice of the Catholic Church is not compatible with the ideas of monument protection. As an example, he mentions the practice of dismantling the altar of celebration [21]. Overall, the Curial Cardinal addresses the conflicting goals, already highlighted in the example of the church at the Schöpfwerk, between religious intention and monument preservation derived from the Venice Charter. Even Ravasi singles out one individual criterion that must be considered when disposing of sacred buildings, he does not present a system of criteria to apply.

The German Bishops' Conference provided Cardinal Ravasi's pronouncements in German as guidelines titled "Closure and Reuse of Churches" to the dioceses and their communities in 2019. However, this did not offer concrete assistance to the dioceses in deciding which churches should continue to be sites of sacramental life and which should be abandoned. The disposal process in the dioceses of Aachen and Essen clearly demonstrates that predominantly buildings from the twentieth century were renovated or demolished. The *Invisibilis* initiative evidently indicates that the problem in question transcends regional boundaries. Up to now there are 3,422 vanished or dramatically changed sacred buildings listed [22] (Figure 5).

In response to this need, individual dioceses have issued guidance for their parishes and internal specialist departments on the topic under discussion. From this perspective, the initial task assigned to the head of the construction department and me as diocesan conservator should also be seen in a new light.

The Archdiocese of Cologne already released a handbook in 2003, that was later adopted by the German Bishops' Conference [23]. In autumn 2025, the German-speaking diocesan conservators were provided with this revised version for evaluation prior to publication. Publication is expected in 2026. This handbook has been under revision for several years. However, the result is still pending. It recommends a graded decision-making process for the repurposing of churches. The first step is to determine whether the church can continue to be used in any form for liturgical purposes. The next option is that in the case of reuse, a small part of the church remains as a sacred space – a so-called "partial reuse". The third step is complete repurposing, which may involve a sale and then its secularisation. The final option is the partial or complete demolition of the church. However, the handbook does not provide support for the question of which church should be abandoned. The overarching view of the total number of buildings to be discussed is missing. The question of which buildings should be retained is not even raised. Thus, this handbook remains within the canon of the Venice Charter, even though it lists demolition as a last resort. A similar attitude can be found in the 2013 published criteria of the Diocese Aachen [24]. They developed criteria, but just as the Cologne handbook the criteria catalogue is used for one single building [25].

Figure 5. Demolished or endangered churches in Germany, *invisibilis*, moderneRegional.

In Austria, only the Diocese of Graz-Seckau has drafted a document dedicated to these processes, which is available to the diocese's specialist departments [26]. Since 2021, it has been offering its parishes and internal departments a written guidance.

In the introduction, it is emphasised that this process should be planned with a broad horizon and that early and open communication between the parties involved is essential to make a joint decision. This preamble highlights an important aspect for the application of criteria because it is essential that the positions and assessments of the individual stakeholders should be examined and reflected. The process at the church at the Schöpfwerk in Vienna has additionally shown that without alignment, tensions and mutual prejudices build up.

The largest part of the guidance, comparable to the Cologne document, focuses on the possibilities of reuse. All aspects that need to be considered and what should be avoided are presented in a very comprehensive manner. The criteria for assessment include the significance of the memorial site, as well as the missionary function of the building for the community.

Unlike all other handbooks, the guidance suggests pure conservation of the building as one possibility for reuse. This interesting and hitherto unique approach does not aim to create a static monument but to create time space so that the reuse process can be well established, and a sustainable reuse can be found. Regarding the complex question of which buildings should continue to be used and which should be handed over or abandoned, this guidance also lacks a concept.

In the Archdiocese of Vienna, a structured process is being developed. Unlike the dioceses of Graz-Seckau and Cologne, it is not intended to serve as guidance for parishes, communities, or even monastery communities considering demolishing a building. The expressed goal is to provide the organisation itself with a secure course of action. This approach fundamentally differs from those presented in other documents here. It involves developing a toolkit for self-structuring and self-reflection for the diocesan leadership.

To my knowledge, this approach is unique and significant. Ultimately, the dioceses must make decisions regarding their buildings and communities collectively. In Vienna, the planning of procedures always starts with individuals. Thus far, two processes have been outlined. One explores what needs to be done if a parish wishes to relinquish a sacred building. The other delineates the procedure to be followed when a request for a specific building is made by someone outside the Archdiocese of Vienna. It is a person-oriented process, focusing on individual buildings to reduce the total number of sacred buildings financed by the Archdiocese of Vienna. The focus is on smooth processes that comply with both canonical and state requirements. The underlying need arises from the experience with the initially described first church disposal in Vienna. In line with the considerations presented so far regarding the decommissioning of sacred spaces, the selection from the broader inventory of listed religious buildings has not yet been integrated into the process. Here, I again observe an implicit, unconscious adoption of the fundamental orientation of the Venice Charter and its successor documents: monuments are to be preserved, but discussions and struggles are necessary regarding how to do so. At the current stage of the Vienna process development, the basic assumption that essentially all objects are to be preserved is evident. Similarly, it is evident that all those responsible are aware that this will not be possible in the future and therefore good and sensible processes must be established. The result can be presented by researchers of the younger generation on the occasion of the seventieth anniversary of the Venice Charter.

Finding from the case studies and analysed publications

It is striking that all decisions about decommissioning a church are made building by building. In autumn 2025, the German-speaking diocesan conservators were provided with this revised version for evaluation prior to publication. Publication is expected in 2026. Similarity all documents on the preservation and reuse of churches always start from an individual building. Here, I perceive an enculturated, implicit effect of the Venice Charter, which is valuable for the conscious and respectful handling of our inherited architectural heritage. However, it requires an expansion to provide a basis for the demands of monument disposal. This expansion does not change the identical intention of responsible action for future generations. In the forthcoming decision on which objects not to preserve, the focus must systematically be widened to include all buildings within one's own area of responsibility. It is essential to reflect on one's own assessment standpoint. It requires a broadening the recurring perspective, which has been enshrined in the Venice Charter and has since solidified and become ingrained in thinking and action. It needs a concept that allows sufficient time, dialogue between stakeholders with different perspectives, and the broadening of the view to encompass multiple buildings. Only then can a selection be oriented towards future generations that corresponds to both the cultural heritage and the intended use.

Firmitas, utilitas, venustas, historiae: a proposal for criteria

The previous analysis has shown that criteria must be chosen in a way that the underlying horizon of experience must be present and understandable for others as postulated by Kant [5]. Furthermore, it became clear that the artistic value as well as the historical value is important for a larger part of society, extending beyond the community of believers. Additionally, the visible and reflected faith practice of the specific community is important. Last but not least, the spiritual dimension is a very important aspect for every decision.

The experience of the first three church disposals in Vienna has shown that the individual aspects outlined here need to be integrated into a system. This system must be usable for the responsible bishop, his vicar general, as well as for those responsible for pastoral and economic matters. With the intention of not reinventing the wheel, I have worked through the presented documents here and through the literature of architectural theory. Individual facets were repeatedly found. Finding a system that is not too narrowly defined but also does not drift into arbitrariness was only successful for me in the reading of Vitruvius' Ten Books on Architecture [25]. Vitruvius, through the conceptual clustering of individual criteria oriented towards the result of the construction process, created a clarity that is still applicable today. I was able to present this idea in 2023 in a commemorative publication for the chief architect of the Archdiocese of Cologne, a friend to whom I owe many open, sometimes controversial, professional discussions in mutual respect, to a larger professional audience [26].

Therefore, I present the result here, without going into detail on translation issues and the effects of this document in the twentieth century.

Over 90 % of this 2000-year-old masterpiece deals with buildings as a process. In Chapter Three of the first book, however, Vitruvius does not focus on the process of construction but on the result, the building. His requirement for every building is that it takes into account both firmness (*firmitas*) and utility (*utilitas*), as well as beauty (*venustas*). Vitruvius' demand for built architecture requires the best solution for all three aspects. A building should be durable, sustainable, optimal for its use, and aesthetically pleasing.

For our cultural self-understanding, Vitruvius' criteria lack an aspect that has developed in European society from the end of the Ancien-Régime and the rule of Napoleon. It is about buildings as monuments, about their historical value, about memory, and about identity formation. These terms appear in all the church guidelines for the disposal of sacred spaces [20-21, 23-28]. They are highlighted in the various documents for their effectiveness and significance as individual aspects.

It is therefore necessary to expand Vitruvius' canon with the concept of *historia*. Because systematic historical reflection is a cultural skill that is now a natural part of our assessment and action. Monument conservation is part of this cultural skill. It emerged in the time of Enlightenment of the eighteenth century and led from the beginning of the nineteenth century to a widespread new approach to inherited buildings.

To give the term of *historia* a sufficiently wide field of words that includes not only historical facts but also narratives and constructed historical images about the specific building, it is useful to add two more terms to this concept. Because the historical dimension of a building includes, in addition to the historical facts, all kind of narratives about the building and the building itself as a projection surface for imagined or experienced history. For me the use of the terms *fabula* and *argumentum* as auxiliary or sub terms to *historia* can accomplish this. Because *fabula* is encompassing the realm of imagined narratives and *argumentum* is outlining the substance of possible narratives. So, all kinds of *fabula* and all kinds of *argumentum* must be examined within the term *hisotria*.

Churches or other sacred buildings that meet all four parameters to the highest degree are considered as outstanding works of architecture and are generally perceived as places of spirituality. The German language provides a special term to classify for those buildings. It is *Baukunst*, which might be translated as “art within architecture”. There is usually a societal

consensus on their preservation. This also explains the phenomenon described at the beginning regarding Notre-Dame in Paris or the parish church of Immerath.

About *firmitas*

It encompasses the structural condition of the building in all its facets. Here, the examination focuses on what needs to be invested to keep a building usable. This question can be divided into the measures currently needed and those that must be set in the long term or on a recurring basis. Similarly, the question of financial expenditure to avoid depreciation of the building is thematically related to *firmitas*. Likewise, the expenses for preserving artworks or artistic features are placed here. However, the assessment of the artworks themselves in their aesthetic value is not a part of *firmitas*. Considerations for adaptation to adjust to the usability requirements of the respective time and its needs are not part of the examination of *firmitas*. However, the definition of what is needed for adequate use is a subset of *utilitas* and must be examined there. Examples include setting up a children's area in the church, altering an altar, or installing a confession room. These examples involve the usage requirements that adaptations to the building demand.

About *utilitas*

The *utilitas* of sacred spaces, which is to be examined, is divided into two areas. Firstly, it is the *utilitas* of current use. Secondly, it is the *utilitas* for potential reuses. Fundamentally, in Catholic sacred buildings, it is primarily shaped by the doctrine, by the religious requirements. For the Catholic Church, spaces primarily serve to enable the experience of the spiritual dimension of concrete actions, especially in their liturgical use with all its aspects.

Utilitas also encompasses concrete questions about social and ecological uses (church café, solar panels). The easily testable questions about *utilitas* include the ratio between the size of the church and the number of Mass attendees, or the alignment between the architectural features and the demands from the parish. In this example, it should be noted that the demands for a better use of the building are part of the *utilitas*. But the feasibility assessment of the demands belongs to the *firmitas*. *utilitas* can be evaluated very differently by different groups. Regarding *utilitas*, it should not be overlooked that this sphere also includes big, difficult-to-answer questions. As an example, the following questions illustrate this: "Does the preaching of the Word of God and/or the celebration of the Eucharist, the prayers of the congregation, need this church space? If so, why is this space valued more than another?" Here, the necessity of deep theological self-reflection becomes apparent. This also sheds light on why the process of decommissioning of churches is so difficult within the Catholic Church. The examination of potential reuses, whether sacred or secular, is also a question of *utilitas*. Through this question, the conflict of objectives, described in the example of the church at the Schöpfwerk, between state monument preservation and church leadership becomes evident. This evidence in turn, creates space for a hands-on dialogue and for joint deliberation. The outlined questions highlight that the greatest challenges and conflicts are expected in the realm of *utilitas*. Recognising and accepting conflict lines is the first step toward resolution.

About *venustas*

For the assessment of the sphere of design, form-finding, artistic strength, and expression of a structure, Vitruvius chose the term *venustas*. This encompasses all aspects of artistic form-finding, aesthetics, and art. Concerning the evaluation of church buildings, this area exclusively pertains to the assessment of the aesthetic strength and expression of the building. Assessing *venustas* is both the simplest and most challenging area. It's simple because it solely concerns form-finding, making the delineation clear, yet challenging because the boundary between taste and aesthetic judgment is based on a specialized education in argumentation. The assessment of all artistic aspects of a building is heavily influenced by one's own cultural-historical background and narrow imprint. Without reflection on one's own standpoint,

achieving consensus in this area can be distant, and fronts can harden. The Roman Catholic Church has acknowledged this issue and therefore included in its law. When changes are to be made to churches or their furnishings, the designated art expert of the diocese must be consulted [29]. Any change in use inevitably has a significant impact on the building and its furnishings, so Canon 1216 applies, even if the actual practices in individual dioceses vary greatly. However, it is undisputed that the solidarity in Paris illustrates that buildings have an artistic effect, that they possess the power of an identity formation, and the power for deep spiritual experience. To recognise and make use of it and to interrupt the described vicious circle, judgment must be made on this aspect of a building in conversation with experts. The dialogue must be based on the knowledge about the various philosophical concepts of art.

About *historia* (also *argumentum* and *fabula*)

This criterion encompasses, on the one hand, the overarching historical dimension of buildings with all their facets, and on the other hand, the personal memories of the community and individual people. The overarching historical dimension includes the significance of the building in its era, the oeuvre of the architect itself or its role as a memorial site for a specific event. Additionally, the significance of the building for a particular technological development/achievement may be considered. When placing buildings in historical context, the role of buildings as projection surfaces for certain views or as instruments of certain worldviews must be considered and examined. The value of churches as sites of personal life memories (baptisms, communions, weddings, funerals) is sensitively addressed in Cardinal Ravasi's document [21] and particularly in the orientation guide of the Diocese of Graz Seckau [26].

Learn from an ancient expert: how the process of Church decommissioning gains quality with the help of Vitruvius

The Vitruvian clustering, expanded by *historia*, is a tool that supports the decision-making process for the decommissioning or surrender of sacred spaces in several ways. Firstly, it is simple and clear, making it applicable. Furthermore, it clearly assigns individual arguments to specific thematic areas, enabling discussions that can be concise. Arguments for or against a building can be clearly attributed to a specific theme, thus avoiding discussions that lead nowhere. Moreover, the clustering is not so narrow that it is only applicable to individual cases or for a specific profession. Issues of inapplicability of criteria and rejection, such as those triggered by the criteria catalogue for post-war buildings in Vienna and Brno, can thus be avoided. Finally, the Vitruvian systematic approach, expanded by *historia*, allows all stakeholders to examine all aspects of a building and at the same time clearly identify their own areas of expertise. This examination forms the basis for comparison in the committee when deciding on buildings and optimally prepares church authorities like the bishop, who bear the final responsibility. It is evident, that this self-examination could be applied to any building, site, or object but here the focus is on church buildings, hence the emphasis. It would thus be equally applicable to the increasingly frequent listing procedures of the Federal Monuments Office in Austria. The benefit lies in mediating between owners and government agencies and ultimately in creating an accurate and meaningful list of monuments.

Undoubtedly, this examination can only be carried out in the form of a self-commitment. Because the living preservation of cultural heritage ultimately is a cultural skill that oscillates between preservation and renewal. Cultural skills can only be acquired and applied through self-commitment. The methodology must be continuously reassessed. The aim is understanding different opinions of others, and the juxtaposition of other life experiences with one's own.

Conclusion: the Venice Charter should be expanded

There is no doubt that a globally applicable document should not be overloaded with assessment criteria. However, the criteria will be assessed differently within different communities. Therefore, when it comes to the commitment to systematically assess the decommissioning of buildings – whether or not they are included in a canon of monuments - a more detailed set of criteria becomes necessary. The willingness to develop criteria and apply them systematically is required. Vitruvian thinking enables the expansion of the Charter to have validity for all countries. The discussions of the Nara Document, the Vienna Memorandum, and any other additions to the Venice Charter could thus be incorporated into the assessment of individual buildings, as well as ensembles and urban extensions. Therefore, I recommend the expansion of the Venice Charta. This expansion could read as follows.

Decommissioning of buildings, ensembles, or other materialised cultural heritage – article 17
When it is necessary to abandon a building, ensemble, or other materialised cultural artifacts, the decision to abandon is preceded by an assessment by the owners, users, and experts. All stakeholders commit to assessing the object to be abandoned for its durability, utility, artistic, and historical significance. This assessment takes place dialogically, in comparison with the assessment results of all stakeholders.

I present this proposal for discussion. Two things are clear to me: The terminology must be carefully chosen in every language so that it corresponds to the intention and the language usage. The research of Alex Langini has shown the distortions of intentions in translations [13]. Therefore, I recommend using Latin terms as the source language and translating them from there into one's own language. No paragraph of the Venice Charter can contribute successfully to the sustainable transmission of cultural heritage if it is not supported by the self-commitment of the users. Carrying this into society is a task for us experts. Our task is to bring the dialogue into society and strengthen awareness. The discussion within our own community only has a limited impact.

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(Re)Contextualising the Venice Charter for the transcultural heritage of contested minorities: dilemmas in the preservation of Goan Oratorian churches in Sri Lanka

(Re)Contextualizando a Carta de Veneza para o património transcultural de minorias contestadas: dilemas na preservação das igrejas oratorianas goesas no Sri Lanka

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Abstract

The study of Catholic minorities in Sri Lanka is complex and multifaceted owing to their unique identities shaped by centuries of colonialism, migration and cultural exchange, originating a transcultural heritage that presents a range of complexities for safeguarding. The architecture of the Oratorian churches established by Goan missionaries in Sri Lanka between the 17th and 19th centuries is perhaps the best example of transcultural heritage among the island's (often contested) Catholic minorities and is considered an exceptional and unique heritage that is nevertheless currently threatened. Drawing on practical experience, and subsequent debate, during preliminary visits to several sites in Sri Lanka with a view to identifying Oratorian churches as candidates for UNESCO's World Heritage Tentative List, this essay aims to address the dilemmas experienced, which highlight the need to (re)contextualise certain principles outlined in international heritage charters, especially concerning the preservation of transcultural heritage belonging to contested minorities.

KEYWORDS
Sri Lankan Oratorian churches
Transcultural heritage
Contested minorities
Integrity and authenticity
Heritage charters

Resumo

O estudo das minorias católicas no Sri Lanka é complexo e multifacetado devido às suas identidades únicas, moldadas por séculos de colonialismo, migração e intercâmbio cultural, dando origem a um património transcultural que apresenta uma série de complexidades para a sua salvaguarda. A arquitetura das igrejas oratorianas fundadas por missionários goeses no Sri Lanka, entre os séculos XVII e XIX, é talvez o melhor exemplo de património transcultural entre as minorias católicas (muitas vezes contestadas) da ilha e é considerada um património excecional e único que, no entanto, se encontra atualmente ameaçado. Com base na experiência prática e no debate subsequente durante visitas preliminares a vários locais no Sri Lanka com o objetivo de identificar igrejas oratorianas como candidatas à Lista Indicativa do Património Mundial da UNESCO, este ensaio visa abordar os dilemas vividos, que destacam a necessidade de (re)contextualizar certos princípios descritos nas cartas internacionais do património, especialmente no que diz respeito à preservação do património transcultural pertencente a minorias contestadas.

PALAVRAS-CHAVE
Igrejas oratorianas do Sri Lanka
Património transcultural
Minorias contestadas
Integridade e autenticidade
Cartas do Património

Historical context

The Oratorian church architecture in Ceylon (today, Sri Lanka) began and was developed secretly during Dutch rule (1658-1796). Later, it evolved as a marginalised architectural tradition connected to the traditional pious practices and ethos of communities that were underprivileged due to casteism and the social stratum underpinning the political and social reformation during British rule (1806-1948). In the recent past, most of the remaining Goan Oratorian churches situated within the former battleground of the almost 30-year civil war (1983-2009), which was prolonged in northern Sri Lanka – where the highest percentage of Tamil Catholics live –, were totally or partially damaged and left either abandoned or in a dilapidated condition due to the communities' deprived state and displacement during the armed conflict. However, under the post-war reconstruction agendas, most affected churches are being restored, renovated or rebuilt, sometimes financed by the diaspora across distant seas, and are still in the process of being replaced with modern constructions, apparently without consultation regarding standard scientific conservation practices. Therefore, safeguarding this distinctive architectural tradition, which continued for over 250 years as a living tradition and hands-on response to the proselytising zeal of the local communities, has become a challenge today, primarily due to the post-war cultural, social and economic dynamics. Therefore, this paper aims to address some dilemmas overlooked in the principles set out in the Venice Charter, using as a case study the conservation of the Goan Oratorian architectural heritage in Sri Lanka.

The Goan Oratorian mission in Ceylon was founded by Fr Joseph Vaz, who was recently canonised for his fundamental role in revitalising the Catholic faith on the island. In 1687, he clandestinely arrived on the island to assist the remaining believers in proclaiming their Catholic faith. The Catholics had been abandoned during the rule of the Dutch, who imposed a ban on Roman Catholicism after expelling the missionaries operating under Portuguese rule (1505-1658), who had introduced Roman Catholicism to the native population. Fr Joseph Vaz was followed by other missionaries affiliated with the Oratorian congregation in Goa, which was mainly staffed by the native Catholic Brahman priests from the natural priestly caste of India. One of their first missionary fields was the Jaffna Peninsula, and later, from 1746, the mainland of Mannar became the centre of missionary operations until the beginning of British rule (Figure 1).

Figure 1. Map showing the Oratorian mission stations in Ceylon (source: Sagara Jayasinghe).

However, around the 1850s, the Ceylon mission field was divided into two "mission territories": the Vicariate of Jaffna (or Northern Vicariate) and the Vicariate of Colombo (or Southern Vicariate). This development would enable the northern and southern Catholic populations to each re-establish their own social and cultural singularity, which they had lost to some extent under the new provincial administration of the British. For instance, in the Vicariate of Jaffna, the majority of Catholics began to assert their distinct Tamil cultural ethos and language and develop their own character inspired and strengthened by the traditional religious practices of Hinduism prevailing in their homeland.

Survey and documentation

After roughly three decades of civil war in northern Sri Lanka, the effects of the enormous destruction and the displacement of the native population haunted the region and produced a large Tamil diaspora residing mostly in countries like India, Canada, Norway and the United Kingdom. Tamil Christians constituted a significant Sri Lankan Tamil diaspora – for instance, most Tamil Christians who settled in Norway were Roman Catholics. This new "Catholic diaspora" became a critical component in facilitating efforts to restore, renovate or rebuild the war-ravaged churches in Sri Lanka (Figure 2). As observed while undertaking the survey and documentation of the remaining churches and field visits to the region, the Catholic diaspora was partially or fully financing many new constructions. The Catholic Church benefited from the generosity of the Catholic diaspora, in the form of funds from abroad, which would have resulted from this group's religious and cultural memories scale compared with larger coastal Muslim cities.

Although the new Catholic diaspora provided significant support to sustain the churches in the post-war setting, it became evident that many church buildings, which had been fully or partially damaged and abandoned during the civil war, were renovated or repaired without regard for their religious and architectural origins. In some cases, churches were demolished to make way for new constructions, while others were abandoned due to the proximity of newly built churches (Figure 3). These remnants of the past and contemporary developments highlight the challenging task of prioritising the safeguarding of cultural and religious heritage in post-war environments. These changes often take precedence in the aftermath of war or counterinsurgency, overshadowing the need to rebuild and restore cultural heritage.

Figure 2. Inside of St James' Church in Gurunagar, Jaffna, in 1993 after the aerial bombing during the civil war (1983-2009) (source: courtesy of the Parish Priest, St James' Church in Gurunagar).

Figure 3. Holy Rosary Church in Palayadipudikulam, Mannar, in 2018 during its demolition, while the new church was being constructed in front of it (photo: Joaquim Rodrigues dos Santos).

Figure 4. Awareness-raising action at Our Lady of Victory Church in Pesalai, Mannar, in 2018 (photo: Sagara Jayasinghe).

In 2018, the research project "Oratorians in Ceylon: Survey of Oratorian churches with Portuguese influence in Sri Lanka" was initiated, funded by the Calouste Gulbenkian Foundation. As the project was getting underway, the disappearance of this unique heritage connected to Oratorian churches was noticeable. The "Oratorians in Ceylon" project allowed for the unveiling, surveying and sharing of this heritage [1-2], which was previously virtually unknown. More importantly, it yielded a series of awareness-raising actions to safeguard this heritage: besides several talks with local and national stakeholders (community, religious and political leaders, technicians and also common people) in Sri Lanka, an itinerant exhibition, "Edifices in Dark Days: Architectural Heritage of Goan Oratorian Missionary Churches in Sri Lanka", was held and a booklet in Tamil was distributed among the local Catholic communities in northern Sri Lanka [3] (Figure 4). Several interviews were also carried out on Sri Lankan social media, intending to reach the maximum number of people [4-5]. These actions not only halted the processes of demolition, distortion or ruin threatening the churches but also potentiated their classification as heritage, leading to the creation of a commission to assess the candidacy of Sri Lankan Oratorian churches for inclusion on the UNESCO World Heritage Tentative List.

Heritage dilemmas

The intention to nominate the Goan Oratorian churches in Sri Lanka for inclusion on UNESCO's World Heritage Tentative List prompted the creation of a working committee to prepare the application for tentative listing. This working committee, comprising Sri Lankan and Portuguese experts, had the support of the Central Cultural Fund, one of the principal heritage management institutions in Sri Lanka, as well as government backing. The working committee immediately launched a field mission aimed at assessing the conservation condition of the Oratorian churches, selecting those eligible for candidature, evaluating necessary safeguarding actions and engaging various stakeholders in this heritage endeavour.

Visits were made to almost two dozen Oratorian churches scattered along the coastal territory from Colombo to Jaffna, with two additional focal points on the east coast (Trincomalee and Batticaloa). After analysing all situations and considering several inherent circumstances, the working committee presented a preliminary list of five Oratorian churches considered the most significant ones in terms of heritage value (historical importance and integrity condition): Our Lady of Assumption Church in Parappankandal (Mannar), the former headquarters of the Goan Oratorian mission in Sri Lanka; St Bartholomew's Church in Olaithuduvai (Mannar), possibly the oldest surviving Oratorian church; St James' Church in Kilali (Jaffna), owing to its ethnographic and anthropological significance; St Joseph's Church in Kanthankulam (Mannar); and St Anne's Church in Keerimalai (Jaffna). The latter two exemplify Oratorian churches remodelled by the Congregation of Oblates (the successors to the Goan Oratorians in these regions), showcasing the enduring presence of the Goan Oratorian typology (Figure 5).

It became apparent during this field mission that although the demolition of Oratorian churches had been suspended, many were nonetheless slowly abandoned or subjected to detrimental alterations due to recent construction projects. Indeed, the churches of Olaithuduvai, Kanthankulam and Kilali were not demolished when new churches were built nearby, as was previously the common practice; but they gradually deteriorated due to lack of use and resources for their maintenance. Regarding the churches in Parappankandal and Keerimalai, recent interventions somewhat altered their value. It was evident that all five churches would require substantial restoration work before the candidature submission, with three of them (in Olaithuduvai, Kanthankulam and Kilali) urgently needing repairs and consolidation to prevent their partial collapse.

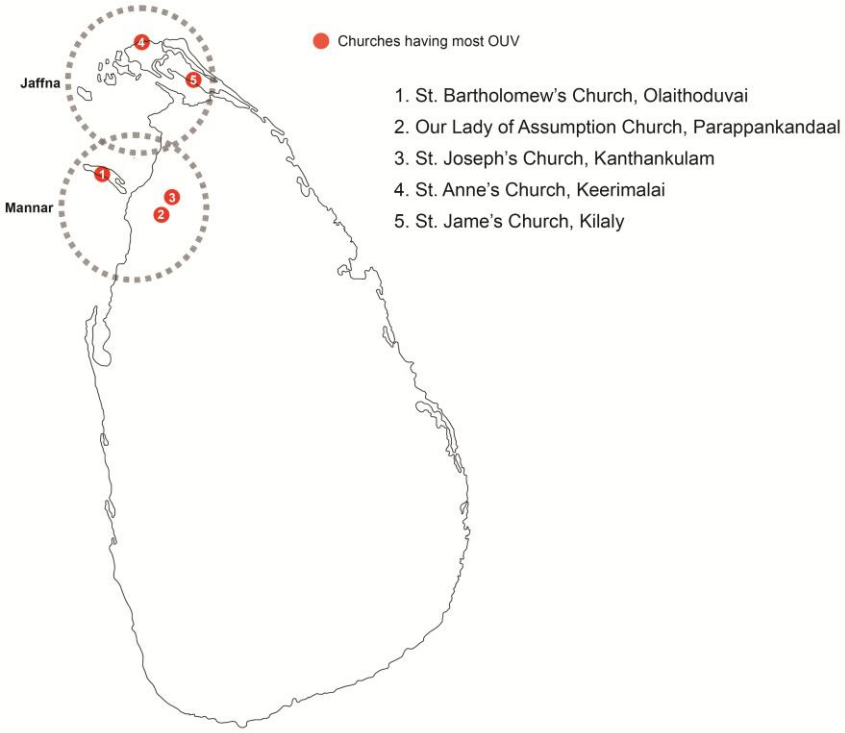

Figure 5. Proposed churches to be included on UNESCO's World Heritage Tentative List (source: Sagara Jayasinghe).

It was precisely during this field mission that several dilemmas and challenges arose regarding the classification and heritage preservation of these churches, stemming not only from cultural differences among the various experts involved but also from the socio-economic and political circumstances or the need to recontextualise principles associated with various international heritage charters. These dilemmas continue to be debated in an attempt to reach a broad consensus that will enable the UNESCO tentative listing candidature to proceed.

Socio- economic and political circumstances

The UNESCO heritage classification is usually viewed very positively by the various entities involved in the process, from the local communities to political, religious and economic entities. Indeed, besides the pride of possessing internationally recognised cultural heritage, the classification signifies enhanced protection and increased economic activity (especially pilgrimage and tourism) that generates revenue, as many studies have shown [6-10].

However, numerous challenges immediately arose in this regard. Sri Lanka has several sites classified by UNESCO as World Heritage Sites, located predominantly in the central and southern parts of the island with majority Sinhalese populations (Figure 6). In fact, with the exception of the historic city of Galle, of colonial origin, all the others are connected to archaeological sites of ancient city centres of magnificent civilisation inspired by the ethos of Buddhism (although some Tamil Hindu influences from the Chola empire can be also found in Polonnaruwa) [11]. Indeed, as has happened in many other parts of the world, there seems to be a kind of ideologically driven tendency in state-sponsored parts of the Sri Lankan heritage sector to prioritise monuments belonging to the majority. The Sinhalese majority tend to be blamed of political dominance by some strata of Sri Lanka's minorities, negatively affecting them and leading to their marginalisation; a significant consequence of this bias would be the alleged deliberate neglect of the heritage of these minorities. The openness of national heritage institutions to analyse the classification of the Oratorian churches is therefore a step to choose a heritage that does not belong to the areas where the Sinhalese Buddhist majority resides.

However, here arose the first challenge. While solid support for the classification of Oratorian churches was expected from the northern Tamil communities, as these could potentially become the first case of classified cultural heritage in the northern region of the island, which is predominantly Tamil, questions arose among community members as to why religious monuments belonging to the Hindu majority in this region would not qualify for classification first; why was it instead religious monuments belonging to the Catholic minority?

The societal wounds have not yet healed owing to the social, religious, cultural and economic issues facing the two prominent ethnic communities in Sri Lanka (southern Sinhalese and northern Tamils), which led to a nearly three-decade-long armed conflict, despite its end about 15 years ago. The fact that the candidature of the Oratorian churches, originating from Catholic roots often associated with colonialism, has institutional support, appears to many Tamils as a deliberate provocation – despite the proposed churches for classification all belonging to Tamil Catholic communities. The many talks with Sri Lankan stakeholders during the field mission revealed that one reason why no Hindu Tamil heritage sites in the north have yet been considered for classification in Sri Lanka lies in their lack of uniqueness and exceptionality compared to other Tamil Hindu heritage sites in neighbouring Tamil Nadu (India) – where notable and unique Hindu monuments classified by UNESCO exist, such as the Great Living Chola Temples in Thanjavur, Gangaikonda Cholapuram and Darasuram [12]. This divergence reveals the challenges of preserving and classifying the heritage of Tamil Catholics, made doubly difficult because it belongs to a minority (Catholics) within another minority (Tamils).

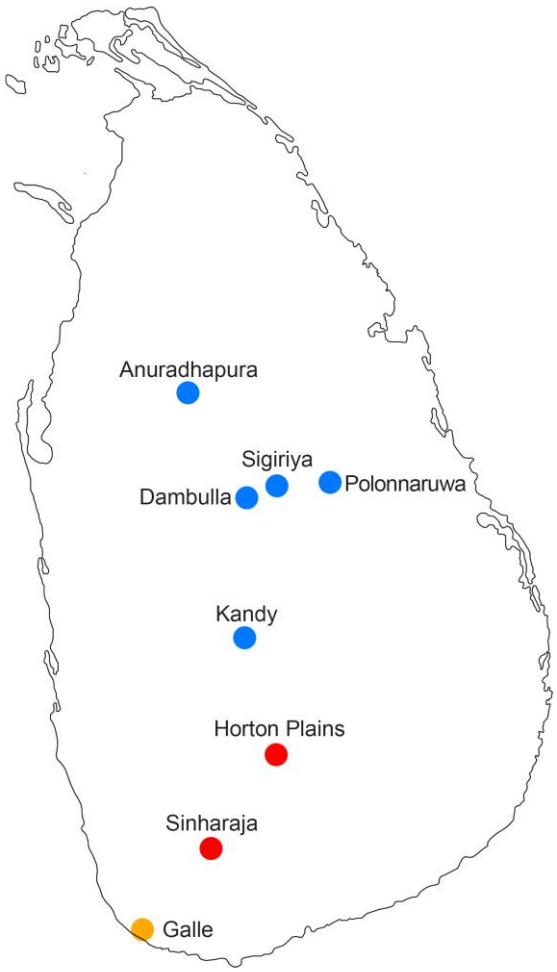

Figure 6. World Heritage Sites in Sri Lanka: cultural heritage sites in blue, natural heritage sites in red and a colonial heritage site in yellow (source: Sagara Jayasinghe).

Even among the Sinhalese, doubts exist regarding the classification of Oratorian churches: since the Sri Lankan Catholic community is transversal to both island societies, with Sinhalese and Tamil believers, there are some questions among the Sinhalese majority concerning why only the churches of Tamil Catholics were chosen for potential classification by UNESCO, when there are also Oratorian churches in areas currently populated by the Sinhalese majority, which includes Catholic communities. These questions persist despite the explanations that the integrity of these Oratorian churches in Sinhalese majority areas is manifestly insufficient for classification when compared to their counterparts in the Tamil majority northern region. There are also arguments that the Sinhalese Catholic churches are more magnificent, and therefore at least one of them should be included in the candidature as a counterpoint to the Oratorian churches of the Tamil Catholics. The problem is that these larger Sinhalese churches are not of Oratorian origin, thus disqualifying them for the nomination. Moreover, they do not have any outstanding universal value in accordance with the criteria defined by UNESCO – like the Tamil Hindu temples on the north of the island, there are Catholic churches much more outstanding and unique than those of the Sinhalese Catholics, despite their substantial cultural interest.

It should also be noted that in recent years, there has been a slight increase in hostility towards the Sri Lankan Catholic minority from some extremist sectors of the Sinhalese Buddhist population, among which hegemonic post-colonial speeches and anti-colonial feelings are significant [13-16]. These Catholic minorities are frequently viewed as outsiders by some strata of the majority population since many trace their identity to the painful colonial period, leading to a complex relationship between Christianity and colonialism – some people view Christianity as a symbol of colonial oppression, possibly jeopardising the Sri Lankan Catholic heritage preservation as it becomes intensely contested. Other Sri Lankan minorities also express mistrust of Catholics [17-18] (Figure 7).

Figure 7. Debris at St Sebastian's Church in Katuwapitiya, Negombo, after the Easter Sunday bombing, 2019 (source: Anadolu Agency – Getty Images).

Returning to the reservations expressed by Tamil populations regarding the classification of Oratorian churches, despite the openness to the need to preserve this unique heritage, a sense of distrust persists from the highest Catholic hierarchy – namely, the bishops – down to the common believer, due to a clear misunderstanding of current heritage laws. Unlike the common practice in many Western societies, where the heritage classification of a building is executed by the state regardless of the owner's wishes (if the monument is private), the heritage classification in Sri Lanka is carried out only with the explicit agreement of the respective owners [19]. This makes the classification process more cumbersome and generally more difficult to achieve for private buildings as their owners usually do not relinquish the prerogative to carry out any desired works on these properties.

In fact, in cases where private buildings are classified as monuments, their owners can no longer undertake any type of work beyond maintenance; repair, rehabilitation or expansion works are only allowed with the state's approval and are carried out under its strict supervision. This restriction is sometimes viewed by monument owners as a loss of ownership, and in the case of the Oratorian churches, this misconception is exacerbated by the sentiments of a Catholic minority that sometimes feels contested. In the Tamil context, such fears are supported by recent classification processes of ancient Buddhist structures in the northern part of the island that were already abandoned, such as the Nagadeepa Purana Vihara (currently recovered and well-functioning) or the Ancient Kantharodai Viharaya. These structures have been appropriated by Sinhalese Buddhists from the central and southern parts of the island under the pretext that as they are ancient Buddhist temples, they are only returning to their rightful owners and users [20-21]. However, it is widely known – specially within the Tamil minority – that these temples were built by Tamil Buddhists, who have since converted to Hinduism [22-25].

Awareness-raising actions between the highest levels of the Sri Lankan Catholic Church and the leaders of Catholic communities have revealed a gradual openness to the classification of the Oratorian churches. Ultimately, there is an understanding that not only is the ownership of classified monuments not revoked but their protection is actually enhanced as the classification prohibits actions that might distort them or interventions within their protected areas that might alter their character, preventing also land encroachment by other non-Catholic communities. Being classified monuments may also mean easier access to funds for their conservation. However, the issue of classification persists within the community at large, which fears losing the freedom to carry out renovation or expansion works on monuments according to their desires.

Hesitation concerning UNESCO's classification criteria

The issue of work carried out on Oratorian churches without proper oversight by heritage intervention specialists has significantly contributed to the distortion of these unique buildings, particularly the churches of Parappankandal and Keerimalai. Furthermore, when communities lose interest in maintaining these churches, they immediately begin to deteriorate and are at risk of collapse and ruin, as can be observed in the churches of Olaithuduvai, Kanthankulam and Kilali (Figure 8). The debate over the potential reversal (or not) of the degraded or distorted state of these churches, with a view to their future classification, has sparked intense debates, sometimes with diametrically opposed views that reflect, to some extent, heritage approaches derived from distinct cultural sensitivities – either between Sri Lankan communities or even with foreigners.

Figure 8. The poor condition of: a) St James' Church in Kilali (Jaffna); b) St Joseph's Church in Kanthankulam (Mannar) (photos: Sagara Jayasinghe).

Regarding the UNESCO criteria for the assessment of Outstanding Universal Value [26], it is apparent that the humble Sri Lankan Oratorian churches do not represent "a masterpiece of human creative genius", nor are they "an outstanding example of a type of building, architectural or technological ensemble which illustrates a significant stage in human history"; they are also not "an outstanding example of a traditional human settlement which is representative of a culture (or cultures), or human interaction with the environment". However, they can be considered to fall within the criterion of "being directly or tangibly associated with events or living traditions, with ideas, or with beliefs, with artistic and literary works of outstanding universal significance", while also "exhibit[ing] an important interchange of human values, over a span of time or within a cultural area of the world".

There is no disagreement on the above criteria. However, regarding the criterion "bear a unique or at least exceptional testimony to a cultural tradition or to a civilisation which is living or which has disappeared", although there is major agreement that the Oratorian churches satisfy this criterion, there are divergent ways in which it is understood. Notwithstanding the simplicity of the Oratorian churches, their history is truly remarkable and unique in the world; the question that arose is whether the Oratorian churches fall within the category of living heritage or if they have already disappeared. To the argument that the Oratorian congregation's disbandment in the mid-nineteenth century makes this heritage a testimony to a cultural tradition that has already disappeared, there is also the argument that this cultural tradition remains alive through the Catholic communities that still exist and use these churches, since the disappearance of the Goan Oratorians did not mean the end of Sri Lankan Catholic communities.

(Theoretical-) Practical issues of intervention

The debate on potential interventions aimed at restoring, correcting or reversing the situations of the Oratorian churches selected for UNESCO World Heritage Tentative List candidature has been lively. The issues raised are diverse, extending beyond a presumed East–West cultural debate and encompassing political-religious, socio-economic, technical, sustainability and authenticity-integrity perspectives.

Figure 9. Examples of two churches in Mannar, where additional value has even been added: St Bartholomew's Church in Olaithoduvai: a) in the 1970s; and b) the 2020s (source: Lewcock, Sansoni and Senanayake [28]; photo: Joaquim Rodrigues dos Santos); and Our Lady of Assumption Church in Parappankandal: c) 2016; d) 2018 (photos: Sagara Jayasinghe and Joaquim Rodrigues dos Santos).

The churches of Parappankandal, Olaithuduvai, Kanthankulam, Kilali and Keerimalai were all built during the first half of the nineteenth century and follow an architectural typology and ancestral construction techniques used in all Oratorian churches built by Goan priests [1, 27]. However, these churches have undergone alterations over time. For instance, almost all the original façades of these churches were subsequently replaced by others aligning more closely with the aesthetics of their respective eras. Some had front porches or side verandas built to mitigate extreme weather effects (heat or monsoon rains). In addition, in various churches that transitioned to the French Oblates (the successors to the Goan Oratorians in the northern missions) after the cessation of Goan Oratorian activity, the roofing of the chancel was raised. This often involved the use of new materials, considered then more efficient than the traditional ones.

However, this may not imply a loss of authenticity in these churches, as historic buildings have generally undergone changes over time to adapt to new living (or religious, in this case) functions, uses, aesthetics or more efficient technologies – without necessarily implying a loss of their heritage value. Sometimes, additional value has even been added to these buildings, meaning that they continued to be used over time, rather than being abandoned and falling into ruin.

The question relating to this matter concerns the boundaries between what would be considered acceptable to maintain and what would be unacceptable and could be removed/changed. For example, the side verandas of the Olaithuduvai church (Figure 9a-b), while not original, were considered acceptable to retain, whereas those of the Parappankandal church (Figure 9c-d), built more recently, were considered somewhat spurious – and this is despite the aesthetic language of both churches matching, although the building materials are different (especially in Parappankandal). This seems to suggest that the argument of antiquity,

more than aesthetics or functionality, may have been the determining factor in establishing the churches' respective value and, with that, stipulating their maintenance or eventual removal. However, this would also imply enquiring about how long something needs to exist to be considered old enough to be preserved.

A couple of decades ago, the wooden columns supporting the roof of the Parappankandal church were replaced by reinforced concrete columns (Figure 10a). In a way, the planimetry and the roof structure were maintained, with only the replacement of an older material with something newer and (considered) more durable. The replacement of old materials with newer ones, while maintaining the forms and aspects, is a relatively common situation in various parts of the East (but also in the West, albeit on a smaller scale), without losing, for those cultures, their authenticity. The maintenance of the original matter and the signs of antiquity (demonstrative of its antiquity), strongly associated with Western cultures, does not have the same associations in several other cultures [29-32].

In the Parappankandal church, therefore, the replacement of wooden columns with reinforced concrete columns represents a kind of natural process within the Sri Lankan culture. Its maintenance would theoretically be acceptable in a context where this continuous updating of buildings is inherent to that same local culture. However, increasing influences from Western cultures clash with this brutalist view of the reinforced concrete columns, and therefore the proposition of reversing the reinforced concrete columns to recover the wooden columns, as they originally were, arises.

The problem is that this replacement, by itself, does not guarantee the authenticity of the structure, since the new wooden columns are not historicised (it is just the replacement of a new material with another new material, although similar to the original), and instead contradicts this natural development of replacing wood with reinforced concrete. In fact, this action could even lead to the creation of a falsehood, as it would obliterate part of the building's history and could historicise the columns with an antiquity value that they would not have. However, the situation of this replacement may still be considered, as there still exists in smaller environments a tradition of working with wood, inclusively in religious buildings, by repairing or substituting parts of wooden structures in a poor condition. The placement of new wooden columns would thus be a kind of continuation of the local tradition of replacing degraded columns with new ones whenever necessary (Figure 11).

Figure 10. Restoration works in: a) Our Lady of Assumption Church in Parappankandal, Mannar, with new concrete columns; b) St Anne's Church in Keerimalai, Jaffna, with an asbestos sheet roof covering, cement plaster on the walls and new mosaic floor (photos: Joaquim Rodrigues dos Santos).

Figure 11. Restoration works on a historic monastic building, famous for its wooden architecture, in the 'Mahavihara' Buddhist Monastery in Kandy (photo: Jayatissa Herath).

Work was recently done on the Keerimalai church, demonstrating the community's willingness to maintain and continue to use its old church. However, once again, this work was done voluntarily by the community, without the proper insights of specialists in heritage conservation: a new modern floor was installed and the walls were plastered with Portland cement (Figure 10b). We now know that the use of Portland cement plaster is detrimental to old buildings as it degrades the original construction materials (stone, rammed earth, adobe, etc.). More than for authenticity reasons, the removal of this Portland cement plaster and its replacement with lime plaster or similar is required for the protection of these original materials.

But how can one communicate to that modest Catholic community that the resources they managed to spend to preserve their church were useless, and this Portland cement plaster should be removed so shortly after it was applied? Or, in the case of the Parappankandal church, how can one tell the local community that the reinforced concrete columns should be removed and replaced by wooden columns, after the enormous financial effort it had to make to erect those concrete columns? And the same happened regarding the new side verandas added recently to this church.

Another issue concerns the altarpieces that used to adorn the chancels of Oratorian churches. With the exception of the churches of Kanthankulam and Kilali, which retained their original altarpieces (although in the former, the altarpiece was removed recently to include it in the new church built nearby), in the remaining churches considered for the UNESCO candidature, their altarpieces disappeared. In fact, there are few altarpieces remaining from the Oratorian period for various reasons (degradation of wood due to the tropical climate, change in the aesthetic taste of the missionary orders that replaced the Oratorians, etc.). But if these Oratorian churches had altarpieces, does their absence not constitute a gap that must be filled? And is it possible to fill this gap without compromising the inherent authenticity?

Figure 12. Wooden carved retable at the old St Joseph's Church in Kanthankulam, Mannar: a) in 2018; b) at the new church in 2023 (photos: Sagara Jayasinghe and Joaquim Rodrigues dos Santos).

Our Lady of Victory Church in Pesalai (Mannar) has the best example of an Oratorian altarpiece in Sri Lanka [33]. The original Oratorian church where the altarpiece was located was demolished about two decades ago, and a new church was built, with the altarpiece placed in its chancel (Figure 12). The proposition arose of transferring this altarpiece to the Parappankandal church, which had been the Oratorian headquarters in Sri Lanka, thus filling the existing gap in this church and enhancing its value. In fact, the altarpiece would be better contextualised in a chancel of an old Oratorian church; however, authenticity would always be relative since the altarpiece was commissioned for another church (Pesalai), not for that specific one in Parappankandal.

With good reason, the population of Pesalai would also refuse to let the altarpiece leave its church, even if a perfect replica could be put in its place in the church. They would then wonder, again with good reason, why the perfect replica could not be placed in the Parappankandal church instead. It would be a viable option but also present a dilemma about authenticity. Leaving the church without an altarpiece compromises its authenticity since it remains an important gap in a space that was created to have an altarpiece; taking an old altarpiece from another church also undermines its authenticity, since it would be taking something that was built specifically for another church and not for that one; placing a replica of something old that was not built to be there also does not seem peaceful; and, finally, placing a new altarpiece is also questionable, especially since the art of building altarpieces was lost in Sri Lanka more than one and a half centuries ago.

Similar dilemmas also relate to the Olaithuduvai church, the oldest Oratorian church still in existence. Like most other churches, it no longer has an altarpiece in its chancel; however, an altarpiece is known to exist in a private collection that was acquired in the Mannar region (although it is not known in which church it was located previously). The proposition arises that this altarpiece could be acquired to be placed in the Olaithuduvai church or, at least, a replica

could be made for that church. But this would lead to the same authenticity issues mentioned above, which must be carefully considered.

Sustainability and integrity

Issues of sustainability and integrity are fundamental to the UNESCO classification process [26]. Sustainable management plans for heritage sites to be classified, including future uses, conservation and societal involvement to benefit and empower the community in safeguarding this heritage, are essential to ensure its preservation for future generations. In the case of the Oratorian churches under consideration, only two of them still maintain their religious function, while the other three are currently abandoned due to constructions of new churches nearby. These churches might have faced demolition some years ago, but efforts were made to prevent their destruction. Yet their clear abandonment leaves them completely vulnerable and in an accelerated process of degradation – local communities do not have enough economic resources to maintain them (Figure 13).

Culturally, these communities take pride in their new churches, symbols of modernity and community enhancement, while disregarding what is old and outdated. While this attitude is understood as intrinsic to their culture and should be respected, it does not necessarily mean agreeing or being complicit. It is also burdensome to demand that these humble communities, after the enormous effort they have expended to build their new churches, must also restore and maintain their old churches, which are already devoid of use, representing a very onerous burden. What, then, do these communities stand to gain from maintaining their old churches?

There are several arguments. If identity preservation issues for future generations assume particular relevance in an increasingly globalised, accelerated and homogenised world, it is because there is often a genuine interest in understanding the past and offering the local community a space for memory. Moreover, there is a healthy amount of pragmatism regarding heritage of local importance if it can attract visitors and generate income for the community. The possibility of the Oratorian churches receiving a UNESCO classification may generate feelings of pride in the respective communities, bringing them international recognition and potentially turning them into tourist attractions that could boost the local economies, particularly through hospitality, catering and other tourism-related services.

Figure 13. St Bartholomew's Church in Olaithoduvai, Mannar, and the construction of the new church (photo: Sagara Jayasinghe).

Figure 14. St Anne's Church in Keerimalai, Jaffna (photo: Joaquim Rodrigues dos Santos).

The integration of these churches into future cultural and religious routes is viewed positively by the Catholic Church hierarchy and community leaders, who allow for the possibility of the currently unused churches being used for special religious practices or, at the very least, becoming cultural interpretative centres focused on Oratorian heritage. The UNESCO classification itself could attract financial resources from the government or even from international institutions, thus contributing to the safeguarding of this unique heritage.

Finally, it is worth noting that climate change itself is a very delicate issue. Most of these Oratorian churches intended for classification are located in areas prone to suffering the impacts of rising sea levels or floods caused by torrential rains. Near the Keerimalai church, work has already been carried out to mitigate coastal erosion caused by rising sea levels and increasingly strong storms (Figure 14). However, such efforts seem insufficient in the face of the ferocity of the sea.

Final notes

Sixty years have passed since the enactment of the Venice Charter (1964) – much longer than the 33 years between it and the Athens Charter for Heritage (1931). The timeliness of many of its heritage principles has not prevented them from being constantly updated, through the drafting of new heritage charters, conventions and declarations that are more generic, such as the Krakow Charter, or more specific to new challenges that have arisen in the meantime, such as the documents from San Antonio (different notions of authenticity, 1966), Burra (places of cultural significance, 1981), Nara (authenticity of cultural heritage, 1994), or La Valetta (historic urban ensembles, 2011), among many others [34]. This updating continues in light of the new dilemmas, challenges and problems that arise with every turn of the page in our history: new types of heritage, technological developments, climate change, artificial intelligence, etc.

At the same time, we have come a long way since the term "colonial heritage" fell out of favour and was renamed "shared built heritage", encompassing other types of heritage generated by the meeting of cultures other than those of colonial rule. The idealistic concept of a heritage shared not only by the cultures that originated it but also by the world itself is indeed

visionary and generous. However, it is also associated with possession, which in post-colonial contexts still marked by the memory of suffering from that past of subjugation, or especially where there are still contested (religious, ethnic) minorities, is still a problematic name. Indeed, "this heritage is ours; it belongs to no one else" is still a motto often heard in contested contexts. That is why the term "transcultural heritage" is more neutral and therefore more easily accepted.

In fact, safeguarding heritage associated with contested minorities is an issue that has yet to be openly discussed, including within ICOMOS itself. This is indeed a very sensitive issue, and one can understand why it is considered almost a "non-issue". Nonetheless, this does not mean it should not increasingly be a subject of debate. Recognising these minorities' identities is vital for (re)framing their dynamic narratives and cultural heritage (re)construction. This identity is constantly negotiated and the cultural heritage is often used to assert claims of legitimacy and ownership as different groups lay claim to the same objects or places and different interpretations of the past compete for dominance [35-38].

In this sense, transcultural heritage serves complex and fluid roles within a society, and notions of mutual appropriation and exchange within intercultural contacts still need to be better understood as they are crucial for developing a deeper understanding of how this heritage can be portrayed, interpreted and negotiated. Prior research has exhibited a Eurocentric tendency in examining the heritage of several minorities around the world, overlooking or downplaying the significance of local traditions and cultural practices which are central to their identities. Prioritising European models risks perpetuating colonial legacies and erasing the diversity and complexity of local cultures, nurturing misleadingly biased opinions and fortifying post-colonial hegemonic discourses.

Even the Eurocentric principles of safeguarding heritage have been revised and recontextualised for the various local realities. The debate between such contrasting principles, in which Bardeschi [39] and Marconi [40], or even Moreno-Navarro [41] have engaged, shows that even within so-called Western culture, there is no consensus on ways of acting on heritage – and perhaps there need not be. The reality shows us that heritage values associated with different cultures around the world sometimes contradict or conflict with each other [42]. This does not mean that they are right or wrong – which is precisely what requires an exercise in (re)contextualising heritage principles, including those enunciated in the Venice Charter. The key term in a heritage intervention should therefore be "ethics": there are several good solutions to the same heritage problem, which ultimately have to be adopted by the respective communities, who will either allow that heritage to endure or fade away. Whichever solutions are adopted, what is essential is that they must be ethical interventions that do not mislead current and future generations.

The work towards submitting the Sri Lankan Oratorian churches built by Goan priests for inclusion on the UNESCO World Heritage Tentative List will engage two fields of study: offering a new understanding of Sri Lankan Catholic minorities' identities, vital for reframing their dynamic narratives and cultural heritage reconstruction; and fostering a transformative dialogue with stakeholders and empowering the local communities to protect their heritage, thus enhancing its resilience – in fact, by constituting the core community, perhaps the emphasis on these minorities and their choices in terms of conservation decisions may take priority over the opinions and solutions coming from outside experts. Creative practices will methodologically allow for the re-analysis of concepts, review of existing literature (mostly Eurocentric or often misinterpreted), questioning of established paradigms (e.g. identity, authenticity, integrity, cultural accommodation) and the broader debate on the safeguarding of this transcultural heritage, particularly by (re)contextualising the principles of various existing heritage charters, such as those in the Venice Charter.

Promoting a wide debate and raising awareness about the preservation and sustainable management of this transcultural heritage, involving communities, experts, politicians and other stakeholders, constitute an essential objective. The gathered information can be used to

inform policy decisions, advocacy campaigns or public discourse on issues related to these communities, towards the development of sustainable heritage management strategies to mitigate vulnerabilities and create new spaces in which multiple narratives about the past can coexist. During these interactions with local communities, the trauma caused by the memory of colonialism or hegemonic discourses will surely be addressed, including conflicts over land, cultural and religious differences, or political marginalisation, besides post-colonial issues. In that sense, dialogue must be encouraged in the communities, following the principle of a "hospitality of narratives": where tensions emerge, they are also given a space to linger, and as the various stakeholders tell each other their interpretations of the past, they enrich each other rather than cancel each other out.

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Beyond the UNESCO intangible/tangible cultural heritage duality: Islamic principles as an intangible heritage – the case of North African medinas

Para além da dualidade património cultural intangível/tangível da UNESCO: os princípios islâmicos como património imaterial – o caso das medinas do Norte de África

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Abstract

In old Muslim cities, community-based and individual building practices have long shaped the urban environment. These practices express the socio-cultural principles and values that historically guided urban formation and, thus constitute a key component of their intangible heritage. Yet contemporary preservation policies tend to prioritize the protection of physical urban fabrics, a fact that often overshadows the intangible dimensions that gave meaning and coherence to the urban environment. This paper argues that safeguarding the tangible heritage of old cities must thus be accompanied by the recognition and promotion of this intangible logic. It highlights the interactive and causal relationship between these two dimensions of heritage, with a geographic focus on North African cities. The study aims to contribute academically by articulating an Islamic perspective on urban form, and professionally by suggesting ways to refine current preservation policies through a more balanced integration of tangible and intangible values.

KEYWORDS
Islamic principles
Muslim cities
Preservation policy
Incremental process
Intangible heritage
Tangible heritage

Resumo

Nas antigas cidades muçulmanas, as práticas de construção comunitárias e individuais moldaram durante muito tempo o ambiente urbano. Estas práticas expressam os princípios e valores socioculturais que historicamente orientaram a formação urbana e constituem, assim, uma componente fundamental do seu património imaterial. No entanto, as políticas de preservação contemporâneas tendem a dar prioridade à proteção do tecido urbano físico, facto que muitas vezes ofusca as dimensões imateriais que davam significado e coerência ao ambiente urbano. Este artigo defende que a salvaguarda do património tangível das cidades antigas deve ser acompanhada pelo reconhecimento e promoção desta lógica imaterial. Destaca a relação interativa e causal entre estas duas dimensões do património, focando-se nas cidades do Norte de África. O estudo visa contribuir academicamente, articulando uma perspetiva islâmica sobre a forma urbana, e profissionalmente, sugerindo formas de melhorar as atuais políticas de preservação através de uma integração mais equilibrada dos valores tangíveis e intangíveis.

PALAVRAS-CHAVE
Princípios islâmicos
Cidades muçulmanas
Política de preservação
Processo incremental
Património imaterial
Património material

Introduction

The concept of heritage in Muslim countries has undergone significant evolution, shaped by changing social, cultural, and institutional conditions. While debates on heritage have been present for several decades, the past decades have seen a notable intensification of interest, during which heritage has increasingly been treated as a distinct paradigm in both research and professional practice.

From early 1960s and 1970s, a considerable number of old cities was subjected to Tabula-Rasa policies under the influence of the modernist doctrine and the general aspiration for progress and development. Old buildings and towns were considered a defect and were thought to remind communities of backwardness [1-2]. In the Arab Gulf, old cities such as Riyadh and Kuwait, have completely vanished, leaving only traces of their original street patterns. In other countries Middle Eastern countries, cities such as Baghdad, and Damascus, have undergone deep alterations in a way to improve vehicular accessibility, provide the basic services and improve the quality of life in old quarters. Large intersecting boulevards have been cut through their compact fabrics, and large open spaces were created. Their outer defensive walls were dismantled to accommodate modern urban extensions [3].

In the 1980s, the boom in oil revenues enabled most Arab countries to develop new cities and shift urban populations to the outskirts. Old cities that remained, such as Manama and Muscat lost their original populations that moved to the outskirts. Historical cores gradually turned into slums for low-wage classes and migrants. That is the case of rural migrants in Algiers, Tunis, and Fez, and Asian expatriates in Gulf cities such as Manama, Jeddah, and Dubai [4].

Paradoxically, Western countries – the birthplace of modernism – experienced a gradual return to historical references, a shift that indirectly influenced the growing cultural awareness in many Arab societies. As a result, heritage progressively gained significance as both a scholarly and public concern. The acute identity tensions generated by the coexistence of modernity and tradition further reinforced this interest, ultimately supporting the rise of heritage preservation as a means of cultural affirmation.

A direct consequence of this shift is the current increasing care for the past. The historic cores of old towns and the buildings that have survived demolition are increasingly attracting the attention of academics, professionals, and policymakers. Basic services such as water, electricity, telephone, and sewerage are introduced, and accessibility to social amenities are improved. Under the pressure of world heritage preservation and tourism, intermittent works of upgrading such as walls-painting, repairing of cracks, and the paving of the streets are being undertaken along the "tourists-walks" that are created in the degrading old towns [5].

Academic research, together with cultural-tourism interests and the growing involvement of international institutions such as UNESCO, ICOMOS, the World Bank, and the Aga Khan programs, has helped broaden preservation philosophy, gradually extending its scope to include not only monuments and historic buildings but also the surrounding urban fabric [6-7]. In planning, architectural theory and curricula, urban preservation has expanded in parallel with postmodernism, regionalism, and, more recently, with global calls for cultural sustainability.

The meaning of Heritage itself underwent a process of refinement through several revisions. It was first interested in famous buildings, monuments, and archaeological sites. One example can be seen in the case of the 1967, 2003, and 2005 Algerian legislation for preservation measures [8]. Castles, palaces, religious buildings, and large residences were transformed into historical symbols and heritage icons. It is only after decades that the isolated objects were meaningless without their contexts. Immediate surroundings were then considered as part of the heritage.

By the end of the twentieth century, heritage witnessed a finer redefinition. It was agreed that it should encompass both tangible and intangible assets. While the tangible cultural

heritage (TCH) concerns physical properties such as monuments, groups of buildings and historical sites, whether natural or man-made, the intangible cultural heritage (ICH), was defined as:

> *The practices, representations, expressions, knowledge, skills – as well as the instruments, objects, artifacts, and cultural spaces associated therewith – that communities, groups and, in some cases, individuals recognize as part of their cultural heritage. This intangible cultural heritage, transmitted from generation to generation, is constantly recreated by communities and groups in response to their environments, their interaction with nature, and their history, and provides them with a sense of identity and continuity, thus promoting respect for cultural diversity and human creativity*. [9]

On highlighting the paradox under study, Dennis Rodwell considers that the increasing interest in intangible heritage and the anthropological vision of culture as a dynamic and an evolving course should reformulate the narrow concept of heritage as vestiges and records from and about the past [10].

The art of city-making and the local building know-how represent one of the most underrated aspects of intangible cultural heritage in contemporary discourse. The outdated view that treated the urban fabric of medinas as merely spontaneous physical entities should give way to anthropological and socio-cultural approaches that recognize and value the actions of individuals and communities.

The present study relies on two main hypotheses. First, beyond the UNESCO's classical subdivision of heritage into TCH and ICH, the urban fabric of old Muslim cities emerges from the continuous interaction between these two dimensions. Second, while the physical structures – built environment, urban layouts, and architecture – constitute the tangible component, the underlying Islamic principles function as the intangible mechanisms shaping them. ICH and TCH are linked through a causal relationship: TCH is the output of ICH.

The aim of the paper is therefore to highlight the simultaneous presence of both Tangible and Intangible heritage in old Muslim cities, and the causal relationships between the two parts of heritage. It then transcends from tangibility to intangibility via the unseen but practiced mechanisms that shape urban fabrics in the old cities (Figure 1).

Figure 1. A diagram showing the three levels of heritage, the tangible, the deep structure and the intangible.

Methodology and materials

The present study examines the physical components of historic Muslim cities, collectively understood as TCH. It then highlights the underlying principles that shaped these urban forms. These principles – rooted largely in Islamic doctrine – evolved into norms of conduct and practical traditions that guided the behaviour of individuals and communities in old Muslim cities, thereby constituting their ICH.

Regarding data, the study draws on two complementary sets of information: (1) the geometry and morphology of urban fabrics in historic cities; and (2) the system of rules and mechanisms established in the author's previous works, as well as those developed by other scholars over the past four decades (1981-2023). The urban fabric of Melika (X = 564498, Y = 3594300), a historic town in the Algerian desert within the M'zab region, serves as the empirical basis for this dual analysis. Most of the material was sourced from the fieldwork of the Office de protection et de promotion de la Vallée du M'zab (OPVM) [11], the institution responsible for the city's Preservation Plan. Melika was selected primarily due to the availability of detailed graphic documentation, the coherence of its physical and social fabric, and its manageable scale compared with larger coastal Muslim cities.

Describing the tangible urban heritage

A significant number of Western scholars have studied urban and architectural heritage in the Muslim world under various terms, including "Islamic city", "Muslim urbanism", "Muslim city", "Middle Eastern city", "Near Eastern city", and "Arab-Muslim city" [12]. On retracing the historiography of the concept, Al-Sayyad [12] and Allahham [13] overviewed the works of Georges Marçais, Max Weber, Ira Lapidus, Jean Sauvaget and Albert Hourani in which the structure and morphology of the Islamic city interpreted. In most of these studies, the focus was predominantly on the physical aspects of the city, including the urban fabric and key components such as the winding streets, the centrality of the mosque and the market, and the governor's residence.

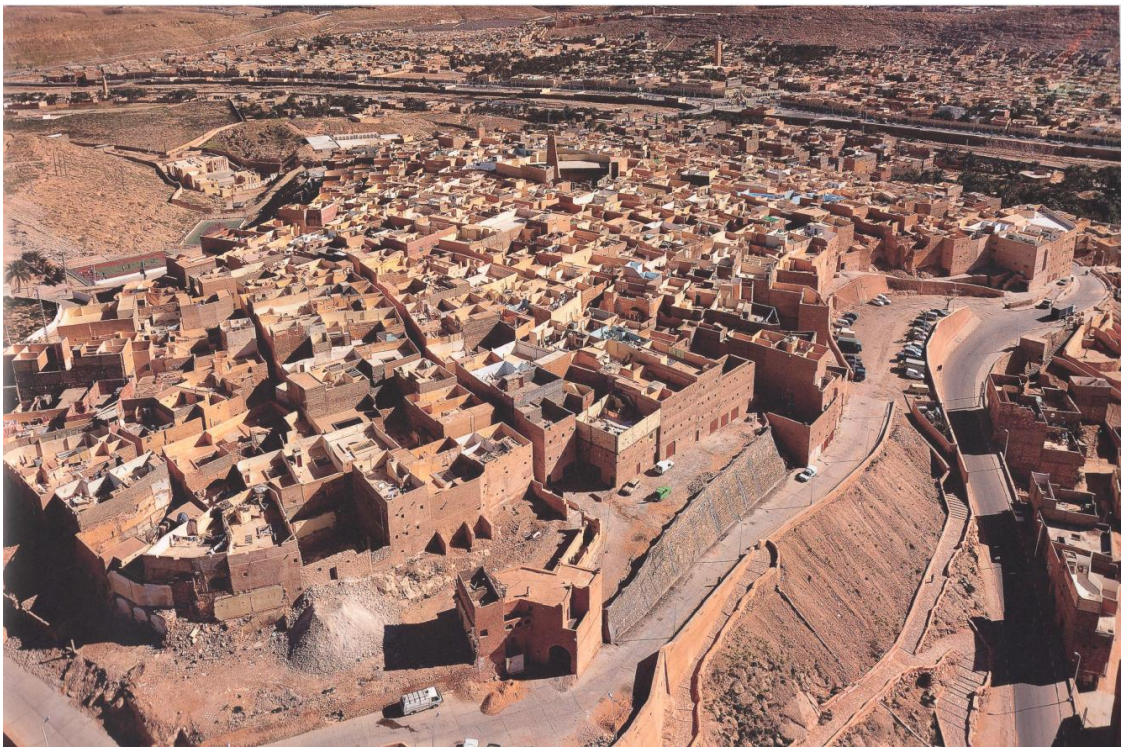

Figure 2. An aerial view of Melika, the old Muslim city in M'zab region, 2009 (sources: a-OPVM, b-Kais Djilali, Ministry of Culture).

At the domestic scale, the spatial organisation of houses and other buildings turns around the courtyard. Beyond its climatic and social functions, the courtyard allows the external envelope of the house to remain free of openings while enabling its four sides to connect with adjacent houses. Shared walls constitute another key component of the built environment, reflecting the grouping patterns of dwellings. Besides the religious recommendations that recommend privacy and mutual care, the permanence of the two components may also be argued by the economic motivations that regard building materials, time-consuming, and land-use economy. The scarcity of openings gives rise to blind elevations, which characterize the façades along streets. This can be seen as a direct outcome of the inward-oriented organisation of houses, itself resulting from the interplay between courtyards and shared walls (Figure 2).

Decoding the deep structure

The second stage of this analysis, of highlighting some common features that are shared among Medinas and help understand their morphologic order. This systematic enumeration reflects the deep structure physical structure will pave the way to a better understanding of the intangible character in the medinas, a theme that will be developed below.

Urban geometry in medinas would not be understood without some major characteristics that are seldom described in studies on heritage. Away from the conventional rules of the Euclidian geometry such as the axiality, the symmetry, the platonic forms, and straightness of lines, urban fabrics in Muslim cities present complex features that have been recently decoded thanks to new advancement in computational geometry [14]. Sections below give key features that help decipher this physical complexity.

Compactness of urban fabrics

There is an emerging interest in compact cities in the last 30 years [15-16] this feature has been defined and measured in various ways. It mostly relates to density, saturation, mass, mix, concentration, and connectivity. In its simplest aspect, it consists of the domination of the built-up area over the open spaces, such as streets and public places.

In the case of old Muslim cities, it results from the contiguity of buildings with each other, the dominance of solids over voids, the intensity of land use, and the high density of the buildings. At a bloc scale, compactness may be identified through the ratio of the open-to-sky surface in the bloc mass, and the exposure of buildings to outside. In terms of calculation, the ratio of mass to void ranges from 60 %, up to 80 % depending on the geographic location [17].

Urban compactness results from the assemblage of buildings according to specific topological rules, whereby houses relate to one another side-by-side and/or back-to-back. This topology arises directly from the principles of shared walls and inward-looking domestic architecture. Together, courtyards and shared walls form the cornerstone of the urban morphology and typology of historic cities. Consequently, there are no stand-alone or detached houses; each dwelling is physically connected to its neighbours. This interdependence is such that the collapse of one structure can lead to the deterioration of the adjoining buildings (Figure 3).

Figure 3. A compact urban fabric in Melika in which the built-up area dominates the out-door spaces (source: OPVM).

Subdivision and fragmentation

The subdivision of properties and assets is a staple in the urban morphology of Muslim towns. It incessantly shapes buildings, plots forms, and morphology. It is a fragmentation process that generates micro-properties that continue to be until it reaches a stage of usage of the resulting portions, below which the asset should either be sold and subdivided as cash, or left as an integral entity.

The conditions for proper subdivision require adherence to the legal principles of Islamic inheritance, while ensuring functionality, accessibility, adequate lighting, and autonomy of the resulting units. Shares are generally assessed on the basis of net area and monetary value, and in some cases also according to turnover or income potential, reflecting differences in location and commercial exposure. Tangible assets such as buildings, plants, and equipment pose greater constraints to subdivision than vacant land because their configuration, usability, and context are already fixed. Consequently, treating subdivision as a purely geometric exercise often results in irregular, interlocking portions.

The block plans provide numerous examples of such processes (Figure 4). A focused examination of their geometry, following a recurrent pattern of transformation, allows the reconstruction of earlier property configurations. Many houses reveal evidence of having once formed parts of larger dwellings. The presence of long, narrow, and irregular internal corridors is often the result of efforts to ensure access to sub-properties located toward the rear of the block.

Figure 4. The dead-end streets and the partition walls, as direct results of the succession law and the subdivision of assets (source: the authors based on OPVM drawings).

Subdivision is also undertaken vertically in multi-story buildings. The initial house turns into two or more superimposed but autonomous properties, each with an independent entrance that is directly reached from a common staircase or from outside. And while the upper owner typically benefits from access to the terrace and the possibility of future extensions, the ground floor owner enjoys the direct contact with the street and the commercial potential offered by the frontage. In many cases, the allocation of these advantages is decided cordially.

Geometric regularity and irregularity

At the urban scale, the grid that goes back to the Greco-Roman city planning model has been considered the model of regularity [18]. In the case of the old Muslim cities, one of the literature milestones of confrontation between regularity and irregularity that seduced scholars is the early works of Sauvaget [19-20]. The discovery of the regular grid in the Roman Damascus that was overwhelmed by the irregular pattern of the early Islamic conquests has long been considered as a witness of such a lag. Similarly, archaeological sites of Cherchell and Old Algiers present some of this overlapping between the two opposite geometric patterns as well as the process of complexity and overlying.

The gradual complexity that leads to geometric irregularity is thus an essential character of medinas that results from the natural process of urban growth. It is the outcome of many factors among which are, the specific response to site conditions, the incremental progression of houses and buildings outward, and the continuous portioning of properties that was discussed earlier.

Evolutivity and incrementality

Mostly, medinas have not been created or erected at once. They underwent many stages of growth and development that are often reflected in their morphology. That is the same process that also takes place at the house level. Without considering this process, their geometry and spatial organisation, if analysed as an intact bloc, would be mysterious and puzzling (Figure 5).

Streets patterns and forms of blocs that were thoroughly analysed by Petroccioli [21] were also subjected to continuous shaping. A grabbing process of left-over spaces that were considered by residents as redundant spaces took place continuously, away from the eyes of the rulers, but under the control or the *Hisbah*, and the social surveillance. It resulted from the outwards expansion of houses and stopped at an optimum space left for traffic fluidity. Consequently, opposite to their seeming permanence over ages, streets networks, and public spaces underwent many stages of remodelling before they reach their final shapes that we see in plans.

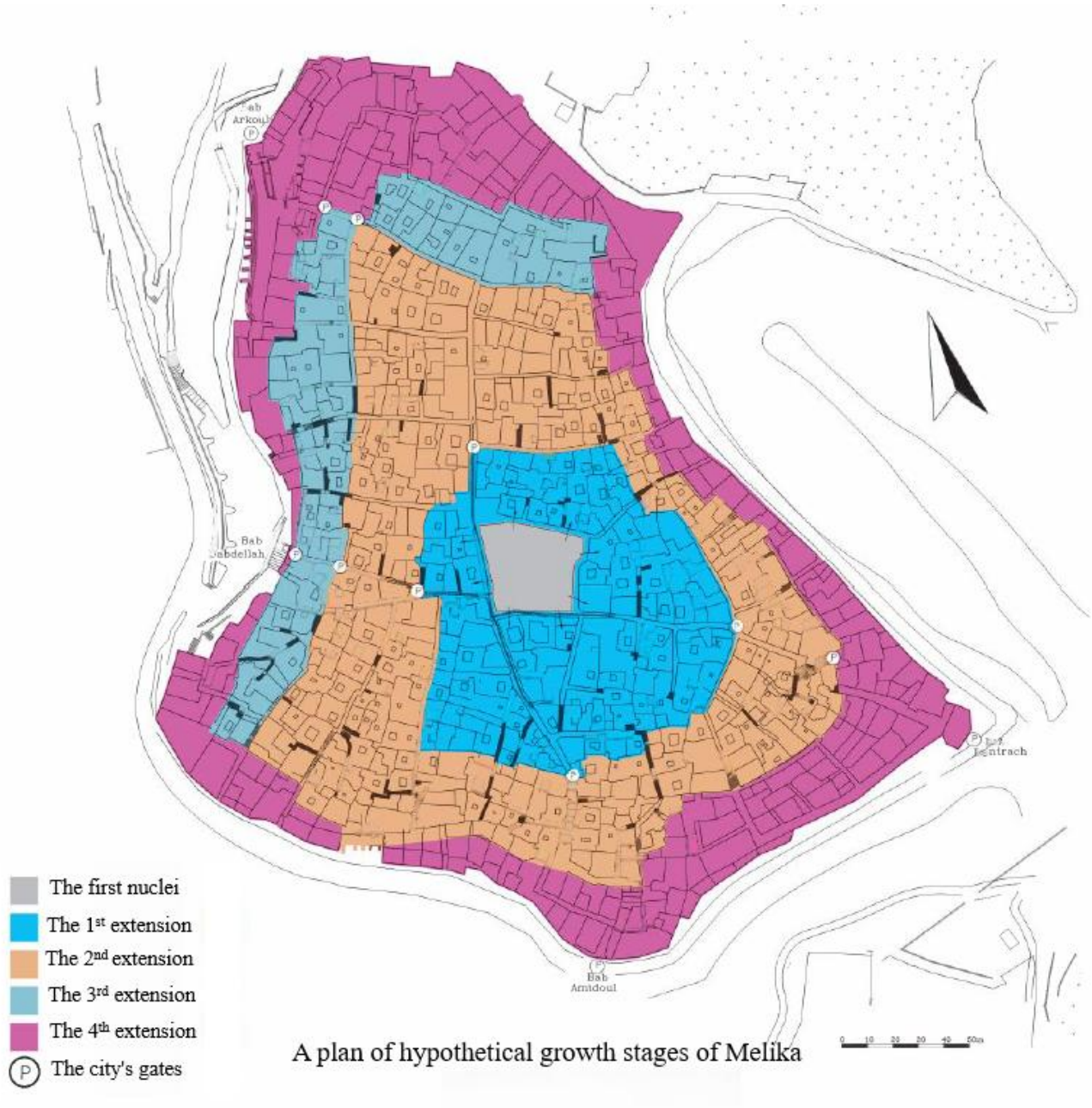

Figure 5. Hypothetical growth stages of Melika (source: OPVM).

Dead-ends that appear at the bottom of the streets are also not preplanned. Rather, they emerged as a natural outcome of the incremental growth process. In many instances, houses facing each others along a street gradually advanced towards one another following a consensus between neighbours to close off an existing alley or a footpath. In other cases, opposite houses eventually met at the upper level through elevated structures – known as *janāḥ, sabāṭ, or rawshan* –, creating an overhead bridge while leaving a channel-like passage beneath. According to Raymond [22], the number of dead-end streets in a town often reflects its age. The older the town is, the more it had dead-ends that resulted from the gradual consumption of outdoor spaces. A comparison between Manama's old town – founded around 1700 – and a much older city such as Cairo, whose urban fabric dates back to the 900s AD, provides a useful illustration of this point.

Decoding the intangible cultural heritage

Previous works addressing the mechanisms and principles that correspond to such intangible heritage include those of Christopher [23-24] who focussed on building patterns and their role in the formation of human settlements, and Hakim [25-26] who worked on codes and generative process in Mediterranean cities. Uncovering such rules does not only reflect a better understanding of ICH but also provides the principles that would help preserve and promote heritage.

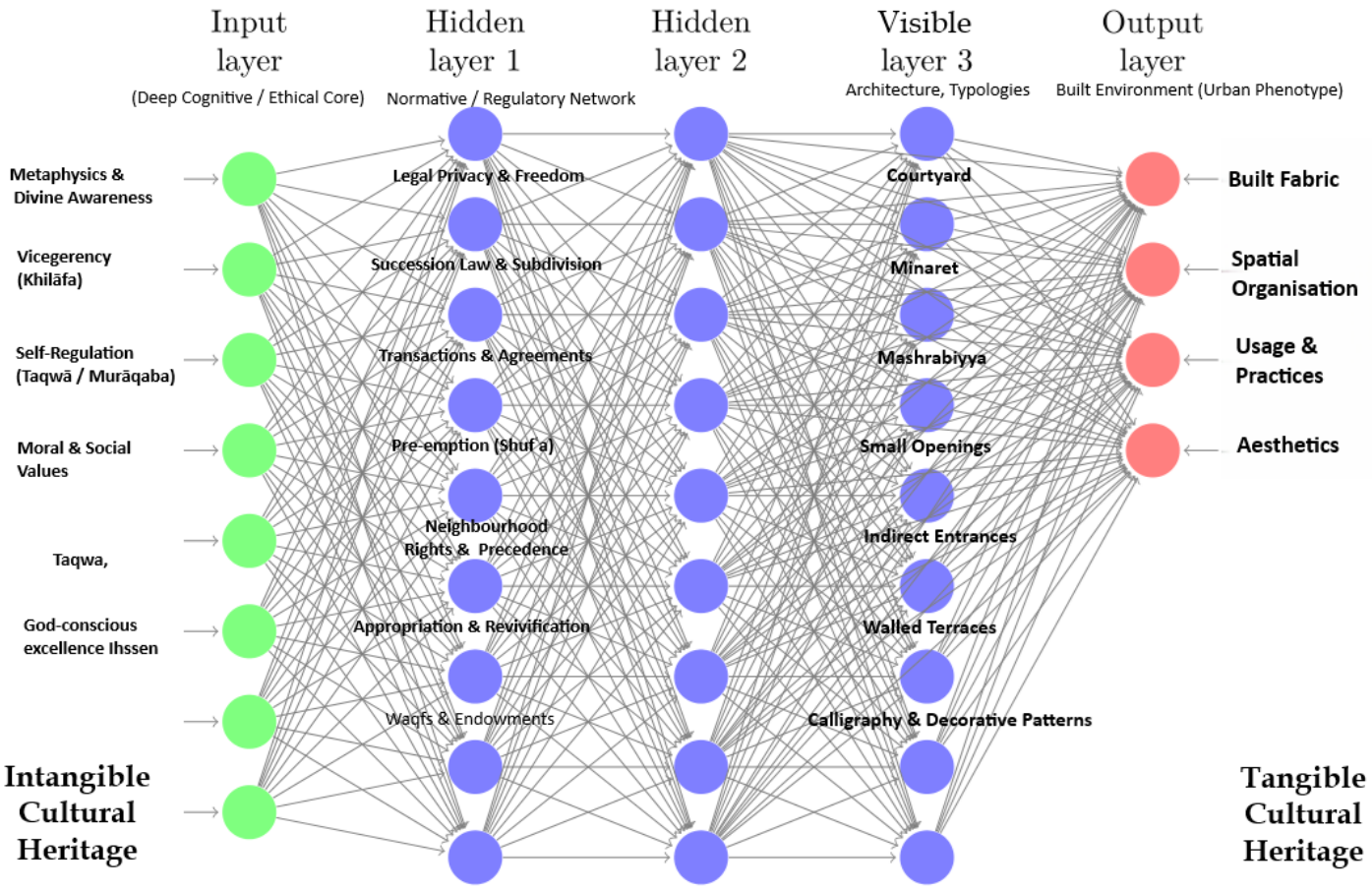

Figure 6. Principles governing the people's actions and generating urban fabric, space, usage and architecture in the old towns.

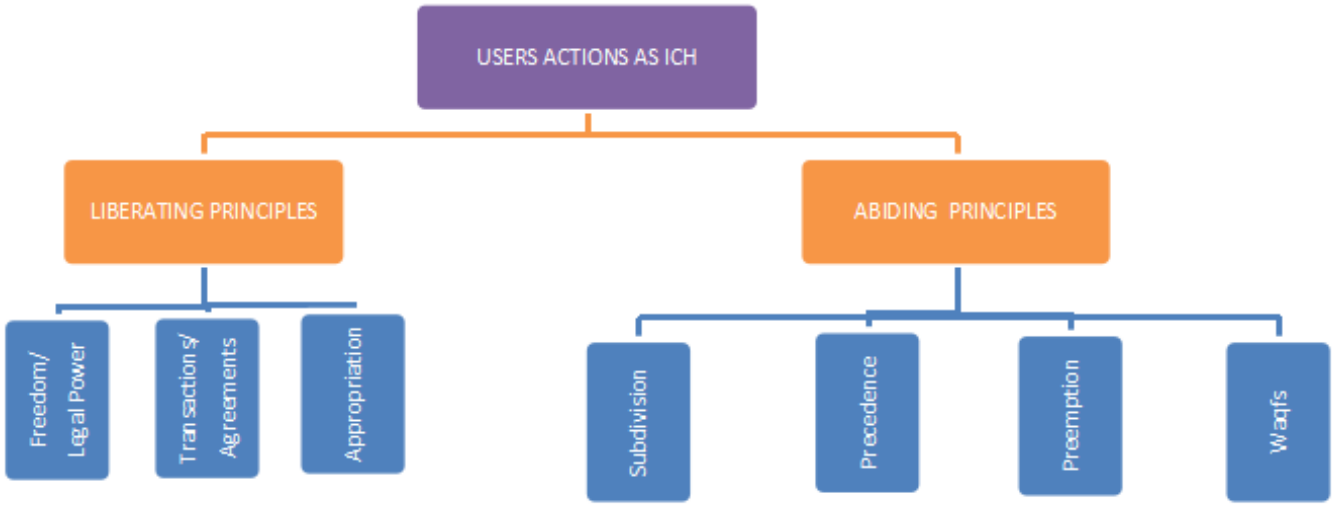

Figure 7. Principles governing the people's actions in the old towns.

The social rules and cultural norms that mostly stand on a thorough set of metaphysical beliefs, moral values and self-accountability (God, Angles, Vicegerency, Day of Judgment, Ethics, *taqwa*, *Ihssan*, etc), turned into endogenous principles that ruled the people's actions, within which are building and space uses. Exogenous rules that are dictated by either the rulers or the community, although they existed, were occasional or rare. These building actions that relied on the local know-how technology and these unwritten rules, were thus the hidden generator of the built environment that we now consider as a TCH (Figure 6).

One of the challenges that faces immateriality is however its discretion. IAS 38 (paragraph 8) for instance defines an intangible asset as "an identifiable non-monetary asset without physical substance" [27]. Sections below will highlight some, and not all, of these rules and principles on which the immaterial heritage in the medinas relied.

Early works on this set of discrete rules and principles would go back to Brunschvig [28]. This pioneering work itself draws on an old, unpublished manuscript attributed to Ibn al-Imām (died between 991 and 997 AD) titled (the book of jurisdiction and the elimination of harm regarding houses, streets, walls, buildings, public squares, trees, etc.) [29, pp. 39-48]. Other recent works that broadened this emerging field are those of [30-38]. For practical purposes that help incorporate these rules and principles in the new preservation regulations, they are classified into two major categories that are related to the building actions; the liberating and motivating principles on the one hand, and the abiding and constraining ones, on the other (Figure 7).

The liberating and motivating principles

Building, demolishing, renovating and transforming one's property in old Muslim cities were considered together an integral part of one's freedom and an inviolable right, and a prolongation of the ownership right. However, this right is legally inactive unless it is sanctioned with the Legal Power, called *wilaya* [39]. In theory, an individual may hold a property right yet be prevented from exercising it due to mental incapacity or legal disability. Such cases, however, were rare within the community, as most people enjoyed full legal capacity and thus the freedom to build. Consequently, houses plans and architectural varied greatly from a house to another as in (Figure 8).

In the light of this principle, the town turns into a field for continuous residents' actions of building, demolitions and transformations that were undertaken without the request for authorities' permits. Daily needs continuously nurtured the urban dynamics and shape urban morphology and architecture.

Figure 8. Forms of houses (a-d) resulting from the building freedom derived from *Private Legal Power* (*Wilaya*). On comparing the four houses we find that they differ in their spatial configurations, their main entrances, their courtyards, the internal distribution of rooms and architectural details (source: OPVM).

As an extension of individual freedom, residents also possess the right to establish transactions, agreements, and exchanges of services with their neighbours without the need to authorization. Each of these transactions that also applied in other aspects of daily life, such as marriage and divorce, sales, rentals, and loans- had a tangible impact on the built environment. Hiring or granting a right-of-way to another person, by allowing passage through one's property could occur in counterpart of a right of support on a neighbour's wall. At the micro-scale, these arrangements may involve acquiring portions of another's property, such as a wall, a passage, a well, or even a room, in return for services or financial compensation. Such transactions are classified by jurists into conventional and unconventional categories, are often preceded by lengthy negotiations, driven either by moral considerations such as keeping good neighbourly relations, or by the need to resolve an existing dispute.

However, agreements and easements rights that were mostly unwritten, sometimes became a source of disagreements as a result of a building collapse, or after the decease of the parents who established them at an immemorial time. In such cases, a new series of agreements were made in order to overcome the conflict and regain reciprocal benefits.

The Appropriation of dead land and residual spaces constituted another guiding principle that motivated individuals and regulated competitive dynamics among residents. Reviving abandoned or unowned land (*mawāt*) and incorporating leftover spaces were the two central expressions of this principle. In Islamic jurisprudence, the revival of a dead land was not merely permitted but actively encouraged, as it transformed neglected or unclaimed plots into usable and productive assets and added value to the built environment [40]. It was also a legal way that led to appropriation and ownership of land and assets, and operated through building, development, redevelopment, and cultivation acts.

Most Muslim jurists, in the early times of Islam, agree that this act may be undertaken without the authorisation and consent of the ruler. However, scholars state some prerequisites that limit the scope of such initiatives and incentives. For instance, a revival act concerns mostly remote lands such as deserts and vestiges of ancient civilisations, but not lands surrounding towns and human settlements.

At the domestic scale, leftover spaces that emerged due to land neglect, abandonment, the disappearance of owners, or the extinction of heirs were subject to appropriation. Overhead spaces above streets – positioned beyond the height of pedestrians, animals, and mounted riders – also offered opportunities for revival and appropriation. The jurist Al-Qarafi (1228-1285 AD) [40], in his 112th rule, considers that the status of the "air" above the ground surface has legally, the same status as the ground itself. Residual spaces and leftover voids in the town may thus be regarded as dead land subject to revivification. The appropriation of overhead spaces above streets, as an application of the Revivification principle, became widespread in many old Muslim cities. The resulting tunnel-like streets stand as visible manifestations of these social practices.

The concept of *fina'* that referred to the narrow strip of space immediately in front of a property, and forming a transitional zone between the private dwelling and the public street, may be considered as a partial appropriation. Functioning within these customary practices and Islamic legal principles, the *fina'* played a crucial role in mediating between individual needs and collective rights, thus contributing to the flexible and adaptive character of the historic urban fabric.

The abiding and constraining principles

The sphere of freedom in building has limits that generally concern the others' realm, whether public, collective or individuals' ones. One of the obligations that emanates from Islamic law is the compulsory subdivision. Properties are often subjected to partitioning according to a set of rules that emanate from the Islamic law, *sharia*. The inheritance law is a system that describes with scrutiny the nature and categories of heirs, shares, and rules of subdivision. In basic cases, heirs who are considered are those alive at the time of the proprietor's death. They are namely;

the father, the mother, and the wife(ves) or the husband, sons, and daughters. Shares that are described as fractions and are textually stated in the Quran are: 1/2, 1/3, 1/4, 1/6, 1/8, 2/3, and 1/3, that have together, 24 as a Greatest Common Dominator. Subdivision of assets depends on the combination mode of the prescribed heirs and the household structure. A second category of heirs called residuary, may have shares depending on the remaining parts from the first subdivision [41].

The basic fractions that are stated above may also develop into highly complex fractions according to the number of ascendant and descendant heirs. Shares often turns into complex numbers according to the number of heirs and generations. The subdivision process may in the latter case, turn into iterative operations that include a sequence of subdivisions. For instance, if heirs initially have inherited a 1/3 of a house, and proceed to a subdivision, this fraction would be subjected to a further slicing that gives the shares of each heir, regardless of their number, provided that resulting shares are autonomous and usable (Figure 9).

Subdivision action also depends on the nature of the property. Baths, *Hammam*, wells, mills and stairs, are considered as un-subdivided and are thus, either kept in co-property and/or in common use or sold out in favour of heirs. Unless the geometry of the urban fabrics in old cities is deciphered in the light of the subdivision process, its high complexity that results from the successive subdivision actions, cannot be understood. A given plan of an urban fabric that we could have on a housing cluster is consequently just a momentary drawing that is taken at a certain time that is then left behind.

Among the many neighbours' rights that constrain building freedom is the right of precedence**.** This principle grants priority to older constructions and pre-existing conditions, recognizing that long-established building elements acquire tacit rights over time. In the event of a dispute, the right of precedence is determined based on neighbours' testimony, written records, or technical investigations. Components such as doors, windows, gutters, and cantilevers that existed from an earlier period must be preserved as they are, regardless of their impact on subsequent constructions or the surrounding environment.

For researchers and professionals, the precedence principle is one of the tools that permits to understand the incremental aspect of buildings and the sequence of components' locations along the street such as windows and doors. In streets, the urban façades on both sides are more than elevations that comprises openings and protect houses privacy. They are rather, a chain of mutual precedence rights and a chronologic order of elements.

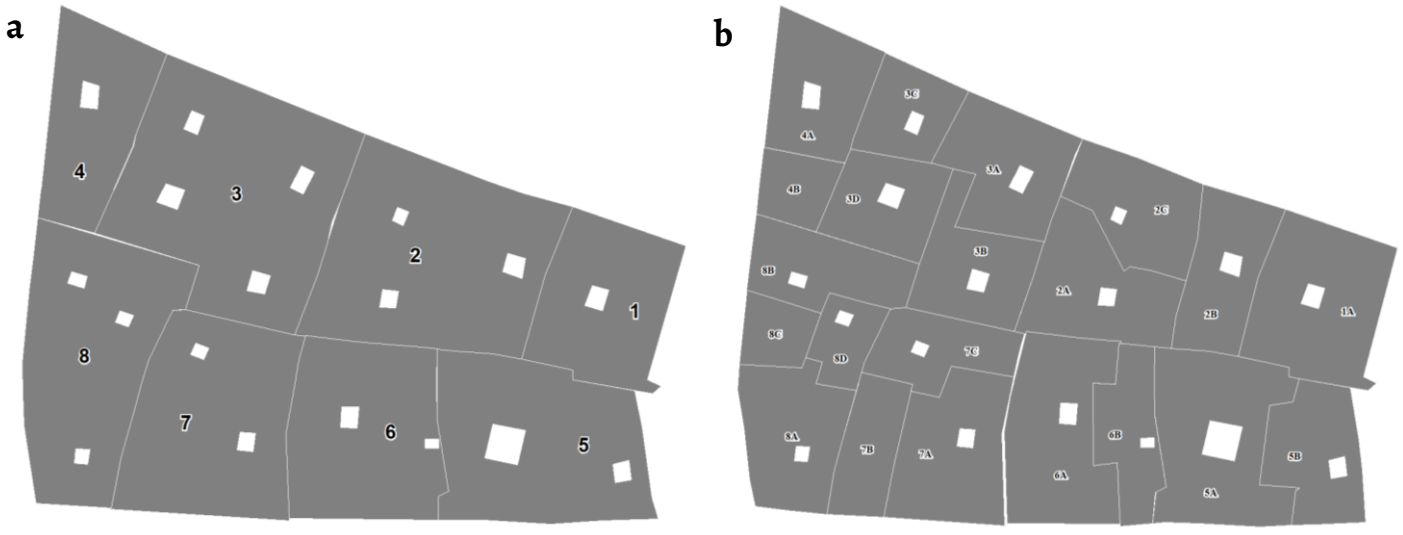

Figure 9. Smaller and irregular parcels and buildings result from the continuous subdivisions of assets as a result of the Muslim Succession Law. A case of subdivision based on a block in Melika: *a)* is a hypothetical earlier state; *b)* is the present state.

Freedom of building action is further constrained by Pre-emption rights. This restriction functions as a protective measure, preventing potential harm that could result from the misuse of individual rights within an association or partnership. In cases of co-ownership, shareholders are obliged to respect their partners' and associates' rights by offering them the opportunity to acquire shares before they are sold to an outsider. This right also allows co-owners to reclaim a share sold to a third party, provided that they compensate the purchaser fairly.

Pre-emption has the important merit of maintaining social cohesion and preventing mutual harm. Over time, it has evolved into a custom and a community practice that regulates individual building actions. Co-owners, neighbours, and other stakeholders were usually informed before any transaction with outsiders, ensuring that local interests are protected. In geometry, pre-emption can be seen as a unifying mechanism that operates in counteracting with subdivision.

Waqf, known in North Africa as *habus*, is another constraining principle to the freedom of building that acted in favour of the public and social groups. It consisted of persuading an owner to renounce his property for charitable purposes. Overall, it encouraged individuals to prioritize community interests and the collective welfare [42]. At the town level, the donated properties serve the large public or a specific social group in accordance to the owners' prescriptions and convictions. In most cases, waqf income covered public services and social amenities, such as healthcare, religious institutions, educational facilities, and housing for the poor. It was also used to support infrastructure and utilities, such as street paving, bridge construction, and water supply.

As tangible heritage, waqf (or *habus*) properties exerted a direct influence on urban geometry and the cityscape. As protected assets, both in form and function, they were safeguarded against alteration, demolition or appropriation.

At last, Public Interest is the other bounding principle that confined individuals' actions. In case of an evident necessity, the public realm was always given priority over private actions. The early stated liberating principles, i.e. the freedom of building actions, the appropriation, the transactions, and agreements may all be halted or cancelled if imminent damage or prejudice to the public or others realm arise.

These principles did not operate in isolation neither with the same frequency. They interacted continuously with each other, forming an integrated system that governed both private and communal actions. For example, the right of Pre-emption, which often worked to reunify fragmented properties, sometimes functioned in tension with inheritance laws that produced subdivision. Similarly, Appropriation which enabled the recovery of unused spaces, could be constrained by other property rights and by the Waqf measures. Consequently, the geometric configurations observed in the urban fabric frequently emerged from the combined influence of two or more of these interacting principles.

Operating as a self-regulating system, this body of daily customs and unwritten rules was transmitted across generations and, in most cases, applied independently of rulers and public authorities. Nevertheless, old Muslim cities maintained a light administrative apparatus that ensured the implementation of Islamic law in the public realm. Urban inspection, for example, was entrusted to the *muḥtasib*, an official responsible for regulating markets, maintaining public order, and ensuring safety along main roads and in public spaces. In judicial matters, the judge - *qāḍī* - who evolved into a formalized institution during the Ottoman period – represented the legal authority empowered to adjudicate disputes concerning property boundaries, water rights, inheritance, and neighbourhood relations. Other agents, such as managers of waqf properties (*wakīl*), together with representatives of guilds (*Amīn*), ethnic groups, and neighbourhood communities, also formed essential components of this administrative framework.

Incorporating Islamic principles in the intangible heritage

From its inception, the field of heritage preservation was dominated by a materialist paradigm, with a primary emphasis on the protection of tangible heritage. Early efforts were largely object-centred, focusing on isolated monuments or artefacts. This object-oriented and folklorist perspective gradually expanded to encompass broader contextual frameworks, including urban and natural settings. Only in recent decades has the concept of heritage evolved to formally integrate intangible dimensions.

Due to the vagueness of immateriality, intangible heritage parameters and criteria of inscription have always been in arrears to those TCH and continuously under refinement. The successive versions; from the Venice Chart (1964) to ICOMOS, adopted in 1978, to the UNESCO Convention for the Safeguarding of the Intangible Cultural Heritage adopted in 1999, are milestones of such a progress.

On the ground, despite the scope of ICH that encompasses "the practices, representations, knowledge, skills – as well as the instruments, objects, artifacts and cultural spaces associated therewith – that communities, groups and, in some cases, individuals recognize as part of their cultural heritage", it is not yet sufficiently incorporated in the preservation policies when this regards old Muslim cities and urban fabrics [43].

Statistically, the number of registered items in both categories reflects the significant lag between TCH and ICH lists. According to the UNESCO site, while the total number of the TCH is 1121 assets corresponding to 127 countries [44], there are only 549 elements in ICH, i.e. nearly half. And while many urban sites, historic buildings, monuments, and vestiges have been classified, the Intangible Heritage in the same domain of architecture, urbanism, and cities, building technology, and local Know-How is disregarded.

In Algeria, the national ICH inventory remains modest, with no reference to the deeply rooted cultural practices of desert towns (ksour), the Casbah, or the traditional processes of Medina-making. Until 2018, the only element recognized on UNESCO's ICH list was the *Knowledge and skills of the water measurers of Touat and Tidikelt*, associated with the *foggara* irrigation system. In Morocco, among the nine registered ICH elements, the Cultural Space of *Jemaa el-Fna* Square -inscribed in 2008- remains the only item on the World Intangible Heritage List that directly relates to urban preservation [45].

Identifiability and Recognition in the domain of intangible heritage in architecture and urbanism, within which are the Islamic principles, is however still problematic. The local know-how and the social skills and practices that regard building and construction, are not yet elaborated, let alone recognised by the policy-makers. Any preservation policy in medinas should thus renounce to the dissociation of TCH and ICH, and highlight the judicious symbiosis between the tangible and the intangible aspects. In other words, it should preserve the process as well as the product.

Conclusion

Policies of preservation in old Muslim cities are often overwhelmed by the tangible aspects that regards architecture, monuments, important buildings, urban fabrics and the built environment. This protective attitude often leads to "museification" of old cities and disregards the intangible aspects that stand behind this tangible character. Unwritten and endogenous principles that stood behind the formation and dynamics of these cities, constitute together, the immaterial heritage of the medinas.

Preservation policies should therefore be grounded in the correlation between the tangible aspects and the intangible dimensions of heritage. Principles that mostly derived from the Islamic doctrine and turned into customs, must be given a place within the legislative framework that accompanies preservation plans.

Professionals should highlight such principles in a systematic way and operationalize them in preservation policies. These principles -long applied but now weakened by top-down and prescriptive approaches- should be revitalized and promoted, as a way to enable communities to participate into preservation.

A reconciliation between the rigid, museum-oriented and conventional preservation, and the dynamic, community-based processes entails embodying these principles and bridges the divide between the TCH and ICH domains. As a transitory stage, this may be achieved through the spread of public awareness, the revival of the building culture, and the assistance of local authorities and professionals as enablers.

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Cognitive method of local identity in Chinese historic urban space based on layered morphology: taking Nanjing Mendong area as an example

Método cognitivo de identidade local no espaço urbano histórico chinês baseado na morfologia em camadas: o exemplo da área de Mendong, em Nanjing

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Abstract

Since the Venice Charter, heritage conservation has evolved to encompass historic urban areas, a process refined by subsequent charters, which frame historic cities as complex systems of cultural stratification requiring multidimensional diagnosis. In the traditional Chinese context, historic urban space follows a distinct logic: architecture is marked by material impermanence, while historical continuity are sustained through cultural memory. The interaction between this impermanence and modern urbanization has produced widespread physical absence, creating fundamental challenges for interpreting historic urban space. This paper proposes a framework that understands historic urban space as the dynamic unity of material transformation and narrative continuity, recognizing architecture, ruins, and physical absence as equally constitutive. Using the Mendong area in Nanjing as a case study, stratigraphic analysis and morphological reconstruction are applied to examine urban form in both present and absent states, providing a new theoretical and methodological tools for interpreting historical knowledge within Chinese urban space.

KEYWORDS
Historic urban space
Historical stratification
Mendong
Nanjing
Urban morphology

Resumo

Desde a Carta de Veneza que a conservação do património abrange áreas urbanas históricas, como sistemas complexos de estratificação cultural que requerem um diagnóstico multidimensional. No contexto tradicional chinês, o espaço urbano histórico segue uma lógica distinta: a arquitetura é marcada pela impermanência material, enquanto a continuidade histórica é sustentada pela memória cultural. A interação entre essa impermanência e a urbanização moderna produziu uma ausência física generalizada, criando desafios fundamentais para a interpretação do espaço urbano histórico. Este artigo propõe um enquadramento que entende o espaço urbano histórico como a unidade dinâmica da transformação material e da continuidade narrativa, reconhecendo a arquitetura, as ruínas e a ausência física como igualmente constitutivas. Usando a área de Mendong em Nanjing como estudo de caso, a análise estratigráfica e a reconstrução morfológica são aplicadas para examinar a forma urbana nos estados presente e ausente, fornecendo novas ferramentas teóricas e metodológicas para interpretar o conhecimento histórico dentro do espaço urbano chinês.

PALAVRAS-CHAVE
Espaço urbano histórico
Estratificação histórica
Mendong
Nanjing
Morfologia urbana

Introduction

The establishment of ICOMOS initially was for the preservation and conservation of monuments and sites. In addition to the *International Charter for the Conservation and Restoration of Monuments and Sites* [1], the Second international congress of architects and technicians of historical monuments formulated a request for the protection and revival of historical centers, which constituted the starting point of the protection and restructuring of historical towns from ICOMOS in 1964. Considering the rapid changes of the globalized reality, Valletta Principles was proposed by CIVVIH in 2011, based on the methods and considerations established in the *Washington Charter* and *Nairobi Recommendation*. Among the issues mentioned in the principle, urban areas are regarded as a complex phenomenon that has arisen as a result of the historical stratification of cultural values, and the historic urban areas should be diagnosed with consideration to all physical and cultural, tangible and intangible dimensions, and it is important to utilize diagnostic methods that can identify the unique cultural identity of historic towns and urban areas [2]. Thus, the cognitive issue matters when we face the historic urban space, and for China, the issue is complex.

Issues inherent to the Chinese historic urban spaces itself reveal the unstability. In the historical context, this unstability is rooted in a traditional architectural view that does not prioritize the long-term preservation of original material fabric. Chinese traditional architecture has historically accepted frequent reconstruction, repair, and material replacement as intrinsic components of spatial continuity. The persistence of cultural meaning and urban memory was thus archived not through the endurance of physical objects, but through the sustained transmission of narrative. In the modern context, this unstability is further intensified by the rapid urbanization that has accompanied China's growth since the late twentieth century. Large-scale redevelopement has often erased traditional urban fabrics with new construction, frequently without sufficient reflection on historical continuity. Paradoxically, under the influence of modern construction systems, the material environments produced in recent decades increasingly emphasize structural permanence, durability, and technical stability. Consequently, China's historic cities today exhibit a striking contradiction: while their traditional material spaces were historically fluid and renewable, contemporary urban forms aspire to physical permanence, even as they simultaneously accelerate the erasure of inherited urban textures. Together, these historical and modern dynamics generate a complex situation in China's historic urban spaces, it is difficult to comprehend historic cities solely through surviving physical environments. This condition demands an expanded interpretive framework that integrates material remains with documentary records and cultural narrative.

Historic city as a kind of cultural landscape has archaeological and historical stratigraphy, proposed by the discussion related to the historic urban landscape (HUL) [3]. History takes place in both time and space. The spatialization of temporal dimension is essential to give the sequence of superposition meaning. Urban archaeology as an emerging theme, its role in the historic urban environment could be regarded as important to "imagine a different and richer role of ancient substrata not limited to heritage sites but concerning the urban in the present and in the future". Archaeology could be introduced as an analytic method related to architects because the temporal dimension is "spatialization" [4]. Through the stratigraphic analysis, the historical layering of urban space could be read and cognized properly. Stratigraphic analysis, an important archaeological method, can be employed to unveil the historical facts lying there and what happened over time. It tells the temporal-spatial relationship of the historic cities, and for the specific areas, it tells the historical knowledge and their functions over time [5]. For a historic city, the study of historical layering could demonstrate the different phases in the evolution of the historic urban space and constitute a thorough excavation and systematic evaluation of the extinction value of a historic city.

Archaeology offers knowledge but the architect has the task to relate this knowledge to the content which he has to "put to form" [4]. Considering the impermanence of the physical objects in the Chinese traditional architectural context and also the blind demolishing resulting from rapid urbanism, this paper will take the Nanjing Mendong area as an example and try to conduct the morphological analysis integrated with the literary sources and historical documentation to clarify and complete the morphological evolution of historic urban space, aiming to establish the comprehensive cognition and identity of the Mendong area.

Situation of the Chinese historical urban area and dilemma

Impermanence issue

After the approaches to urban conservation in the Washington and Nairobi Charters, the Valletta Principles (2011) have redefined objectives, attitudes, and tools for the evolution of definitions and methodologies of preservation in historic towns and urban areas. A higher awareness of intangible values contributing to the character and identity of historic areas as well as the multifaceted challenges of modification were introduced in the coherence of all tangible and intangible heritage values. It suggested that diagnostic methods must be used to identify the particular cultural identity of the historic urban areas considering the urban areas are complex phenomena that have resulted from the historical stratification of cultural values. Thus, the cognitive issue matters when we face the historic urban space, and for China, the issue is complex. China has a different situation: the limitation of architectural physical objects. This point could be illustrated by the fragility of materials in ancient China.

It is particularly important to note that this paper does not adopt a binary perspective that contracts a Western emphasis on tangible remains with a Chinese traditional focus on intangible dimension. Such a simplification is clearly inadequate, as China also possesses numerous "permanent" constructions in stone, including bridges and city walls, etc. Rather, the purpose of this study is to develop a deeper understanding of the characteristics of architectural space in the traditional Chinese context, where building practices were predominately based on earth and wood. At the level of historical urban transformation, this tradition has produced a pattern in which the material form of urban space exhibits discontinuity, while the cultural and symbolic dimensions of space demonstrate relative continuity.

Sicheng Liang (梁思成, 1901-1972), who was a very famous Chinese architect and architectural historian, illustrated traditional Chinese architecture features from the perspective of technique and ideology, and one point he mentioned in ideology is the "concept of impermanent of the original object (*不以原物之常存*)" [6]. He argued that the ancient physical existing above the ground remained few although the duration of the Chinese architectural system goes beyond four thousand years, and he explained it as the limited durability of wooden construction but, for a deeper reason, the concept of impermanent the original object. Furthermore, Liang stated that ancient China had no deliberate intention, like Egypt, to chase a permanent construction project, but rather preferred the rule of metabolism in architecture: either regarding buildings as substitutable or having no ambition of keeping the original object intact. This traditionary idea results in two facts: firstly, content with the utilization of wooden material for thousands of years instead of going deeply into the stone; secondly, more newly reconstructed than renovation of the original object. Besides, he mentioned the tomb, which was mainly constructed underground with stone and brick, as an exceptive example in ancient Chinese architecture, and there are different considerations behind this construction difference: the tomb is built for permanent preservation.

As the idea from Liang showed above, the ancient Chinese attitude had a preference for reconstruction and the performance derived from the specific ideology. The author concluded two points for this issue as follows:

1. Attitudes case towards time

The understanding of time has a crucial influence on architectural issues. From the perspective of philosophical context, the classical linear structure is more familiar in the West, while the cyclical structure of time is accepted by non-Western perspectives [7]. Besides, Pierre Ryckmans pointed out the Chinese attitude towards time: "Nothing immobile can escape the hungry teeth of the ages" [8]. Therefore, the Chinese constructors gave up on the onrush of time and deflected it instead. Then, he proposed the phenomenon that Chinese architecture is made of perishable and fragile materials, and it decays rapidly and requires frequent rebuilding.

2. More emphasis on the existence of the mind rather than that of material

The characteristic of Chinese traditional cultural context: Spiritual presence and physical absence of the past. Emphasizing intangibility rather than tangibility could be regarded as one of the characteristics of the Chinese traditional cultural context, and it was concluded as "Spiritual presence and physical absence of the past" by Pierre Ryckmans, a well-known international expert in sinology. China has a different situation where it is loaded with considerate history and memories but deprived of ancient monuments. Although the monumental absence of it, the past which continues to influence Chinese life in many subtle but powerful ways might remain on the people instead of material objects. In Ryckman's opinion, the Chinese past is both spiritually active and physically invisible.

Building on this understanding, this paper further argues that a spatial conception exists within traditional Chinese architecture and historical urban environments – namely, a cultural logic that prioritizes narrative over materiality**.** This logic is manifested in two interrelated dimensions. On the one hand, the material form of historical space exhibits pronounced discontinuity**,** as architecture based primarily on earth-and-timber construction has undergone repeated cycles of destruction, reconstruction, and renewal over the history. On the other hand, its cultural meaning and collective identity remain highly continuous, sustained through historical texts, local gazetteers, and shared narratives that enable the persistence of spatial significance beyond physical transformation.

This cultural logic is exemplified most clearly in the historical evolution of Yueyang Tower. Since its initial construction during the Three Kingdoms period, the tower has been repeatedly destroyed and rebuilt as a result of warfare, flooding, fire, and political change. Its location, scale, and architectural form have varied considerably across different dynasties. Yet despite these continual material transformations, Yueyang Tower has remained a powerful cultural landmark within the Chinese collective memory. The site continues to attract large numbers of visitors, a phenomenon driven primarily not by the material presence of the existing structure, but by the immersive cultural experience produced through literary narratives and historical imagination – most profoundly shaped by the spiritual and symbolic literary work of Yueyang Lou Ji (*Inscription of Yueyang Tower*). For most visitors, emotional identification with the site is grounded more in this cultural imagery than in the material qualities of the extant architectural construction.

Moreover, reconstructions based on historical textual descriptions reveal that Yueyang Tower assumed dramatically different architectural forms in different periods (Figure 1). This morphological evolution indicates that the architectural identity of Yueyang Tower has never been fixed in any single material configuration; rather, it has remained fluid, renewable, and open to reinterpretation. In certain historical moments, the physical structure even disappeared entirely, with its spatial meaning sustained solely through textual records and cultural imagination.

The transformation of Yueyang Tower thus vividly illustrates a fundamental principle of traditional Chinese cultural space: continuity of narrative and symbolic meaning takes precedence over the permanence of material form.

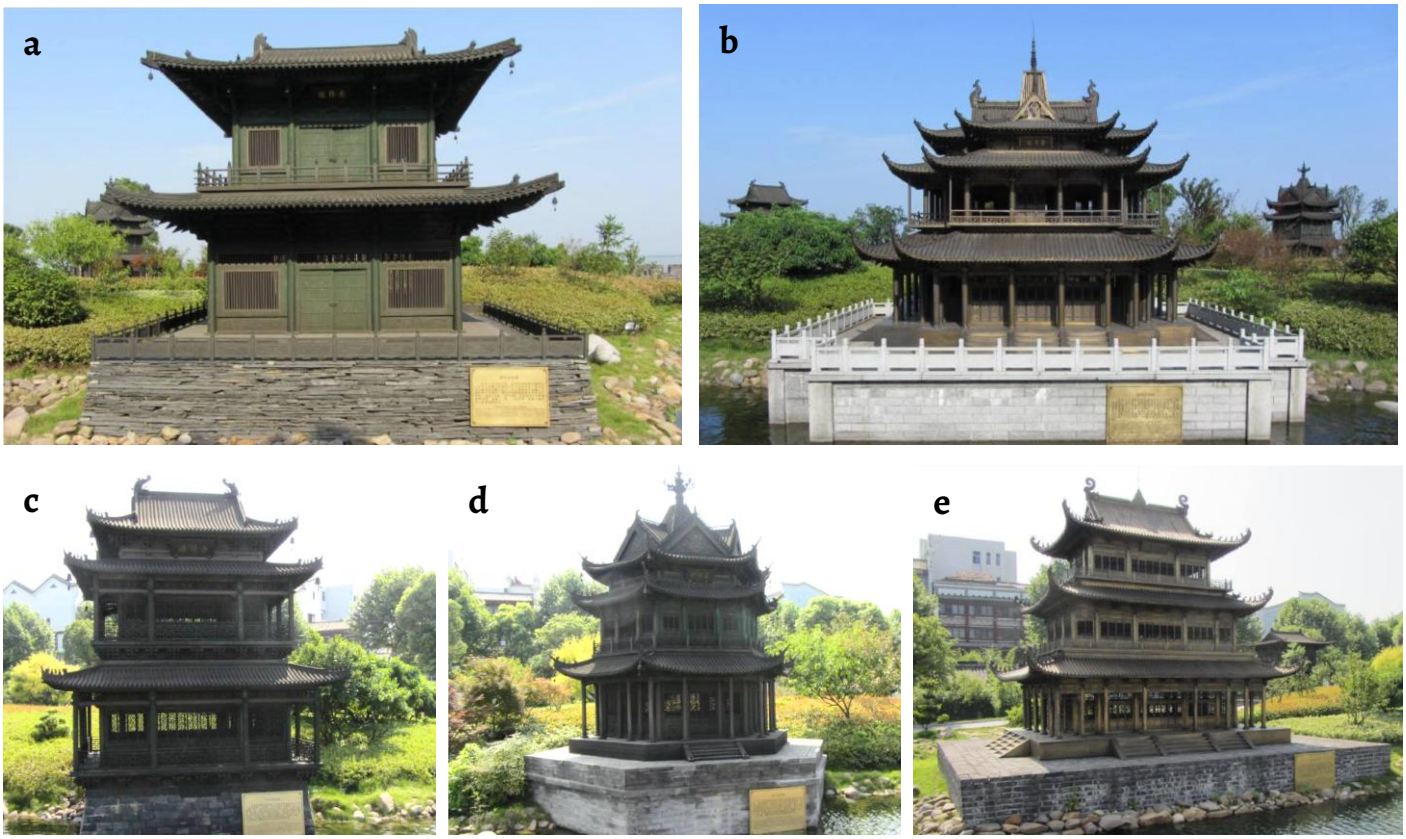

Figure 1. Five-dynasty representations of the Yueyang Tower (五朝楼观): *a)* Tang Dynasty (late 7th-9th century); *b)* Song Dynasty (10th -early 13th century); *c)* Yuan Dynasty (late 13th century – early 14th century); *d)* Ming Dynasty (late 14th century – early 17th century); *e)* Qing Dynasty (mid-17th century – early 20th century) [9].

More broadly, within the long-term evolution of Chinese historical cities, material space has been subject to frequent cycles of demolition, repair, and reconstruction as a result of warfare, natural disasters, dynastic transitions, and administrative reorganization. Yet urban spatial identity and historical continuity have not been fundamentally disrupted by these material ruptures. The underlying reason lies in the continuity of narrative, which is deeply embedded in documentary media such as historical texts, place-name systems, and local gazetteers, rather than being dependent solely on the material persistence of any particular architectural entity.

Similarly, Frederick W. Mote, another remarkable American sinologist, discussed the attitude of China towards the past with an example of the historical city, Soochow [12]. He quoted the observation from Hampden C. DuBos, who settled in Suzhou in 1872 as a missionary. Dubose notes: “There are no ancient ruins in the city. The local history tells us of many famous buildings which were the pride of the people in the centuries gone by, yet their walls were not built of hewn stones, as in Athens and Rome, to withstand the ravages of ages” [12].

In this respect, Mote proposed a similar view as Liang. he also explained that China doesn’t have these not because of the incapacity to build with bricks and stones, like in Athens and Rome, but different attitudes towards the ways of both making and achieving enduring monuments.

Mote viewed that the past could be scrutinized continuously as recorded in words, instead of stones. He stated that China kept a very large and long-enduring of mankind's documentation of the past, and it repeatedly scrutinized that past as recorded in written words, and caused it to function in the life of its present. One illustration of this could be explained in this way the local history demonstrated the physical parts of a city. Sections of those works called “historical outline” or “establishment and construction” described the history of the utilization of the site, and others titled “streets and lanes” “bridges and crossings” “residences and buildings” or “temples” or “historic remains” list all of the physical components of the city,

providing those items with their descriptions. Taking Nanjing for example, the earliest local gazetteer is *Jingding Jiankang Local Gazetteer* (《景定建康志》, *Jingding Jiankang Zhi*) which was published in the Southern Song Dynasty (1261) and records the natural environment, social culture and local public buildings, etc. Besides, *Nanking Past and Present Local Gazetteer* (《金陵古今图考》, *Jinling Gujin Tukao*) written by Qi Chen (陈沂) in the Ming Dynasty (CE 1516) is an initial local record which described the construction of Nanjing from the BCE 333 to the Ming Dynasty and the mapping of mountains around the city as well as the river system and bridges inside (Figure 2). Similarly, the *Local Gazetteer of the Captial City in the Year of Hongwu* (《洪武京城图志》, *Hongwu Jingcheng Tuzhi*) also recorded the physical parts of the city, with the mapping of mountains and river system, sacrifice places, bureaucratic buildings, temples and public buildings (Figure 3). Most of the historical construction and spaces that vanished with the subrogation and the erosion of time are recorded as hand drawings and narrative written words, so the local records and documentary sources are vital materials for the cognition issue of Chinese historical spaces. As Mote illustrated in his book the real part of the historical city in China is "a part of the mind, the only truly enduring embodiment of the eternal human are the literary ones" [12].

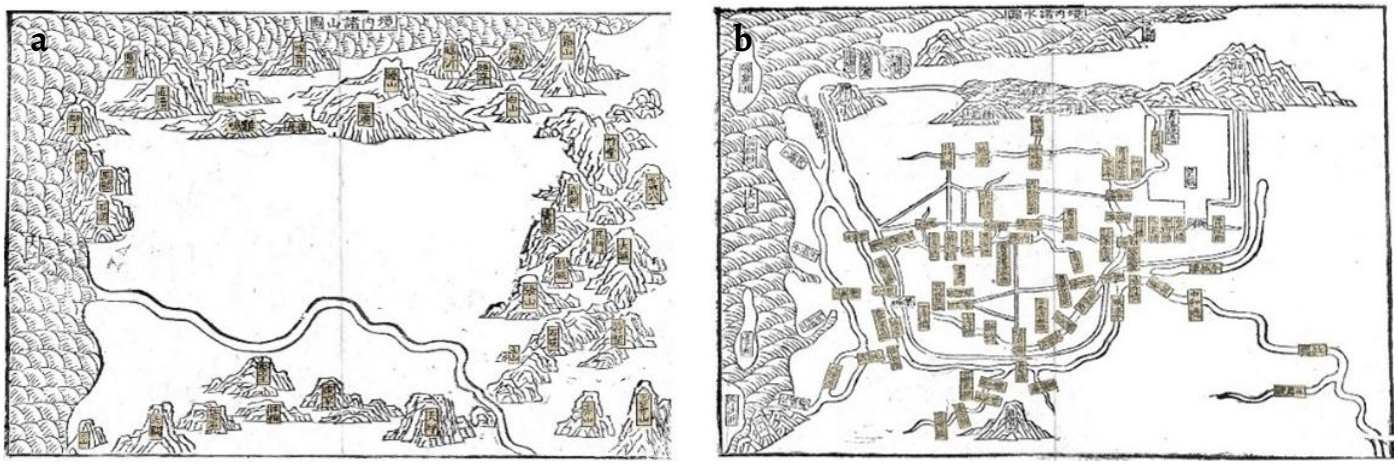

Figure 2. Mapping of Nanking in the Ming Dynasty: *a)* Mountains; *b)* River system [10].

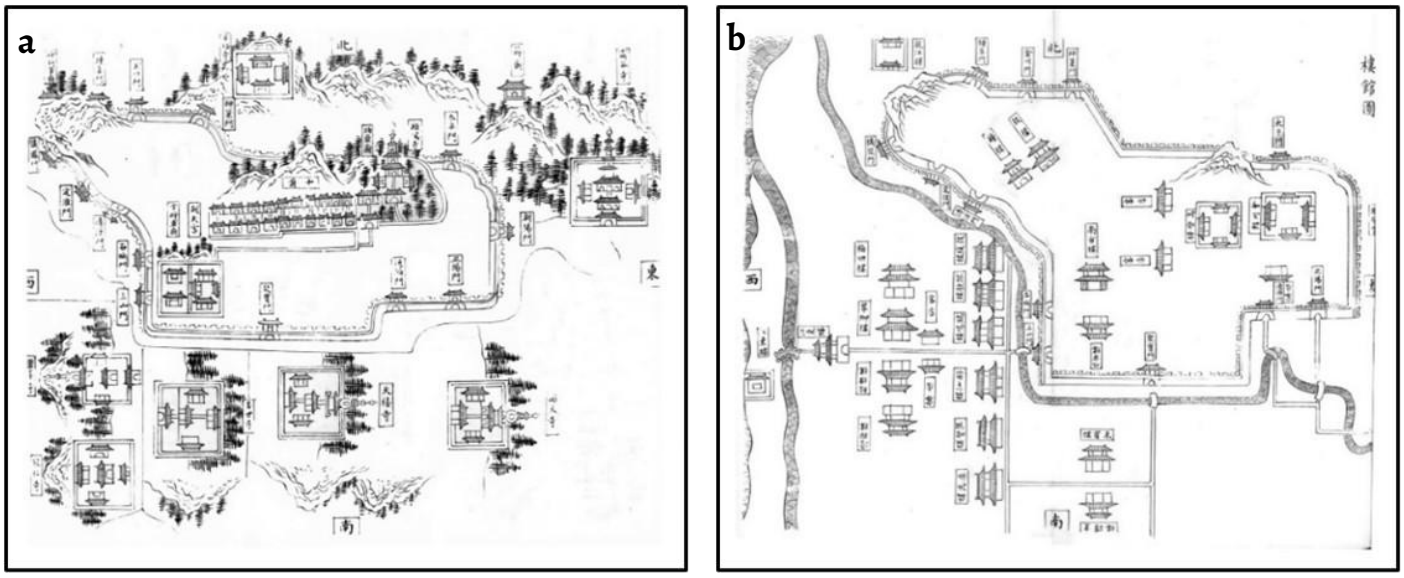

Figure 3. Mapping of Nanking in the Ming Dynasty: *a)* Temples; *b)* Public buildings [11].

Therefore, it is significantly necessary to understand and cognize the Chinese historic urban environment from both the tangible dimension and the intangible dimension, which is the historical information and narration from the documentary sources, and to regard historic urban space as a unity of material forms and humanistic spirit. "Since the written word and place-related narrative were more important than real sites, buildings and their physical relics, the past was and is still perceived as a space of the mind, rather than as a space of stones" [4]. Consequently, the study of historic space should include together with buildings, traces, absences and the intangible dimension.

Consequently, historical urban space in the traditional Chinese context exhibits a distinctive cultural logic: space exists first and foremost as a system of narratives rather than as a mere aggregation of material objects. This observation indicates that the study and interpretation of Chinese historical urban environments must move beyond a purely object-centered perspective, and instead regard architecture, ruins, and even physical absence as integral components of historical space. Only through such an approach can we grasp the essential unity between material transformation and cultural continuity that characterizes China's urban historical experience.

Lost of the local identity

"Same image of the cities" indicates the homogenization of the urban appearance and experience [13]. It has been criticized in urban and rural planning and architectural design, which is a serious problem in the development and transformation of urban settlements in the twenty first century in China. This problem exists not only in new urban construction but also in the renovation of historic cities. Since the 1980s, during the formulation and implementation of urban planning, lots of historic urban areas have undergone large-scale renewal and transformation, sometimes even becoming unrecognizable, without in-depth research into their historical evolution and traditional features [14]. Furthermore, either the historic urban areas that were involved in the tide of preservation and regeneration after urbanism, or the cultural and creative industry parks that were transformed from repurposed factories, warehouses, docks, and even traditional residential buildings, historic urban spaces are transformed into the places and landmarks for working, residence and tourism by the stakeholders because of their historic values which representing as distinctive façades, and specific historical background and historical narrative element.

Apart from the reasons related to political policies and economic development, cultural elements stand out as vital catalysts, serving as the core tools in the formation process of identity, sense of place and landmarks. However, only depending on the vague cultural planning program still presents lots of problems. Among them, creating the sense of place that is formed through community interaction becomes a challenge for spatial managers due to the protracted cycles and overly intricate components, besides, the cultural and creative industry that relied on capital and commercial practices provides physically distinctive appearances, but often remains on a visual level and not evokes the localized history and memories that were initially anticipated [15].

Historic urban space could be regarded as a continuously evolving socially spatial entity and bears the imprint of various historical periods through a distinct transformation which in turn shaped the uniqueness of contemporary urban built environments. It is obvious that the uniqueness lies in the special site selection and natural environmental factors. The topographical elements, climate, and others have exerted tangible and intangible influences on the urban appearance, urban tissue and social-cultural factors through the millennia-long history of formation and development [16]. As a result, it inevitably gives rise to the core of urban development, giving shape to distinctive urban features.

The absence of personalized culture in the historic urban space erases the diversity inherent in the progression of human civilization. Cities need to be read thoroughly, and the intricacy and distinctiveness of each city require comprehension and respect. Historic urban space

serves as the place where individuals develop a sense of belonging and identity with uniqueness which coincides with the emergence of urban cultural characteristics. “Same image of the cities” could be attributed to the under-cognition of local culture, and the reconstruction of local identity should rely on the in-depth cognition of local cultural sources and involve the humanity dimension [17], but here is the dilemma of the cognition from the architectural field and other disciplinaries.

Previous research on the cognition of historic urban space in China could be classified into two main aspects including the architectural and urban planning field and other disciplines, such as historical geography, literature and history, etc.

The investigation and analysis of historic urban space by architects and urban planners mainly focused on the historic urban form and structure. In this context, historical maps and other relevant materials are analyzed and synthesized to extract information on historical urban form and structure. The research result can be used to establish the historic urban landscape system and inform subsequent urban design and planning, aiming to maximize the value of historical resources and establish the value assessment framework. Beyond the practical projects, digital tools such as Geographic Information Systems (GIS) and 3D modelling are employed to reconstruct historical urban space, to provide reliable data and technological support for the preservation and study of historical urban environments in the future. Additionally, some research is directed toward enhancing and evaluating spatial quality for the renovation and rehabilitation of historic urban space. A minority of studies have approached historical urban spaces by leveraging the historical culture and narrative aspects, constructing urban narrative networks to cognize historic urban spaces. However, most of them have not genuinely recognized and excavated the local identity inherent in historical urban spaces from the perspective of historical and humanistic perspectives.

On the other hand, within the realm of humanities disciplines, extensive research has also been concerned about historic urban space. The field of historical geography examines the foundation of urban emergence and developmental processes. It explores the relationship between historical urban structures and geographical situations, thus contributing to the rational layout of cities. Within the field of historical studies, research concerning historic urban space primarily focuses on urban history. These studies frequently refer to the distinctive history and culture of cities, clarifying and illustrating the valuable information relating to the historic urban areas during the developmental process. At the same time, a spatial turn has risen in the study of urban history gradually with the evolvement of the Geological Information System. Nevertheless, it is important to note that the research within urban history predominantly relies upon textual narratives and does not extensively engage in the analysis of physical spatial forms or other related elements of physical space.

The study of historic urban space necessitates interdisciplinary integration. The preservation of urban humanistic characteristics, history and memory needs extensive research in both historical humanities and historical spatial studies. The field of historical humanities brings a specialized advantage in the textual description of historic urban space, which primarily employs textual narratives to expound upon the evolutionary process of urban space. However, the limitation remains in the expression of the physical spatial form [18]. In recent years, with the application of historical map research and Historical Geographic Information Systems (HGIS) technology, new vitality has been injected into the study of historic urban space in the field of urban history, and the trend of spatial shift has risen [19].

Conversely, architecture and urban planning emphasize the analysis and expression of the physical form of historic urban space. However, their attention to the historical-humanistic dimensions of these spaces is comparatively limited. The necessity of greater focus on the evolution of historic urban space from the social, economic, and cultural perspectives needs the involvement of the clarification of historical documents and the excavation of historical-humanistic factors behind the spatial evolution [18]. Such efforts could contribute to the understanding of historical value in the urban space and the recognition of local identity.

Puyu Tang plot as an example

Brief introduction of the Puyu Tang plot

The case of the Four Halls of Puyu in the Mendong area of Nanjing provides a compelling empirical demonstration of this argument. The development of charity in China experienced several structural transformations. Since the Tang Dynasty (seventh-tenth centuries), official involvement in charitable affairs gradually expanded, while during the Ming Dynasty (fourteenth-seventeenth centuries), the weakening of state authority encouraged the rise of privately organized charity, particularly led by local gentry. This shift resulted in the Jiangnan region – China's most prosperous economic zone – becoming the most concentrated and developed area for charitable institutions in ancient China. This prominence is clearly reflected in quantitative evidence: between 1655 and 1742, at least 98 Yuying Tang and 5 Puji Tang were established nationwide, of which 51 Yuying Tang (52 %) and 3 Puji Tang were located in the Jiangnan region [20]. By the Qing Dynasty (seventeenth-nineteenth centuries) [21], government involvement once again intensified, and on the foundation laid in the Ming period, China's officially-supported charitable system reached its highest level of institutionalization and maturity, with the Jiangnan region standing at its core. Within this framework, Nanjing (Jiangning Prefecture), as the provincial capital of Jiangnan, received substantially stronger governmental support for the establishment and management of charitable institutions than other cities in the region [20]. Its charitable system was therefore more comprehensive, stable, and systematically organized, exhibiting a pronounced official character. The Four Halls of Puyu, which constituted the central government-sponsored charitable complex in Qing Nanjing, were established in the Mendong area. Their importance was formally documented in the *Record of the reconstruction of the Four Halls of Puyu* (Chongxiu Puyu Sitang Zhi), authored by supervising officials, and their location was prominently marked on late Qing historical maps. Within this framework, Nanjing (Jiangning Prefecture**)**, as the provincial capital of Jiangnan, received substantially stronger governmental support for the establishment and management of charitable institutions than other cities in the region.

The Mendong area, which is valued for its traditional residential buildings dating back to the late Qing dynasty (approx. 1840-1912), gives Nanjing distinctive urban morphology and cultural characteristics. As the earliest official charity organization and educational institution in Nanjing, Puyu Tang (普育堂) and the other three institutions were established in the Mendong area in 1733, which can be viewed as quite important existence during the historical development of the Mendong area, as their information is recorded many times in the local gazetteer and historical maps (Figure 4 and Figure 5). However, the physical existence has already been demolished and replaced by other constructions. As the absence in the Mendong area, they can hardly be cognized. But their history and memory of them cannot be ignored, as one of the historical values and identities of the Mendong area.

This case vividly illustrates the vulnerability of physical space within Chinese historic cities: while material forms may disappear under the pressure of historical change and modern development, the intangible cultural memory they once embodied persists and remains socially meaningful. The Four Halls of Puyu thus serve as a critical example of how historic urban space in China must be interpreted through the combined lens of material absence and cultural continuity.

This paper will clarify the three periods of the morphological evolution of the Puyu Tang and the transformation of the roles that they played in this area, aiming to complete the overall cognition of the Mendong area.

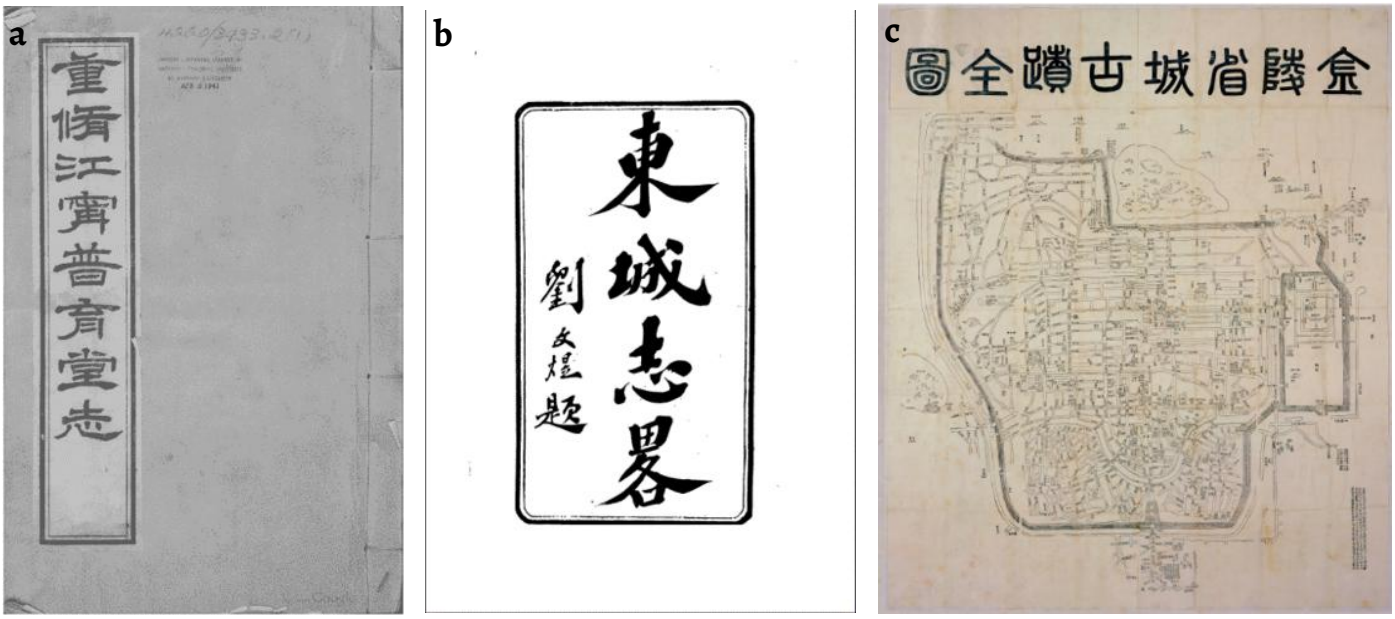

Figure 4. Historical documents record the information of the Four Halls of Puyu: *a)* Jiangning prefecture rebuild Puyu Tang records (《江宁府重修普育堂志》), 1886; *b)* Record of the East of the city (《东城志略》), 1899; *c)* Map of Nanking relics (《金陵省城古迹全图》), the late Qing Dynasty.

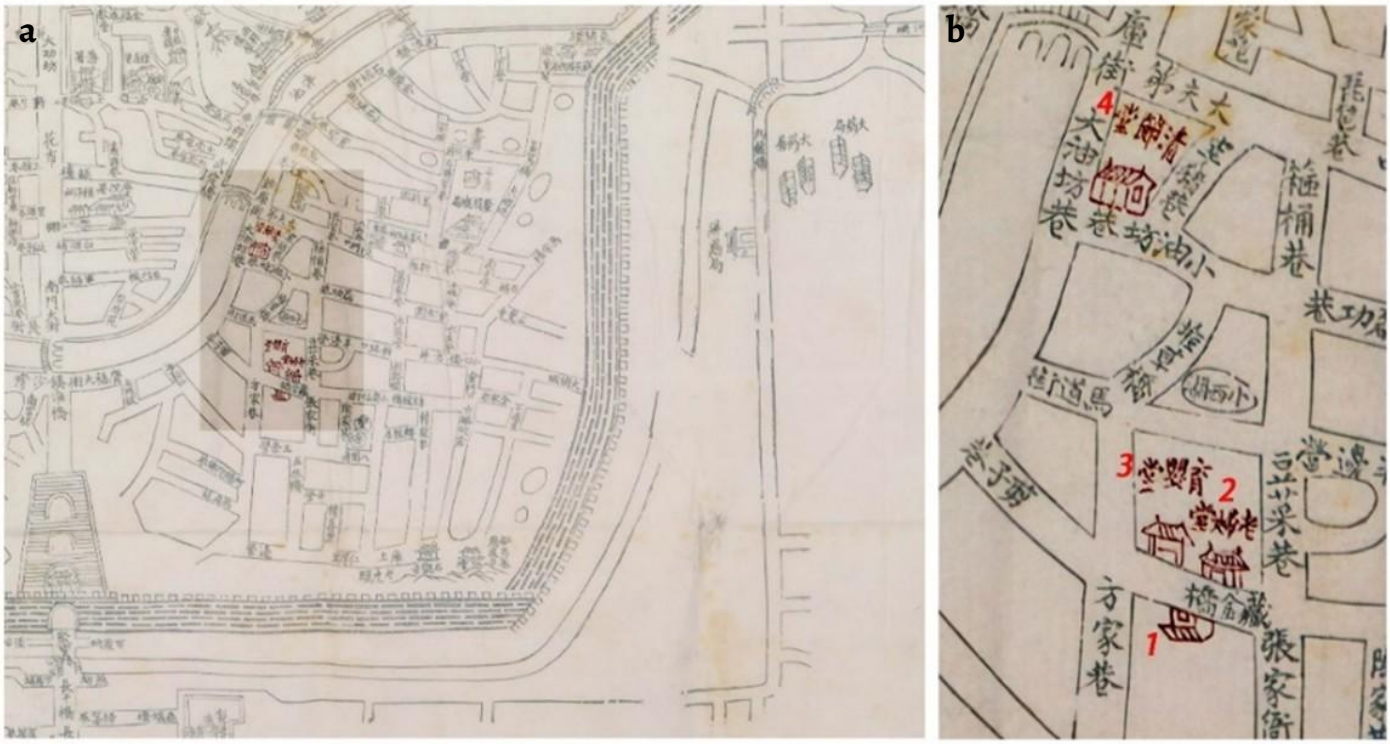

Figure 5. The reconstructed Four Halls of Puyu in the Mendong area: *a)* Location; *b)* Center detail: 1- Puyu Tang, 2- LaofuTang, 3- Yuying Tang, 4- Qingjie Tang (source: Map of Nanking Relics (《金陵省城古迹全图》), the late Qing Dynasty).

Puyu Tang is a charity established by the local government in the Qing dynasty, with the main aim to provide accommodation for the poor and raise orphans respectively. Generally, Puyu Tang contains two agencies, both Puji Tang (普济堂) and Yuying Tang (育婴堂), at the same time. In 1724, Puji Tang and Yuying Tang were first established in the capital city, and then it was followed by each province in succession. In 1733, Hongen Zhao (赵宏恩), the Governor of the Liangjiang area (两江地区) which includes Jiangsu Province today, established the Puyu Tang in Jiangning Prefecture, and Jiangning Puyu Tang also is the earliest official charity organization in Nanjing.

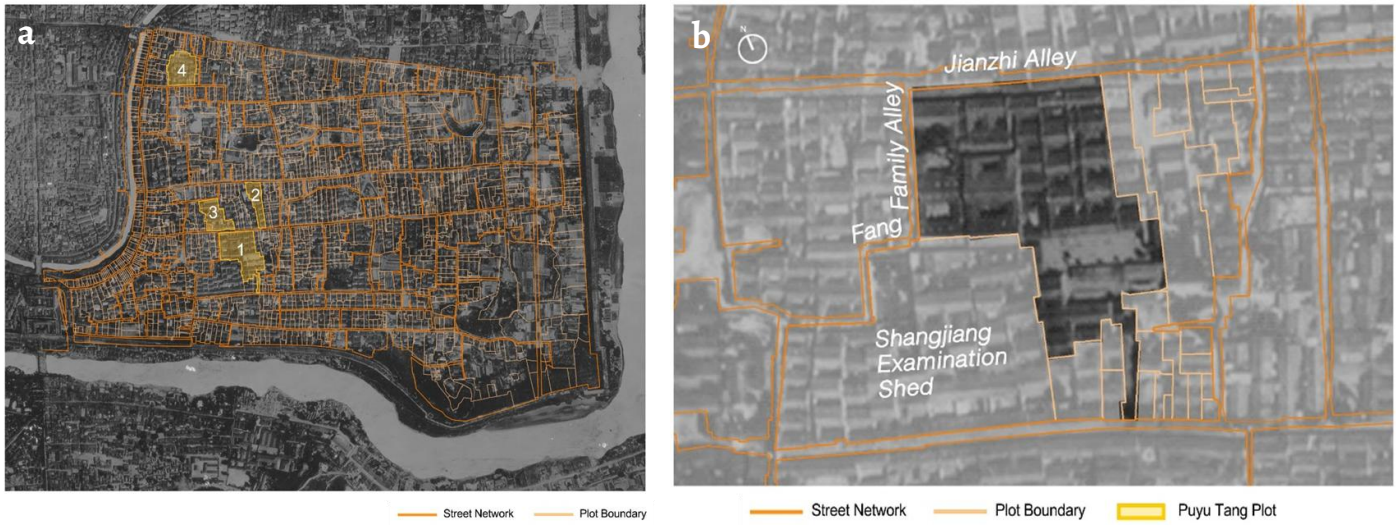

Figure 6. Mapping of the plots of the Four Halls of Puyu in the Mendong area: *a)* Plots of the Four Halls of Puyu: 1- Puyu Tang, 2- LaofuTang, 3- Yuying Tang, 4- Qingjie Tang; *b)* Puyu Tang plot (source: Nanjing Aerial Map in 1929 overlapped with the Cadaster Map in 1936).

Initially, Puyu Tang was built in an obsoleting private garden outside the city wall and included two sub-agencies: Puji Tang for the elders and the disabled, and Yuying Tang for the orphans. However, in 1853, the buildings were demolished due to the Taiping Rebellion. Therefore, the Jiangning prefect rebuilt Puyu Tang in the Mendong Area, precisely, at the south of Jianzi Alley (剪子巷, Scissors Alley). The construction project of PuyuTang has gone through three phases including twice expansions and formed the original building layout and plot boundary eventually (Figure 6). The second phase of the Puyu Tang plot is the Nanjing Municipal Almshouse. After the establishment of the Republic of China in 1912, the government reorganized the administration of all separate almsgiving agencies and updated it to Nanjing Municipal Almshouse, which originated from Puyu Tang in the Qing Dynasty, in 1929, and expanded the almshouse to another two places in Nanjing. The aim of the Municipal Almshouse in Jianzi Alley was changed to mainly support the elders and the disabled, and provide a workhouse for homeless people [22].

In 1951, the utilization of this plot was transferred to the Weaving Factory which was affiliated with Nanjing Almsgiving Institute and then transferred to Nanjing Yarn-dyed Factory (南京色织厂) in 1981 eventually after a series of reorganizations. During this period, the original buildings of Puyu Tang, which used to be residential buildings, inside the plot were transferred to the factory buildings. In 2011, under the background of the renovation project of the Mendong Area, the historical buildings of the Nanjing Yarn-dyed Factory were renovated into the Jinling Art Museum as the industrial heritage, with remaining industrial-period morphology (Table 1).

Table 1. Development of Puyu Tang plot.

Time	Utilization	Event	Background
1865	Jiangning Puyu Tang	Reconstruction	Taiping rebellion
1929	Nanjing Municipal Almshouse	Reorganization	Establishment of the Republic of China
1951	Weaving Factory (Affiliated to Nanjing Almsgiving Institution)	Industry related to the original weaving workhouse	Priority of the industrial development
1981	Nanjing Yarn-dyed Factory	Industrial promotion	Reform and opening-up policy
2011	Jinling Art Museum	Renovation	Renovation project of the Mendong area

Morphological evolution of the Puyu Tang plot

The paper intends to explore the evolutionary process of the Puyu Tang plot into two periods according to the morphological transformation from 1865 to 2011. The first period (1865-1951) contains two phases: Jiangning Puyu Tang and Nanjing Municipal Almshouse, and the second period (1951-2011) contains three phases: Weaving Factory, Yarn-dyed Factory and Jining Art Museum. Besides, the Nanking Aerial Map taken by Aircraft Squadrons United States Asiatic Fleet in 1929 and the Nanjing Cadaster map drawn by the Nanjing Land Management Bureau in 1936 are the earliest maps that show the road system and urban tissue clearly. Considering the time of the two maps are quite close, their overlapping could provide information about the street system, plot, and the roof of the building object.

Phase I: Puyu Tang, 1865

The earliest map showing morphological information is the Nanking Aerial Map in1929, but the rebuilding of Jiangning Puyu Tang started in 1865, so the author has to refer to other materials. *Jiangning Prefecture Rebuilding Puyu Tang Records* (《江宁府重修普育堂志》) is the official local records edited by Zongying Tu (涂宗瀛), the Jiangning prefect, who was in charge of the reconstruction of Puyu Tang in 1865, with recording the rebuilt project and development of Puyu Tang, including the hand drawings. Based on the written words and the drawings, the reconstruction process could be clarified. Therefore, the Records could be a clue, and also a tool, for understanding the morphological transformation of the Puyu Tang Plot before 1929. Through a rough comparison, the morphology of the Puyu Tang plot in 1929 could correspond to the buildings of Puyu Tang recorded. Hence, the morphological evolution process could be analyzed.

The plot boundary in the cadaster map was the final result of the continuous construction of Puyu Tang, so the morphological evolution of Puyu Tang could be deduced according to the written records. The construction process of Puyu Tang could be illustrated as three stages (Table 2) based on three-times expansions. In 1865, the local government bought several sites and houses of local families to build the new Puyu Tang in Jianzi Alley, and in 1869, the boundary of Puyu Tang expanded continuously. The houses of the Zhang Family were transferred to the new buildings of Puyu Tang, and in 1875 the site nearby was constructed as a yard. Then in 1885, the houses of the Li family were finally included in the Puyu Tang plot. The morphology of the Puyu Tang plot presented traditional residential buildings, small-scale spaces and continuous courtyards, and the plot boundary was formed basically (Figure 7).

Table 2. Construction process of Puyu Tang.

Time	Original ownership	Boundary
CE 1865	The site of the Niu family	North: Jianzi alley South: *Shangjiang Examination Shed* (上江考棚) West: Fang Family alley East: Houses of Li family
CE 1869	Houses of the Zhang family and the site of the Wang family	North: Jianzi Alley South: Houses of Li family West: Houses of Li family East: Houses of Tang family
CE 1885	Houses of the Li family	North: Jianzi alley West: Puyu Tang East: Houses of Li family

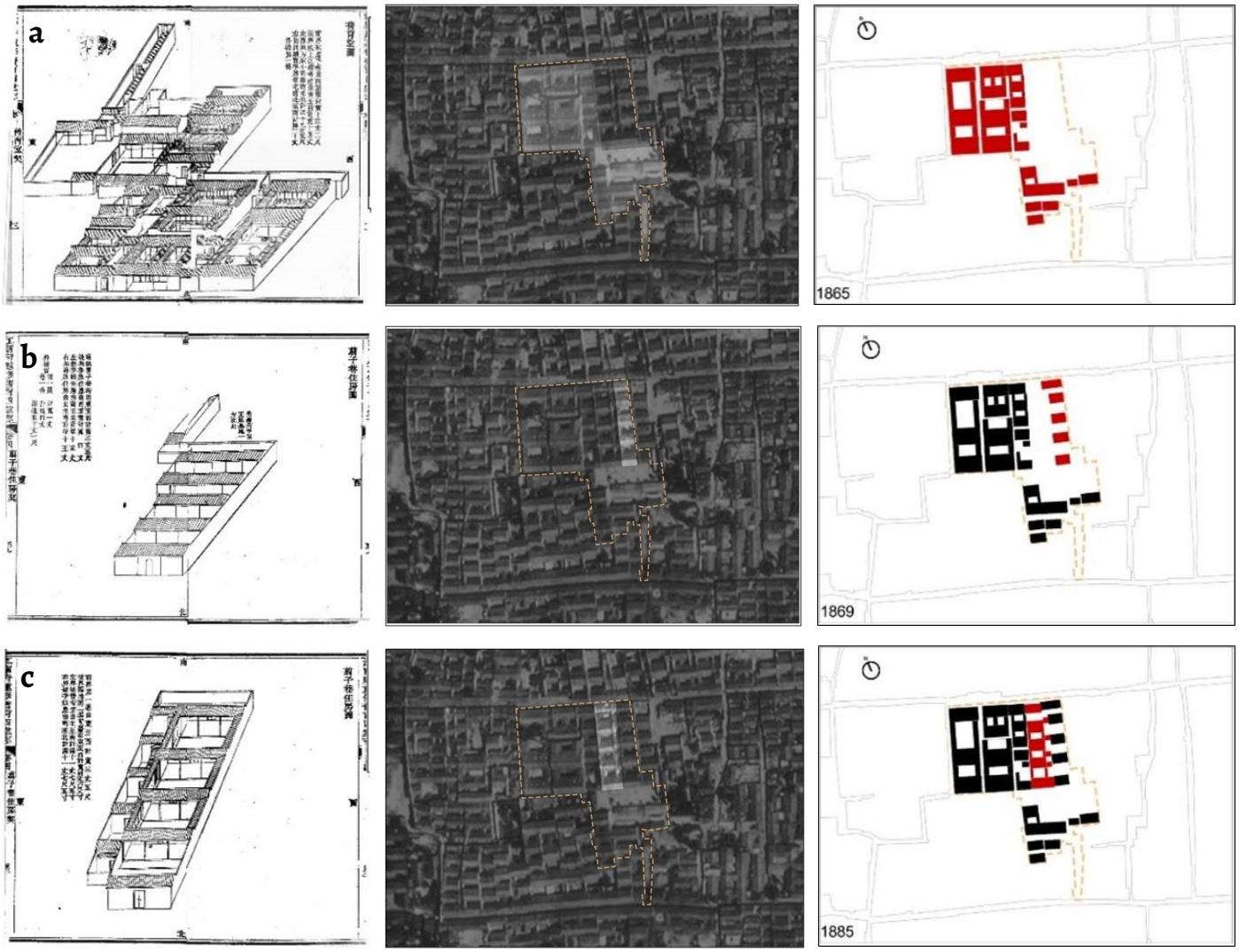

Figure 7. Mapping of the morphological evolution of Puyu Tang before 1929 (attached figure in the record – left column, location in the *Mendong* area – center column and morphological map – right column): *a)* re-establishment of Puyu Tang in the Mendong area in 1865; *b)* the first expansion of Puyu Tang in the Mendong area in 1869; *c)* the second expansion of Puyu Tang in the Mendong area in 1885. Source: partly based on the Nanking Aerial Map in 1929 and the Nanjing Cadastral Map in 1936, elaborated by the authors.

Phase II: Nanjing Municipal Almshouse, 1929

After the government of the Republic of China was established, the Jiangning Puyu Tang was officially reorganized as Nanjing Municipal Almshouse in 1929. Although the local government enlarged the scale of the Municipal Almshouse and constructed new buildings in other places, the Municipal Almshouse in Jianzi Alley remained a partially relieving role. Besides, compared with Puyu Tang in the Qing Dynasty, the Municipal Almshouse in Jianzi Alley started the female workhouse for skill training in 1930, and the techniques included sewing, knitting, and embroidery [23]. During this period, the original buildings of Puyu Tang remained generally according to the Nanking aerial map.

Phase III: Weaving Factory affiliated to Nanjing Almsgiving Institution, 1951

Under the background of developing industry was given priority after 1949, the Puyu Tang plot finally finished the almsgiving role and was transferred to the weaving factory, keeping the industrial continuity. According to the aerial map taken in 1977 (Figure 8a), the morphology of the plot has totally changed from the traditional small-scale residential spaces to industrial spaces. The three main factories were typical light industrial buildings with wooden zigzag roofs. Compared with the original Puyu Tang plot, the plot boundary expanded towards the

west, which partially belongs to Fang Family Alley and the southwest corner original *Shangjiang Examination Shed* (上江考棚) plot, and the original south alley disappeared.

Phase IV: Yarn-dyed Fabric Mill, 1981

After several industrial reorganizations, the original Weaving Factory was transferred to the Nanjing Yarn-dyed Fabric Mill in the 1980s. Due to the expansion of the production scale, the two buildings were reconstructed in 1981 respectively (Figure 8b), and their structures were transferred to the reinforced concrete frame structures. Besides, the other factory retained the zigzag-shaped roof but was re-constructed with reinforced concrete in 1971 (Figure 8a-b). The morphology of this plot kept changing because of the continuous reconstruction.

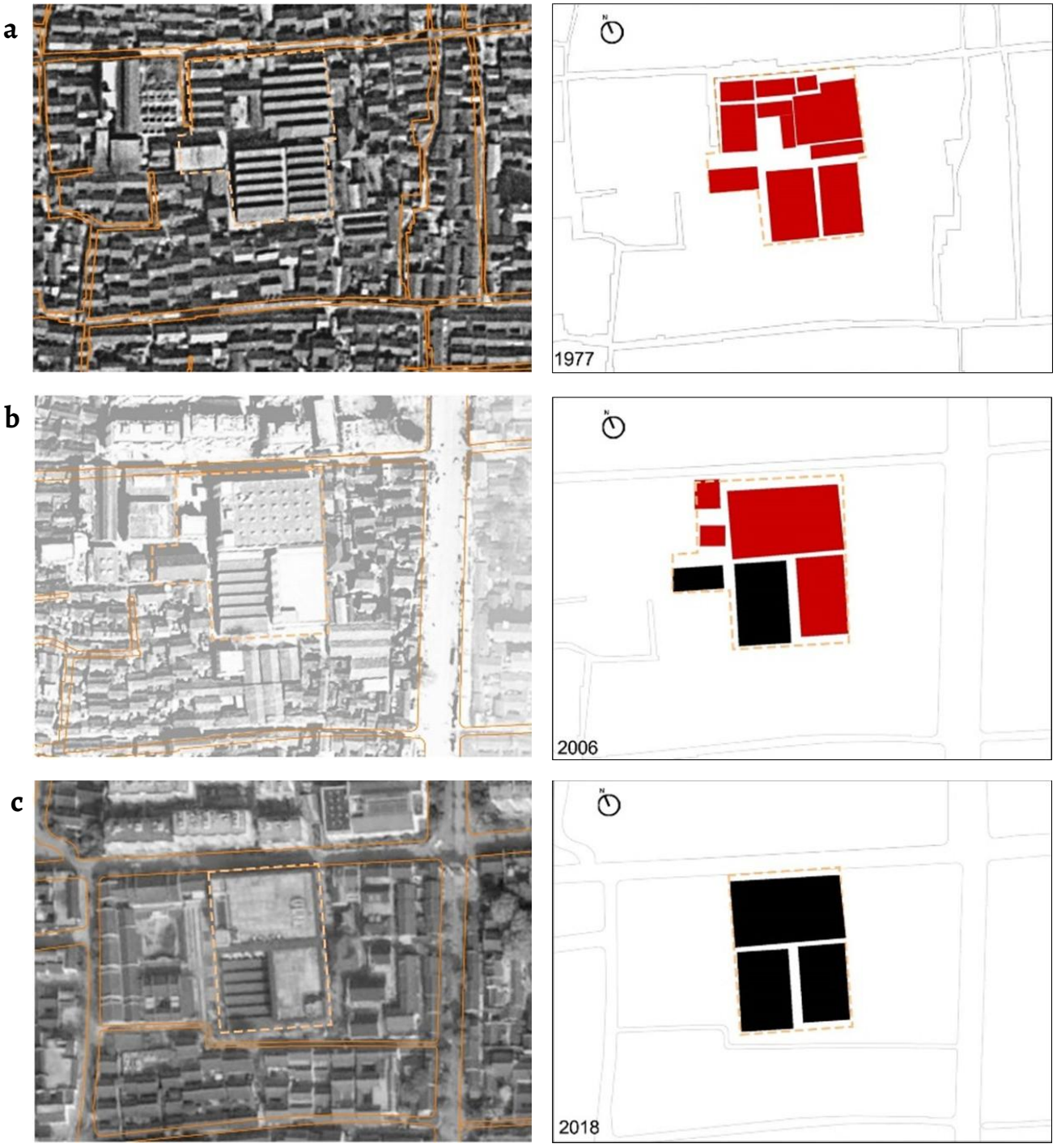

Figure 8. Mapping of the morphological evolution of Puyu Tang plot after 1951 (aerial map – left column and morphological map – right column): *a)* Weaving Factory Affiliated to the Almsgiving Institution, 1977; *b)* Yarn-dyed Fabric Mill, 2006; *c)* Jinling Art Museum, 2018 (source: Partly based on the 1977 aerial map from USGS, 2006 Google Map and 2018 Google Map).

Phase V: Jinling Art Museum, 2011

Regarding the expansion of the industrial scale and the priority of living environment protection at the end of the twentieth century, the factories established inside the historic city were required to move to the suburban area. Besides, the conservation planning of the Mendong Area started in 2010, and the original factories, as the industrial heritage of the 1980s, were transferred to the museum. The industrial buildings remained, but by inserting the translucent skin as the new façade, the new design reorganized the inner space and circulation (Figure Figure 9). During this period, the utilization of buildings changed but the main building object survived, therefore the morphology remained generally compared with the Yarn-dyed Fabric Mill (Figure 9).

Figure 9. NanjingYarn-dyed Fabric Mill: *a)* from the perspective of Jianzi Alley; *b)* view of the industrial buildings with the zigzag roof; *c)* Jinling Art Museum.

Discussion

The role that Puyu Tang played in history has vanished and now as the "absence" in this plot, it can hardly be cognized through the physical existence. But the history and memory of Puyu Tang cannot be ignored, as the vanished or erased historical urban space, should be recognized under the cultural and architectural background of physical impermanence in China. Considering Puyu Tang cannot be explored as the physical absence in this plot anymore, this paper unfolds the investigation to clarify the historical space and morphological evolution of Puyu Tang through the collection of historical information which mainly includes local records and historical maps, etc., and also to clarify the narration of this plot, aiming to complete the evolutionary process and reason behind. And the paper tries to establish the cognition method that morphological analysis, at the tangible level, and historical information, at the intangible level, are integrated as a unity, for the erased and missing historical space during urban development in China.

But both the situation of physical impermanence in the Chinese traditional architectural context and the blind demolition of urban development result in the "absence" in the historical layerings of urban space, and the "absence" can be understood in terms of literary sources rather than physical remains considering that the past is primarily a past of literary memory and mind, not of buildings [4]. Moreover, the historical layerings including the absence and the remains constitute the overlapping of the historic urban space during the morphological evolution process. It is necessary to establish the stratigraphic analysis to read its historical layerings for the overall cognition of the historic urban space, and the comprehensive understanding can be the basis for the interpretive design in the future.

Conclusion

The evolutionary trajectory of the Puyu Tang plot provides a concrete empirical confirmation of the theoretical framework advanced in this study. Under the influence of social

transformation, the site has undergone continuous morphological change and shifting identity. Following the construction of modern buildings, only limited material traces of Puyu Tang from the late Qing Dynasty remain, significantly constraining direct material-based interpretation of local history and collective memory.

This condition exemplifies the cultural logic identified in traditional Chinese historic space: material form is inherently discontinuous, while cultural meaning remains structurally continuous. Yet existing academic approaches continue to reproduce a disciplinary divide. Architectural and urban studies tend to prioritize the analysis of physical form, often neglecting the historical narratives and cultural memory that sustain spatial identity. Conversely, research in the humanities emphasizes documentary knowledge while insufficiently engaging with the material and spatial structure of the historic environment.

This study argues that such fragmentation obscures the fundamental nature of historic urban space. The unity of tangibility and intangibility, of material transformation and narrative continuity, constitutes the core mechanism through which historical urban identity is produced and sustained. Only by integrating architectural remains, spatial change, historical documentation, cultural memory, and even physical absence into a unified analytical framework can the true continuity and identity of historic urban environments be comprehensively understood.

Acknowledgments

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An investigation on the ground floor uses of 19th-century apartments in Istanbul within the scope of re-functioning: the case of Beyoğlu

Investigação sobre os usos de pisos térreos de apartamentos do século XIX em Istambul no âmbito da reutilização: o caso de Beyoğlu

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Abstract

The transformation of Istanbul's Beyoğlu region began with the 19th-century Westernization movements, resulting in the emergence of apartment buildings as a new architectural style. These buildings significantly influenced urban life, particularly due to the commercial and social activities taking place on their ground floors. However, over time, unconscious interventions and commercial concerns have caused the original qualities of these ground floors to be lost and damage to the historical texture. In this context, this study aims to analyse the ground floor usage of re-functioned buildings in Beyoğlu, focusing on the Botter Apartment and Baudouy Apartment, and evaluating the effects of interventions on the architectural integrity and historical texture. The study reveals that ground floors not only impact the urban fabric but also serve as an interface between historical buildings and public life, emphasizing the significance of preserving the originality and character of architectural heritage.

KEYWORDS
Re-functioning
Heritage
Apartment
Ground floor
Beyoğlu
Istanbul

Resumo

A transformação da região de Beyoğlu, em Istambul, começou com os movimentos de ocidentalização do século XIX, surgindo edifícios com apartamentos, como um novo estilo arquitetónico. Esses edifícios influenciaram significativamente a vida urbana, particularmente devido às atividades comerciais e sociais que ocorriam nos seus pisos térreos. No entanto, com o tempo, intervenções inconscientes e preocupações comerciais fizeram com que as qualidades originais desses pisos térreos fossem perdidas e causassem danos à textura histórica. Neste contexto, tem-se como objetivo analisar a utilização do rés-do-chão de edifícios reabilitados em Beyoğlu, com foco no *Botter Apartment* e no *Baudouy Apartment*, e avaliar os efeitos das intervenções na integridade arquitetónica e na textura histórica. O estudo revela que os rés-do-chão não só têm impacto no tecido urbano, como também servem de interface entre os edifícios históricos e a vida pública, enfatizando a importância de preservar a originalidade e o carácter do património arquitetónico.

PALAVRAS-CHAVE
Reabilitação
Património
Apartamento
Rés-do-chão
Beyoğlu
Istambul

Introduction

The refunctioning of architectural heritage is an increasingly popular approach to urban development that involves repurposing existing buildings to meet modern needs while preserving their historical and cultural significance. Reuse, refunctioning, or adaptive reuse implies a change of function of a building whose previous use is now obsolete and therefore is changed to accommodate a new function, with new occupiers with different needs and priorities [1]. Refunctioning of architectural heritage seeks to reach a balance between the conservation of buildings and the need to meet contemporary demands [2]. This approach has been widely adopted in many cities around the world as a way to address the challenges of urbanization, sustainability, and cultural preservation. According to Venice Charter Article 1, the concept of a historic monument embraces not only the single architectural work but also the urban or rural setting in which is found the evidence of a particular civilization, a significant development, or a historic event [3]. Therefore, the interventions carried out on a historical building influence its surrounding environment, including the cultural and historical context in which it exists.

The Beyoğlu–Pera region, which is considered within the framework of the study, stands out with its architectural heritage predominantly consisting of nineteenth-century apartment buildings in Istanbul. These structures, influenced by European architectural styles, were originally built to accommodate the increasing foreign population in the Ottoman Empire. They introduced a new residential typology characterized by distinctive massing, common circulation areas, and a design approach that encouraged interaction with the city's social life, thus contributing to a unique urban fabric. Generally, these buildings had five or six floors, with the ground floors mostly used for commercial purposes such as cafes, shops and restaurants. This multifunctional approach played an important role in shaping the social and economic life of the area, as it provided a space for people to gather, socialize, and do business.

Beyoğlu – once a reflection of the bourgeois lifestyle and social patterns of its era – has undergone a significant transformation driven by shifting social, cultural, and economic conditions over time. This change has also manifested itself in daily life and the urban fabric of the area. During this process, some of the apartment buildings have been preserved, some have been demolished and disappeared, and some continued to be used with new functions. The repurposed buildings have generally been transformed into multifunctional programs, including boutique hotels, art galleries, offices, restaurants, and cafes. However, on the ground floors, where commercial functions have been retained, the interventions have yielded controversial results in terms of their impact on architectural integrity. In some cases, alterations – including the removal of original interior details, the installation of oversized storefronts, and the addition of inconsistent elements with the façade – have disrupted the historical character and identity of these structures. These changes not only damage the historic qualities of the buildings but also pose a serious threat to the cultural heritage of the region. On the other hand, there are also buildings that have been designed with a more comprehensive approach, ensuring that their ground floors remain an integral part of the urban space by incorporating various functions. These buildings enhance community interaction and contribute to the lively atmosphere of the area, making them vital to the city's character and historical background.

In this context, this study aims to analyse the use of ground floors in the re-functioned buildings of Beyoğlu, focusing on Botter Apartment and Baudouy Apartment, and to evaluate the effects of the interventions on structural integrity and historical fabric. These buildings were selected for their representative qualities within the nineteenth-century Beyoğlu apartment typology and their reflection of European architectural influences in the late Ottoman period. Both buildings have undergone adaptive reuse, yet exhibit differing degrees of preservation of their original features, enabling a comparative analysis of distinct intervention strategies. In addition, the buildings' location on Istiklal Avenue (formerly Rue de

Pera), a significant social and commercial axis in Beyoğlu, provides a valuable perspective for examining the impact of ground floor transformations on urban life. By focusing on two emblematic cases in Beyoğlu, this article highlights the importance of preserving the authenticity and character of the architectural heritage by revealing that ground floors not only affect the urban fabric, but also function as an interface between historical heritage and public life.

Transformation of Beyoğlu – Pera – region

Nineteenth century to the early republican period

The Pera region, today called Beyoğlu, has created a unique place in Istanbul with the lifestyle brought by its ethnic and cultural structure throughout history [4]. In the nineteenth century, Beyoğlu went through a significant transformation as it became a major cultural, commercial, and entertainment centre of Istanbul [5]. While the old city retained a more traditional structure in terms of buildings and social institutions, the Galata-Pera region faced a remarkable change and growth [6]. This development of the area was mainly due to the growth of foreign communities, including Levantines, Greeks, and Armenians, who settled in the area and established their own institutions and businesses. Pera was also known as an "aristocratic" settlement, with a new way of life that was shaped by the influence of these groups, including notable figures from embassies in the region [7]. Their contributions were pivotal in shaping the distinctive elite culture of the area, influencing its development and evolution over time.

Pera, which was shaped by the tastes of the newly emerging bourgeoisie, was quite different from the old city not only in social terms but also in terms of architecture and therefore physical space [5]. The buildings on and around Grande Rue de Pera (today's Istiklal Avenue) were reflecting a general picture of the values, fashions, and social patterns introduced to the Ottoman capital following the Tanzimat (1839) reforms [8]. The street was not only a centre of commerce and leisure but also a vibrant reflection of the diverse population it served. Along La Grande Rue de Pera, there were different types of buildings representing the modern face of the city, such as embassies, theatres, and hotels [9]. In addition, Rue de Pera had famous shopping arcades such as European Arcade, Hazzopulo Arcade, Alhambra Arcade [7]. The ornamented façades, high ceilings, and grand entrances of these structures were reflecting the neoclassical and eclectic styles that were prevalent in Europe at the time (Figure 1). Also, these buildings shaped the identical architectural composition, which has been one of the important signs of the area's visual qualities [10].

The nineteenth-century also brought new changes to domestic culture in the Ottoman Empire. During this period, apartment buildings, whose spatial organization differed notably from the traditional Ottoman culture of living, came to be seen as symbols of modern life. One of the defining characteristics of residential space in the Ottoman Empire was its protective nature, designed to isolate family life from the outside world and ensure privacy. The door of the house opening to the street was symbolizing the boundary between the outside world and the inside world [12]. For this reason, the Ottoman urban fabric maintained a clear spatial separation between residential areas and commercial activity zones. In contrast, the new apartment buildings in the Pera district integrated residential and commercial functions within the same structure, thereby linking domestic life directly to the public space. On the ground floors of these buildings, the *bonmarchés*, whose commercial activities were based on imported products, displayed foreign-labelled consumer goods in their shop windows. This new form of family life and urban living, embodied at the apartment scale, developed as part of everyday life shaped by the forces of modernization [12]. In the Ottoman Empire, such a combination of residential and commercial uses was not common prior to that time except in buildings constructed by non-Muslim communities. With the 1839 Tanzimat Edict and urban reforms, this new typology began to spread widely in the city [9].

Figure 1. Grand Rue de Pera (today's Istiklal Avenue) at the end of the nineteenth century [11].

The development of the Pera continued under the influence of non-Muslim groups in the late Ottoman period, and this situation shaped the unique architectural character of the region. Then, with the proclamation of the Republic in 1923, a new era began that brought substantial political and administrative changes in the country. The designation of Ankara as the new capital shifted the focus of construction and investment activities away from Istanbul. Therefore, in this period Istanbul lost its former dominance and priority. However, Beyoğlu retained its importance as one of the Istanbul's principal socio-cultural and commercial centres according to other areas. In particular, the Istiklal Avenue represented the "European" face of the young Republic, which aimed to "modernize" through Westernization [13].

Mid-century: from decay to revitalization

Once the cosmopolitan centre of Istanbul, characterized by its vibrant mix of European and Ottoman influences, Beyoğlu experienced a period of decline in the mid-twentieth century. The area lost its privileged status and suffered a significant erosion of its distinctive identity. The embassies moved to Ankara, Turkish replaced French as the language of commerce, the names of streets, businesses, and institutions were changed, and most of the Christian and Jewish population left the area [14]. Furthermore, the start of re-modernization attempts with insufficient planning projects after World War II gave rise to dramatic changes. The urban landscape underwent substantial alterations as a result of the development efforts undertaken during the 1955-1960s, reshaping the architectural and social fabric of the city [7]. The city's historical centres lost much of their importance, and residents moved to the prestigious districts developing in the north and to the new suburbs on the Asian side [15]. This situation led to significant declines in property prices, high vacancy rates, and widespread abandonment in Beyoğlu [16]. Moreover, the Istiklal Avenue – previously called Grande Rue de Pera – was open to vehicle traffic during this period, causing additional challenges. The presence of heavy

traffic increased air pollution and noise, which negatively affected the pedestrian experience and the commercial viability of the area (Figure 2). These factors accelerated the destruction of the area's historic urban fabric and further diminished its status as a socio-cultural and commercial hub. As a result, abandoned buildings, the deterioration of the historic building stock, and socio-cultural degradation have led to the area's loss of its former appeal. All these factors highlighted the need for the area to be revitalized in order to regain its former attraction.

Socio-spatial reconstruction of the area

By the mid-1980s, Beyoğlu had largely lost its urban appeal due to its inability to respond to changing spatial and social dynamics. Economic shifts and changing demographics led to the abandonment of many historic buildings and the emergence of urban decay in the district. Additionally, significant transformations in consumption patterns resulted in new spatial and functional demands within the retail sector. While the need for commercial spaces with flexible usage possibilities increased, the region's narrow parcel structure and height restrictions proved insufficient to meet the demands [19]. As a result, these challenges triggered a series of strategic interventions aimed at addressing Beyoğlu's spatial and functional deficiencies and revitalising its urban fabric.

The 1990s stand out as a period of radical transformation in the physical environment and functional structure of the region. The demolition of nineteenth-century housing stock between 1986 and 1988 resulted in the opening of Tarlabaşı Boulevard, which formed a parallel axis to Istiklal Avenue and began to serve as an alternative route for vehicle traffic [15, 19]. This development was a vital infrastructure move that paved the way for Istiklal Avenue to be closed to vehicle traffic and pedestrianised. Indeed, with the closure of Istiklal Avenue to vehicle traffic in 1990, the avenue gained the identity of a pedestrian axis where public life was revitalised. Later that year, the reopening of the Taksim–Tünel tram line was also an important initiative to revitalize the historical identity of the region. In 1993, after many attempts, the area was declared an urban preserved area [7]. All these developments not only reshaped Istiklal Avenue but also revitalized the surrounding neighbourhoods, establishing it as a vibrant hub for commerce, leisure, and community events in Istanbul (Figure 3).

Figure 2. Istiklal Avenue open to vehicle traffic: *a)* a festival in 1973 [17]; *b)* in front of Emek Cinema, 1980s (Ali Öz Archive) [18].

Figure 3. Istiklal Avenue: *a)* before the pedestrianization (Kemali Söylemezoğlu Archive) [20]; *b)* after the pedestrianization (Photo: Murat Germen, 2000) [21].

A hybrid urban space: Beyoğlu in the 2000s

The spatial and socio-cultural transformation of Beyoğlu underwent another significant turning point at the beginning of the twenty-first century. This transformation was driven by a combination of urban policies, legal reforms, and socio-economic developments that collectively reshaped the district's fabric and dynamics. In this period, there were two fundamental developments that profoundly influenced this process. The first was the new legal arrangements that facilitated property ownership by foreign nationals, opening the district to a broader investor base. The second was the enactment of the "Renewal and Re-use of Deteriorated Historic Building Stock" in 2005, which granted local authorities greater power to intervene in and regenerate decaying historical neighbourhoods. This legislation provided a legal framework for urban renewal in areas where market forces alone were insufficient or too slow to drive transformation [15]. As a result of these developments, both domestic and international capital played a decisive role in reshaping the area and Istiklal Avenue and its near surrounding rapidly evolved into a multi-functional centre characterized by a concentration of hotels, restaurants, shops, and entertainment venues. This process had particularly dramatic consequences on ground-floors, where commercial functions became increasingly dominant. The radical changes on plan layouts, additional facade coverings and big storefront signs damaged the architectural integrity and character of the buildings. Although the area historically served similar functions, a clear separation has emerged between the intensely commercialized ground floors and the relatively less altered upper levels. This dichotomy has led to disruptions in the visual and spatial continuity of the street.

With capital reclaiming control over the axis, Istiklal Avenue – together with its side streets and surrounding neighbourhoods – has become a prominent showcase where Istanbul's gentrification process can be intensely observed and experienced [13]. This transformation has deeply affected the spatial and cultural character of the district; amid the ever-expanding presence of chain stores, restaurants, hotels and the historic fabric struggling to survive has rendered Istiklal a hybrid urban space (Figure 4).

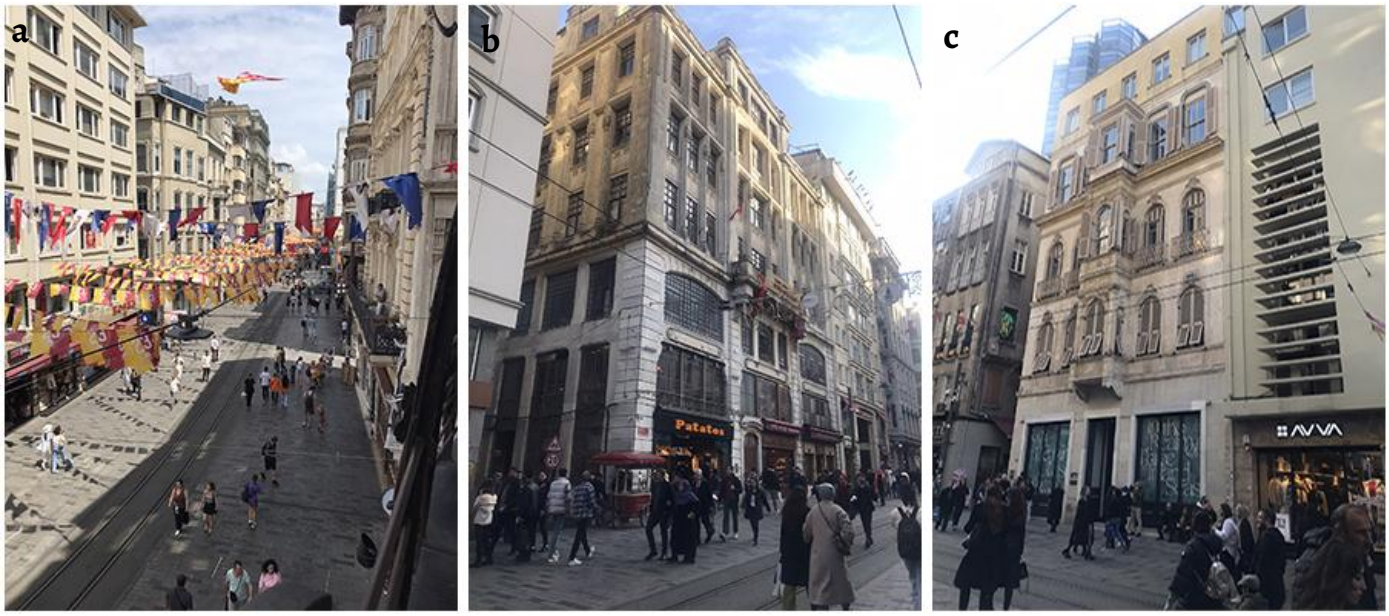


Figure 4. Istiklal Avenue as a hybrid urban space (former Grand Rue de Pera): *a)* current building fabric along the axis; *b)* commercial ground floors and upper levels; *c)* façade diversity and mixed-use character along the avenue (2024).

Materials and methods

Beyoğlu – Pera region, examined within the framework of this study, has long been one of the city's most significant socio-cultural and commercial areas due to its ground-floor relations stemming from its history. Although this situation continues today, the preservation problems in the historical texture of the region have caused a pronounced loss of identity. Moreover, the new design approaches towards ground floors – often conceived independently of the original architectural character – have created an eclectic situation on the façades, further weakening the architectural and historical continuity of the area. These approaches have highlighted the necessity of design decisions that prioritize the harmonious integration of historical preservation and contemporary development in the region.

According to this, the research focuses on the Botter Apartment and Baudouy Apartment located on Istiklal Avenue, which is an important historical axis of Beyoğlu district. Constructed in the late nineteenth century as mixed-use, these buildings originally housed commercial functions on the ground floors and residential spaces on the upper floors. Over time, both structures have undergone functional transformations and alterations – particularly on their ground floors. Today, through adaptive reuse strategies, they have been reintegrated into the urban fabric with new functions and redefined ground-floor relationships.

The study first outlines the historical evolutions of the Botter Apartment and the Baudouy Apartment within the framework of the urban and architectural transformation of the Beyoğlu-Pera district. In this context, archival sources, historical photographs, and literature on the district's development were consulted. Subsequently, historical maps were compared with current satellite maps to identify changes in parcel patterns and to reveal the evolving spatial relationships of the buildings with their immediate surroundings. To examine the nature of the transformations, former ground-floor plans and façade photographs were compared with their current conditions, providing a general review of the interventions. Then, these data were compiled into tables and visuals, enabling a comparative reading of the spatial configuration and façade articulation of the buildings across different periods.

Results of the study

The findings of this research are presented through two detailed case studies that exemplify different adaptive reuse approaches within the historical context of Beyoğlu-Pera. Both buildings – Botter Apartment and Baudouy Apartment – are located on Istiklal Avenue and share a common origin as mixed-use buildings built in the late nineteenth and early twentieth centuries, combining commercial ground floors with residential upper floors. Despite this common typology, the buildings have undergone distinct transformation processes shaped by functional requirements, design approaches, and conservation priorities. The following sections examine each case in detail, exploring their historical background, architectural characteristics, interventions over time, and current roles in the urban fabric.

Botter Apartment: from fashion house to cultural hub

The Botter Apartment was designed by Raimondo D'Aronco on La Grande Rue de Pera (today's Istiklal Avenue) in 1900-1901. The building is regarded as the first example of Art Nouveau architecture in Istanbul. The Botter Apartment derives its name from Jean Botter, a prominent couturier who served as the personal tailor to Sultan Abdülhamid II. The building, which was constructed on a narrow and long parcel and has a street frontage, housed both residential and commercial functions (Figure 5). The concept of combining the two functions is rooted in the European tradition [9]. Built with the advanced construction techniques of its time, the structure features a cast iron frame, brick infill walls, and a stone-clad façade [22]. All these features make the building one of the leading examples of modern architecture of the period.

The Botter Apartment is a seven-story building, encompassing the basement, ground floor, and first floor, which functioned as a fashion house, with the remaining four floors serving as the family's residence. The high-ceilinged ground floor and mezzanine were specifically designed for sales, displays, and workshops. A notable interior feature was the symmetrically positioned curvilinear staircases leading to the mezzanine floor, which provided an elevated platform for fashion shows. The walls were covered with mirrors and textiles, and the windows opening to the light well were decorated with stained glass [22]. Botter's private study area was on the first floor, opening onto a distinct curvilinear balcony that contributed to the façade's architectural uniqueness. The façade of the building was covered with ornaments and embellishments that reflected the most delicate examples of the Art Nouveau style of the period. On the ground level, the prominent fashion house entrance occupied much of the frontage, while a narrower entrance on the right provided access to the residential part. With all these features, the building was one of the notable apartment buildings on Istiklal Avenue.

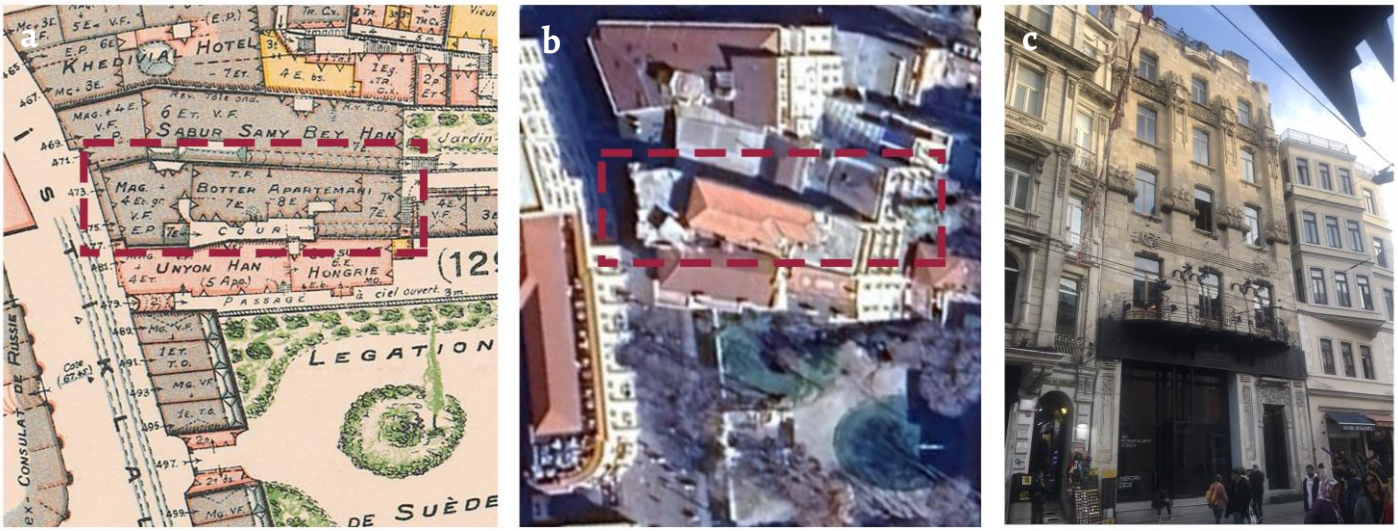
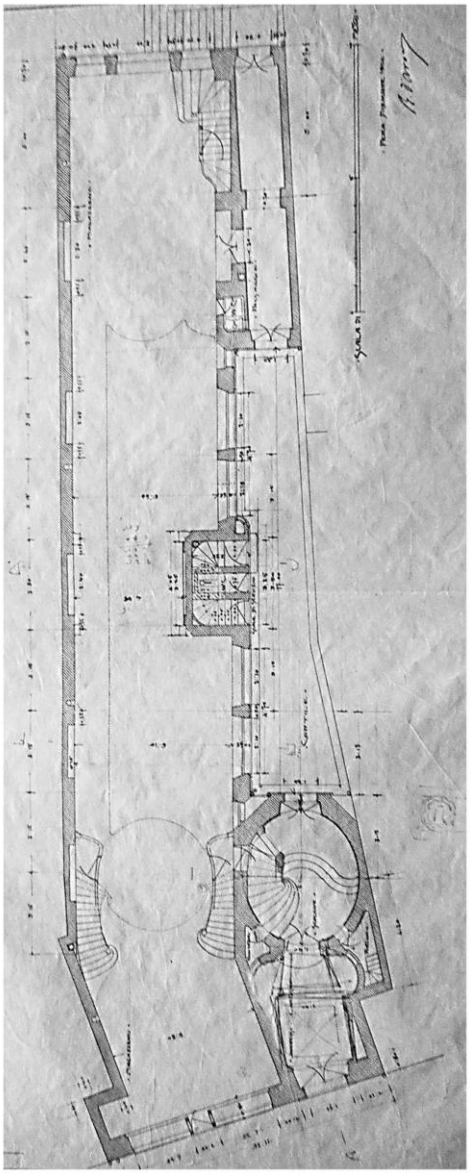
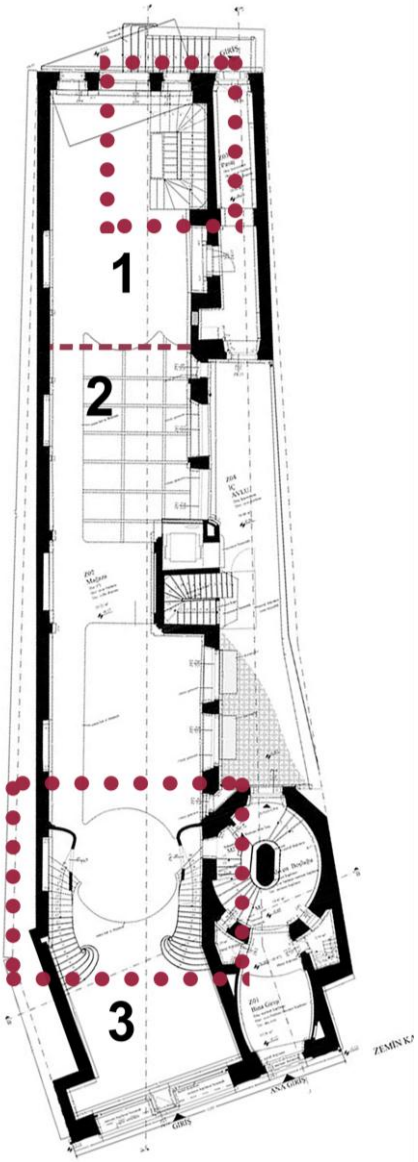


Figure 5. Botter Apartment: *a)* location on Pervititch map, 1932 (generated by the author from a Pervititch map no.50 accessed via Salt Research Archive) [23]; *b)* the building and its surroundings in the Google Earth image; *c)* existing situation of the building, 2024.

"In an era when snobbery was widespread, memoirs of certain authors note that even strolling in front of the Botter Apartment – pretending to have just stepped out – was considered fashionable" [22]. Historical sources indicate that Botter designed garments for many years to the members of the Ottoman court and aristocracy. However, with the decline in interest in the fashion house due to the Balkan Wars and the First World War, the Botter family sold the apartment and moved to Paris [24]. This process was an important breaking point in the history of Botter Apartment. The new owners of the building started to rent the other floors for various commercial purposes, leading to the deterioration of the original features of the building. In 1960, the ground and mezzanine floors were leased to a bank, resulting in significant damage to the façade and interior due to alterations made to accommodate the bank's functional requirements. The removal of the original curvilinear staircases, once central to fashion shows, represented a significant loss for the building's architectural identity [25].

Table 1. Interior changes in the Botter Apartment's ground and mezzanine floors.

Original ground floor plan by Raimondo D'Aronco [26]	**Restoration project (2013) ground floor plan** [27]	**New interventions in 2023**
		

1- The staircase located at the back corner of the building that no longer exists today;
2- The trace of the new mezzanine floor which is a part of the exhibition area, and the new steel spiral staircase;
3- The curvilinear stairs leading to the old mezzanine floor in the original plan, which were demolished by a bank in the 1960s. This part, located near the entrance, now serves as part of the exhibition space.

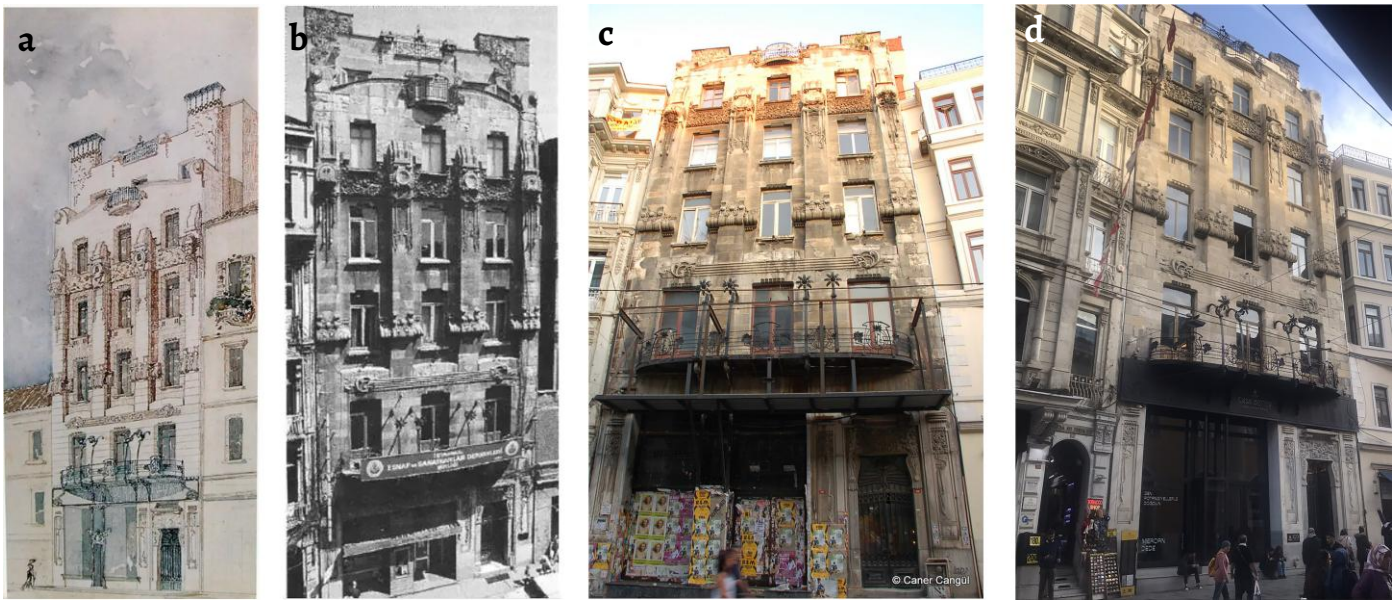


Figure 6. Façade changes of the Botter Apartment: *a)* the fashion house and the facade details (by Raimondo D'Aronco) [9]; *b)* the characteristic balcony was covered by a large sign (unknown date) [22]; *c)* the building has fallen into disrepair (by Caner Cangül, 2008) [28]; *d)* after the restoration process (2024).

For decades, the Botter Apartment accommodated several commercial and residential users. However, due to neglect and structural deterioration over time, it was abandoned. Later, the building's restoration was completed by IBB Miras (IMM Heritage) and reopened in 2023 as the *Casa Botter Art and Design Centre*. Within the adaptive reuse framework, the ground floor and mezzanine – once the main spaces of Botter's fashion house – were transformed into exhibition halls (Table 1). The expansive storefront façade on the ground floor was preserved, reinforcing the visual and spatial dialogue between the interior and the Istiklal Avenue. This allowed passersby to see the activities inside, while also ensuring that visitors inside remained visually connected to the flow of urban life outside. The mezzanine floor, set back further than in the original plan, was connected to the ground floor with a circular steel staircase. The first floor, which was previously the office of Botter, was designed as a common working space open to public use. In addition, the metal balcony, one of the characteristic elements of the building, was restored to its original state and reopened for use. In general, the design approach was not only about preserving the original qualities of these spaces but also strategically integrating the building with the city and citizens.

Considering the watercolour sketch of the façade made by Raimondo D'Aronco, it can be stated that the restoration work was carried out as faithfully as possible to the original situation (Figure 6). In particular, the deteriorations that occurred on the façade due to the use of the ground floor for different functions over time were repaired, and the original Art Nouveau decorations and motifs of the building were brought to the fore again. Restoration works are still ongoing on the other floors of the building. After the process is completed, it is planned to include different activity areas such as a screening centre, documentary film archive centre, conference hall, design workshops and artist offices on the other floors [27].

Baudouy Apartment: from mixed-use heritage to modern museum

Baudouy Apartment was built in 1907 on Istiklal Avenue by a French merchant named Joseph Baudouy. The architect of the building remains unknown. Today, it occupies one of the most vibrant locations along Istiklal Avenue, adjacent to the Deva and Perukâr cul-de-sacs and in close proximity to the Odakule Business Centre (Figure 7). Originally designed as a typical Beyoğlu apartment – with the ground floor designated for commercial functions and the upper floors for residential use – the building comprises five standard floors and a terrace, in addition to the basement and ground floor. The functional separation between the commercial ground

floor and the residential upper floors is also legible from the articulation of the façade. The building was officially registered as a protected monument in 2005.

The building was later acquired by Türkiye İş Bank and with some structural interventions, the ground and first floors served as the Beyoğlu Branch between 1953 and 2016 [30-31]. A 1954 issue of *Arkitekt* – a leading architectural magazine of the period – confirms the building's adaptation into a bank, with the basement, ground, and first floors allocated to banking functions. According to the new planning, the entrance, bank customer hall and managers were located on the ground floor; passive services were located on the upper floor; and the safe deposit box office, treasury and employee services, heating and ventilation were located in the basement. In the building, which was constructed using a combination of reinforced concrete and masonry techniques, the necessary alterations were made possible only through the incorporation of steel supports and beams [32]. From this information it can be deduced that, with the change in function, the building differs significantly from its original layout. In 2008, the Board of Directors of İş Bank decided to transform the building into a museum where the 'İşbank Art Works Collection' would be exhibited. Following a bureaucratic process, the design and construction works started in 2015 were completed in 2023, and the İşbank Painting and Sculpture Museum was opened [31].

In the re-functioning project developed by Teğet Architecture, it was aimed to utilise the potential of different layers of the historical process of the building. Accordingly, the building was organised to meet the technical needs of the contemporary museum while trying to preserve its spatial characteristics, atmosphere, materials, and patina. In this context, the room system along the façade in the original plan of the building was preserved as a shell, while a new multifunctional and technologically equipped core was inserted at the centre (Figure 8). According to this, the services and small spaces in the core area were removed, and only the stairs and the elevator, which were the characteristic elements of the building, were preserved. Structurally, the concrete core also acts as a reinforcement, ensuring the stability and conservation of the protected sections of the building [31]. Moreover, during the simultaneous demolition, preservation, and construction of different parts of the building, hand-carved wall details concealed beneath seven layers of paint were revealed, exposing traces of historical craftsmanship. These details mediate between the restored historical elements and the newly introduced architectural components [31].

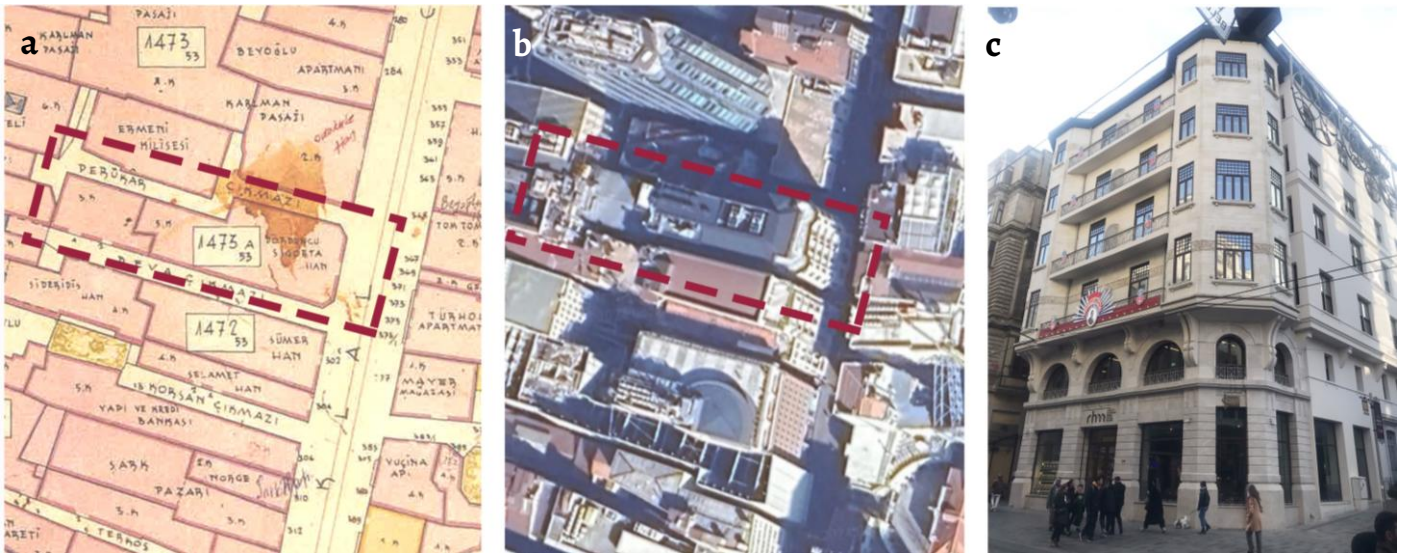


Figure 7. Baudouy Apartment: *a)* location on Suat Nirven map, 1950 (generated by the author from the Suat Nirven map accessed via Salt Research Archive) [29]; *b)* the building and its surroundings in the Google Earth image; *c)* existing situation of the building (2024).

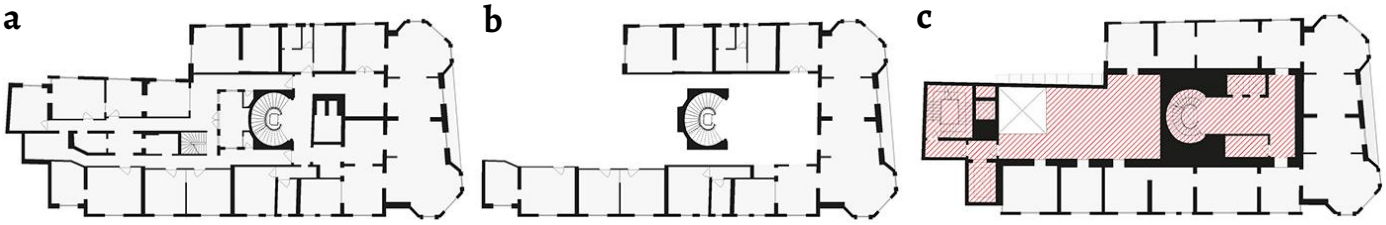
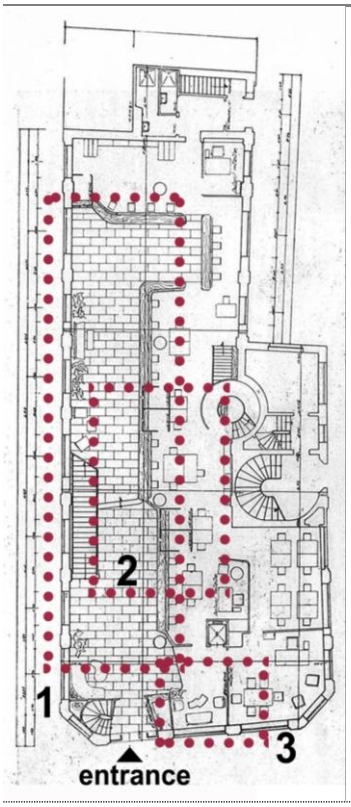
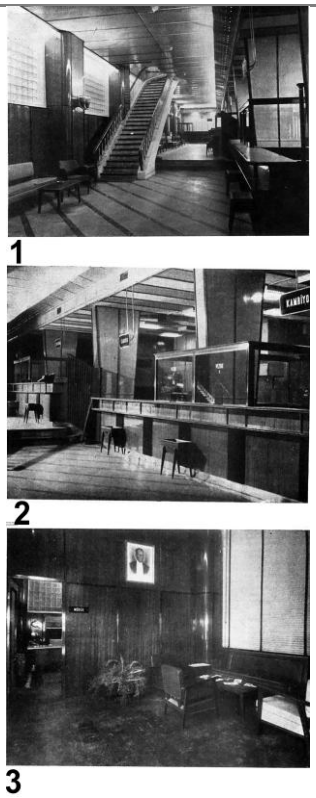
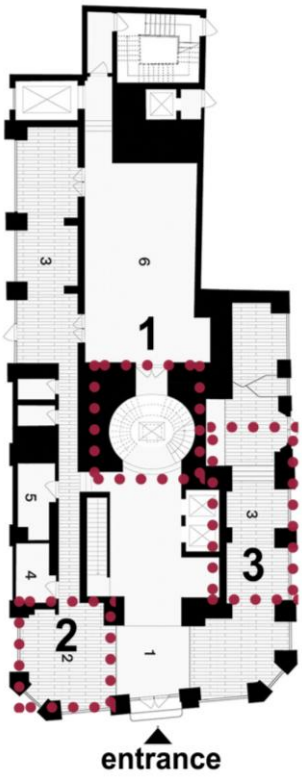


Figure 8. Adaptive reuse strategy of the museum: *a)* existing situation of the plan layout; *b)* protected shell and the staircase of the old building; *c)* new technical core addition (red area) [31].

In the new functional arrangement, the ground floor houses a museum shop, bookstore, cafe, multi-purpose hall, and foyer; the first floor accommodates administrative offices; the second to fifth floors serve as exhibition spaces; and the sixth floor operates as a restaurant. In the new ground floor design, the entrance to the building was positioned on the same axis with the circular historical staircase, and the linear staircase of the bank seen in the old photographs was removed (Table 2). The cafe and bookstore on the ground floor define a new spatiality that allows capturing different views from the street. Therefore, it is possible to say that the ground floor, which was previously used as a store and a bank, has now established a new dialogue with Istiklal Avenue by its socio-cultural functions. In this context, beyond its primary role as a museum, the building actively engages with the public realm through multiple functions, a concept also reflected in the architect's words:

> *İstiklal's new museum will be a structure completely equipped with cultural and artistic functions, extending across the ground floor and opening onto Odakule Square with its bookstore, art library, multipurpose hall, workshops, and exhibition floors. Beyond being its architect, I am also excited as a follower of arts and culture* [33].

Table 2. Interior changes in the Baudouy Apartment ground floor.

Ground floor plan of the bank, 1954 [32]	Photos of the bank [32]	Museum ground floor plan, 2023 [31]	Photos of interventions
			
1- The area approximately occupied by today's bookstore, cloakroom, and restroom areas. The bank's linear staircase also no longer exists; 2- The area where the teller counters were located; 3- The former waiting hall, where the entrance is located today.		1- Protected staircase in the core part of the building (the upper level photo was used as the old staircase is visible there); 2- The new bookstore area; 3- The current cafe area, formerly used as workspaces of the bank.	

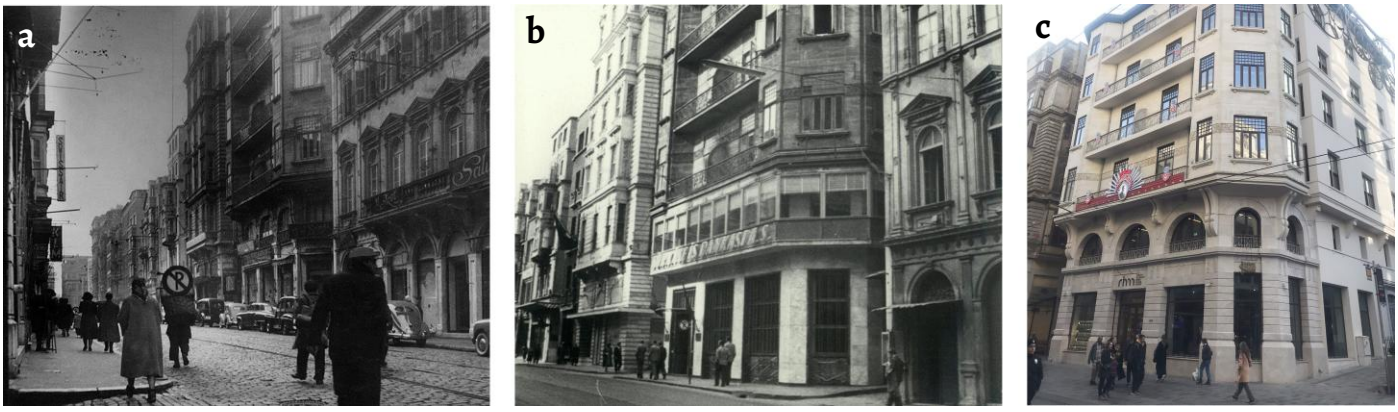


Figure 9. Façade changes of the Baudouy Apartment: *a)* old situation of the façade (unknown date) [31]; *b)* the original façade details were covered by the bank's cladding and name sign (after 1950s) [31]; *c)* İşbank Painting Sculpture Museum façade (2024).

A comparison with the 1950s facade reveals that the arched windows were covered with additional cladding elements and the large sign of the bank (Figure 9). With the restoration, the deteriorated facade was reconstructed according to its original form and the remaining materials, ornaments and patina were preserved. Furthermore, the relocation of the main entrance to align with the staircase–elevator axis created a symmetry in both the façade and the interior organisation. Today, with the recent interventions, the façade has regained much of its original texture and architectural expression.

Conclusion

Adaptive reuse is a vital strategy in the conservation of architectural heritage, enabling buildings to retain their cultural and historical significance while accommodating contemporary needs. This approach plays a crucial role especially in the historic city centres, where the preservation practises are essential for maintaining the area's unique fabric and sense of place. The Beyoğlu-Pera region, which is the focus of this study, has been an important location in Istanbul with its architectural character and urban environment shaped by its multi layered past. In particular, the Istiklal Avenue, the vibrant axis of this region, has always been the focus of attention with its commercial and socio-cultural life. However, over time, the changes in the economic and social structure influenced the region and new consumption habits, tastes and living styles brought about new spatial requirements. Due to new commercial concerns, buildings have been refunctioned with different needs by ignoring their architectural and historical values. Especially, the interventions made on the ground floors, where daily activities take place, have led to structural integrity problems and loss of identity.

The refunctioning practices of Botter Apartment and Baudouy Apartment, examined in this study, were found to be important samples in preserving the historical qualities of the buildings, as well as their ground floor relations and participation in public life. Both buildings, originally designed as mixed-use structures with commercial functions on the ground floors and residential functions on the upper floors, have undergone re-functioning to align with the changing needs of the period. In this process, in addition to the preservation of the architectural characteristics of the buildings, ground floors were designed strategically in order to establish a renewed relationship with the Istiklal Avenue. A comparative analysis of the interventions applied to the buildings revealed that the Botter Apartment preserved its original spatial configuration to a greater extent due to the limited structural intervention resulting from its new flexible programme. On the other hand, the Baudouy Apartment underwent more extensive interior changes due to the technical requirements related to its adaptation to a museum function. In terms of ground floor relationships, both buildings exhibit an open engagement with the street level. In the Botter Apartment, this is achieved through a strong

visual and spatial dialogue between the façade and the exhibition space, while in the Baudouy Apartment, the ground floor has been allocated to socially oriented functions such as a café, bookstore, and multi-purpose spaces, fostering active interaction with the public realm. Overall, both buildings stand out as significant examples, distinguished by their architectural integrity and spatial programs, when compared to other repurposed buildings in the area.

In conclusion, a holistic design approach in the refunctioning of historical buildings is important in terms of preserving architectural integrity and strengthening continuity in the urban fabric. The case studies highlight the importance of context-oriented approaches in adaptive reuse, not only in preserving architectural heritage but also in fostering a dynamic and sustainable urban environment. As this approach continues to develop, adaptive reuse will remain an important conservation strategy that shapes the cultural and social fabric of historic cities and contributes to their transmission to the future.

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Revitalizing industrial heritage: participatory reuse of Zitomlin silos in Belgrade

Revitalização do património industrial: reutilização participativa dos silos Zitomlin, em Belgrado

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Abstract

Post-industrialization is a turning point that revealed the heritage value of industrial buildings belong to the "industrialization period" that had lost their function. The variety of industrial heritage buildings and prevailing architectural paradigms has led to an increase in reuse techniques. Furthermore, within a particular context, reuse has resulted in the creation of distinct meanings. Various application examples have resulted in innovative, inventive, and unconventional experimental implementations carried out as labs, like silos. The study highlights the significance of engaging users in transforming the silos' former industrial role into a cultural hub that aligns with public and social needs, particularly in developing countries like Serbia. As an example of the adaptive reuse movement, the "Silosi Beograd" demonstrates how participatory design and production methods can address contemporary social and cultural demands while preserving historical identity. By connecting the past with the present, the study proposes a sustainable framework for guiding similar initiatives.

KEYWORDS
Adaptive reuse
Silos
Cultural identity
Social sustainability
User-participation

Resumo

A pós-industrialização é um ponto de viragem que revelou o valor patrimonial dos edifícios industriais pertencentes ao "período da industrialização" que perderam a sua função. A variedade de edifícios patrimoniais industriais e os paradigmas arquitetónicos predominantes aumentaram as técnicas de reutilização. Além disso, num contexto específico, a reutilização criou interpretações distintas. Vários exemplos resultaram em implementações experimentais inovadoras, inventivas e não convencionais, como os silos. O estudo destaca a importância de envolver os utilizadores na transformação da antiga função industrial dos silos num centro cultural que se alinhe com as necessidades públicas e sociais, particularmente em países em desenvolvimento como a Sérvia. Como exemplo do movimento de reutilização adaptativa, o "Silosi Beograd" demonstra como os métodos participativos de design e produção podem responder às exigências sociais e culturais contemporâneas, preservando simultaneamente a identidade histórica. Ao ligar o passado ao presente, o estudo propõe um quadro sustentável para orientar iniciativas semelhantes.

PALAVRAS-CHAVE
Reutilização adaptativa
Silos
Identidade cultural
Sustentabilidade social
Participação do utilizador

Introduction

In the post-industrialization period, new technologies often lead to the establishment of new industries and the closure of older ones. Abandoned industrial structures hold historical, social, and architectural significance, forming part of our industrial heritage that should be preserved for future generations. In particular, silos have been symbols of the mechanisms of the production system. Originally constructed for storing things, silos have been creatively turned into residences, social centers, and cultural spaces [1]. This change is especially visible in cities like Buffalo, Chicago, and Cape Town, where historical values are kept alive and silos serve as powerful reminders of the past [2].

This study examines Serbia's efforts to revitalize "Zitomlin" silos into "Silosi Beograd" while transforming its industrial and commercial identity into a cultural one. As the capital of a developing country, Belgrade's growing tourist appeal and developing economy make it an ideal location for preserving and reevaluating industrial heritage as a means of reflecting cultural identity. Particularly from the perspective of developing nations, this research aims to explore how such transformations align with changing public values and socio-cultural identities. Furthermore, the reuse of the industrial heritage site depends largely on viewing the study through the lens of participatory design and production techniques. At every stage of the process, community members, designers, and other participants are involved. This collaborative approach not only ensures that the design reflects local needs and values but also empowers communities to take ownership of the transformation process. They generate these structures in places that are significant to communities and bridge the gap between the past and the future.

The objective of this research is to investigate how to repurpose silo structures as industrial heritage sites using participatory design and production methods. The potential for the sustained growth of this approach is examined using Iverson and Dindler's four forms of sustainability: maintaining, scaling, replicating, and evolving [3]. For this approach to be properly assessed and contextualized, data obtained from interviews with users of the "Silosi Beograd" structure are analyzed to identify the presence of four types of user participation – doing, adapting, making, and creating [4] – as indicators of an existing framework that supports the continuity of the participatory process approach. Then, the results are examined through these sustainability lenses to come up with an overall strategy to encourage the long-term use of these industrial heritage sites.

This study aims to explore long-term, user-centered strategies for transforming iconic industrial structures like silos, as demonstrated by the "Silosi Beograd" case, showing how such methods can help developing countries adapt their identities to today's social and cultural needs.

Revitalizing industrial heritage in the post-industrial era

The Industrial Revolution had a major impact on port cities, which were important hubs in global trade networks. Because of increased economic activity and advances in technology, these cities had to construct additional structures to meet the needs of new manufacturing and storage operations [5]. Large-scale, mechanized operations such as the construction of silos, tank farms, and warehouses were initiated, along with the development of new port extensions [6].

However, as economic models shifted and industrial activities decentralized, many once-vital buildings like silos and warehouses gradually lost their primary functions. This change marked the start of a period of transition in which these structures became less beneficial.

Following that, in the post-industrialization period, advances in transport, shifts in global trade, and new storage methods rendered many of these structures obsolete, until

contemporary urban redevelopment restored them in alternative ways. The modification of these storage structures is part of a broader urban development trend that aims to improve the appearance of waterfronts by transforming abandoned docks and industrial sites into new ones. This plays a significant role in port city revitalization [7-11]. By blending the historical and architectural importance of these sites with modern city life and making sure they still benefit the community, this reuse of old industrial buildings helps keep the cultural identity of the city.

Participation for sustainable adaptive reuse

Adaptive reuse of historic industrial structures plays a crucial role in balancing the preservation of cultural and communal significance with ensuring their ongoing functionality. The preservation of industrial heritage has gained increasing international attention, particularly within the framework of heritage conservation charters and specialized organizations. The ICOMOS Burra Charter [12] emphasizes that heritage sites should be conserved in ways that respect their historical significance while allowing for adaptive reuse. Within this framework, the International Committee for the Conservation of Industrial Heritage (TICCIH) plays a central role by advocating for the protection and revitalization of industrial sites. As a key advisory body to ICOMOS, TICCIH contributes expert guidance to UNESCO World Heritage nominations, ensuring that proposals align with the foundational principles of the Venice Charter.

Complementing these efforts, the Nizhny Tagil Charter and the Dublin Charter [13] serve as significant initiatives specifically focused on industrial heritage. These charters underscore the importance of interpreting industrial sites within their broader social, cultural, and historical contexts. They highlight the role of such sites in sustaining collective memory and community identity and provide concrete frameworks for their conservation and reintegration into contemporary urban and social life [14]. Together, these charters and institutional collaborations underscore the critical importance of safeguarding industrial heritage not only as physical remnants of the past, but as active components of cultural continuity and social engagement.

Redevelopment of port areas leverages strategic locations to create citizen-friendly, socially sustainable spaces, fostering inclusivity and community engagement [15]. In this changing framework, the definition of heritage includes a sustainability aspect as well. This makes it necessary to rethink how heritage conservation efforts can be in line with sustainable development [16].

A critical yet often overlooked dimension of this process is the role of heritage sites in preserving collective memory and cultural identity. Industrial and port-related heritage sites are deeply embedded in the historical narratives of local communities; they serve as spatial anchors for shared experiences, labor histories, and socio-economic transformations. When these spaces are erased or redeveloped without consideration of their cultural meanings, communities risk losing vital connections to their past. Conversely, adaptive reuse strategies that integrate elements of memory, storytelling, and public engagement can reinforce a community's sense of belonging and continuity.

Thus, heritage conservation in post-industrial urban areas should not only be seen as a tool for physical or economic revitalization, but also as a social practice that sustains intergenerational memory. Preserving the material traces of the past, such as silos, warehouses, or port structures, becomes a way to reframe these spaces as living parts of the city's collective narrative – spaces that can educate, inspire, and foster identity in the context of rapid urban change. This perspective supports a more holistic approach to sustainability, in which cultural continuity is considered as essential as environmental or economic resilience.

Effective public participation in production and managing industrial heritage sites enhances their long-term relevance and sustainability by promoting more profound engagement with historical and communal values. This participatory approach fosters ownership, strengthens social cohesion, and activates users as collaborative partners in site

transformation, rather than passive observers [3]. In turn, this inclusive model reinforces adaptive reuse strategies and contributes to more equitable, resilient, and socially grounded urban environments.

From mechanical production to intuitive use: the transformation of silos

The transformation of the mechanical infrastructures of port cities, including silos and warehouses, into social spaces represents a shift in urban redevelopment. Historically, silos stored plant feed, grain, or cement, enabling large-scale trade and contributing to port city growth. These buildings eventually became symbols of their industrial past. These silos were some of the first to use reinforced concrete technology, which was a big step forward for building things in both agriculture and industry all over Europe, as Giuliani et al. points out [17]. These "mechanical miracles" are still important parts of the cityscapes that they help define the skyline [1], even though they are not functioning as storage anymore.

The "incredible mountain-like" grain elevators of Buffalo and Chicago, famously described by architect E. Mendelsohn in the early twentieth century, underscore the considerable urban planning and architectural value of these structures [18]. Since the early 2000s, there has been a discernible movement towards community-led reuse of industrial heritage sites, including abandoned port areas in Europe and America. This "grassroots" approach – rooted in the active involvement of ordinary people at the local level – represents a "bottom-up" process in which initiatives originate within communities and work upward to influence broader urban redevelopment strategies, policies, and social norms [19]. By challenging traditional top-down commercial redevelopment methods, it critiques capitalist economics and the privatization of public spaces, while fostering genuine and enduring connections between communities and their environments [19-22]. Furthermore, this bottom-up mode of engagement offers an alternative to approaches dominated solely by expert control, instead promoting a model in which expert guidance actively supports and facilitates the inclusion of users in the planning and production processes, enabling local stakeholders to play a decisive role in redefining the functions and meanings of these heritage sites [23].

One of the earliest notable examples of silo reuse involved the transformation of a Barcelona cement factory into a corporate headquarters named La Fabrica (Figure 1). More recent adaptations have repurposed grain elevators into student housing and residences, such as the 1961 silo in Fuentes de Andalucia, Spain, which was converted into a cultural facility [17]. While both individual initiatives and public funding have driven conventional redevelopment efforts, local community-based reuse plays a crucial role in fostering social significance and acting as a catalyst for regeneration, compared to conventional adaptive reuse practices [24].

The concept of adaptive reuse is increasingly coming to the forefront as a means to redefine buildings with symbolic significance but no current function, facilitating their engagement with potential users. Silos, as vertical industrial structures, not only exemplify monumental or symbolic figures but are also showing how they can be reintegrated through new uses. In this context, participatory design methods are gaining traction as a viable methodology for reinvigorating such structures, reflecting a growing emphasis on collaborative approaches in heritage sites.

Figure 1. Adaptive Reused Barcelona Cement Factory as La Fabrica: *a)* exterior; *b)* interior (photo: Kristina Avdeeva) [25].

Reproduction of new values for silos through participatory design

Sustaining social value is essential to mitigating gentrification, the socio-economic transformation that can displace existing communities and lead to monopolization by specific groups [26]. Cizler highlights the role of civil initiatives in countering gentrification [27]; however, paradoxically, these well-intentioned efforts may unintentionally accelerate it by increasing the social and economic attractiveness of an area. The adaptive reuse of industrial sites – initially driven by political and critical motivations aimed at challenging dominant urban development models and reclaiming underused spaces [15] – has expanded beyond these goals to emphasize social and functional revitalization. The transformation of the Franciszek Ramisch factory in Łódź by Fabrykancka (Figure 2b) – a collective of artists and students – exemplifies this shift, using art as a means of fostering community engagement and strengthening local identity through exhibitions, concerts, and workshops inviting residents to shape the site's cultural life. However, while enriching social value, it inadvertently contributed to gentrification, displacing the original initiators as the area was transformed into a tourism-oriented market space. Plevoets and Sowińska-Heim [24] highlight the need for sustainable social value in such projects to mitigate displacement. Similarly, Amsterdam's NDSM-Werf (Figure 2a) has seen its former shipyards revived by an artist community via low-cost upkeep, modest renovations, and affordable rentals, reinforcing the delicate balance between revitalization and retaining the social fabric.

Figure 2. Vernacular adaptive reuse of industrial heritage sites: *a)* NDSM-Werf (Photo: Alf van Beem); *b)* Franciszek Ramisch Factory (photo: Autorstwa Zorro2212) [28-29].

An example in Mostar, Bosnia and Herzegovina demonstrates a commitment to social sustainability with a project involving 24 silos of Zipotromet Factory (Figure 3) with participatory activities engaging diverse community groups. Martinović and Ifko note that the project combined heritage preservation with creative community use by organizing cultural programs, art workshops, and open public discussions, transforming the silos into a focal point for post-conflict urban regeneration [15]. Another example is the reuse of Buffalo's early grain elevators, now known as Silo City (Figure 3), which are actively used by the local community for cultural events, public gatherings, and artistic projects. They operate outside traditional markets, often without major funding. Unlike mainstream preservation projects, Silo City's privately owned model does not prioritize inclusion in local or national registry listings. Instead, a diverse group carries out significant projects without relying on traditional preservation funding. This approach is characterized by cost-effective, community-led restoration efforts and "flexible outcomes" – results that are not rigidly predetermined but evolve over time in response to community needs – prioritizing public arts and cultural events over permanent modifications aimed at generating higher revenue.

A similar focus on community connection and cultural value can be seen in Montreal's New Harbour-front initiative, which rehabilitates five Port of Montreal properties (Figure 3b), including Silo No. 5 [1]. In this project, activities such as architectural tours and a dedicated website are used not primarily for tourism, but as tools to increase public awareness of the site's history and significance [16]. By framing these activities as educational and cultural experiences, the project avoids the pitfalls of tourism-driven gentrification and instead strengthens the link between heritage, community engagement, and inclusive public access. This approach shows how adaptive reuse can bridge the historical identity of port structures with new, socially sustainable uses.

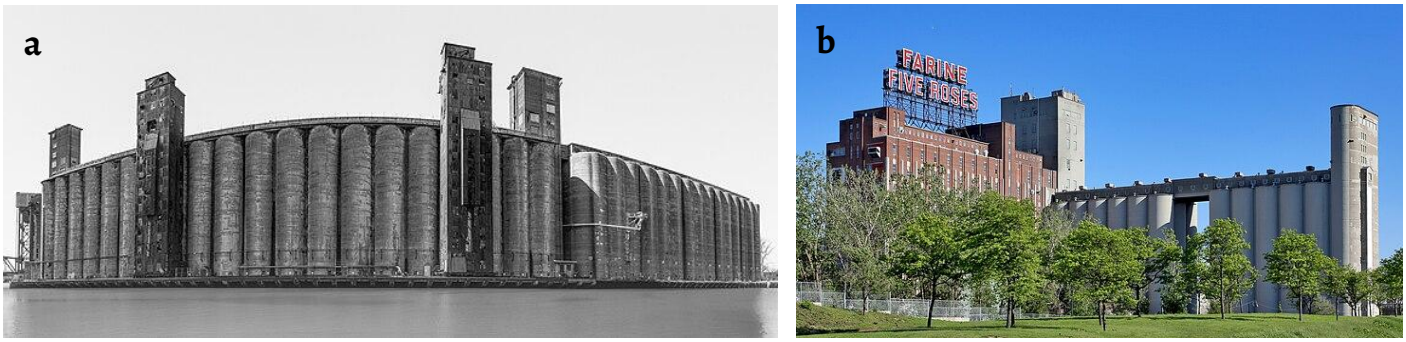

Figure 3. Silos: *a)* Silo City in Buffalo (photo: Flickr-sagesolar [30]); *b)* Silo No.5 in Montreal (photo: Denis Tremblay [31]).

Participatory production process in adaptive reuse

User participation, enriched by participatory democratic ideals, is crucial for the sustainable development of communities, encompassing design and production processes that enhance user experiences. Participatory design and production directly involves end-users to understand their needs and integrate feedback throughout the process [4]. User involvement can be implemented through various methods and targets integrating user feedback at every stage of design.

This approach requires balancing economic, social, and preservation factors while addressing historical, technological, and symbolic values within a community framework [17]. Active citizen involvement is central to this process, as it fosters a sense of belonging and strengthens community ties. As demonstrated by Martinović & Ifko [15] through experimental site studies, such participation plays a vital role in the long-term regeneration of neighborhoods – particularly in post-conflict areas – by promoting cultural identity, collective memory, and place attachment.

Participatory design and creation approaches encourage users to engage with varying levels of creativity – doing, adapting, making, and creating – within a unified process [4]. "Doing" refers to users actively engaging with the design in its current state – through direct use, testing, and observation – thereby providing experiential feedback that can inform immediate improvements. "Adapting" involves users modifying existing designs to better suit their specific needs or contexts, personalizing the solution. "Making" represents a deeper level of involvement where users actively contribute by constructing or assembling parts of the design themselves, integrating their own ideas. "Creating" is the highest level of creative involvement, where users collaborate equally with designers to develop new concepts and solutions from scratch. According to Sanders & Stappers [4], engaging users across these levels not only enriches the design process but also ensures that the final product more effectively meets real-world needs.

Although this participatory process – covering every stage of production and use – may initially seem slow and labor-intensive compared to a user-focused design approach based solely on feedback, it ultimately leads to products and initiatives that are more readily embraced by their intended audience. This leads to the development of longer-lasting, more satisfying, and advanced products, enhanced through participatory design discussions [32]. Participation encompasses various forms of decision-making among involved groups and is most effective when designed to meet specific community needs. Successful community participation requires commitment from initiating local governments or agencies, which must be open to and value citizen input [33-34].

The participatory design process is a methodology in which users are directly involved and play an active role at every stage of the design. It is particularly valuable in the adaptive reuse of industrial heritage sites, such as silos, because it engages individuals who already have a cultural, historical, or emotional connection to these spaces. By enabling them to articulate their needs, ideas, and experiences, this approach fosters a sense of ownership and strengthens the relationship between the site and its community. Rather than imposing top-down solutions, participatory design ensures that the transformation reflects local values and expectations, leading to outcomes that are more meaningful, sustainable, and widely accepted. Instead of traditional top-down management, adopting a bottom-up, grassroots approach that enables users to create solutions based on their own needs and expectations enhances sustainability and fosters stronger community acceptance in such projects [19]. The creative contributions of users not only make the design process better but also strengthen the engagement and functionality of the final product within the community. Thus, historical structures like silos are not only preserved but also transformed into vibrant and functional spaces that serve the needs of modern society. This process shapes the future by focusing on its users while continuing to value the past.

Case study: social adaptation of Zitomlin silos in Belgrade as a community-driven model of participatory design

The Zitomlin Silo structures, landmarks in the Danube River Industrial Zone's Dorćol port, represent Belgrade's industrial heritage and have been revitalized into "Silosi Beograd," a dynamic center for art, education, sports, and environmental activities [35]. This transformation, a local example of user oriented adaptive reuse, contrasts with the commercial redevelopment of Belgrade's Sava riverfronts. The evolution of the Zitomlin Silos within this context marks a significant phase in Belgrade's urban transformation.

Adaptive reuse of Zitomlin silos as "Silosi Beograd" cultural center

Located in the Lower Dorćol area along the Danube River, the Danube Industrial Zone hosts the Zitomlin silos, a landmark of ongoing adaptive reuse. These silos, part of the region's first industrial area linked to rail and ship traffic, stand beside the ICOMOS-recognized Snaga i Svetlost power plant (Figure 4 and Figure 5). While the power station is included in the Marina Dorcol transformation project, the silos are part of a general urban development plan aiming to utilize this historical industrial area [36].

Built in 1955, the four monumental concrete silos – each standing 28 meters tall and featuring 64 honeycomb-like cells – gained prominence during the 2011 Mikser festival, where they served as a backdrop for projections and cultural events [40]. In 2021, these silos were revitalized by the Gaia movement into "Silosi Beograd, a community hub hosting artistic and educational activities". The site includes exhibition spaces in silos along the riverbank and a "beegarden" for beekeeping behind the silos (Figure 6).

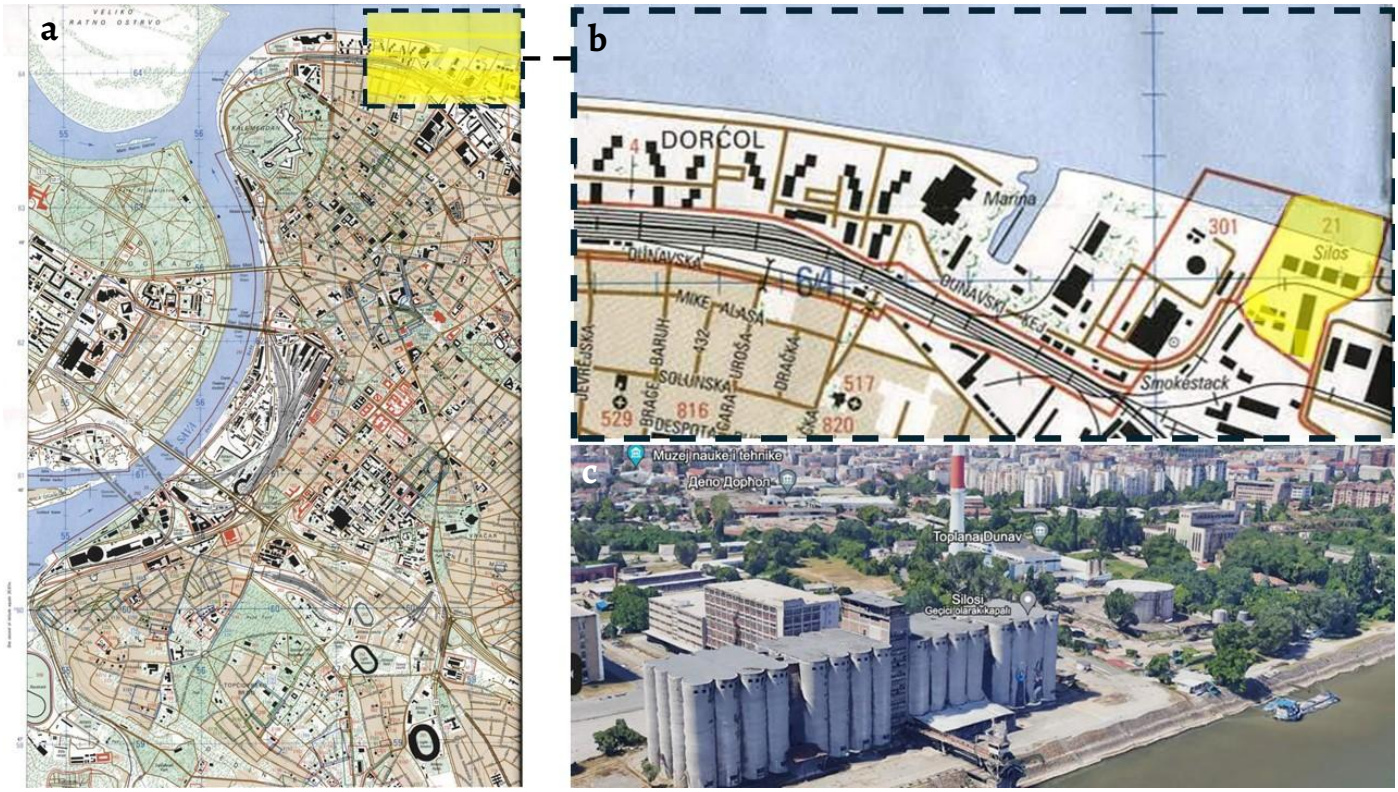

Figure 4. Silosi Beograd: *a-b)* City location map diagram (map source: U.S. National Imagery and Mapping Agency, 1999) [37]; *c)* Google earth view [38].

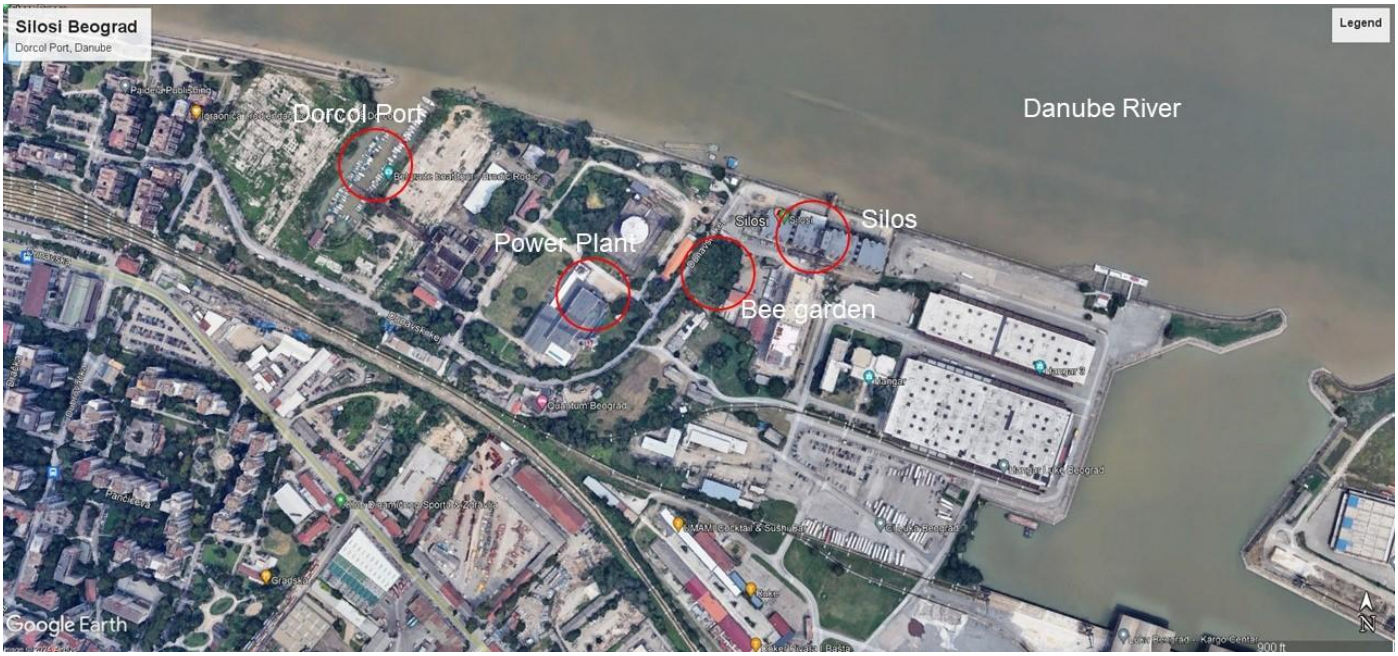

Figure 5. Silosi Beograd location map on Lower Dorcol Area (produced from Google Earth [39]).

Figure 6. Adaptive reused: *a)* outdoor and *b)* indoor spaces of silos (photo: Sadko [41]).

The Zitomlin Silos along Belgrade's Danube River exemplify how industrial heritage can be reimagined through community-driven initiatives. Managed by the company named "Port of Belgrade" and leased to the "Gaia Movement" for eight years, the site transformed into a vibrant hub with public amenities, murals, and open spaces. Today, it hosts over 300 events annually – 90 % of which are free – drawing more than 35,000 visitors. The initiative prioritizes inclusivity, serving seniors, families, and the Romani community, with funding from sponsors and additional revenue from space rentals. Unlike market-driven projects, Silosi Beograd's grassroots model strengthens local identity and redefines the waterfront.

Methodological approach

This study examines how the silo area meets the criteria of a sustainable participatory design and production (PD) model, emphasizing the role of industrial heritage in promoting social sustainability within Belgrade's urban planning. It explores how participatory processes intersect with the silo as an industrial heritage resource and new adaptive reuse approaches for sustainable development. The research is guided by two main questions:

- What benefits does participatory design and production bring to the reuse of silos as industrial heritage?
- Does the reuse process of the Zitomlin silos in Belgrade as the "Silosi Beograd" cultural center have a decisive impact on determining the sustainability of the area or facilitating the process itself?

In the initial phase of the research, the benefits of reusing the Zitomlin silos as Silosi Beograd (SB) will be analyzed. The second phase will focus on the participatory community of founders, experts, and volunteers. To explore this dynamic, semi-structured interviews will be conducted with two of the seven members – an SB founding member and an expert who served as a co-designer during the design phase. Finally, the project's methodologies will be assessed within the framework of the four forms of sustainability, based on the participatory creation model proposed by Sanders & Stappers [4].

The objective is to identify participants involved in planning, and decision-making processes through semi-structured interviews, and to determine those who can apply different creativity levels – creating, making, adapting, doing [4]. In line with this goal, the "Silosi Beograd" is intended to be tested and assessed as a participatory design model, examining participant profiles, type, degree, and duration of participation [42]. Additionally, the research will discuss which forms of PD method the cultural center meets in terms of social sustainability, as they provide a framework to evaluate the long-term viability, adaptability, and impact of participatory initiatives. Iversen propose four forms of sustainability that can guide community initiatives: maintaining, scaling, replicating, and evolving [3].

The "maintaining" form investigates how initiatives developed during participatory processes are integrated into existing post-project practices to preserve them in the same context. The primary factor affecting this form is the degree to which the sense of ownership and stakeholder engagement is successfully embedded within the community structure. The "scaling" form allows participants beyond the core designers and researchers to take significant roles, transitioning initiatives from small communities to larger organizations. "Replicating" involves adapting initiatives to different contexts of similar sizes, keeping the system or method constant but altering content. Lastly, the "evolving" form signifies a transformation in the ideas, systems, and practices of initiatives or catalyzing new processes.

The investigation will assess whether "Silosi Beograd" functions as a maintainable, scalable, replicable, and evolvable participatory design (PD) model [3]. Within this framework, participants in the semi-structured interviews were asked on the three key topics:

- Identification of site planning and decision-making processes across four different levels of creativity: creating, making, adapting and doing;
- Assessment of PD sustainability forms: maintaining, scaling, replicating, and evolving;
- Perspectives on the transformation process of the Dorcol port area where SB is located.

To implement this methodological framework, the study began with an on-site visit to observe the silo area's physical and spatial qualities, with field notes taken. This was followed by a review of the site's historical background and operational structure to understand its institutional and social context. From this analysis, key stakeholders – coordinators and active users – were identified. Semi-structured interviews were conducted with representatives from both categories: an SB founding member and an early-phase co-designer. These interviews, carried out online and lasting approximately two hours each, providing insight into user engagement, planning dynamics, and participatory production. The qualitative data obtained were subsequently analyzed in relation to the design and use practices observed at the site, allowing for a comparative assessment of how the participatory design model has been implemented in Silosi Beograd.

Findings and synthesis

Based on interviews with participants, data gathered highlighted that the initial principle of the creation process, "creating", prominently involves the founding members of the team. This is supported by statements from Participant 1 and Participant 2 during the interviews.

Participant 1:

> *I proposed repurposing existing buildings to the Port of Belgrade authority, which led to them renting these spaces under an eight-year contract. Alongside my brother, who oversees musical events, we transformed the adjacent Silosi property into a community space and established a bee garden in response to the decline of bees in Belgrade. Furthermore, we reimagined the silos as an outdoor art district, where artists create murals that express global issues such as climate change, education, and heritage, embodying our movement's pillars: agriculture, education, public health, and environmental protection.*

Participant 2:

> *I joined the organization last year at the founder's invitation to help establish the beegarden. Now, my brother and I manage it. After clearing the site with the founder and his brother, we introduced bees as part of an urban beekeeping experiment to observe their adaptation to the urban environment. The following year, we began creating a honey garden.*

These statements indicate that during the "creating" phase of the development, individuals in founding member positions within the community have a greater say, but the same individuals also contribute to the "making, adapting, and doing" phases along with others. These insights also inform about the involvement of three other participant profiles in the community in these initiatives (Table 1).

Regarding the production of spaces in the initiative, Participant 1 states:

> *My brother and I cleaned up the area, brought in electricity, and initially tried to create a cafe with his friends focusing on a modest, comfortable setup. We minimized resource use to revitalize the space, with major investments in plumbing and heating systems. Insulating the 700m^2 silo structures was a significant task. Starting with limited personnel and financial resources, we heavily relied on our personal funds.*

Since the opening of the space, the roles of community members have evolved across various phases of the creation process:

> *After setting up the initial operations two and a half years ago, the project gradually evolved into a more participatory system as word spread and more people joined. A friend took on the role of program coordinator and began selling his own brand products, designing his sales area. Meanwhile, her brother transformed one of the silos into a climbing wall. My brother's team, including three waitresses, launched their brand and opened their own business within Silosi.*

Table 1. Participant inputs categorized by forms of creativity.

Form of Creativity	Definition	Participant Profile / Example Activity	Quote / Summary
Creating	Generating new ideas and initiating the design process	Founding members	"I proposed repurposing existing buildings… we reimagined the silos as an outdoor art district…" (P1)
Making	Physically implementing ideas	Founders + volunteers	"We cleaned up the area, brought in electricity… invested in plumbing and heating…" (P1)
Adapting	Modifying existing spaces or ideas to meet new needs	Expert members, artists	"We brought in a landscape architect… turning into a health center…" (P2)
Doing	Day-to-day operations, event organization, and maintenance	Program coordinator, students, visitors	"Hosted 320 events, including performances, exhibitions, and workshops…" (P1)

From this, it is evident that over time, the number of people involved in the production process has increased, their profiles have diversified, and they have become influential in shaping the spaces through all the creative phases.

Participant 2 describes a process involving experts from various fields with the following words:

> *We brought in a landscape architect to help design our beegarden, aligning them with our vision. Meanwhile, my brother and I are working on a new section of the honey garden that we're turning into a health center where people can come and breathe in the air from the bees. We've already found a doctor, and a therapist will be joining us soon. We also produce our own brand of honey and sell it, with all the proceeds going back into the garden to support our initiatives.*

The following statements by Participant 2 respectively indicate that the spatial formation has been supported by new programs, and that there has been an increase and diversification in the number of users. This can be considered an indicator of "evolving" a form of sustainability from statement of Participant 1:

> *Last year, we attracted over 200,000 visitors and hosted 320 events, including performances, exhibitions, and university collaborations, involving over 300 artists. We're constantly innovating; after redesigning our honey garden, we're planning new workshops and transforming concrete lots into vibrant gardens. Our site, open until 11 PM in the summer, is human and pet friendly and caters to a younger audience with modern music. We offer free use to universities and are preparing an augmented reality app for virtual tours to enhance visitor engagement.*

In addition, Participant 1 uses the following expressions for the initiative as a whole:

> *This is my first pioneering project, inspired by successful developments like NDSM Werf in Amsterdam and a silo project in South Africa, transforming abandoned urban areas. Last year, we supported Serbian projects advocating for clean water, hosted a festival for the Danube region, and implemented a no-plastic policy to address environmental concerns.*

Participant 1's statements indicate that this project was the community's pioneering initiative, drawing inspiration from existing projects as examples of "replicating," and that the creation of partnerships with different projects meets the "evolving" form of sustainability. Thus, when viewed as a participatory initiative, it can be stated that the project exemplifies various forms of sustainability within its framework, serving as a model of effective sustainable practice (Table 2).

Table 2. Participant inputs categorized by forms of sustainability.

Form of Sustainability	Definition	Participant Profile / Example Activity	Quote / Summary
Maintaining	Preserving project outputs in the existing context over the long term	Founders, regular volunteers	"Continuous programming… embedded ownership…"
Scaling	Expanding from small communities to larger audiences	Diverse participant typologies, universities	"Expansion to diverse participant typologies… inspiring similar initiatives…"
Replicating	Applying the model to similar contexts	Founders' collaborations	"Inspired by NDSM Werf… supporting Serbian projects…"
Evolving	Transforming through new programs and ideas	Experts, artists	"Planning new workshops… AR app for virtual tours…"

Discussion

While the spatial creation process was originally shaped by the founders' ideas during the "creating" phase, it later evolved to include expert members and gained additional support from external professionals during the "adapting" and "making" phases. Throughout this process, a diverse range of participants – including paid student volunteers, artists, hired professionals from various disciplines, and regular visitors – became involved at different stages, reflecting the layered and evolving nature of participation within Silosi Beograd (SB)'s Participatory Design (PD) model. The direct involvement of end-users, particularly artists and students through exhibitions, workshops, and various social events, is quite evident. Founders and expert members often participate as cooperative design partners, while hired experts contribute as informational resources. Some expert members engage both as cooperative project and design partners, and artists also partake as design partners. Students, serving as paid volunteers, participate in diverse roles, contributing to programs for youth, biennials, and university-organized workshops. Regular visitors, a crucial component of the end-user profile, significantly enhance the social value of SB by fostering a sense of continuity, community interaction, and informal knowledge exchange within the space.

Over time, participation expanded from founders to a wider range of users, making the process more inclusive. With the growing variety of participant typologies, the sustainability forms of scaling within the participatory initiative process are evident. Initially, the spatial creation process was driven by founders' ideas in the "creating" phase, which evolved to include expert members and further supported by external experts in the "adapting" and "making" phases.

The discussion on SB's social sustainability evaluates its viability as a maintainable, scalable, replicable, and evolvable PD model. Community members involved in the creation process, along with added experts, students undertaking temporary roles, and visitors, have shared different roles, highlighting SB's sustainability as a PD model, particularly in terms of the "scaling" principle. The initiative has evolved into a process supported by new programs, with increasing and diversifying user numbers, indicating "evolving" sustainability. It aligns with "maintaining" as a form of sustainability, considering its long-term participant design model plans. However, uncertainty arises due to the site's eight-year tenure of usage rights. Meanwhile, SB serves as a case study for community members, inspiring similar initiatives, which fulfills the "scaling" and "replicating" aspect of sustainability. Notably, the "evolving" and "scaling" principles prominently underscore the project's sustained community impact.

In light of the findings, the participatory design and production process implemented at SB evolved from a founder-led "creating" phase to a broader participant base that included experts, students, artists, and regular visitors. This shift facilitated the rapid activation of the abandoned silos, enhanced social interaction, and raised public awareness of industrial wastelands as heritage assets. When evaluated according to Sanders & Stappers' four forms of sustainability, maintaining is evident through continuous programming and embedded ownership, scaling is reflected in the expansion to diverse participant typologies and inspiring others as a case study, replicating emerges from the model's adaptability to similar contexts, and evolving is demonstrated by the ongoing addition of new programs (e.g., beekeeping-based health/learning initiatives, digital/AR applications). Thus, the process not only facilitated the acceptance of the design and the revitalization of the site but also contributed to the sustained social life of the area.

Table 3. Cross-tabulation of creativity forms and sustainability forms.

Creativity \ Sustainability	Maintaining	Scaling	Replicating	Evolving
Creating	Founders' initial repurposing idea sustained through long-term programming	Initial vision inspired larger community engagement	Inspiration from NDSM Werf & other silo projects	Introduction of new cultural themes (e.g., climate change art)
Making	Maintenance of constructed spaces (e.g., plumbing, heating)	Expansion of physical facilities for broader audiences	Application of construction/innovation model in other small-scale projects	Continuous upgrades (e.g., climbing wall, garden improvements)
Adapting	Adjustments to keep functions relevant	Adaptation of spaces to serve larger events and users	Modification of original designs in other community settings	Development of new hybrid uses (e.g., beekeeping health center)
Doing	Daily operations ensuring continuity	Increased events & participants over time	Replication of event formats in other contexts	Innovation in activities (e.g., AR tours, thematic festivals)

Table 3 cross-maps the four observed forms of creativity (creating, making, adapting, doing) in SB's participatory design process with the four sustainability forms (maintaining, scaling, replicating, evolving) proposed by Sanders & Stappers [4]. This structure illustrates which sustainability outcomes each creativity form supports and how the process unfolds in a multi-layered way. The findings indicate that the founder-led creating phase contributed not only to maintaining the project but also to scaling the community and evolving through new programmatic additions. Similarly, the making and adapting phases preserved the functionality of physical spaces while incorporating new user profiles, enabling the model's replication in other contexts. The doing phase sustained day-to-day operations and event management, supporting both continuity and the emergence of innovative applications. This cross-reading reveals how forms of creativity and sustainability objectives reinforce each other, demonstrating how a holistic participatory model was built in the case of Silosi Beograd. However, the eight-year tenure of usage rights remains the primary uncertainty for long-term stability.

Conclusion

In Belgrade, the privatization of riverfronts and the transformation of historical industrial sites into high-value properties pose a threat to industrial heritage. Despite this, e-democracy efforts in the city tend to be reactive, often spurred by government actions rather than proactive civic engagement. Nonetheless, as highlighted by Nikolić & Vukmirović [36], there is an awareness among citizens of the heritage value, and engagement tends to correlate with this recognition. Civic groups, nonprofits, and citizen-led projects are very important for bringing these areas back to life. They want to protect built heritage and find new uses for old industrial buildings.

The Zitomlin silos, which are now called Silosi Beograd (SB), is a successful example of bottom-up adaptive reuse. As a participatory design model where different users interact with the space in ways that grows slowly over time [4]. Instead of product-focused, experiential and transformative design shows how heritage sites can become lively social places that do more than just allow for physical reuse.

In addition, the structural flexibility of industrial structures enables different types of users make a wide range of functional changes, which leads to a design process that focuses on making spaces and social settings adaptable to the needs of users. Civic-led projects can raise property values, but they also may bring the risk of gentrification. So, it is important to balance these projects with ways for people to have a say in how things are done in community spaces to keep them socially sustainable.

As a commentary conclusion regarding the role of international institutions such as ICOMOS, TICCIH, and UNESCO should all agree that participatory design principles and the long-term effects of social adaptation on the adaptive reuse process are important issues that need to be addressed. In particular, local user-oriented examples that are specific to industrial heritage sites should be monitored, and research should be done on sustainable adaptation as models for different industrial heritage structures.

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The Jerónimos Monastery (Lisbon, Portugal) and the Venice Charter: conservation and restoration challenges of a UNESCO World Heritage monument over the past 25 years

O Mosteiro dos Jerónimos (Lisboa, Portugal) e a Carta de Veneza: desafios de conservação e restauro nos últimos 25 anos de um monumento inscrito na lista de Património Mundial da UNESCO

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Abstract

As sixty years have passed since the drafting of the Venice Charter (1964), this study aims to assess the importance of the principles outlined in the document using the Jerónimos Monastery (Lisbon, Portugal), a UNESCO World Heritage Site (1983), as a case study. The focus is on the two major conservation and restoration interventions carried out on the monument since 1983, centred on the Cloister (1998-2002) and the Church vaults (2012-2026), which have been presented as examples of excellence in both methodological and technical terms at both national and international levels. The analysis is based on the documentation, some unpublished, produced on the works; as well as on in situ observation and dialogue with the conservators and restorers. The aim is to provoke a reflection on current trends in monument intervention, grounded in an integrated and sustainable perspective of managing a UNESCO-listed monument, where interdisciplinary dialogue is prioritised.

KEYWORDS
Jerónimos Monastery
Venice Charter
Late gothic architecture
Conservation and restoration projects
Maintenance

Resumo

Sessenta anos depois da redação da Carta de Veneza (1964), este estudo tem como objetivo avaliar a relevância dos princípios nela consagrados, tomando como caso de estudo o Mosteiro dos Jerónimos (Lisboa, Portugal), monumento inscrito na lista de Património da UNESCO desde 1983. O foco incide nas duas principais intervenções de conservação e restauro realizadas no monumento desde 1983, centradas no Claustro (1998-2002) e nas abóbadas da Igreja (2012-2026), que têm sido apresentadas como exemplos de excelência, tanto do ponto de vista metodológico, como técnico, a nível nacional e internacional. A análise baseia-se na documentação produzida no âmbito das intervenções, parcialmente inédita, na observação *in situ* e no diálogo estabelecido com os conservadores-restauradores envolvidos. Pretende-se, assim, promover uma reflexão sobre as tendências atuais de intervenção em monumentos, assente numa perspetiva integrada e sustentável da gestão de um bem distinguido pela UNESCO, na qual se privilegia o diálogo interdisciplinar.

PALAVRAS-CHAVE
Mosteiro dos Jerónimos
Carta de Veneza
Arquitetura tardo-gótica
Projetos de conservação e restauro
Manutenção

Introduction

The Jerónimos Monastery, whose construction began around 1501 under the patronage of King Manuel I of Portugal (1469-1521), is regarded as one of the most significant examples of sixteenth century Portuguese architecture. Its construction was financed through dividends derived from maritime expansion. The monastery's architectural and decorative features, which incorporate distinctive late Gothic elements, contributed to its recognition in the nineteenth century as a unique and national architectural style, subsequently named "Manueline" in honour of its founding monarch [1, pp. 52-53] (Figure 1).

Over the more than 500 years of its existence, the Jerónimos Monastery has been shaped through multiple construction phases that initially extended into the mid-sixteenth century, adapting to evolving challenges. Notably, from 1833 onwards, the monastery was affected by the dissolution of the religious orders, leading to the evacuation of the monks of the Order of Saint Jerome and the subsequent repurposing of the site to house the Casa Pia de Lisboa orphanage institution. Throughout its history, the monastery has undergone numerous modifications, additions, reconstructions, and alterations to its utilitarian and artistic features. Additionally, its surrounding environment has evolved in tandem with the development of the Belém area [2, pp. 200-208].

In this case study, we will not focus on the architectural evolution of the building itself over its five-century history, as this subject has been extensively addressed by numerous authors [3-7]. Instead, in the context of the Venice Charter's 60th anniversary - the International Charter for the Conservation and Restoration of Monuments and Sites - the objective is to examine the influence of its principles on the various interventions carried out at the Jerónimos Monastery since its inscription on the World Heritage List in 1983. Simultaneously, the aim is to assess the relevance and contemporary validity of the contents of this foundational document of the International Council on Monuments and Sites (ICOMOS) in the twenty first century, in terms of the conservation and restoration of the monument under study. This assessment is framed by current trends in monument interventions, aspects that have yet to be thoroughly examined and reflected upon.

Figure 1. South façade of the monastery, 2013 (photo: A. Serralheiro).

The focus will be on the two most significant intervention campaigns carried out on the monument, documented since 1964: the *Cloister Conservation Intervention* (1998-2002) [8] and the *Conservation and Restoration Plan for the Church Vaults* (2012-2026). The former, characterised by an aesthetic dimension and a more conspicuous visual impact; and the latter, with a subtler effect – partly due to its location away from the main vantage points frequented by visitors – yet of considerable importance for the stabilisation of the vaults and their preservation.

To this end, multiple site visits were conducted, including ascending the scaffolding during ongoing works, analysing documentation produced within the scope of these interventions (such as proposals, reports, drawings, and photographs), and engaging in discussions with the conservators-restorers to clarify certain aspects and deepen understanding.

Before and after the Venice Charter (1964): criteria for intervention in the monument

With an increasing concern and interest in the preservation of national monuments, Portugal ratified the Venice Charter, with architect Luís Benavente (1902–1993) serving on the drafting committee [9, pp. 229-300]. The interventions in national monuments, coordinated since 1929 by the Directorate-General for National Building and Monuments (DGEMN), an entity overseen by the Ministry of Public Works, would, from that point onwards, follow the principles of the Venice document, reflecting the monitoring of the international policies in conservation and restoration of monuments, which has been applied in Portugal since the 1950s. Prior to this, practices were predominantly empirical, with limited theoretical debate among DGEMN technicians regarding monument intervention principles [9]. The approach was characterised by efforts to restore monuments to their original form, often involving hypothetical reconstructions and the removal of architectural and decorative elements (such as tiles, carvings, and stucco), originating from different periods.

The overwhelming effects of the intense and devastating bombings that ravaged Europe during the World War II, and which Portugal was spared, prompted a national debate regarding the restoration of monuments and the criteria and methodologies to be adopted. At the time, an unprecedented programme of monumental restoration was underway under the auspices of the dictatorial Estado Novo regime, led by António de Oliveira Salazar (1889-1970), who gave monuments a key role in his ideological propaganda [10, pp. 94-95].

Regarding the Jerónimos Monastery, which had undergone extensive interventions in the nineteenth century and was classified as a National Monument in 1907 [11], the scope of work carried out by DGEMN was relatively circumscribed. Notable conservation and restoration activities included the cleaning of the western and southern façades of the church, the consolidation of sculptural elements, the repair of joints on the church portals [2, pp. 409, 417], and the construction of a controversial galilee connecting the church and the former dormitory. An ongoing intervention plan for the cloister aimed to address persistent infiltration issues, that involved slabbing the terraces, filling stonework joints, clearing the channels of gargoyles, and treating the vaults [2, pp. 427-428].

In the following decades, the construction of new west and north aisles, designed in a neo-Manueline aesthetic style, facilitated more suitable accommodation for the Ethnology Museum (now the National Archaeology Museum) and the installation of the Navy Museum. During this period, interventions on the original features of the building were primarily focused on preservation, rather than restoration. These efforts mainly aimed to maintain the roofs, guttering, vaults, and windows, to address ongoing infiltration issues. Additionally, cleaning works were carried out on the cloister and the west façade of the church [12]. Contemplating this period, it is important to mention the establishment of a special protection zone for the monument, in 1960 [13]; the result of an increased awareness of the importance of safeguarding the building's broader context and its surrounding environment (Figure 2).

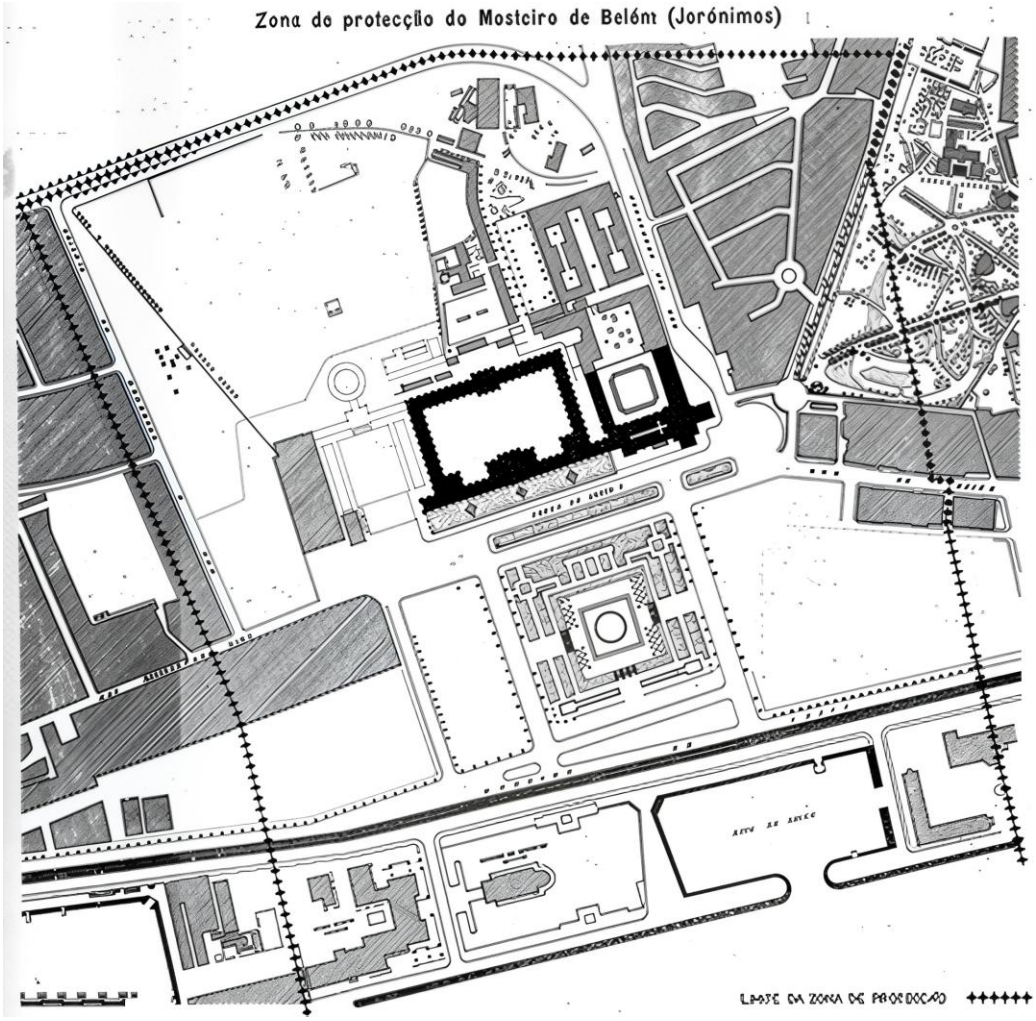

Figure 2. Special protection zone around the Jerónimos Monastery, 1960.

Between 1981 and 1983, in preparation for hosting the *17th European Exhibition of Art, Science, and Culture*, which featured the Jerónimos Monastery as a prominent highlight, several restoration and conservation measures were undertaken. These included the cleaning and washing of all decorative stonework in the cloister (first and second floors), as well as the sealing of joints and the creation of "stonework finishes to replace those that had deteriorated or disappeared" [14].

In summary, concerns are highlighted regarding the maintenance of the building, as outlined in Article 4 of the Venice Charter, and the utilisation of the monument, in accordance with Article 5 of the same document, which emphasises the safeguarding of its authenticity and respect for all that it represents. These principles extend to the relationship between the monument and its surrounding environment.

Following the inscription of the Jerónimos Monastery on the World Heritage List, conservation and maintenance activities have predominantly focused on the ongoing preservation of the monument, with occasional restoration interventions. These works include waterproofing the terraces to prevent water infiltration, cleaning the roofs, and the cleaning and restoration of the west and south portals of the church, as well as the stained-glass windows. A strong emphasis on preventative measures underscores the intention to preserve and enhance the architectural and artistic integrity of the original components of the monument, which comprise the church, sacristy, cloister, refectory, chapter house, and library. Notably, some of the restoration activities undertaken can be characterised as "preventive restoration", as Cesare Brandi defined it [15].

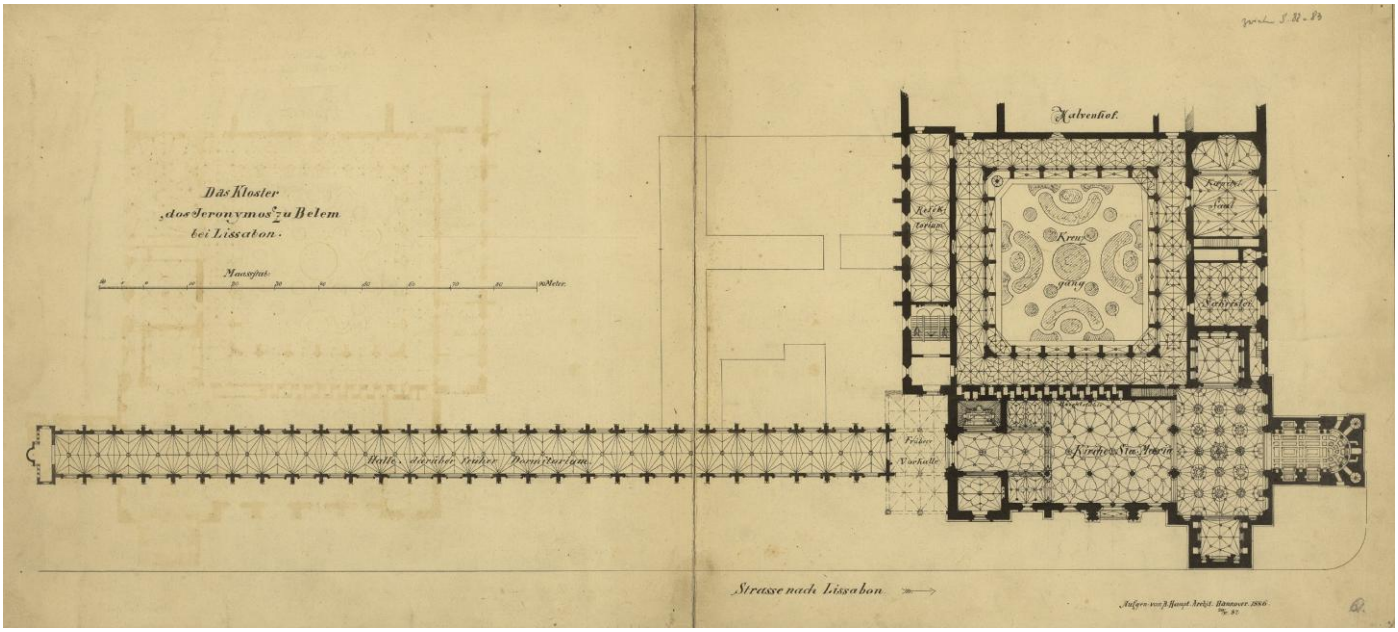

Figure 3. Albrecht Haupt, General plan of the Monastery of Santa Maria de Belém, Hanover, 1886 (Source's/UB, 32REPO-014).

These maintenance works aim to prevent major losses, such as the successful restoration and replacement of the church's stained-glass windows, or the restoration of its wooden doors, creating barriers against water, dust and other undesirable agents within the interior of the religious space.

The two most significant interventions recorded after 1983 were, as mentioned, the *Cloister Conservation Intervention* (1998-2002) and the *Conservation and Restoration Plan for the Church Vaults* (2012-2026). These will be the focus of the next sections of this study (Figure 3). Although restoration works were carried out during this period in the chancel, focusing on the conservation of the altarpiece by Lourenço Salzedo (1998-2000), this intervention has been excluded from the present study, as it concerned the restoration of a painted work and falls outside the scope of our architectural-focused approach [16].

Cloister Conservation Intervention (1998-2002)

The Jerónimos Monastery's cloister, situated to the north of the church, is often described as "a monument within a monument", consistently evoking high praise from visitors. In 1890, the German architect Albrecht Haupt (1852-1932) regarded it as potentially "the most beautiful cloister in the world" [17, pp. 98, 100]. This acclaim is attributed to the originality of its layout, which reflects the genius and technical mastery of the Biscayan master builder João de Castilho (1470-1552). Its sumptuous decorative features are particularly remarkable, contributing to its powerful scenographic quality within the architectural composition.

The cloister has undergone numerous interventions throughout its history. The most significant of these took place in the nineteenth century, during the period when the space was occupied by the Casa Pia de Lisboa orphanage, with the transformation of its aisles into student dormitories. When these were relocated to a newly constructed area in the 1880s, the cloister was restored to its former splendour [2, pp. 443-454].

By the end of the twentieth century, more than a century after the last major intervention to the cloister, its decorative qualities had been obscured by a layer of black stains. These were caused by excessive direct exposure to rainwater, resulting from alterations to the hydraulic system during the nineteenth century works [18, pp. 74-75] (Figure 4).

Figure 4. The cloister before the intervention, 1998 (photo: Nova Conservação, S.A.).

The issue, which DGEMN had been unsuccessfully attempting to address for decades, was subsequently resolved due to insights gained from research into the historic hydraulic system. Art historians, in the technical and scientific multidisciplinary team responsible for the intervention programme implemented at the cloister of the Jerónimos Monastery, played a crucial role in guiding and informing the understanding of both the cause of the problem and its potential solutions.

Project coordination and management

The intervention project conducted within the Jerónimos Monastery cloister is regarded as a pioneering case at the national level [8], owing not only to the significance of the site but also to the "quality of the organisation and working method" employed [8, p. 13]. As previously mentioned, a multidisciplinary team was assembled, incorporating experts from social sciences and the humanities, which ensured a comprehensive investigation and laid the foundation for informed decision-making throughout the process.

The importance of multidisciplinary teams is strongly recommended by the Venice Charter, which advocates a balanced group of humanists and scientists throughout conservation and restoration activities. Article 2 of the Charter states: "the conservation and restoration of monuments must have recourse to all the sciences and techniques which can contribute to the study and safeguarding of the architectural heritage" [19]. Nonetheless, this interdisciplinarity is not always fully realised, particularly regarding the involvement of social and human sciences. This case is remarkable for exemplifying restoration guided by historical studies and taking them into consideration in decision-making, which remains a rarity in Portugal. The 1964 Venice Charter emphasises that "the process of restorations is a highly specialised operation," and that it "must be preceded and followed by an archaeological and historical study of the monument," cautioning that interventions should cease where conjecture begins (Article 9). In the case of the cloister, restoration actions were highly targeted, primarily aimed at repairing broken or fractured features and stabilising structures using stainless-steel dowels.

In addition to the historical studies, between 1998 and 2000, research was also conducted to analyse the stone and comprehending the various alteration phenomena affecting the monument. It was based on these principles – grounded in the highest level of scientific,

technical, and historical knowledge – that the complex conservation intervention in the Jerónimos Monastery cloister was carried out.

This project resulted from a partnership between the World Monuments Fund-Portugal (WMF-P) and the Institute of Architectural Heritage (IPPAR): the second collaboration between the two entities, following the work on the Belém Tower [20]. The close cooperation between these organisations secured funding for a significant portion of the intervention through sponsorship initiatives, ensuring a work methodology based on preliminary scientific and historical studies capable of supporting future decision-making. This also guaranteed control of deadlines and budgets, hiring the best specialists considering relevant study fields, along with the most advanced technology; particularly that used in stone cleaning.

In terms of intervention management, the pioneering decision in Portugal to keep the space open to the public during the works, with all necessary safety measures in place should be highlighted [21]. This was achieved through a phased approach, addressing one elevation of the cloister at a time [22, p. 85]. Concurrently, small documentary exhibitions were organised, allowing the public to observe the ongoing work and to perceive directly the intervention's progressive effects (Figure 5).

Following two years of preparatory work, the initial scaffolding was erected in February 2000 within the northern wing of the cloister. The project was completed two years later, in February 2002, with the conclusion of works on the western wing. This intervention transformed the appearance of the Belém cloister, characterised by a distinctive golden hue, typical of Lisbon's lioz stone, and of which there was no prior memory.

Over the course of four years, all activities undertaken were meticulously recorded in accordance with Article 16 of the Venice Charter, which stipulates that "there should always be precise documentation in the form of reports (…) placed in the archives of a public institution and made available to research workers. It is recommended that the report should be published" [19].

Figure 5. Ongoing works in the cloister, with visitors contemplating the intervention, c. 2000 (photo: D. Caldeira).

Four years after the conclusion of the works, an extraordinary publication was produced, extensively illustrated and featuring texts from the various intervention teams, providing a comprehensive account of all the actions carried out on the cloister, with technical sections translated into English [8]. This document serves as a significant record of the work accomplished and functions as a methodological, scientific, and technical reference for future projects of similar scope and nature.

Intervention and works carried out

The interventions, conducted by Nova Conservação, S.A., were divided into six major operations: the elimination of primary water infiltration issues; realignment and stabilisation of displaced stone blocks; re-mortaring and filling of joints; cleaning and removal of extensive bio colonisation; consolidation of deteriorated areas; and the application of surface protective finishes.

The initial operation was fundamental, as it facilitated subsequent procedures and was critical to their overall success, given that water ingress significantly accelerates the deterioration of stone, masonry, and mortar materials. Following this, two operations were particularly significant: the cleaning of the stone (covering approximately 22,000 m^2) and the re-mortaring of the joints (approximately 15 km of joints).

The stone cleaning process was characterised by considerable complexity, given the various types of dirt, the necessity to preserve traces of patinas or superficial orange layers, remnants of historical treatments [23, pp. 117-118], and the conservation status of the materials present in the monument. As documented, "each method used must be applied in such way as to be as effective as possible in removing the soiling while preserving the surface of the stone as well as its historic changes" [24, p. 103].

Consequently, an innovative approach was implemented, employing Laser Ablation for Material Analysis (LAMA) technology, which utilises fibre optic laser technology through ablation [25, pp. 156-159]. This method had not previously been applied in Portugal.

Approximately 800 m^2 of surface area were cleaned using laser technology, representing one of the largest areas cleaned with this advanced technique worldwide [22, p. 86]. This approach was deemed the most suitable, particularly for the external arcades of the ground floor of the cloister, which feature delicate sculptural tracery and where traces of colour from historical treatments needed to be preserved. The use of this method also allowed for reductions in costs and labour [26].

For the remaining areas, traditional methods were employed, including dry cleaning, wet cleanings and, in specific cases, chemical cleaning. The selection of appropriate methods was based on the nature of the dirt and the conservation status of the materials within the monument.

Regarding the re-pointing of joints, "one of the most intensive phases of the entire intervention" [24, p. 112]: open joints were filled, deteriorated mortar was removed and replaced, and joints previously filled with Portaland cement were corrected. For the re-mortaring, binders previously tested in the context of the Belém Tower intervention were utilised: a specialised white binder suitable for conservation and restoration purposes, combined with an aggregate composed of sand and ground marble. In the internal wall joints, a pigmented limewash patina was applied, employing earth-tone colours to approximate the natural hue of the stone.

Following cleaning and re-pointing, a protective coating was applied to all surfaces within the cloister. This coating consisted of a translucent pigment-based layer designed to incorporate only the necessary pigment to harmonise with existing chromatic traces. The primary objectives of this treatment were to slow down further deterioration of the stone materials, while achieving visual harmony with the monument's historic appearance.

The methods and materials employed in the conservation of the cloister are fully consistent with Article 10 of the Venice Charter, which advocates the use of traditional intervention

techniques. Where such techniques are impractical or deemed unsuitable, they should be replaced by modern methods if "the efficacy of which has been demonstrated by scientific data and proven through experience" [19]. Additionally, the overall approach was founded on the principle of minimal intervention, restricting actions to necessary cleaning, the application of essential mortars for re-pointing, and highly targeted restoration efforts, as previously outlined. Although the Venice Charter does not explicitly mention this principle, it emphasises that reintegration materials "should be the least that will ensure the conservation of a monument and the reinstatement of its form" (Article 5).

In pursuit of a long-term preventive conservation strategy, consistent with the recommendations for "ongoing maintenance" outlined in Article 4 of the Venice Charter, the technical team responsible for the project formulated specific guidelines for the ongoing maintenance and monitoring of the cloister. These measures were designed to anticipate potential issues and reduce the likelihood of more extensive and costly interventions in the future [27].

Conservation and Restoration Plan for the Church Vaults (2012-2026)

The monumental church of the Jerónimos Monastery, conceived as a *hallenkirche* with three naves of equal height, features a vault characterised by a complex reticulated rib system, which was unprecedented in Portugal at the time and executed by the already mentioned João de Castilho [28]. In the transept vault, the Biscayan architect reached the apex of his daring design approach, presenting an exceptionally ambitious technical solution that differs from that of the naves. He devised a single vault with a lowered profile, intended to span approximately 29 × 20 m and reaching a height of around 25 m above ground level.

The technical excellence, visual impact, and contribution to the overall monumentality of the space rendered by the vaults of the church makes them unique (Figure 6). However, concerns regarding their conservation status have persisted for many years, with documentation dating back to at least the early twentieth century. Severe infiltrations, akin to those observed in the cloister, have resulted in deterioration of the joint fillings and stone materials, leading to the detachment of fragments. Over time, various interventions have been undertaken to waterproof the roofs and ceilings, as well as to consolidate the vaults and seal the joints [29]. Nonetheless, despite recognising the problem, its underlying cause remained elusive, resulting in the implementation of solutions that primarily mitigated rather than resolved the issue.

In the 1990s, a comprehensive systemic study, analysis, and monitoring of the issues were undertaken, involving laboratories, universities, and recognised specialists. The primary objective of these studies was to produce a specification document to initiate a tender process [30, p. 3]. At the time, an architectural and structural survey was conducted, incorporating topographical mapping, photogrammetry, radar sondages, endoscopic examinations, and ultrasound investigations to clarify the structural condition of the nave vaults. These investigations identified a combination of factors contributing to the observed problems: the construction methodology of the vaults, heterogeneity in the stone blocks used, the quality of restoration mortars, moisture and condensation accumulation, all compounded by the building's age [31-33].

As the contest schedule for the late 90s was interrupted, the issues observed in the Jerónimos Monastery church vaults, namely infiltrations and the detachment of some stone fragments and mortars, were addressed on an ad hoc basis [30, p. 4].

Figure 6. Church, nave vaults, 2013 (photo: A. Serralheiro).

Given the persistence of these problems and the potential risks associated with their progression, the responsible authorities for the monument, advised by specialists in stone conservation and pathology, recognised the necessity and urgency of implementing a structured, phased programme for the vaults' conservation and restoration. This process was initiated in 2012, when, based on art historians' prior engineering and architectural studies [34], the main phenomena of alteration and degradation present in the structure was identified, and an action plan for the church vaults was established [35]. The intervention work began in May 2013. The circumstances, which will be broadly outlined below, needed modifications to the original action plan, and resulted in some delays. It is currently estimated that the church vaults' conservation and restoration work will extend until the end of the first quarter of 2026. Unlike the works on the cloister, which have already been completed and for which multiple studies have been published, the vault interventions are still ongoing, and available technical information for research is subject to some understandable limitations. Nonetheless, this study underscores that these extensive conservation efforts, initiated following the monument's inscription as a UNESCO World Heritage Site, should be viewed within the broader context of heritage preservation initiatives. Many of these efforts have already yielded significant results, contributing to the monument's long-term preservation.

Project coordination

Between May and November 2013, the first phase of the plan (I1) was begun. This initial stage encompassed the bell tower vaults, the southern section of the high choir, the northern chapel of the transept, and the chancel. This phases' report explicitly outlined the predominant pathologies observed during the works, highlighting issues such as dirt accumulation, moisture resulting from infiltrations, bio colonisation, empty joints between blocks, fissures at

contact zones, displaced elements, detachment and loss of stone material, localised pulverisation of stone, and salt efflorescence within joints [30, p. 5].

During the execution of the first phase of the plan, it became evident that the alterations affecting the stone extended beyond the vaults, also impacting the church walls, both internally and externally. Consequently, in 2016, as the external Phase E1 was nearing conclusion, the *Conservation and Restoration Plan for the Church Vaults* was re-evaluated, leading to an expansion of the intervention area to include the church walls [30]. The revised plan subsequently comprised six stages for the interior (I1 to I6), and four for the exterior (E1 to E4), with the following distribution:

- Phase I1 (2013) – bell tower vaults, the southern section of the high choir, the northern chapel of the transept, and the chancel;
- Phase I2 (2014) – four vaults of the northern nave, the vault of Vasco da Gama's tomb space, the northern and western walls, and the corridor/staircase leading to the high choir;
- Phase E1 (2015) – bell tower, the tower's body, the western elevation and galilee, and the axial portal;
- Phase E2 (2016) – southern elevation (between the bell tower and the transept), including the portal;
- Phase I3 (2017) – vault and walls above the choir stall, southern and western walls of the high choir, vaults and southern wall of the nave on the Epistle side, and the choir stalls;
- Phase I4 (2018) – central nave;
- Phase E3 (2019) – façades of the southern transept chapel and crossing;
- Phase E4 (2020) – chancel façade and eastern façade;
- Phase I5 (2021) - southern transept chapel, crossing, and walls of the northern transept chapel;
- Phase I6 (2022) – interior of the bell tower, multimedia room, and education service room (walls).

The COVID-19 pandemic, which occurred between 2020 and 2022, impeded the timely completion of the schedule phases outlined in the plan, justifying its extension until 2026. The phases E1, E2, I2, and I3 were funded, as had previously been the case with the cloister works, by the World Monuments Fund-Portugal. The pandemic and subsequent suspension of activities prompted the formation of a new partnership with the Portuguese Government, with the remaining phases (E3, E4, I4, and I5) being financed through the Recovery and Resilience Plan (PRR). Adopting a methodology that had proven highly effective during the cloister intervention, the project also embraced an open-site approach, allowing visitors to access the construction site without compromising safety conditions for all. Given that the site is a church open to worship, maintaining regular religious services during the various phases of intervention was also prioritised.

Under the motto "open for works" [36], special guided visits have been organised for professionals and researchers (architects, engineers, conservators-restorers, art historians), providing, through access to scaffolding, a privileged view of the vaults and the upper sections of the columns. Simultaneously, with engaging daily visitors to the monument in mind, various informational panels have been installed to explain the ongoing works (Figure 7).

The extensive documentation produced throughout the project (encompassing archival, graphic, and photographic materials), ranging from preparatory research for the intervention plan to the execution of the works, will culminate in a publication, as was done for the cloister. This will serve to disseminate and share in greater detail the methodologies adopted, and the criteria followed during the intervention.

Figure 7. Panel explaining the intervention areas, both in Portuguese and English, 2024.

Intervention and conducted works

All completed phases were executed by the company Nova Conservação, S.A., to whom the various contracts were awarded.

In general, the different phases have shared common methodologies, such as observation, monitoring, and diagnosis, culminating in conservation and restoration interventions. The primary objectives have also been consistent across phases, aiming to eliminate or mitigate deterioration factors and restore the architectural clarity (Figure 8). The following paragraphs will systematically outline the actions undertaken and the conservation and restorations practices adopted, with the intention of identifying the underlying principles and their criteria.

The first phase of the works consisted of surveying the conservation state of the intervention area, with the corresponding photographic and graphic documentation. This included markings from the quarrying process, tracing marks, and inscriptions. Following this, conservation and restoration interventions were carried out, which included a cleaning process. These comprised dry methods, wet methods, chemical methods, and mechanical ones, the latter being applied to darkened areas where the other techniques proved ineffective. For the vaults, the use of laser technology for cleaning was deemed unsuitable, as the dirt was superficial, and the surfaces were minimally ornamented.

Figure 8. Southern transept chapel façade: *a)* before and *b)* after the intervention, 2024.

Structural reinforcements, stabilization of various elements, fixation and adhesion of displaced components, as well as the treatment of stone and metallic elements and joints, have constituted the primary interventions carried out. Concerning the joints, the actions have included the removal of degraded materials, filling with mortars that replicate traditional techniques, such as lime and sand-based mixtures, using injections, resealing of the joints, and finishing with micro-plastering. These efforts were made to achieve chromatic harmony of the surfaces through the application of natural pigments [37]. Externally, an inspection of the roof and covering system was conducted, along with the rectification of the drainage system, including the gutters (Figure 9).

Figure 9. Chancel's roof: *a)* before (photos: Nova Conservação, S.A.) and *b)* after the intervention, 2023.

Once again, the entirety of the principles outlined in the Venice Charter are reflected in this intervention. Principles and methodologies characterised by rigorous scientific standards are adopted, which respect the integrity and authenticity of the monument, restricting interventions that are deemed unnecessary or excessively invasive.

The focus on conservation, maintenance, and sustainability

The two intervention projects discussed serve as important methodological examples when it comes to conserving and/or restoring monuments, even if they do not possess the same historical, artistic, and symbolic significance as the Jerónimos Monastery.

Careful planning and management of the work, based on preliminary technical and historical studies and involving a multidisciplinary team, are, as highlighted by the Venice Charter, undoubtedly essential. These practices facilitate funding processes, enhance the credibility of the work carried out, support decision-making, prevent errors, and minimise costs in both time and budget. This results in benefits for all, particularly for the monuments themselves [38-40].

However, whether upstream or downstream of a conservation and restoration intervention, the commitment to conserve, especially in a preventive manner, and to preserve the monuments, through maintenance actions, should be a priority. Article 4 of the Venice Charter advocates this by stating that "It is essential to the conservation of monuments that they be maintained on a permanent basis" [19]. Despite an awareness that the popular adage "prevention is better than cure" is entirely applicable to the reality of monuments. The truth is, in many cases, another popular saying: "A house that has been broken into, needs a lock afterwards"; meaning that problems are only addressed after they occur, reflecting a limited engagement in prevention, whether due to budgetary constraints or lack of planning.

The reports of the interventions carried out at the Jerónimos Monastery clearly demonstrate the need for a "conservation of conservation" efforts, in order to reduce costs and, most importantly, to minimise the impact that large-scale works can have on the monument. Consequently, strategies have been developed and maintenance actions designed to preserve the existing conservation state. These actions, based on regular inspection and monitoring, enable prompt intervention without compromising the progression of any issues.

For the church, within the scope of maintenance interventions, activities included cleaning walls, treating biological colonisations, filling joints, restoring the chromatic balance of the stone surfaces, clearing out gutters, cleaning and removing organic deposits from the roof and terraces, replacing broken tiles and re-seating displaced pieces.

Regarding the cloister, because of periodic inspections, numerous maintenance actions have been conducted over the past 20 years. The aim has been to mitigate the presence of biological colonisation and the darkening of the stone surfaces, which would otherwise lead to further loss of the carved decorations' readability [41]. Additionally, treatments have been undertaken to address water infiltration points, fill joints, restore the chromatic balance of the surfaces, clear all the gargoyles (where paper, plastic, and residual dirt have accumulated), and inspect the waterproofing condition of the drainage pipes.

Figure 10. Falcon and falconer hand, doing its rounds on the cloister's roof, May 2024.

Regarding maintenance activities in the cloister, it is noteworthy that, from 2021 onwards, an innovative ecological conservation practice has been adopted. This method was tested at the Vatican Museums and was employed for the first time in Portugal at the Jerónimos Monastery by the company Nova Conservação, S.A. It involves a cleaning procedure that is more environmentally friendly and less invasive to the monument, as well as more cost-effective compared to traditional biocide treatments. The process utilises 70 º alcohol, whose volatility is not absorbed by the stone but effectively targets bio colonies. Subsequently, essential oils based on cinnamon, thyme, and clove are applied, not only to assist eliminating biological agents, but also to contribute to the preservation of the stone material. Certain bacteria present within these oils, when associated with algae and lichens, produce calcium carbonate, which facilitates the consolidation of the weakened stone [42].

Furthermore, regarding the preventive conservation measures across the entire building complex, efforts have been undertaken to address one of the major issues affecting water drainage systems: seagulls. This is due to their nests, debris, carcasses of other animals, and similar obstructions; as well as stone corrosion caused by their excrement [43]. Additionally, the presence of these birds within the cloister has caused significant impediments to visitors and hindered the organisation of events in that space.

Recently, bird control measures have proven to be effective in deterring seagulls, as they help to protect the monument without causing harm to wildlife. The ineffectiveness of the previous employed method, which was based on an electric repellent system installed in 1994 and subsequently destroyed by the seagulls themselves, led to the adoption, in 2020, of a practice involving the use of raptors, such as eagles and falcons. This approach does not involve capturing or hunting prey, rather, it aims solely to dissuade the birds from inhabiting the territory occupied by the predator (Figure 10). The method has previously been utilised

successfully in Portugal at the Convent of Mafra, the Alcobaça Monastery and the Peniche Fortress. It has also been adopted in various countries around the world, with positive results, although it entails significant costs.

Final considerations

It can therefore be stated that both the *Cloister Conservation Intervention* (1998-2002) and the *Conservation and Restoration Plan for the Church Vaults* (2012-2026) demonstrate a renewed approach to intervention, characterised by rigorous studies directed at understanding the causes of issues, assessing their damage, and implementing solutions to address them. Overall, these projects maintain a strong alignment with the principles and values outlined in the Venice Charter, attesting to its continued relevance 60 years after its formulation.

Despite ongoing debates regarding the contemporary applicability of this Charter and the existence of numerous other charters, conventions, and recommendations that complement it, the principles enshrined in the 1964 Charter remain steadfast. These enduring values have evidently guided both interventions discussed in this study.

Interdisciplinary collaboration in the monument intervention process (Article 2), with particular emphasis on the integration of art historians; the conduct of preliminary historical studies to determine the appropriate actions to be undertaken (Article 9); the pursuit of compatibility between traditional techniques and modern materials (Article 10); concerns regarding the maintenance of the monument (Article 4); and producing and disseminating documentation related to all stages of the intervention process, has been fulfilled in relation to the cloister, and the same is currently being prepared for the vaults' intervention.

With a strong emphasis on maintenance actions and preventive conservation, as rightly stated by Article 4 of the Venice Charter, the safeguarding of the Jerónimos Monastery currently faces additional challenges, with mass tourism (the monument receives approximately one million visitors annually), and climate change on the forefront. Achieving a balance in visitor numbers to reduce their impact on the monument and on the quality of visits; being aware of the effects of climate change and seeking control and mitigation solutions aimed at protecting the building, its visitors, and the environment; as well as investing in knowledge and its dissemination, improving communication dynamics (with researchers, the general public, companies, public and private entities, among others), are some fundamental measures to preserving a monument like Belém's. These should not be underestimated in comparison to large-scale restorations. These challenges are undoubtedly complex, and they should be reflected on, discussed and integrated into the Monument Management Plan [44-45], an obligatory document for heritage assets inscribed on UNESCO's World Heritage List, and an essential tool for ensuring sustainable, integrated, preventive, and successful management.

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Challenges and opportunities for heritage sustainable management: a case study on vandalism of built heritage in Jordan

Desafios e oportunidades para a gestão sustentável do património: estudo de caso sobre o vandalismo no património construído na Jordânia

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Abstract

Vandalism poses a significant threat to the integrity and sustainability of heritage sites worldwide. While existing literature addressing heritage sites' management provides useful insights, there is a gap in knowledge regarding specifically on vandalism in the Middle East. Hence, this study examines the phenomena of vandalism on Jordan's built heritage, focusing on: 1) types of vandalism; 2) motivations behind it; and 3) its impact on the site's integrity and sustainability. The research applied a qualitative approach and a comparative case study analysis of Petra, Jerash, and Machaerus fortresses. Data was collected through a rigorous review of existing literature, analysis of archival records, observations, and interviews. Results revealed that unwariness and delinquency are the critical reasons for vandalism, underscoring the urgent need for conservation strategies. The findings highlighted trends about the importance of community engagement, public awareness campaigns, and effective law enforcement in combating vandalism to safeguard Jordan's built heritage for future generations.

KEYWORDS
Built heritage
Vandalism
Sustainable management
Heritage Conservation

Resumo

O vandalismo representa uma ameaça à integridade e sustentabilidade dos locais patrimoniais no mundo. Embora exista literatura sobre a gestão de locais patrimoniais, há lacunas no conhecimento sobre o vandalismo no Médio Oriente. Este estudo examina o fenómeno do vandalismo no património construído da Jordânia, focando-se em: 1) tipos de vandalismo; 2) motivações por trás dele; 3) o seu impacto na integridade e sustentabilidade do local. Usou-se uma abordagem qualitativa e uma análise comparativa de estudos de caso das fortalezas de Petra, Jerash e Machaerus. Recolheram-se dados através da revisão da literatura, análise de registos arquivísticos, observações e entrevistas. Os resultados revelaram que a negligência e a delinquência são as razões críticas para o vandalismo, sublinhando a necessidade urgente de estratégias de conservação. As conclusões destacaram a importância do envolvimento da comunidade, campanhas de sensibilização pública e aplicação eficaz da lei no combate ao vandalismo para salvaguardar o património construído da Jordânia.

PALAVRAS-CHAVE
Património construído
Vandalismo
Gestão sustentável
Conservação do património

Introduction

Sustainable heritage management is a comprehensive process that seeks to ensure the long-term conservation, preservation, and responsible use of cultural assets, this process requires a delicate balance between preservation and accessibility, conservation and tourism, and traditional and contemporary sustainable heritage management. In most cases, the lack of assertive management of built heritage leads to numerous harms for the sites; therefore, it is essential to implement sustainable management strategies to protect invaluable cultural assets while mitigating potential risks and threats.

Sustainable heritage management is a comprehensive strategy for the conservation of any valuable heritage attribute, aiming at protecting its integrity and longevity [1]. It is about how to optimize the appreciation of heritage in such a way that it will still be relevant in the future [2]. Consequently, sustainable heritage management seeks to prolong the lifespan of cultural properties through implementing strategies and practices that ensure their long-term viability. Therefore, it is crucial to preserve built heritage, especially when facing challenges such as vandalism.

Cultural heritage has been increasingly recognized as a key factor in the sustainable development of cities [3]. It has the power to shape a region's identity while contributing significantly to its economic development. Historical and natural properties are among the most significant sources of a country's tourism capital [4]. The reason is that the cultural diversity, uniqueness, and richness of an area make a significant contribution to the tourism potential of a country and guarantee a source of capital in the future. Therefore, when conserved, built heritage adds economic value and sustainability for future generations.

The world's built heritage is threatened with deterioration as a result of social processes, active industrial activities, and the aggressive impact of mass tourism [5]. In addition, the phenomena of vandalism pose a significant threat to cultural and historical assets. It emerges as a major global challenge, causing unprecedented problems at archaeological sites [6-7].

Many interpretations of vandalism have been presented in scholarly literature. Conklin [8, p. 110] defined vandalism as the "(…) destruction, damage, degradation of shape or appearance of a property without the permission of its owner", and the "(…) behavior of damaging structures, official institutional goods, and others' belongings for various reasons or pleasure". It is mostly an "illegal destruction of goods belonging to someone else or intentional, purposeful and deliberate deterioration of their appearance" [9]. Documents from UNESCO [10, pp. 1-182] and ICOMOS [11, pp. 1-14] agreed that vandalism includes both the intentional and unintentional destruction or damage in whole or in part of cultural heritage compromising its integrity.

Studies of human aggression, including vandalism in locations and settings, have been conducted mostly in recreation, leisure, criminology, psychology, and sociology [12]. For instance, in a study conducted by psychologists [13], human aggression is considered any behavior directed towards another member of a community or their property that is executed with the intention to cause harm or damage. Vandalism threatens all types of cultural heritage properties, endangering tangible and intangible attributes.

Hence, vandalism on built heritage has diverse patterns and motivations, stemming from both natural and anthropological factors [14]. Anthropic (intentional) factors are just as dangerous as the natural (unintentional) factors [14]. The loss of built heritage due to such threats has been observed in different parts of the world [15]. The forms of vandalism on built heritage can be categorized as presented in Table 1. The different range of patterns, factors, and motivations are summarized in the following Table 2.

Table 1. Forms of vandalism.

Form	Examples
Defacement of the structures	· Violent acts: bombing, burning, gunfire, shelling, carving, removing parts of the monument, cutting. · Text messaging and artistic movements: graffiti, carving, and spraying paint. · Unauthorized interventions: inadequate restoration and management, uncontrolled urbanization, unauthorized excavations · Environmental factors: natural disasters (earthquakes, water floods, biological factors, humidity, weathering, fire), industrial pollution. · Oversized industrial development plans, unsustainable tourism · Delinquency: misbehavior, ignorance
Looting	Stealing, illegal trading, personal use, and unauthorized excavations

Table 2. Motivations of vandalism.

Vandalism source	Motivations	Forms	Example
Intentional (anthropology - resulted from the human activities and manifestations that harm the environment)	Religious: refers to religious and /or cultural beliefs, intolerance, and ethical rules	- Defacement of structures - Looting	1. The ancient city of Maaloula, and Temple of Baal, Palmyra, Syria; 2. Illegal trade of artifacts of Palmyra in Syria; 3. Meleager and the Calydon Boar, Vatican Museum.
	Political: based on revolutionary movements, acts of violence, terrorist attacks, and wars	- Defacement of structures - Looting	1. Temple of Baal, Palmyra, Syria; 2. Archaeological looting in Iraq by the American invasion in 2003; 3. The ancient cities of Nimrud and Hatra in Iraq were looted and destroyed by ISIS in 2003; 4. Looting of Egyptian treasures in revolutionary movements in 2011.
	Personal/Social: unwariness delinquency	- Looting - Defacement of Structures	1. Text massaging on the historical wall of Al Mushatta Palace in Jordan; 2. Graffiti and carving on 3500 stone in Luxor temple, Egypt, in 2013 by a teenage tourist; 3. Artistic movements on the fountain at the entrance of the Church of Saint Spyridon, Iași (1754); 4. Carvings on the Colosseum in Rome in 2020; 5. Breaking the stolen piece of ancient Moai status Rapa Nui by tourists into a dozen fragments in 2006; 6. The rock-cut portion of the Temple of Gerf Hussein in Egypt was flooded by the creation of Lake Nasser; 7. The Great Wall of China, when tourists took parts of it as a souvenir.
Unintentional (natural and anthropology)	Environmental: natural disasters	- Defacement of the structures	1. The lighthouse of Alexandria (one of the seven wonders of the ancient world) was heavily damaged by earthquakes in the 10th and 14 centuries; 2. An earthquake in Syria in 2023 caused damage to the ancient Aleppo Castle; 3. A water flood in Derna, Libya in 2023, which caused damage to the ancient city of Cyrene (Greek and Roman city, UNESCO site).
	Unauthorized interventions: the failure to comply with the specific ethical principles of the scientific conservation process	- Defacement of the structures	Inadequate installation of heat and power systems inside Trinity Church (1800 -1850), Cilibiu, Golăeşti, Iasi County.
	Industrial and/or domestic pollution	- Defacement of the structures	1. House with Lions (1898), Constanta 2. Oran city-Iran
	Neglect: ignorance, inexperience, neglect, or financial interests	- Defacement of the structures	The Hellenistic Temple of Iraq al-Amir in Jordan

Vandalism has a complex impact on built heritage, causing both aesthetic and structural deterioration [16]. It undermines the cultural values of these sites and can lead to mechanical, physical-chemical, and biological degradation [17]. Consequently, vandalism contributes to the loss of authenticity, which refers to a site's ability to truthfully express its cultural and outstanding universal value through its features and integrity, which refers to the wholeness and intactness of those features, conveying the site's significance [18]. In addition, the emotional connection of communities to their heritage adds to the need to develop strategies for sustainable heritage management to tackle vandalism issues.

Among the available literature, attentions were given to the Middle East, focus on those that are experiencing a political conflict, such as Syria, Yemen, Iraq, and Lebanon. While some studies have examined vandalism on built heritage, there is still limited understanding of other patterns and motivations behind these acts, especially in the context of Jordan. Therefore, this study aims to fill this gap in knowledge to provide insights regarding the patterns of vandalism and its motivations across Jordan's built heritage, and the assessment of the impact of vandalism on the sustainablele site's authenticity and integrity.

Sustainable management and vandalism at Jordan's built heritage

Jordan has valuable cultural heritage sites that date back several significant decades and are considered one of the most powerful draws for international visitors to the country [19]. Jordan witnessed a significant increase in cultural tourism in recent years, due to its high density of built heritage sites, like Petra, Jerash, Um Qais, Bethany beyond the Jordan (Baptism Site), and Mount Nebo, in addition to natural heritage sites such as natural reserve of Wadi Rum and Dana, the dead sea and the natural hot water springs. These sites are some of the hundreds that are significantly affected by different forms and patterns of vandalism, which have caused damage to their physical attributes over the years.

Jordan's legal framework primarily focuses on preventive measures to deter vandalism, including the imposition of fines and imprisonment. However, these measures have proven to be insufficient or not enough to prevent the widespread damage caused by vandalism. The prevailing conventional approaches, relying primarily on reactive measures and punitive penalties, have failed to address the underlying causes and motivations behind these acts. Archaeologist Munther Al-Jamahawi [20] emphasized that the high density of built heritage in Jordan poses a major challenge for governmental institutions, and conventional measures are not enough to prevent the harm and destruction of Jordan's built heritage. Hundreds of Jordan's built heritage are vandalized each year. Thus, a new approach is needed to prevent further destruction of the country's built heritage.

Al-Adwan [21], a social specialist, emphasized the concerning increase in damaging actions targeting ancient sites in recent years. Among thousands of Jordan's built heritage, a great number of these sites were exposed to continuing acts of vandalism related to different motivations. In 2012, among the documented sites, about 870 sites were damaged, meanwhile 1526 are endangered. The Ministry of Tourism also reported that 2877 sites are significantly damaged due to different forms of vandalism. In 2013, about 1500 archaeological sites in southern Jordan were damaged due to looting and vandalism. Archaeologist Al-Jamahawi announced the alarming prevalence of vandalism against archaeological sites in Jordan, reporting an estimated 1,000 attacks annually. He also mentioned that in 2017, the construction of dams and highways destroyed several archaeological sites [20]. In 2023, a report by the Department of Antiquities (DoA) documented 115 cases of vandalism, up from 85 cases in 2022. However, the number may be much higher.

Summarising, protecting Jordan's built heritage requires a new approach since the reactive conservation and management approach has not been achieving the goal of heritage protection and sustainability.

Research methods

To gain a comprehensive understanding of forms and factors contributing to vandalism and their impact on cultural values, a thorough investigation was conducted on the acts of vandalism against Jordan's built heritage. A qualitative approach and case study comparison strategy were adopted. Three historical sites in Jordan were selected for in-depth analysis, namely Jerash – a Roman City, Petra – the Nabatean City, and Machaerus – a Herodian fortress-palace. Through studying these diverse sites, the research aimed to capture a wide range of patterns of vandalism and motivations, providing a comprehensive understanding of the phenomenon across different sites. Two types of data were used in this study: 1) primary data through personal observations and semi-structured interviews with stakeholders, including architects, the local community, and Department of Antiquities officials, and 2) secondary data through archival documents. Then, content analysis was used to analyze the collected data.

Case studies

The study selected three archaeological sites in Jordan: Petra, Jerash, and Machaerus Fortress-Palace (Figure 1). Each of these sites holds significant historical and cultural values in Jordan. Petra is a UNESCO World Heritage site, and one of the seven wonders of the world in 2007, known for its intricate rock-cut architecture, including the famous treasury and monastery. Jerash (the "Pompeii of the East") is famous for its well-preserved Roman ruins, including a colonnaded street, temples, and an amphitheatre. Machaerus fortress-palace, a Herodian fortress, is the biblical site where John the Baptist was imprisoned and executed.

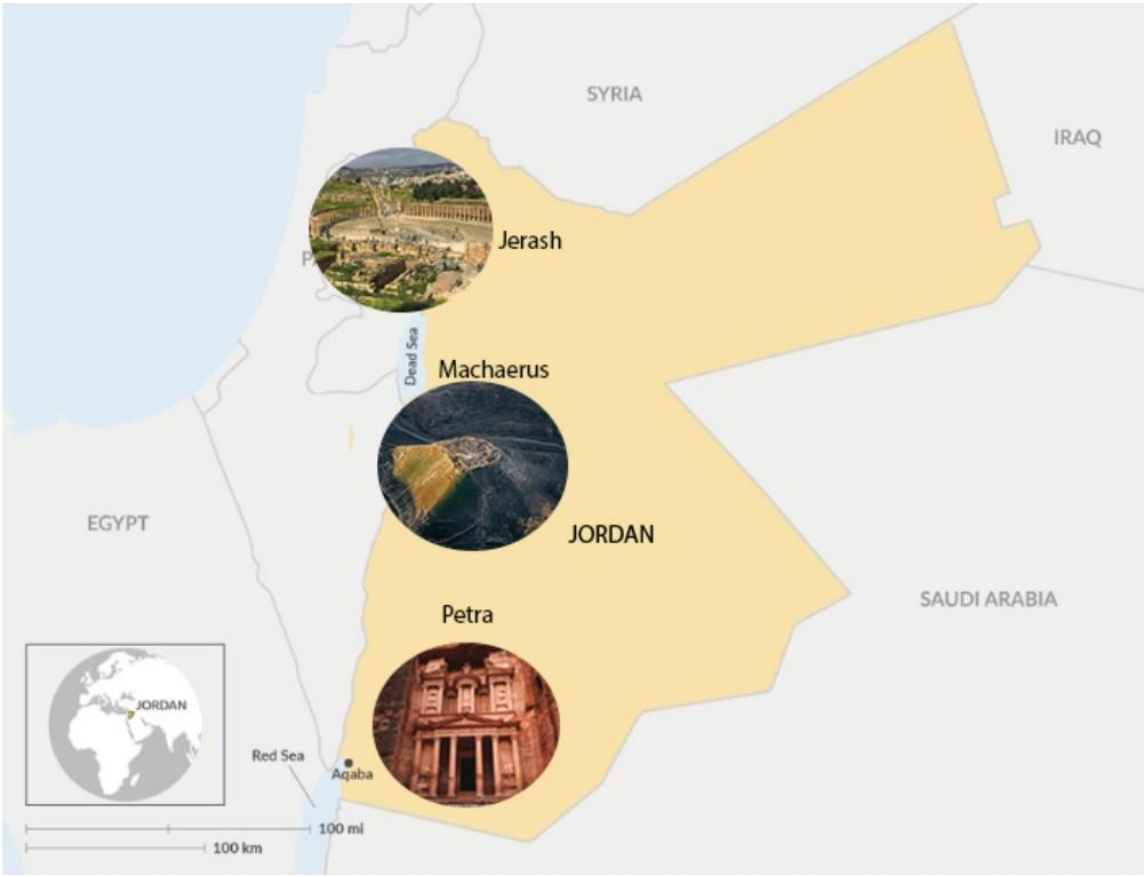

Figure 1. Jordan map showing the geographical location of Jerash, Machaerus Fortress, and Petra.

Table 3. Vandalism on Jordan's built heritage.

Site	The act of vandalism	Location	Frequency	Responsibility
Jerash	Inadequate restoration	Outdoor areas Accessibility zones	Occasional	Authorized institutions
	Urbanization	Restricted areas	Occasional	Locals- Authorized institutions
	Text messaging (Graffiti, looting)	Outdoor areas	Occasional	Locals
	Structures removals	Outdoor areas	Occasional	Locals
Petra	Urbanization	Accessibility zones	Occasional	Authorized institutions
	Text messaging (Graffiti) carving	Outdoor areas Restricted area	Occasional	Locals, tourists
	Structures removals	Outdoor areas	Occasional	Locals
Machaerus	Unauthorized intervention	Outdoor areas Restricted area	Rare	Authorized institutions
	Defacement of structures	Outdoor and indoor areas Accessibility zones	Occasional	Locals
	Neglecting	Outdoor and indoor areas Accessibility zones		Authorized institutions

In each case study, acts of vandalism (Table 3) were examined based on the following criteria:

- Location
  - Outdoor areas: vandalism affects external surfaces like walls, statues, or plazas;
  - Indoor areas: vandalism occurring within buildings or enclosed spaces;
  - Accessibility zones: areas with high visitor traffic and easy access, such as entrance gates, main pathways, or popular attractions.
  - Restricted areas: areas with limited or controlled access, such as archaeological excavations, storage rooms, or offices.
- Frequency
  - Regular: vandalism incidents occur frequently and consistently at the site;
  - Occasional: vandalism incidents occur at irregular intervals but with some frequency;
  - Rare: vandalism incidents occurring infrequently or sporadically.
- Responsibility
  - Tourists: visitors to the cultural heritage site who may be unaware of the cultural significance or value of the artifacts;
  - Locals: individuals residing in the surrounding community who may have personal or social motivations for vandalism;
  - Organized groups: individuals or groups engaging in vandalism as part of a coordinated activity or with a specific agenda.

Jerash archaeological site (Gerasa)

One of the ancient Roman "Decapolis" cities dates back to the fourth century. It was a thriving urban center during the Roman Empire and played a significant role in the region's history and trade. The city has well-preserved ruins and architectural structures that provide valuable insights into the Roman civilization and its influence on the region. Jerash's historical and cultural significance make it a potential site for preservation, being in the Tentative List for UNESCO World Heritage recognition. Unfortunately, the ancient city of Jerash is also a victim of vandalism, it has been witnessing a continuous act of physical destruction.

The modern city's urban development has had an impact on the ancient city of Jerash. The occurrence of damage in structures of historical and cultural value has been largely observed in the urban environment. The main street cuts through the ancient city in half, dividing it into two sections: the modern city is on the eastern side, and the western side belongs to the Department of Antiquities (DoA). Urbanization and mixed land use within the boundaries of

the ancient city, though restricted, has been undermining the value of the site and leading to the physical destruction of material attributes of the ancient city. Buildings and infrastructure have been constructed without consideration of the cultural significance of the site. In addition, the mixing of residential, commercial, and industrial activities may obscure the historical context of the site, making it more challenging for visitors to understand and appreciate its importance.

Al-Saad [22] argues that the managerial backgrounds of Jerash stakeholders are not well-matched with the World Heritage Convention and international charters on sustainable tourism and cultural heritage protection. The continuous balance that various civilizations throughout Jerash's history have created has suffered significantly from unsystematic urban development in the modern city of Jerash. As a result of these acts, in 2007 the World Heritage Committee stated that the Jerash site does not meet the conditions of integrity and authenticity and lacks an adequate protection and management system to safeguard it from the impacts of urban development [23].

Many conservation and restoration works have been carried out in Jerash (Figure 2a). Nevertheless, previous studies revealed a huge weakness in the implementation of proper restoration works. The restoration of the Hadrian gate using cement caused significant structural damage and compromised the gate's integrity. The unauthorized material has resulted in cracks and deterioration, and compromised the integrity of the gate, leading to structural damage and detracting from its historical and scientific value.

The material elements, such as columns and walls, have been facing the challenge of destructive social behaviours. The recent appearance of graffiti on the columns at Cardo in 2023 by unknown individuals is not only a defacement of the ancient structures, but it also significantly diminishes the site's historical authenticity. These markings disrupt the visual integrity of the site, as they clash with the original design. Moreover, they detract from the site's historical value by introducing modern elements that distort the visitors' experience and understanding of the site's original appearance. Dealing with these acts further decreased the aesthetic value of these attributes (Figure 2b).

As a result of these acts, the ancient Roman city of Jerash Archaeological Site was not selected as a World Heritage Site, and the integrity and authenticity of the place are in decline (Figure 3 and Figure 4). The factors affecting the integrity and authenticity have been the poor management of the site, the unsystematic urban expansion of the modern city, the unidentified boundaries of the site, and improper conservation work [22].

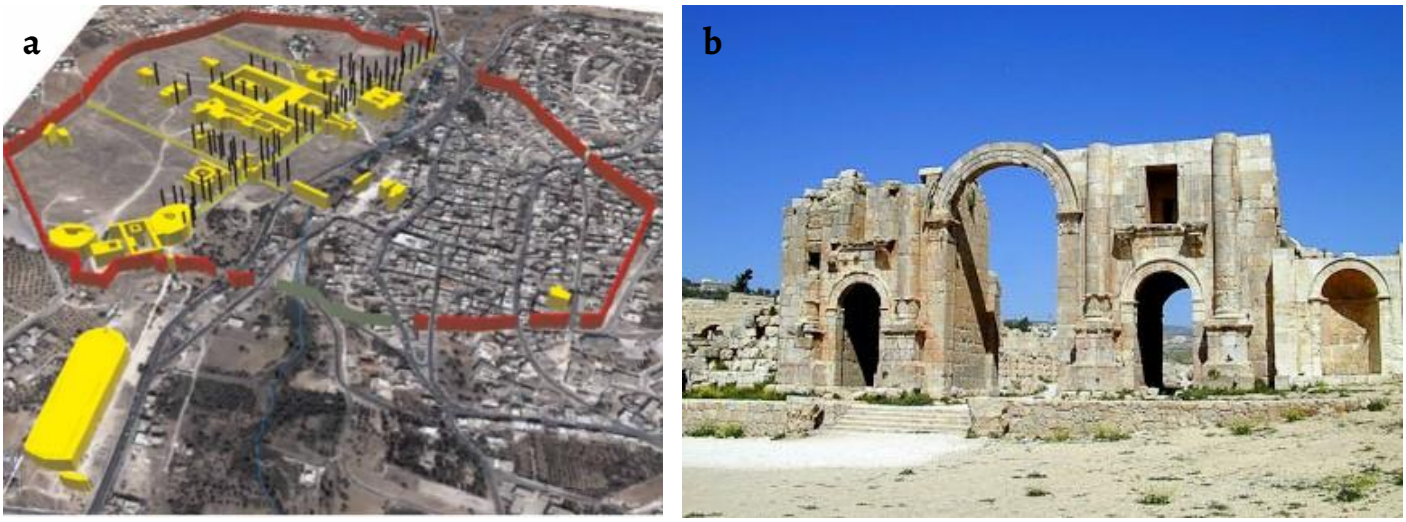

Figure 2. The boards of the ancient city of Jerash: *a)* the new city and the new main street dividing the ancient city into two parts [22]; *b)* Hadrian gate which was restored using unauthorized materials [24].

Figure 3. The same act was observed in two different areas of the archaeological site of Jerash: *a)* large concrete walls threaten the integrity and authenticity of the connection area between the archaeological site and the modern city of Jerash [22]; *b)* remains of east bath Jerash surrounded by modern buildings.

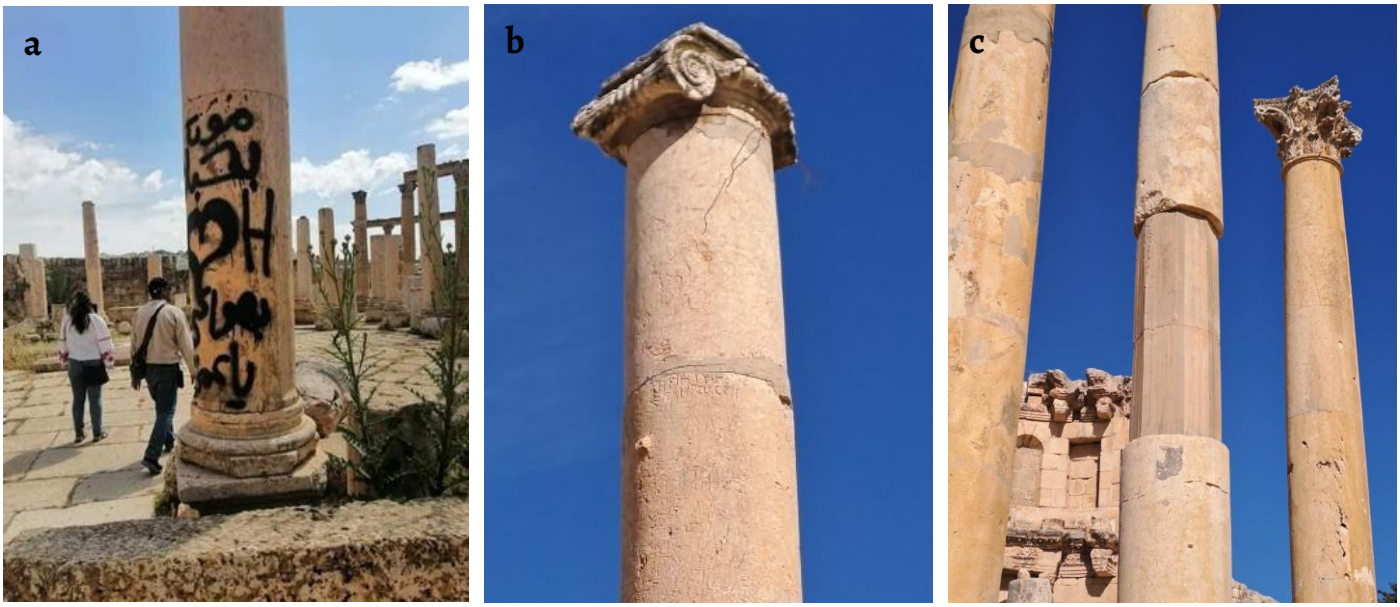

Figure 4. Columns: *a)* recent graffiti on one of Jerash's columns, Cardo (Source: Fadi Bal'awi, 2022); *b)* column conserved using steel wire, 2024; *c)* one of the restored columns number 21 and 12 using cement, 2024.

Petra

The Nabataean-carved archaeological park of Petra, also known as "Rose City", is a popular tourist destination in Jordan. DoA has been in charge of managing the site since 1968. However, Petra has experienced different patterns of vandalism that have been disturbing the process. Archaeologists from Brown University have reported a significant increase in criminal damage within the park.

"Unplanned and uncontrolled tourist development harms physically both the archaeological heritage and its cognitive and historical value" [5]. The number of visitors has increased by 300 % in the past two years (Figure 5). A recent study in 2023 by the Ministry of Tourism and Culture reported the detrimental effects. The negative consequences of high visitor flows lead to overcrowding, which puts strain on the site's infrastructure, resulting in damage to the delicate structures and archaeological materials. The study also reported instances of tourists climbing on ancient ruins, touching artifacts, and carving names on the ruins, further contributing to the deterioration of the site. While tourism can bring economic benefits to a region, such as job creation and increased revenue, it is essential to balance these benefits with the preservation of the site's archaeological heritage. Uncontrolled and unplanned tourist development can result in long-term damage to the site, which may ultimately deter visitors and negatively impact the local economy. Therefore, implementing sustainable tourism practices and managing visitor

numbers are crucial for both preserving the site's historical value and ensuring the long-term economic benefits of tourism.

Regarding the effects on the site's natural landscape, the use of horses for tourist transportation within Petra has sparked worries. The frequent grazing of horses on the narrow trails may cause soil erosion and compaction, which may eventually compromise the stability of the nearby slopes. Additionally, the horses' waste can contaminate and pollute the delicate ecosystem of the site (Figure 6b).

The Bedouins residing within Petra have been criticized for their utilization of the site's carved caves as both a shelter and a venue to display their wares to tourists (Figure 7). While this practice may provide economic opportunities for the community, it can also have negative consequences for the preservation of the built heritage. The constant presence of people and commercial activities within the caves can lead to physical damage, such as graffiti or accidental destruction of the carvings. Furthermore, the commercialization of the caves can detract from the historical and archaeological significance of the site, turning it into a marketplace rather than a protected cultural landmark. Additionally, according to Holloway [25], Bedouins used rifles to reach the treasure inside the urn, which was constructed from solid stone, to cause damage. An urn adorns the entryway to the monastery, showing evidence of several bullet strikes.

The historic canals and water drainage system of Petra are essential for controlling water flow and averting flooding during the rainy season. The Nabataean civilization cleverly designed these systems to direct rainwater away from the structures, ensuring their preservation and structural integrity. However, the lack of proper maintenance of these systems has resulted in obstructions and blockages, which have exacerbated the problem of flooding. As a result, the ruins have suffered partial damage, compromising their cultural and historical significance.

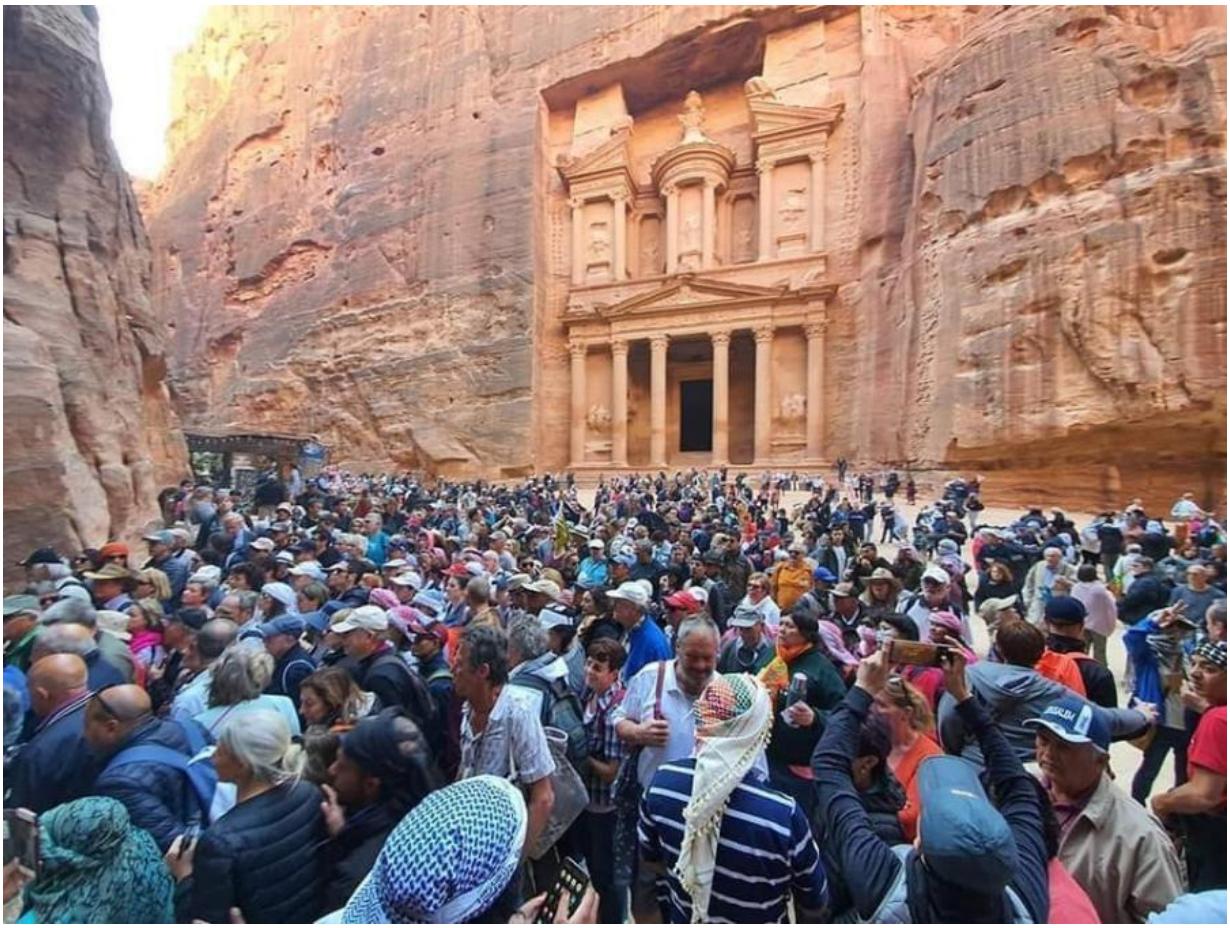

Figure 5. Excessive tourist traffic in Petra, 2021 [26].

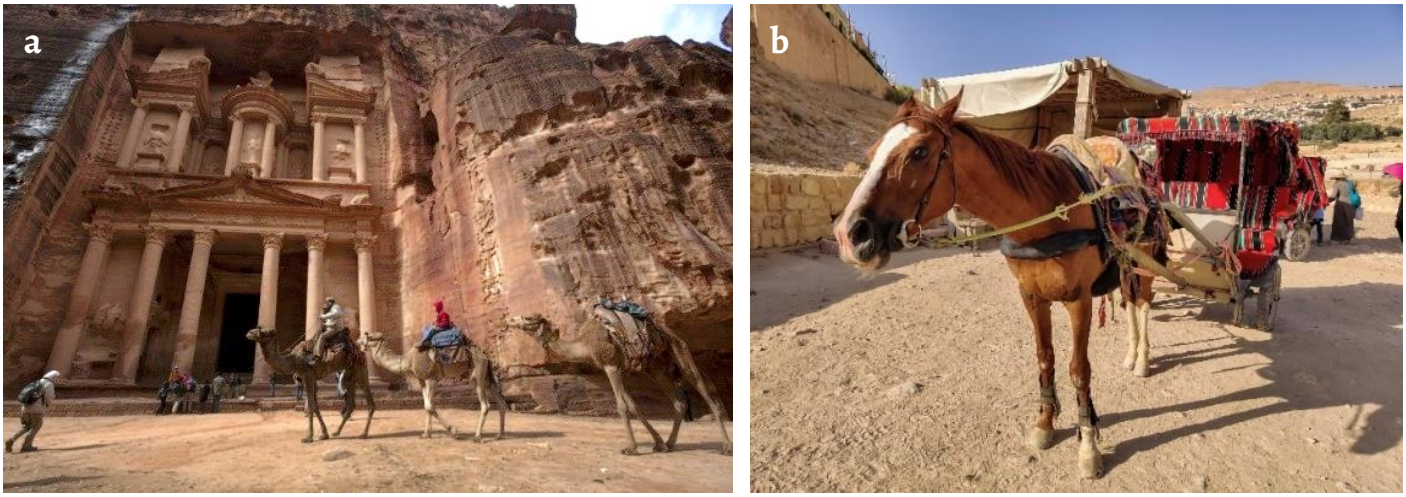

Figure 6. Animals used in Petra: *a)* camels; *b)* horses, 2022.

Figure 7. The Bidoun using cultural heritage to sell souvenirs: *a)* the ancient stairs; *b)* caves, 2022.

Machaerus Fortress-Palace

The Herodian Fortress-Palace is a biblical pilgrimage site. The historical site, which is connected to biblical events (John the Baptist's incarceration and execution), dates back to 90 BCE. The site is also subject to destructive acts that contribute to the site's value deterioration. Due to its location along Jordan's rift valley, Machaerus Fortress was exposed to continuous earthquakes, resulting in severe damage to its physical structure. The continued exposure to environmental factors such as erosion, weathering, and earthquakes can further accelerate the degradation, making it increasingly difficult to restore and preserve the site.

Machaerus is also surrounded by many hermit caves that are of historical and spiritual significance. Shepherds improperly used the hermit caves as shelter. This misuse not only compromises the structural stability of the caves but also disrupts the intended cultural and historical context, contributing to the deterioration of this built heritage (Figure 8). Numerous instances have been revealed of intentionally destructive actions when individuals have deliberately targeted these columns, causing irreparable damage to the structural integrity of the site (Figure 9). Likewise, uncategorized interventions conducted at Machaerus fortress, such as the restoration of the royal courtyard, have been improperly executed without adequate research. This form of act involves misguided attempts to restore the site, leading to potential damage and a loss of authenticity.

Figure 8. Abandoned and misused hermit caves that surround Machaerus Fortress, 2022: *a)* an interior view revealing stone collapse and physical deterioration; *b)* a cave interior demonstrating accumulated debris, lack of conservation, and ongoing neglect.

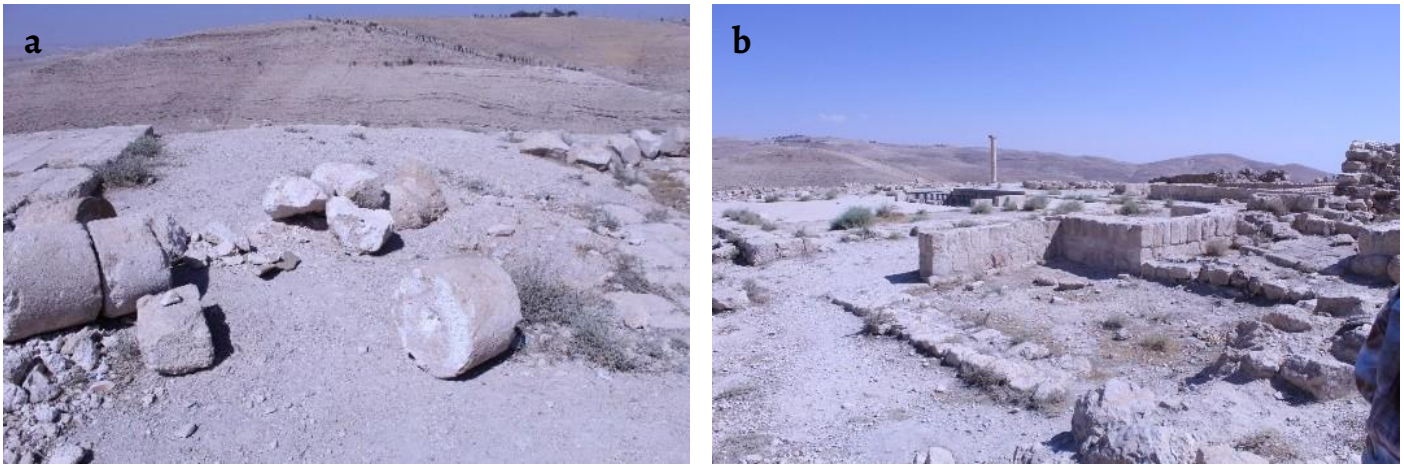

Figure 9. Machaerus: *a)* broken ancient column by unknown people, 2022; *b)* the ignorance of the site can vividly be seen through her growing plants, 2022.

Table 4. Impact of vandalism on Jerash, Petra, and Machaerus Fortress; H - hight, M - medium, L - low (2024).

Site	Physical destruction	Heritage values [27]							
		Historical	Aesthetic	Scientific	Ecological	Social	Economic	Political	Age
Jerash	M	M	H	H	L	H	H	H	M
Petra	L	L	M	M	H	L	M	L	L
Machaerus Fortress	H	H	H	H	L	M	M	M	H

To gain deeper understanding, Table 4 summarises the impact of vandalism on Jerash, Petra, and Machaerus Fortress, employing a framework developed by Pereira Roders [28], which outlines eight key values associated with heritage sites: historical, aesthetic, scientific, ecological, social, economic, political, and age.

The previous table reveals that the Machaerus fortress is the most impacted by vandalism resulting from environmental factors, as it is situated near the Great Jordan Rift, which makes it exposed to earthquakes, abundance, unauthorized interventions, and a lack of awareness. These acts contribute to the deterioration of the physical structure and potentially hinder the scientific exploration of the site, in addition to its social and historical value. Followed by Jerash, which is primarily affected by unsystematic urbanization and a lack of public awareness manifested through graffiti and looting. These threats endanger the aesthetic value of the site and potentially compromise its historical integrity. The consequences of inadequate public awareness are further highlighted by Jerash's delisting from UNESCO. Petra, on the other hand, seems to face a different challenge: uncontrolled tourism and lack of awareness. While

tourism can offer economic benefits, it might also pose a threat to the social fabric of the local communities and potentially lead to the degradation of the site's aesthetic and historical value.

Interviews

Semi-structured interviews guided by eight questions were conducted to provide a comprehensive perspective on the motivations behind vandalism and the challenges faced by sustainable management of heritage sites according to various stakeholders. Twenty-five individuals, including five architects, 16 members of the local community, and four site managers with direct experience in heritage site management in Jordan, were interviewed in person between October and November 2023. Each question was tailored to each stakeholder group. Their insights were particularly valuable due to the first-hand exposure to the on-the-ground impacts of vandalism. Thematic analysis revealed two key clusters: 1) motivations for vandalism and 2) challenges and opportunities for sustainable management.

1) Motivations behind vandalism: the interview revealed a complex relationship between the local community and heritage sites. Ten of the sixteen local community members expressed a lack of personal connection and sense of belonging towards their built heritage sites. This disconnect contributes to a general lack of awareness regarding the profound cultural significance of these historic structures, as highlighted by several participants, including two architects and three site managers. On the other hand, six of the local community respondents felt a sense of ownership, attempting to justify their destructive activities, and they had the right to damage or use the site as a form of ownership. Despite the contrasting perspectives, a fundamental issue emerged as a common thread: a lack of awareness and sense of responsibility among the local community regarding the profound cultural significance of these historic structures. This collective lack of awareness and knowledge gap contributes significantly to the frequency of harmful actions against these heritage sites.

2) Challenges and opportunities in sustainable management: interviewees, including three sites' managers and three architects, demonstrated shortcomings in the current management plans for Jordan's built heritage. While existing management plans are primarily individual efforts and focus on stabilizing structures, they fall short of addressing the long-term preservation and protection of these invaluable sites. All interviewees expressed concerns about the ineffectiveness of current preventive measures implemented by governmental institutions, particularly the lack of focus on 1) educational programs: this was identified by multiple interviewees as a crucial element for fostering a sense of ownership and responsibility within the local community; 2) stakeholder collaborations: several interviewees highlighted the importance of collaboration between government institutions, heritage management professionals, and the local community for effective site management.

Additionally, existing plans often lack strategies for engaging local communities in the preservation and protection of these sites, which can lead to a lack of local support and increased vulnerability to vandalism and destruction. This ineffectiveness is attributed to a failure to address the root causes and motivations behind these destructive acts.

Findings and discussion

Vandalism, is a result of negative direct interaction between the ruins and individuals, encompasses both intentional and unintentional, individual or group acts, which inflict a detrimental impact on built heritage, damaging physical structures, diminishing site integrity, and tarnishing the visitor experience. The negative effects extend beyond the immediate destruction caused, impacting the historical, aesthetic, and economic significance and, as a result, the authenticity and integrity of these sites. This loss of the site's values compromises its conservation, reduces its appeal to tourists, and hinders its sustainable development. The most prevalent act of vandalism in Jordan is the defacement of structures, including carving and graffiti, in addition to inadequate and weak conservation interventions, as they fail to effectively protect and maintain these structures.

The ancient city of Jerash is losing its integrity and potential values, which has adversely affected Jerash's inscription as a UNESCO World Heritage Site. Similarly, Petra is at great risk of losing its integrity due to the persistent vandalism caused by Tourists and Bedouins that damaged its impressive structures. The lack of comprehensive studies and unauthorized interventions at Machaerus Fortress has resulted in the destruction of ancient structures and looting acts, which significantly reduced the historical, religious, and spiritual value of the site and undermined its historical integrity for future research.

The Interviews revealed that the motivations of vandalism in Jordan are complex and multifaceted, often rooted in anthropological factors. The lack of awareness about the significance of these sites seems to lead to a lack of sense of belonging among Jordanian citizens regarding the importance of their cultural heritage. Consequently, this disconnection among locals contributes to these damaging practices. This gap in understanding serves as a primary driver of vandalism, as individuals lacking appreciation for these cultural treasures are less likely to recognize the need to take care of and to preserve them. Moreover, weaknesses of current heritage conservation and management further contribute to the negative impact on the integrity of the sites.

Conclusion and recommendations

This study investigated the act of vandalism on Jordan's built heritage and its consequences. It analysed current management strategies and discussed possibilities to improve them. Various forms of vandalism occurring in Jordan's built heritage were showcased through three case studies: Jerash, Petra, and Machaerus fortress. In addition, semi-structured interviews with stakeholders were conducted to get a sample of the motivations that could potentially contribute to the matter. The findings emphasize the importance of sustainable heritage management practices that go beyond just security measures and reveal that the tangible attributes have been vandalized as a result of unawareness and delinquency, not politically or religion-motivated. There is a lack of knowledge and understanding about the outstanding values of these properties to Jordan's cultural identity, economy, and tourism development.

By implementing sustainable heritage management, Jordan can move beyond simply reacting to vandalism and instead develop a proactive approach. That would involve security measures, education programs, and community engagement to increase a sense of belonging and responsibility among the community. International collaborations and integrated management of tourism. Several countries have successfully implemented such strategies, offering valuable lessons. For instance, the Palace of Versailles, in France, implements timed entry tickets, controlled visitor flows, and educational programs to manage crowds and promote respectful behaviour. Similarly, the Lascaux caves have a replica site (Lascaux II and subsequent iterations) to allow visitor access without damaging the original prehistoric paintings. Italy provides another example of a country that integrates legal frameworks with

tourism management to protect its heritage. While the Cultural Heritage Code's focus extends beyond tourism, it provides the legal basis for regulating tourist access, guiding development related to tourism (like hotels and infrastructure) to minimize impact on sites, and promoting sustainable tourism practices that respect the integrity of the heritage. For example, limitations on visitor numbers at fragile sites like the Cinque Terre and regulations on cruise ship traffic near Venice are rooted in this framework.

Ultimately, the efficacy of these initiatives is linked to several fundamental components. Fostering a robust sense of ownership within the community is crucial, as individuals are predisposed to safeguard that which they perceive as inherently theirs. The provision of concrete economic advantages associated with heritage can further enhance the motivation for preservation activities. Extensive educational and awareness initiatives are integral in cultivating an appreciation for the cultural and historical importance of these sites. The active involvement of local residents in monitoring, maintenance, and decision-making processes engenders a sense of accountability. Ultimately, synergistic collaborations among heritage organizations, municipal authorities, and the communities themselves, along with the empowerment of local stewards through the allocation of resources and authority, are vital for the sustained efficacy of community engagement as a formidable mechanism against heritage vandalism. This is vividly seen in the United Kingdom, where the National Trust's reliance on local volunteers for the upkeep and monitoring of heritage properties fosters a strong sense of ownership and pride, leading to increased vigilance against vandalism. Similarly, the Local Heritage Initiative encouraged community-led projects, embedding a culture of care for local historical assets. Australia provides another compelling example, where the central role of Indigenous communities in managing and presenting their cultural heritage has proven effective in protecting sites. Their direct involvement in tourism and active monitoring, often through ranger programs, cultivates a sense of custodianship that deters damage.

This would contribute to ensuring the long-term preservation of such irreplaceable cultural resources. This aligns with the Venice Charter's [29] vision for a holistic approach to conservation, ensuring the long-term survival of Jordan's irreplaceable cultural treasures. This comprehensive approach will help safeguard these important historical landmarks for future generations.

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Learning from the 18th heritage through parametric modelling: case study of the National Palace of Mafra

Aprender com o património do século XVIII através da modelação paramétrica: estudo de caso do Palácio Nacional de Mafra

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Abstract

The 18th century in Portugal was a time of grandiose constructions, marked by the construction of the National Palace of Mafra (NPM), listed as a UNESCO World Heritage Site since 2019. Our understanding of this heritage is limited due to the minimal documentation that has survived to the present day. In this research, we address the lack of stereotomic studies, focusing on developing a methodology to document and model these constructive solutions. Our methodology includes the inventory of the stereotomic solutions, surveying with laser scanning and/or photogrammetry, understanding the generative geometric principles, and generating parametric models. Within the scope of this paper, we address one vault that, when represented as a parametric model, can be reused to fit other vaults of the NPM or of the same type in other buildings. These results represent an initial step toward developing a reusable library of stereotomic solutions for surveys and contemporary designs.

KEYWORDS
UNESCO World Heritage
National Palace of Mafra
Stereotomy
Point Cloud
3D parametric modelling
Digital heritage

Resumo

O século XVIII em Portugal foi um período de construções grandiosas, marcado pela edificação do Palácio Nacional de Mafra (NPM), classificado como Património Mundial da UNESCO desde 2019. A nossa compreensão deste património é limitada devido à escassa documentação que chegou até aos nossos dias. Nesta investigação, abordamos a falta de estudos estereotómicos, centrando-nos no desenvolvimento de uma metodologia para documentar e modelar estas soluções construtivas. A metodologia inclui o inventário das soluções estereotómicas, o levantamento através de varrimento laser e/ou fotogrametria, a compreensão dos princípios geométricos geradores e a geração de modelos paramétricos. No âmbito deste artigo, é analisada uma abóbada que, quando representada como modelo paramétrico, pode ser reutilizada para outras abóbadas do PNM ou de tipologia idêntica noutros edifícios. Estes resultados representam um passo inicial para o desenvolvimento de uma biblioteca reutilizável de soluções estereotómicas para levantamentos e projetos contemporâneos.

PALAVRAS-CHAVE
Património Mundial da UNESCO
Palácio Nacional de Mafra
Estereotomia
Nuvem de pontos
Modelação paramétrica 3D
Património digital

Introduction

The National Palace of Mafra (NPM), listed as a UNESCO World Heritage Site since 2019, is the main exemplar of a shift in architectural construction that took place in the eigtheenth century in Portugal [1-2]. As the main representative of stone stereotomic solutions of this period in Portugal, it was chosen as a case study. This paper focuses on developing a documentary methodology for stereotomic solutions through laser scanning and parametric modelling. To test the methodology, one specific vault was chosen at the ground level, beneath one of the bell towers.

We show the possibility of extending the application of parametric modelling methodologies to heritage contexts, where reverse engineering can provide a deeper understanding of the geometrical properties of existing structures [3-5]. Comprehending heritage remains challenging due to the scarcity of original project drawings and the limited surviving documentation. In the case of the NPM, only a few drawings of the building have survived [6], and no original documentation of the researched vault is known. In fact, we do not even know whether a stereotomic project was carried out in preparation for the stone cutting, or if this was prepared on site during construction. However, advancements in survey techniques offer promising avenues towards achieving a more thorough understanding of historical design methodologies [7-8]. The analysis of point cloud data led to a conceptual framework of the design of the vault. This was done through a parametric approach that, in turn, allowed us to consider the studied vault as an instance of a larger family of vaults, i.e. vaults that can be generated by changing the parameter values in the parametric model. In the specific case of the studied vault, the parameters were adjusted to make the parametric model fit the survey data. The recreated parametric model allows a deeper understanding of the structure's features, providing insights into the constructive process.

This study is a component of an ongoing PhD project focused on integrating stereotomic and geometric data sourced through the analysis of historical documents, photogrammetry, and laser scanning, to create parametric 3D models. The main objective of the first phase of the research was to streamline the process of generating parametric 3D models from survey data, creating an adjustable parametric object library of eighteenth-century Portuguese architecture based on the NPM. The database of characteristic building instances would enable the fast and effective creation and editing of 3D models of other buildings from the same period. This paper focuses on the geometric information and workflow of the geometric parametric 3D models.

Stereotomy

Stereotomy is the study of the material cut for construction with a structural purpose, mainly based on geometrical rules. It can be, for example, stone or wood, usually depending on locally available resources or the intended type of construction. The tradition of stone construction, at least in Western Europe, lasted until the end of the nineteenth century and was later superseded by concrete. Knowledge of classical stereotomy is visible in existing buildings and in architectural treatises such as those by Derand [9], Desargues [10], Frézier [11], de La Hire [12], or de Vandelvira [13], among others. The geometrical speculations presented in these written works include ways of constructing specific shapes such as arches, vaults, and domes, sometimes with references to existing constructions, including those located outside the author's country of origin. A direct connection to an example of Portuguese heritage exists in the treatise *La theorie et la pratique de la coupe des pierres et des bois pour la construction des voutes et autres parties des Bâtimens Civils & Militaires, ou Traité de Stereotomie a l'usage de l'Architecture* (vol 3), where the author points to the beauty and quality of execution of the sixteenth century vaults of the monastery of Belém's church [11].

Portuguese stereotomy is not widely studied, biggest focus of existing research being on the sixteenth century [3, 5, 14-15]. A brief introduction to stereotomy of this part of western Europe

was also published in a study by Calvo-López [4], which points to already mentioned researchers that focus mostly on sixteenth century.

Despite the remarkable stone craftsmanship of eighteenth-century Portuguese architecture, it has been little studied from a geometrical perspective. This period introduced standardised architectural elements, repeated within buildings and shared by masons across sites, yet the geometric vocabulary of the time remains underexplored. Research in stereotomy has mainly addressed vault geometry, such as the nineteenth-century Arco da Rua Augusta in Lisbon [7]. Advanced survey techniques, including terrestrial laser scanning and photogrammetry, now allow a deeper understanding of historical design methods where original documentation is incomplete or unknown [8].

National Palace of Mafra and its relevance in the research

The National Palace of Mafra is a symbol of the Portuguese Golden Age and the backdrop for José Saramago's renowned novel [16]. Designated a UNESCO World Heritage Site in 2019, it has significant cultural and historical importance, supporting both preservation and scholarly research. Notable for its vast scale and symmetrical quadrangular layout, the palace serves religious, entertainment, educational, and residential functions [17]. The palace's remarkable architectural form owes its existence to the cultural and economic milieu of the Portuguese Empire during the reign of King João V, who enlisted international architects and artists to realise the NPM, drawing inspiration from the artistic aesthetics of Italian Baroque [18].

Located 30 km northwest of Lisbon, the palace-convent represents a paradigm shift in Portuguese construction. It was envisioned as a representation of the values and power of the Portuguese Empire, embodying Baroque artistic and architectural principles. The genesis of this palatial complex can be traced back to the establishment of the Convent of St. António in the village of Mafra, pursuant to the charter issued by Dom João V in 1711. Initially conceived as a modest convent in the typology of the Arrábidos Friars, the project expanded over time to accommodate a larger community of friars and a church [6]. The construction of the Basilica began on 17 November 1717, during the Johannine period, and continued until King João V's death in 1750 [3]. The resulting structure of the NPM reflects a synthesis of contemporary innovations and skilled craftsmanship, with contributions from renowned international artists commissioned for the project. While many of these crafted items have since vanished, the enduring legacy lies in the impressive structure constructed from locally sourced materials, which encapsulates the collective vision of architects, artists, engineers, craftsmen, and builders, under the leadership of the principal architect of King João V, German-trained in Rome: Johann Friedrich Ludwig, known as João Frederico Ludovice, who designed the winning Mafra project [6, 19]. His inspirations came from treatises by Alberti, Vitruvius, and Serlio [20], seventeenth-century buildings such as St Peter's Basilica (inspiration for the NPM Basilica) or Sant'Agnese church in Rome (inspiration for NPM church towers) [21], and Jesuit *modo nostro* principles [18]. The NPM's leading engineer was Custódio Vieira.

Functioning as the structural framework, the building's architecture serves as a canvas for artistic expression and daily life, facilitating the seamless integration of art and functionality. The NPM was built by approximately 45,000 workers, engineers, master builders, architects, and artists of French, Italian, German, Flemish, and Portuguese origin (who were also taught at the Mafra School of Sculpture and Masonry that developed at the NPM). The grandiose construction mobilised much of the kingdom's workforce. At times, over 15,000 workers were on site simultaneously, while little else was constructed in the kingdom. After completion, the workforce spread across Portugal, likely influencing eighteenth- and nineteenth-century architecture [6]. The NPM became a reference for later buildings [6, 22].

Stereotomic solutions in Mafra reflect eighteenth-century architectural achievements, although lack of existing construction drawings from the times the NPM was erected makes it impossible to verify with which accuracy plans and details were executed. In this paper, through the study and analysis of one example of vault we test a workflow to study stereotomy

using advanced digital tools that will be later extended to all the main types of stereotomic solutions present in the NPM fabric.

Parametric modelling of historical buildings

Parametric modelling techniques represent a paradigm shift in historical building analysis and conservation. This study presents a unified method for architectural design and modelling, extending conventional CAD software with algorithmic-aided design (AAD). By leveraging computational tools, parametric modelling addresses complex challenges in heritage projects [23-24]. Techniques include photogrammetry, 3D laser scanning, Historical Building Information Modelling (HBIM), point cloud processing, and generative design algorithms [23-26], all crucial for capturing, analysing, and simulating historical building data, needed for informed decision-making throughout the conservation process [27-29].

Grasshopper, a visual programming language in McNeel Rhino 3D, is widely adopted in the architecture, engineering, and construction sectors for generating parametric models, that are a 3D reconstruction of existing objects, created with balanced degrees of accuracy and parametrisation [27].

Innovations such as machine learning, artificial intelligence, and virtual reality expand parametric modelling, enabling more accurate modelling, predictive analysis, and immersive visualisation of historical structures. Point cloud data can serve as libraries for Artificial Intelligence (AI) training, shape recognition, or 3D style transfer [30-31], supporting understanding of stereotomy and geometric characteristics of historical objects

Parametric modelling for heritage connects historians, architects, and computer scientists, requiring architectural, structural, geometric knowledge and basic programming skills, meaning professional toolkits must adapt to these new methods.

The documentary methodology

Preserving historical heritage is essential for safeguarding cultural identity and digitising it allows greater accessibility and understanding. Digital parametric models can also support exploration of forms, dissemination, videogames, 3D printing, and augmented or virtual reality [23]. However, our main focus is to develop a documentary methodology that, in its first phase, supports our study and understanding of stereotomic solutions using the NPM as our primary data source.

As a preliminary work, we defined a dictionary to name the different typologies of stereotomic elements detected in the NPM: stairs, arcs, vaults, domes. However, we found that it is not always possible to match existing terms in the literature with real elements. For example, none of the main names of vault types in the literature precisely matches the vault chosen as the first example to develop our documentary methodology.

Based on an inventory of the main stereotomic solutions present in the NPM, the methodology encompasses several phases for each element: i) surveying through laser scanning and/or photogrammetry; ii) preliminary analysis of the surveyed data to infer the geometric principles of the stereotomy; iii) generation of a parametric model of the visible surfaces of the vault; iv) analysis of the stone cutting and assembly.

To develop the methodology, we selected one vault located at the ground level under the left tower of the main façade of the NPM (Figure 1). It is a shallow, banded vault. It is a form that cannot be found in historical treatises, and since the original documentation is non-existent, the geometrical features of this element were unknown. It covers an area of approximately 5.9 × 5.9m. This vault was chosen because it is sufficiently complex to serve as the basis for deriving the documentary process, yet it is simple enough to allow rapid data acquisition and analysis. Once the methodology is validated, it will be applied to the full inventory.

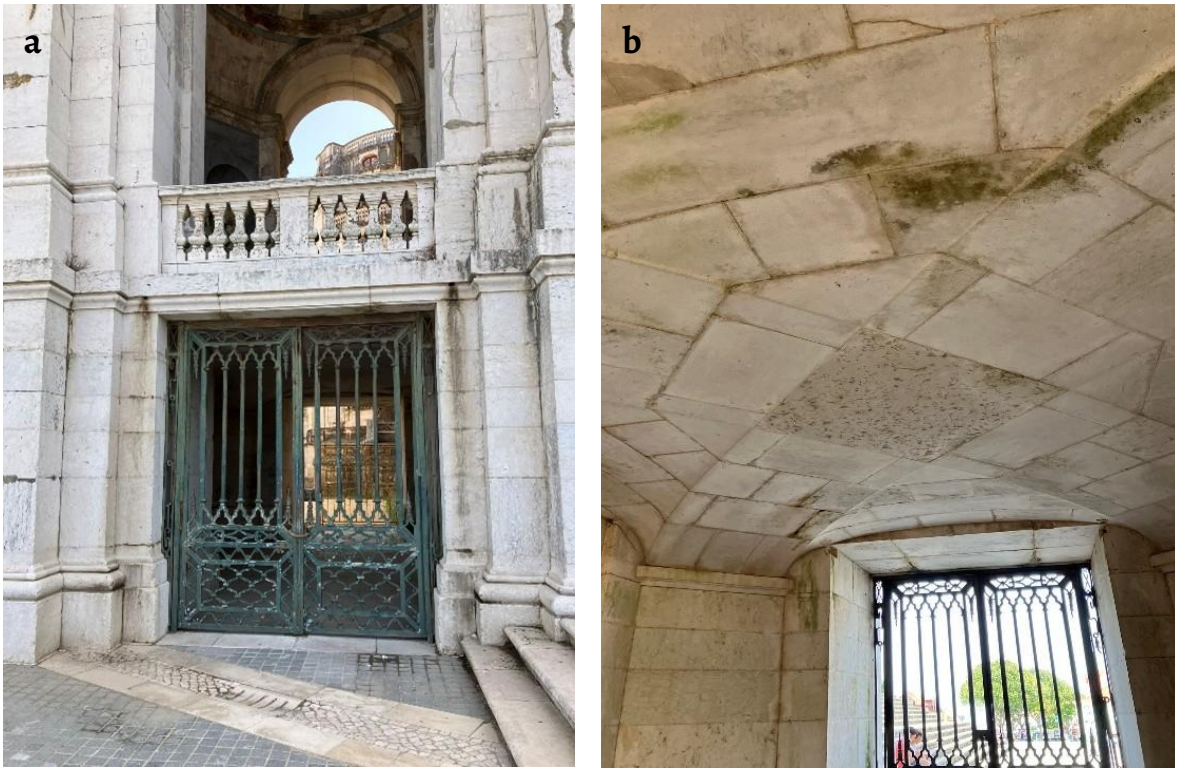

Figure 1. Vault: *a)* location of the vault in front facade; *b)* bottom view under the vault.

Surveying

Today, laser scanning and photogrammetry are considered standard methods for collecting accurate geospatial data. These tools can be used independently or together, depending on the object. For example, in a large building, laser scanning can capture overall geometry, while drone photogrammetry can record higher areas [8]. The initial concern is therefore selecting the appropriate surveying methods and tools.

We surveyed the chosen vault using a Faro Focus S120 laser scanner. A total of 16 scans was sufficient to cover the entire vault (Figure 2). Due to accessibility from the ground level and the absence of intricate details, scanning was straightforward. Since our focus is stereotomy, we did not document sculptural finishes, colours, or decorative details.

Figure 2. Panoramic view of the vault, obtained from laser scanning. It shows two openings (to the main façade of the palace and to the yard) and connections to interior of the palace.

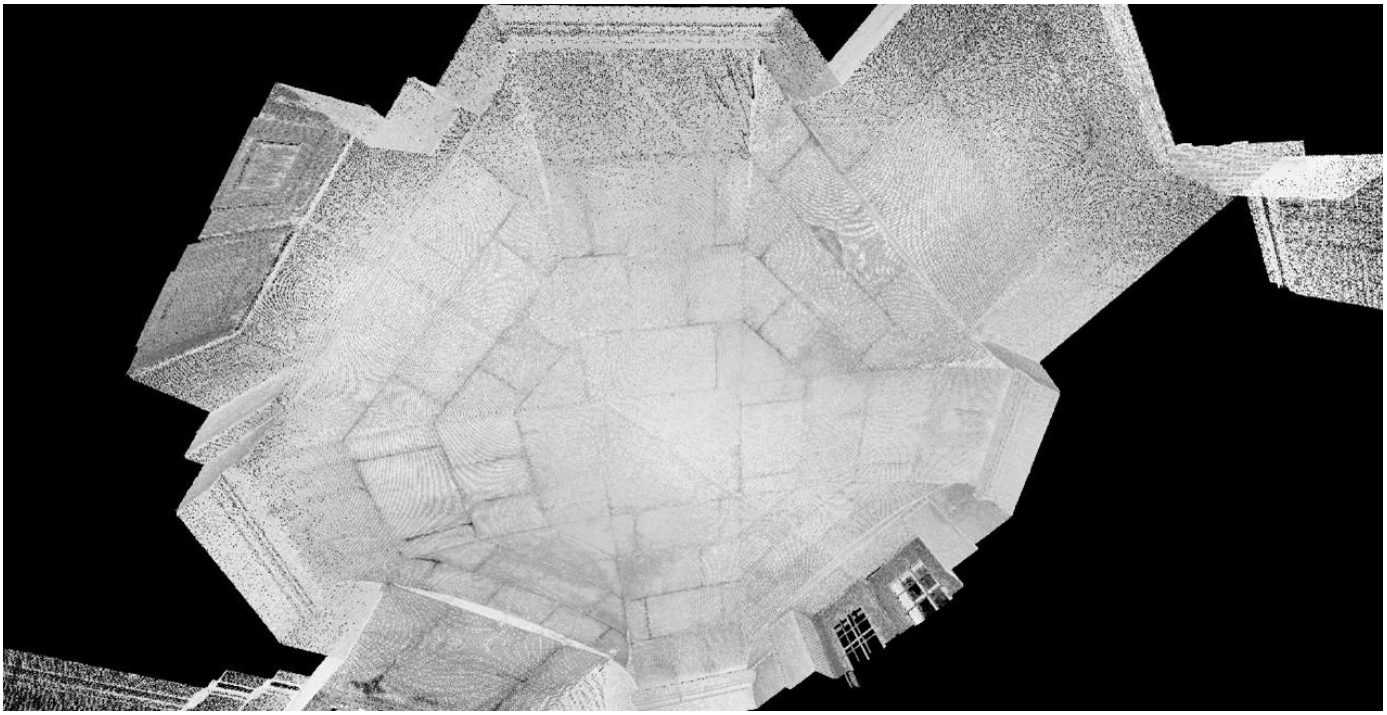

Figure 3. Point cloud of the vault viewed from bottom.

Point clouds were processed and aligned using Faro SCENE software, version 7.5. After processing, a sample containing the vault was exported (Figure 3).

Preliminary analysis

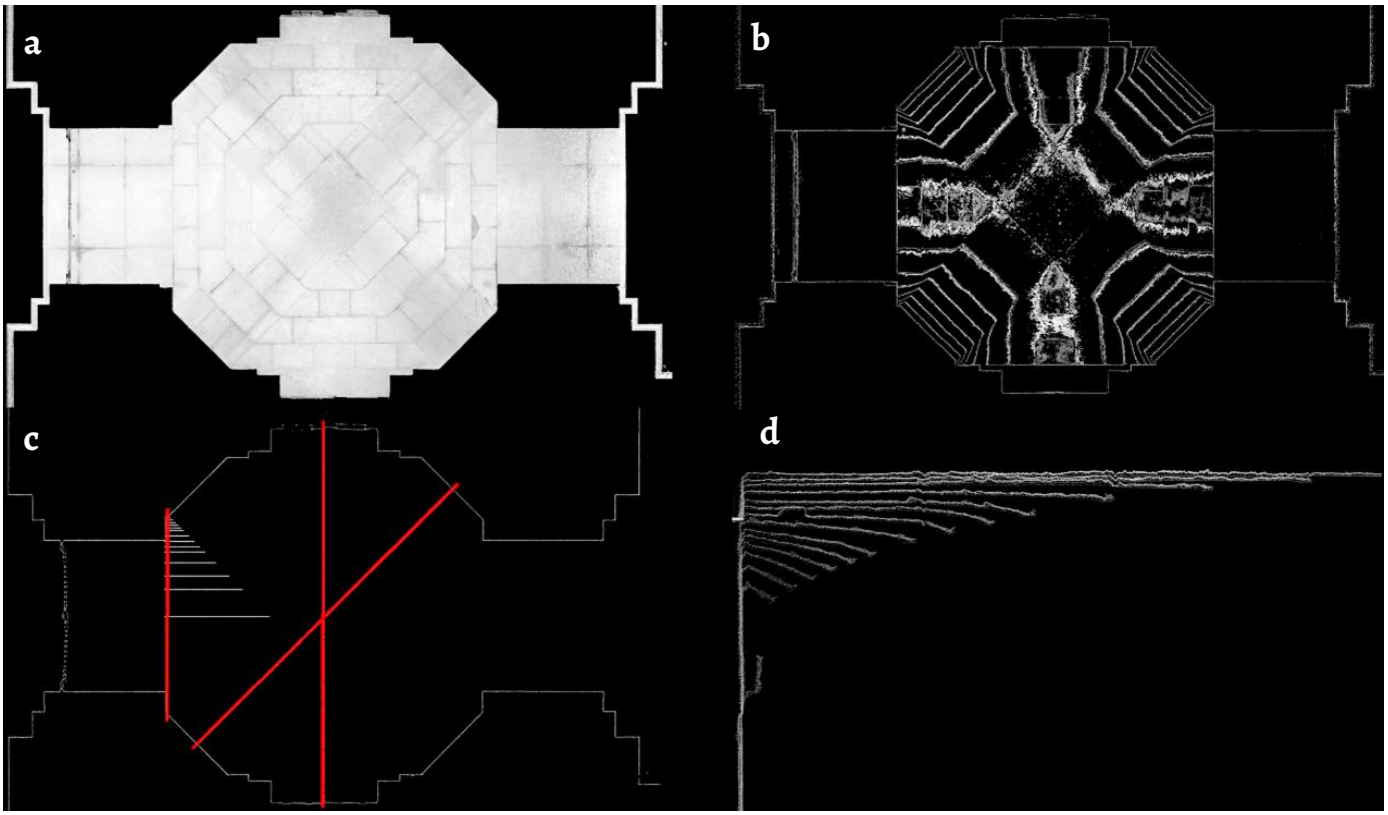

Figure 4. Point cloud of the intrados of the vault: *a)* top view to the intrados; *b)* series of horizontal sections; *c)* positions of main vertical sections marked in red; *d)* longitudinal section cuts showing that the main spans of the vault are not generated by extrusion.

Once we completed the alignment and obtained the final point cloud, we analysed it to infer the vault's geometric properties. To do this we extracted a series of horizontal, longitudinal, transversal, and diagonal sections (Figure 4). These sections will, later, allow us to make inferences about the geometric nature of the generating lines as well as the geometric nature of the surfaces.

Through a trial-and-error process, we searched for a match between the point cloud and different types of arcs. First, we tried with elliptical arcs in the main vertical sections but clearly there was not a good match. Then, it seemed possible to have a better match using chained circular arcs. This approach led us to experiment with different number of chained arcs which, in turn, suggested that the good fit could be obtained via oval arcs (Figure 5).

Manual modelling of the geometry based on the point cloud was meant as a base for understanding the crucial geometric properties of the vault, as its sections represented just fragments of the structure. It should be noted that a direct mesh modelling or NURBS modelling via spline lofting would not be the adequate approach although it could generate good representations of the vault. The reason is it would omit the geometric nature of the generating lines. On the other hand, it is known that the masons use physical gauges to orient the stone carving. So, the intention was to capture the geometric properties of those tools.

In this step, first the geometric properties of the generating lines are investigated. Then, it follows the study of how those lines are connected. This means, the study of the geometric surfaces that can be generated through those given lines. A visual inspection of the point cloud suggested that the vault was composed of ruled surfaces. Again, having the given point cloud data as reference, different methods to generate ruled surfaces were considered. Those include extruded surfaces, cylindroid surfaces and surfaces generated by a bundle of planes that meet at a given straight line.

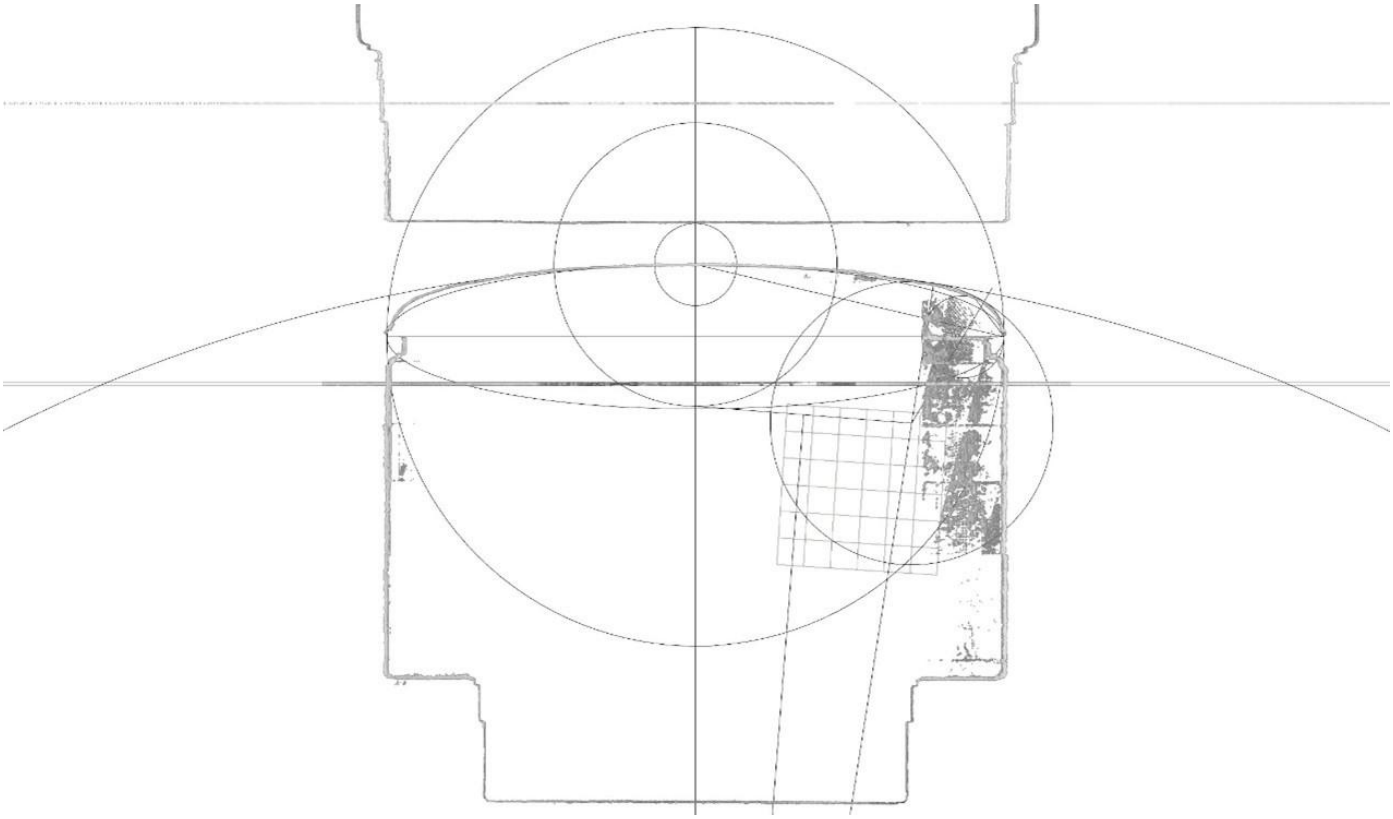

Figure 5. Trials of fitting arcs to the section of a point cloud.

Generation of a parametric 3D model

Connecting parametric modelling to heritage research allows us a flexibility of control over the model geometry. Recreating a vault with these tools enables us to deepen our understanding of the geometric principles behind its formation.

Generating a parametric model means that all the knowledge gathered up to this point can be incorporated into the generative process of the vault, extending its possibilities far beyond the generation of the specific vault studied so far. This means that the parametric model can generate not only this vault but also a multitude of other vaults that share common principles with it.

The first step in the definition of the parametric model is to set up dimensional constraints or parameters (Figure 6).

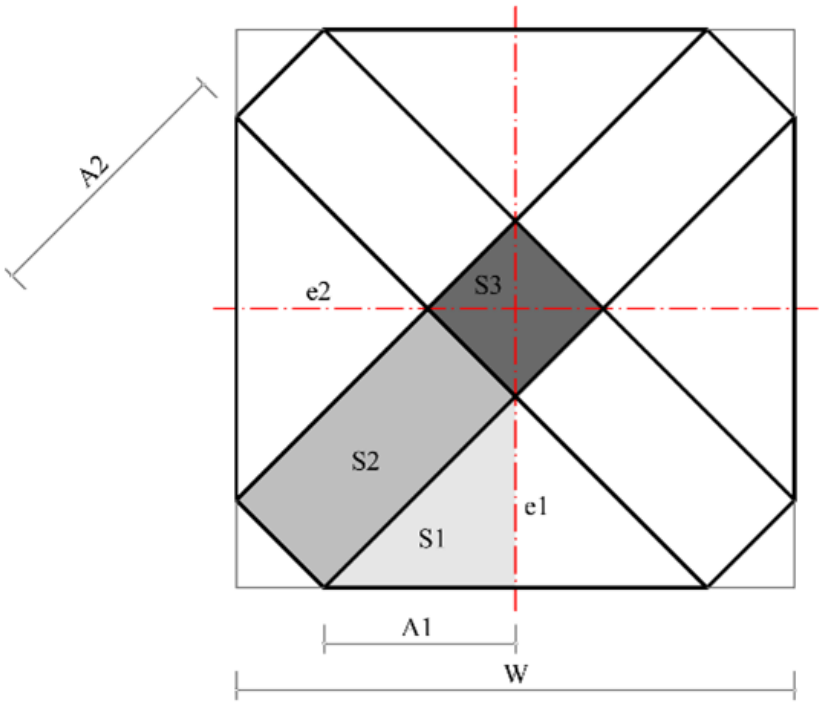

Figure 6. The main parameters of the vault, in top view. The vault has not only 4 bays, but also X-shaped bands that cross it, that require additional input parameters to control them.

The first parameter to be set is the square shape of the top view and its width, W. Then the symmetry axes e1 and e2 mean that only a quarter of the vault needs to be generated, and the other parts can be obtained via mirror and/or polar array operations.

The shaded areas correspond to the different surfaces that need to be generated. In light grey we have a surface, S1, that subtends two half arcs, A1 and A2. In medium grey, an extrusion surface, S2, obtained from arc 2 (A2). In dark grey, a planar square surface, S3, in the top of the vault.

Following the preliminary analysis of arc A1, it became apparent that the best solution to fit the studied vault would be a seven-centre oval arc. However, in the parametric model we included circular arc, elliptical arc, segmented arc, three centre oval arc, five centre oval arc and seven centre oval arc as options that the user can pick (Figure 7). The insertion of the arcs into the algorithm means adding a new parameter, the distance [HC] in Figure 7, or height of arc 1.

The assumptions used to generate surface S1 determine the nature of arc 2. If surface S1 is generated through an extrusion of arc 1 along edge 1, then arc 2 is the result of the intersection of the extruded surface with the vertical diagonal plane of arc 2. We named this method as Front Arc Based. This was the first method used to generate surface S1, but it did not provide a good result when compared to the real data.

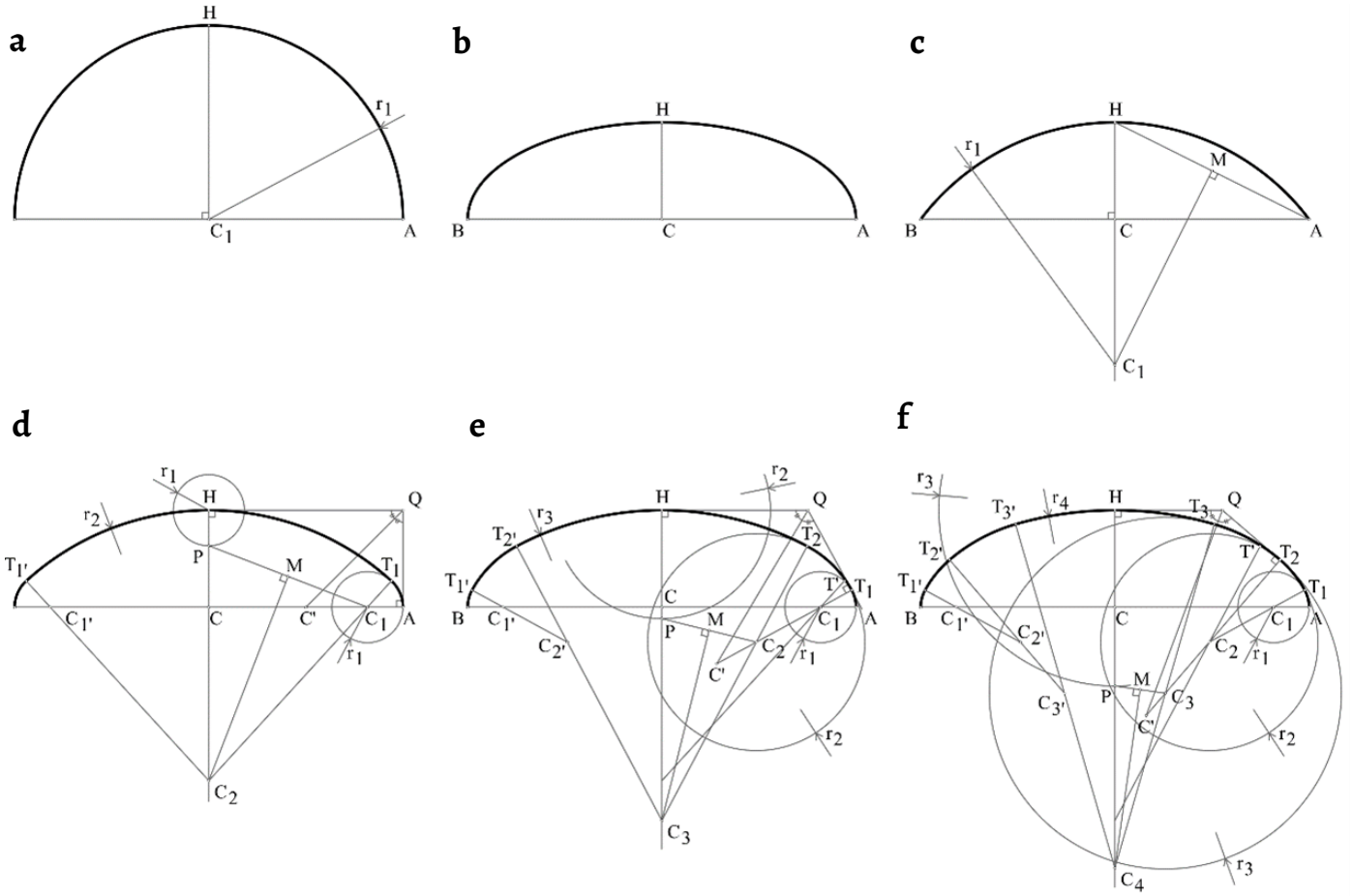

Figure 7. Parametrical model: *a)* circular arc; *b)* elliptical arc; *c)* segmented arc; *d)* three centre oval arc; *e)* five centre oval arc; *f)* seven centre oval arc.

If surface S1 is generated through an extrusion of arc 2 along edge 1, then arc 1 is the result of the intersection of the extruded surface with the vertical plane that passes through the side of the circumscribed square. We named this method as Diagonal Arc Based.

Another method was considered. In this method, arc 1 and arc 2 are considered independent and with the same height [HC] (Figure 7), unless semicircular arcs are used. In that case, [HC] corresponds to the radii of the circles. In turn, this method considers two possible ways to generate ruled surfaces connecting the arcs 1 and 2. The first one uses a bundle of planes parallel to the vertical plane passing through edge 1. The other one uses a bundle of planes that pass through a straight line, not necessarily horizontal, lying in the vertical plane of edge 1. These planes intersect both arcs in points connected with straight lines.

To summarize, the three methods used to generate surface S1 are: i) extrusion of arc 1 along edge 1 - Front Arc Based (Figure 8a); ii), extrusion of arc 2 along edge 1 - Diagonal Arc Based (Figure 8b); iii) bundle of planes - Double Arc Based (Figure 8c).

The output of the parametric model is a BREP (boundary representation) that can be further converted to other representations like meshes or stereolithography (STL).

Since the parametric model allows us to generate very wide variety of vaults (Figure 8), the metadata for each one must be saved to keep a record of the process. This is important for recreation of the solution. Essentially, metadata include a list of the parameters used in the vault generation, some metric properties like area, and other data like file name. The implementation of the parametric model was done using the Rhino/Grasshopper modelling environment.

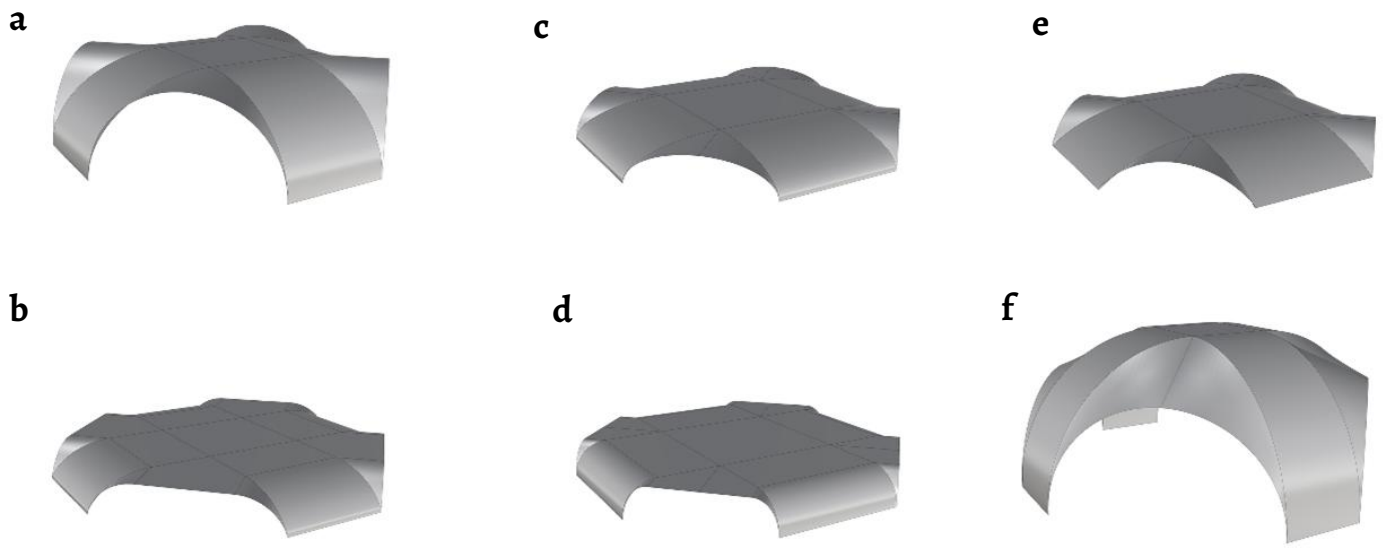

Figure 8. Examples of solutions thanks to parametric vault model: Front arc based: *a)* circular arch and *b)* 7 center arch; Diagonal arc based: *c)* elliptical arch and *d)* 7 center arch; Double arc based: *e)* front arch – 3 center arch , diagonal arch – segmented arch and *f)* front arch – circular arch , diagonal arch – circular arch.

Fitting the model to real data

As the parametric model was developed, an iterative process was followed. It implicated that, for each hypothesis about the nature of an arc or surface, a fitting approach to the point cloud was conducted. The best fit was achieved through a double arc approach where both arcs were seven centre oval arcs. The surface S1 was ruled and generated through a bundle of oblique planes passing to a line parallel to axis e1 (Figure 6). To validate the model, the BREP representation of the vault was converted into a mesh saved in STL. Then a distance analysis between the surveyed point cloud and the mesh to analyse the final model deviation was performed (Figure 9).

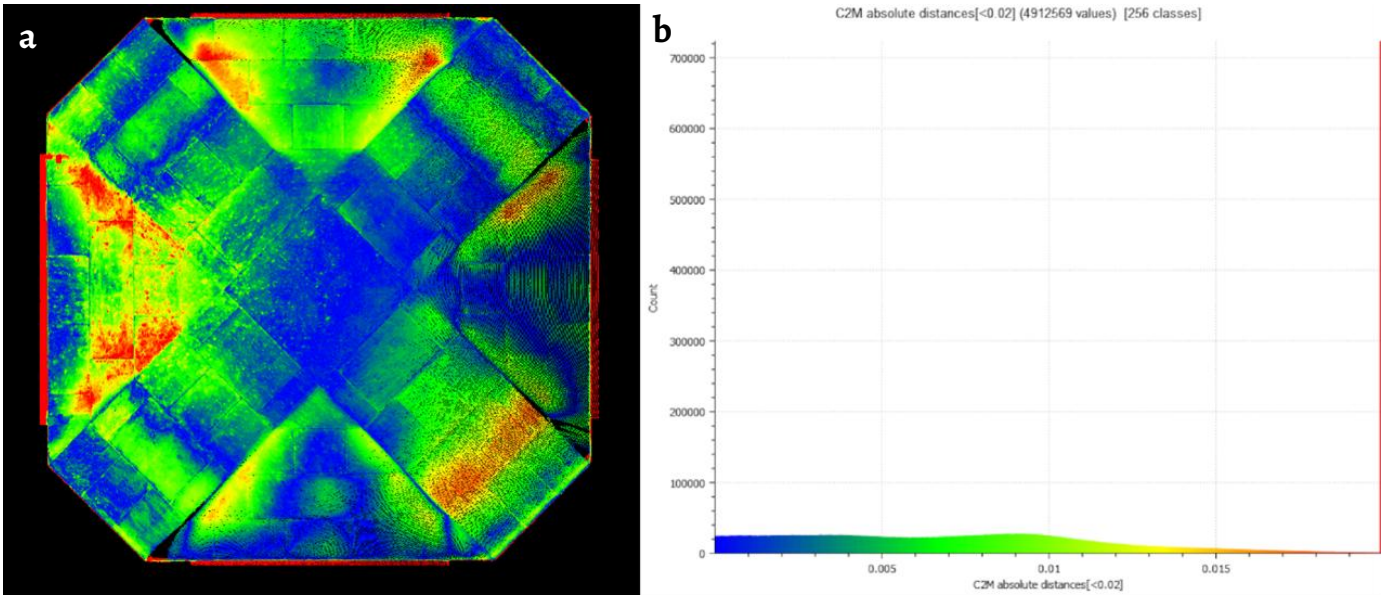

Figure 9. Distance analysis between developed mesh and the point cloud (a) shows minimal deviation between the parametrically developed surface and the real data, less than 1 cm (b).

From Figure 9 it can be seen that the overall mesh-to-point cloud distance is less than 1 cm. For the purposes of this research, we consider that this distance analysis is a form of validation of the model generated. The differences can be explained by small inaccuracies during the construction and small deformations during time. The result is quite impressive if we consider that the parametric model is an ideal geometric model.

Analysis of the stone cutting and assembly

The point cloud provides an accurate representation of the visible parts of joints of the ashlars that constitute the vault. That information allows us to model a hypothesis of the assembly of the stones that form the structure as it can be seen in Figure 10.

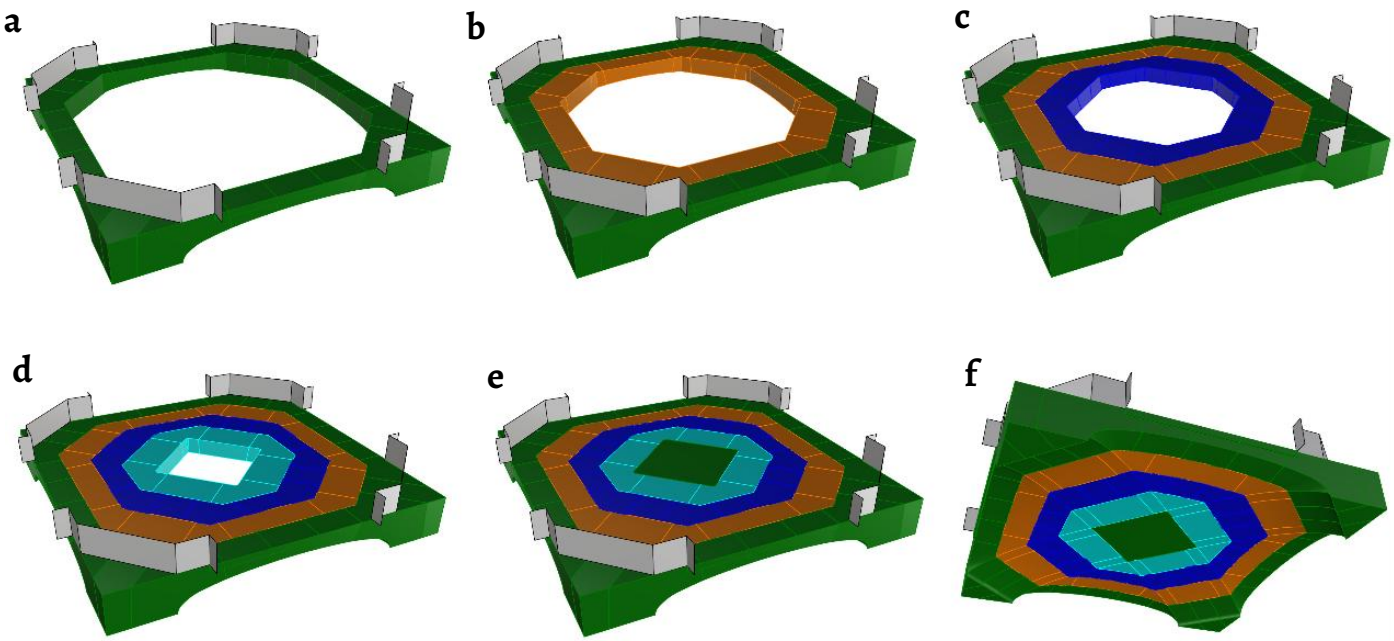

Figure 10. Modelling of the ashlars ring by ring: *a)* first row; *b)* second row added; c) third row added; *d)* fourth row added; *e)* closing ashlar added; *f)* bottom view of the intrados.

We call it a hypothesis because point clouds only provide us data about the visible surfaces. No record of the interface surfaces of the ashlars is available, therefore, although informed, the model does not have 100 % certainty. In fact, its analysis raises interesting questions. The first row of ashlars shows a typical arc structure replicated four times (Figure 10a). But an interesting issue appears between the first and second rows (Figure 10b). The interface surface between these rows appears to be vertical as the joints in the bottom of the vault and the corresponding ones in the upper pavement are vertically aligned. Of course, that is structurally impossible because, it would mean that no arc behaviour exists. The logical consequence is that the second row of ashlars would not stand. But in reality, it holds, which means that some extra cutting geometry, not visible, had to have been implemented. In our model we assumed a geometric configuration of the corner ashlars of first row that enables an arc behaviour (Figure 11). However, to understand what is really happening, other recording tools would need to be employed.

Then, for the remainder of the rows (Figure 10c-e), the joints of the ashlars ensure that the vault structurally works as they are not vertically aligned. In Figure 10f we have a bottom perspective of the modelled vault.

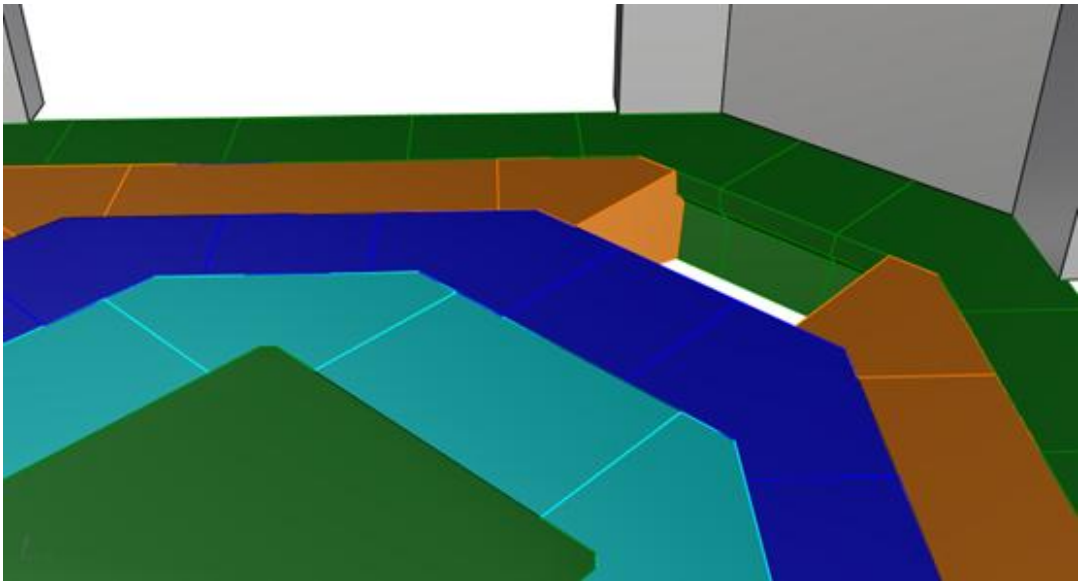

Figure 11. Perspective view of the assembly with one ashlar removed to make the joint between first and second row visible.

Conclusions and future research

Understanding stereotomy is important because it is one of the main methods of constructing most of monumental Portuguese architectural heritage from the eighteenth century. Looking back to earthquake that destroyed most of Lisbon central area in the same century it is valid to have in mind possible natural disasters, that may damage or destroy buildings being a vital part of national history and identity. This research shows in depth geometrical analysis of an exemplary element, vault, and can be scaled up to other instances and different heritage buildings, since it is possible to track style influences of the eighteenth century in Portugal. Creating parametric models of the vaults allows precise fit and geometrical analysis which is valuable for historical/constructive analysis and to support conservation and restoration actions.

So far, we have developed a documentary methodology to record and analyse stereotomic constructive elements from a geometrical point of view. Since the methodology includes the development of parametric models, besides allowing the precise representation of real stereotomic elements, it also allows the generation of a multitude of other models that, somehow, are from the same family as the real ones. This way we can instantiate virtually a limitless number of exemplars of vaults.

As future research, we will develop a tool to generate synthetic point clouds from the parametric models. These point clouds can be used as a base for training of artificial intelligence tools that can be helpful to optimize the surveying process or to allow contemporary designs through 3D style transfer algorithms. This means that we have potential to further explore those models and even use them as inspiration for contemporary designs.

The stone cutting process also raises interesting questions that were not analysed in this paper. These, together with structural simulations is another possible path for future research.

Acknowledgements

The topic of the work is connected to PhD thesis of Marta Orszt titled “Portuguese XVIII Century Stereotomic Vocabulary and its Potential Contemporary Use in 3D Style Transfer. A Study Based on the National Palace of Mafra” supervised by Luís Miguel Cotrim Mateus and Graziella Del Duca. This work is financed by national funds through FCT – Fundação para a Ciência e a Tecnologia, I.P., under the Strategic Project with the references UIDB/04008/2020 and UIDP/04008/2020.

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Digital documentation of modern heritage: Álvaro Siza's Borges & Irmão Bank in Vila do Conde (1978-1986)

Documentação digital do património moderno: Banco Borges & Irmão de Álvaro Siza em Vila do Conde (1978-1986)

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Abstract

The digital revolution significantly impacts cultural heritage safeguarding offering advanced documentation and communication techniques. Modern heritage provides valuable research insights for its rich documentary, physical, and oral resources. This article focuses on digitally documenting Álvaro Siza's Borges & Irmão Bank in Vila do Conde (1978-1986), listed on the World Heritage (WH) Tentative List since 2017. Despite Siza's global recognition, the complex design process and construction features of this building are still scarcely disseminated. Hence, this article aims to deepen knowledge and disclosure of this relevant case-study. Research supports documenting its Outstanding Universal Value (OUV) and tectonic consistency for future preservation. The methodology, framed within the SizaATLAS (FCT) research project, employs combined techniques to document 18 buildings in the WH Tentative List, including: i) archival and bibliographic research; ii) fieldwork; iii) photogrammetry; iv) 360 ° virtual tours; and v) 3D didactic models. This framework enhances understanding and dissemination of Álvaro Siza's work while providing relevant documentation for future management.

KEYWORDS
Álvaro Siza
Borges & Irmão Bank
Digital documentation
Tectonic perspective
Modern heritage

Resumo

A revolução digital impacta a salvaguarda do Património Cultural, ao disponibilizar técnicas de documentação e comunicação. O património moderno é neste âmbito um campo privilegiado de estudo, pela consistência dos recursos documentais, materiais e orais. Este artigo aborda a documentação digital do Banco Borges & Irmão, de Álvaro Siza, em Vila do Conde (1978–86), inscrito na Lista Indicativa do Património Mundial desde 2017. Apesar do reconhecimento do arquiteto, o processo de conceção e as características construtivas deste edifício permanecem pouco sistematizados. A investigação suporta a documentação do seu Valor Universal Excecional e da sua coerência tectónica, visando a preservação futura. A metodologia, desenvolvida no projeto SizaATLAS (FCT), aplica técnicas combinadas a 18 edifícios da Lista Indicativa do PM, incluindo: i) investigação arquivística e bibliográfica; ii) trabalho de campo; iii) fotogrametria; iv) visitas virtuais em 360º; e v) modelos didáticos tridimensionais. Este enquadramento apoia a compreensão, divulgação e gestão futura da obra de Siza.

PALAVRAS-CHAVE
Álvaro Siza
Banco Borges & Irmão
Documentação digital
Perspetiva tectónica
Património moderno

Introduction

The digital revolution has profoundly altered the ways in which cultural heritage is safeguarded, introducing new methodologies and tools for its documentation, analysis and dissemination [1]. In a context increasingly shaped by techniques that have become both indispensable and unavoidable [2, p. 35], this transformation assumes particular significance for modern heritage. Modern heritage presents a rich tapestry of documentary, physical, and oral sources, offering a complex and fertile field for critical investigation and interpretative approaches [3].

Digital documentation of cultural heritage has increasingly consolidated its role as an essential tool for the study, preservation, and communication of cultural assets [4-5]. This approach contributes not only to the precise recording of formal and construction features but also to critical interpretation, enabling hypothetical reconstruction and cultural mediation. This is particularly significant in the context of modern heritage, as its study is often characterised by gaps in documentation and by the need to understand singular construction processes, which are frequently experimental and innovative in nature [6].

The preservation of modern heritage therefore requires comprehensive and systematic digital documentation, encompassing both its broader urban and territorial context and its intricate material and constructive details. Identifying the most effective methods for creating accurate digital models must be undertaken in parallel with considerations of cultural significance, authenticity, and conservation requirements. This holistic approach ensures that modern heritage is not only safeguarded but also critically understood by future generations. It also underscores the capacity of modern architectural heritage to embody visionary concepts of form, space, technique and social responsibility [7].

Within this framework, Álvaro Siza's Borges & Irmão Bank in Vila do Conde is a particularly relevant case study. Its complex and prolonged development over approximately fifteen years reflects not only architectural experimentation but also continuous negotiations between architect and client, especially regarding material choices during periods of economic constraint. This context underscores the historical and cultural importance of comprehensively documenting such sites, anticipating new interdisciplinary relationships and intuiting potential advantages in future research [8]. Amid shifts in Portuguese politics from the late sixties onwards, the management of Borges & Irmão Bank considered several proposals for establishing a branch in Vila do Conde [9]. The initial phase, conceived in 1969 near the Santa Clara convent, involved the unification of two existing buildings, including the bank's headquarters at the time, while preserving the facade of the building to be incorporated and proposing a redesign of the former headquarters' facade. Following the abandonment of this proposal (1969-1974), a second solution was developed in 1978, based on the renovation of an existing building, not far from the original site proposal. The third and final proposal (1978-86), on the same plot as the previous one, involved demolishing the existing structure and constructing an entirely new building. Reflecting on this troubled process, Siza later remarked that the only thing missing was being dismissed from the commission [10].

Furthermore, with regard to modern heritage, it is of particular relevance to document construction techniques and material features, as these are more vulnerable to decay because of the limited durability of industrial materials or the long-term performance issues related to new or experimental technological solutions, such as flat roofs and curtain wall systems. Hence, documentation of construction processes plays a crucial role in advancing knowledge and supporting future conservation strategies for such buildings [11].

This paper intends to shed light on Borges & Irmão Bank in Vila do Conde (1978-1986), a well-known yet insufficiently documented architectural project, particularly focusing on its phasing and materialization. The study aims to provide comprehensive documentation of the building through a methodology that integrates archival and bibliographical research with digital tools in order to constitute a pedagogy for the teaching and professional practice of

architects. Additionally, it explores the tectonic dimension of the work, including its constructive logic and material systems, an aspect often underrepresented in the study of Siza's architecture and particularly significant in this seminal example of modern architecture at both national and international levels. In this sense, the methodological and analytical approach adopted here directly supports the identification, interpretation, and communication of the building's cultural and material attributes. Consequently, the research contributes to the documentation of attributes associated with OUV, as framed within the serial WH nomination "Álvaro Siza's Architecture: Modern Contextualism Legacy," submitted by Portugal in 2024 [12].

Methodology

The methodology adopted in this study is framed within the SizaATLAS research project (FCT) and is supported by a synergy of techniques for the comprehensive digital documentation of modern architecture. This approach has been applied to 18 buildings designed by Álvaro Siza, which have been included in the World Heritage Tentative List since 2017 [13].

The methodology is supported by the cross-analysis of i) archival and bibliographic research, ii) fieldwork, iii) photogrammetry, iv) 360 º virtual tours, and v) 3D didactic models. The methodology has already been tested and implemented in previous case studies, including the Ocean Swimming Pool [14], the Beires House [15], and the Serralves Museum of Contemporary Art [16].

Archival and bibliographic research

As regards data collection, the cross-analysis of archival and bibliographic research with fieldwork proved to be of major relevance. Planning permission projects, including written documentation, drawings and correspondence, are preserved in the Archives of the Municipal Council of Vila do Conde. These materials are organised according to the different design phases and include sketches (Figure 1a), studies, working drawings, plans and photographs (Figure 1b-c).

Complementary sources, including negatives, slides, and textual records such as project reports, meeting minutes, and correspondence with Borges & Irmão Bank, can be found in Álvaro Siza fonds at the Canadian Centre for Architecture (CCA) [17-19]. This collection also includes a study model.

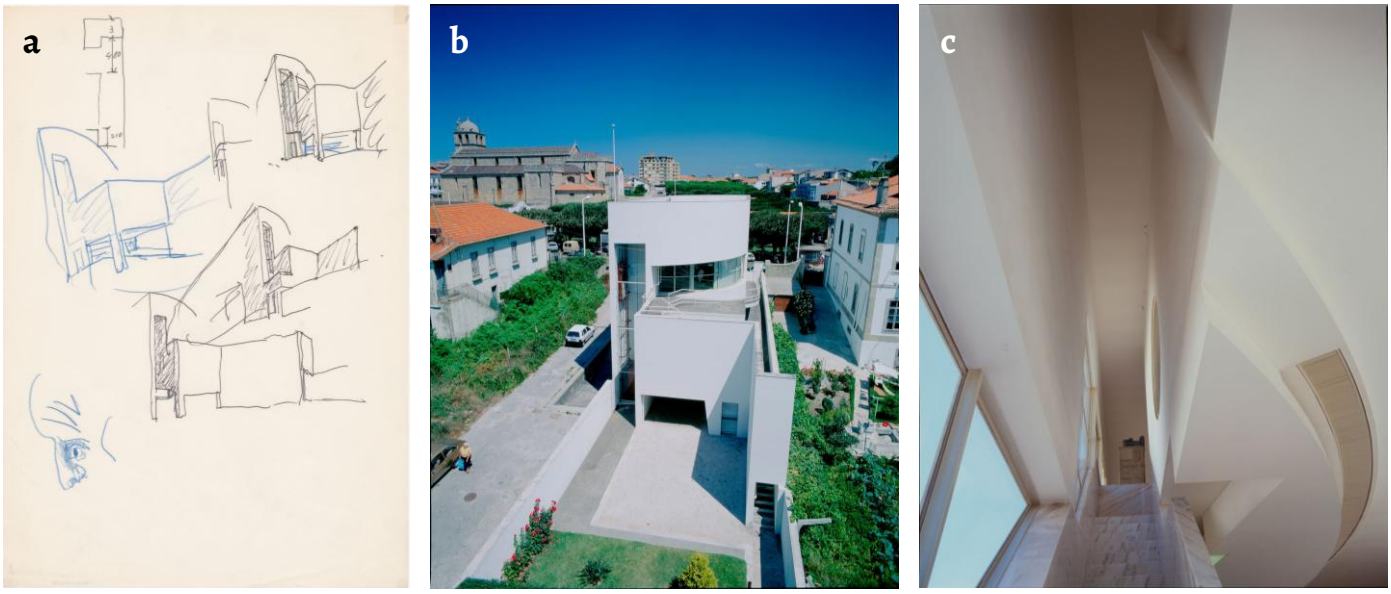

Figure 1. Documentation of Álvaro Siza's Borges & Irmão Bank in Vila do Conde: *a)* exterior sketches (1978-1986); *b)* rear view (1978-1986); *c)* interior view showing the ceiling and the staircase to the first floor. Álvaro Siza fonds, Collection Centre Canadien d'Architecture / Canadian Centre for Architecture, Montréal, Don d'Álvaro Siza / Gift of Álvaro Siza.

Fieldwork

Fieldwork conducted at the Borges & Irmão Bank encompassed a systematic survey of all interior and exterior spaces, complemented by insightful discussions with staff members, which provided valuable context information and enhanced understanding of the building's use. To ensure comprehensive documentation, an extensive photographic survey was conducted, including the use of drones to capture both aerial views and broader site perspectives.

This process was crucial in assessing the building's current condition and identifying areas requiring closer attention. Furthermore, the detailed analysis and photography of construction details, with a particular focus on tectonic features, significantly contributed to documenting the building's architectural integrity. The digital documentation protocol was thoughtfully designed to facilitate the systematic organisation and seamless integration of all gathered data, culminating in a coherent and easily accessible archive for future research and conservation purposes.

Photogrammetry

Photogrammetry facilitates the three-dimensional reconstruction of Siza's architectural works, elucidating their contextual relationships and physically documenting their construction. When combined with Building Information Modeling (BIM) and other digital tools, photogrammetry contributes to a robust documentation framework, enhancing the understanding and preservation of Siza's architectural legacy.

Although not originally designed for cultural heritage applications, photogrammetry has evolved into an indispensable tool in this domain. Since the 2010s, it has been a crucial tool for the 3D documentation of heritage sites, including twentieth-century architecture, using photographic data acquired from both ground-based and aerial ways. Digital photogrammetry stands apart from traditional methods by employing digital imagery and computational processes supported by cameras, computers, and specialized software.

Previously, the process was manual and required identifying matching points in photos to create orthophotos or simple 3D models. The major advance of digital photogrammetry lies in the use of computer vision and automated workflows, which make it possible the accurate documentation of very complex objects and the generation of high-resolution three-dimensional model.

360 virtual tours

Virtual tours are instrumental in the documentation and preservation of heritage assets, playing vital roles in outreach, communication, and conservation monitoring. In the context of twentieth-century architectural heritage, especially within the work of Álvaro Siza, 360º virtual tours emerge as a valuable complementary tool. The Borges & Irmão Bank stands out as a prime exemplar in this regard, demonstrating the effectiveness of this technique in capturing and disseminating the spatial qualities of architectural heritage.

Image acquisition for the virtual tours was carried out using a Ricoh Theta camera, with careful consideration on weather conditions and lighting to enhance the quality of the captured imagery. The captures material was subsequently processed and enabled using Pano 2VR software, providing an immersive virtual environment that contributes to the comprehensive digital documentation of the building.

3D Didactic Models

The Didactic Models (DM) offer an integrated analytical approach to study of the architectural tectonics in Siza's work. They focus on material compositions and construction logic, encompassing structural elements, envelops, frames, and detailed junctions. These models present precise 3D representations of selected sections and components of the building, emphasizing their pivotal role in informing material choices and construction practices.

Unlike conventional Heritage BIM (HBIM) workflows, that often aim at comprehensive digital reconstitutions or digital twins for conservation management, the DM prioritise analytical clarity over exhaustive description or completeness. Their purpose is to isolate, interpret, and communicate key constructive strategies. In this sense, the models function as curated interpretative tools rather than comprehensive replicas.

These models are not participatory teaching tools involving student modelling, as seen in recent BIM-based pedagogical research [20]. Instead, they perform a didactic function by providing analytical representations that support the interpretation of Siza's design principles. In this context, the term "didactic" does not refer to instructional frameworks within learning design, but to a method of communicating architectural knowledge through visual and parametric abstraction. In particular, they help bridge gaps caused by fragmented or inconsistent archival and field data.

The methodologic framework that supports these models is detailed across two sections: "Borges & Irmão Bank. Vila do Conde", which adresses i) archival and bibliographic research, ii) fieldwork); and "Digital documentation", which focuses on iii) photogrammetry, iv) 360 virtual tours and, v) 3D didactic models. Together, these stages constitute an essential methodology sequence for ensuring the rigour and coherence of the digital documentation process presented in this study.

Borges & Irmão Bank, Vila do Conde

Siza's repeated engagement with bank commissions across Portugal offered a sustained opportunities to reflect on this architectural typology. Notable examples include the Banco Pinto & Sotto Mayor branches in Oliveira de Azeméis (1971-1974) and Lamego (1972-1973), among others.

Three different projects were undertaken for the Banco Borges & Irmão Bank, referred to as the *Vila do Conde Agency*, situated in the historic part of the city (Table 1). The first project, spanning from 1969 to 1974, aimed to remodel the existing Borges & Irmão Bank. Located at the base of the Convent of Santa Clara (Figure 2a-c), the project evoked what Rafael Moneo described as a confrontation between "David and Goliath" [21]. It involved alterations to the façade (Figure 2d), interior design, an extension, as well as electrical and mechanical studies.

The second project, dating back to 1978, focused on another location within the historic area of Vila do Conde, near the Parish Church. This endeavour involved the construction of a new building, as the original was demolished. Siza made significant alterations to the design throughout the process, resulting in multiple versions of the building documented within the project series.

The final building of Borges & Irmão Bank consisted of two floors and a basement. Administrative offices were situated on the top floor, public services occupied the second floor, and the basement, also serving as the garden level, housed safety deposit boxes. This project led to Siza receiving the prestigious Mies van der Rohe Award for European Architecture in 1988, acknowledging his substantial impact on the field of architecture.

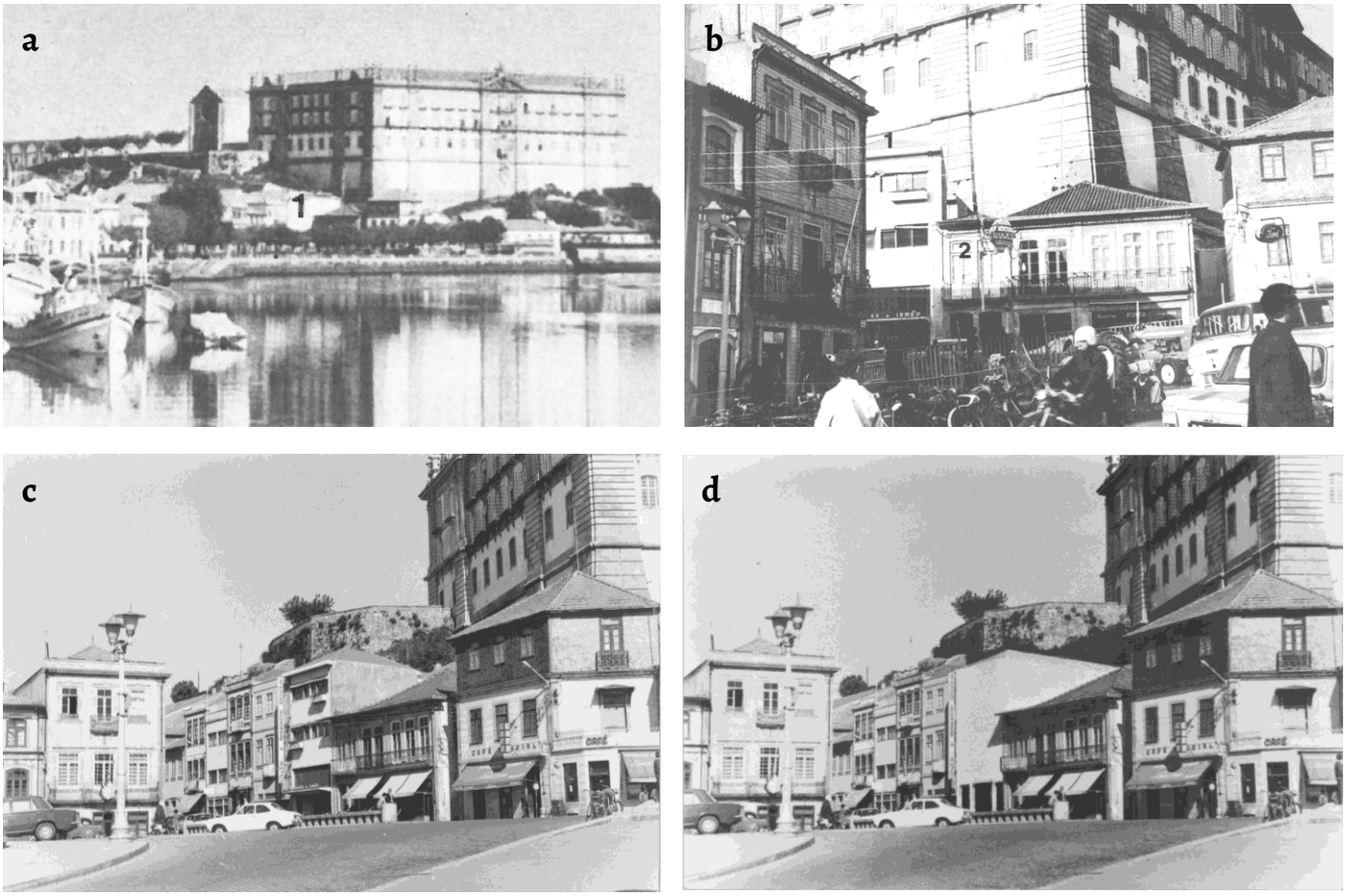

Figure 2. First phase location in Vila do Conde (1969-1974): *a)* headquarters at the time (no. 1 in the photograph), set within the urban landscape, with the River Ave and the convent in the background; *b)* closer view of the existing building to be incorporated into the new bank design [22, p. 35]; *c)* view of the existing building [18]; *d)* photomontage illustrating the proposed volumetric intervention and new façade [18].

Table 1. Synthesis of the three phases, with the corresponding process number in the Municipal Archives.

Phase	Process n.º	Date	Description
1st	691/70	1956-1979	The process spans from the establishment of the initial agency in 1956 to the project's approval in 1972. It includes Siza signing the planning permission project in 1970, obtaining ministerial approval in 1971, and applying for the extension of the bank agency license in 1972. Support for this progression came from the contractor's license, a budget estimate, and the opinion of the Municipal Art and Archaeology Commission.
2nd	148/78	1973-1978	This process includes a preliminary design package, which comprises a design report with an addendum, notifications, and orders. It also involves photographs taken before the project began, alongside drawings and supplementary documents.
3rd	71/80	1980-1983	This process encompasses vital project elements, including a responsibility statement, design report, drawings, and detailed plans for sanitation and water supply infrastructure. Additionally, it covers comprehensive terms, technical reports on various aspects, electrotechnical records, and essential notifications and requirements. These components collectively ensure a comprehensive grasp of the project's scope, design details, and the approval process.

First phase: 1969-1975

The Municipal Archive of Vila do Conde preserves the plans from the original building permit application, relating to the initial design by Siza for the bank. This project involved an intervention in two contiguous pre-existing buildings. One of these structures was originally conceived by Francisco Manuel de Almeida de Eça Guimarães, with a Design Report dated 15 August 1956, just 14 years before Siza's proposal (Figure 4).

Drawings from the 1970's reveal Siza's intention to replace the existing modern façade with a more abstract, presumably whitewashed, featuring a tripartite glazed opening approximately

matching the height of the ground floor openings of the neighboring buildings. On the adjacent façade, the only visible sign of intervention is the replacement of the ground-floor joinery. Sketch lines drawn over the circular opening suggest a possible attempt to eliminate it, bringing the façade design closer to the constructed version, the third iteration (Figure 4a).

The project received early international attention and was published in several key architectural journals and monographs during the 1970, including *Controspazio* [22, pp. 34-35] and *Arquitectvras BIS* [19]. It was also selected as one of Siza's projects for the monograph of *L'Architecture d'Aujourd'Hui* dedicated to Portugal [23, p. 54] and listed in the monograph dedicated solely to him by the same editor [24, pp. 66-67]. These publications feature sketches (Figure 3a-c), axonometries and photographs of models.

The published sketches reveal Siza's exploration of the façade, particularly through the distribution of openings, where he experiments with variations of shapes and scale and introduces projecting elements, such as protective window canopies and a pronounced emphasis on the main entrance. This investigation of apertures can be interpreted as an attempt to establish a controlled dialogue with the adjacent monastic volume of Santa Clara, characterized by its monolithic appearance, reinforced by stone masonry at the corners and pilasters and defined by its with white façades punctuated by granite-framed windows. It also may evoke the main façade of Vila do Conde parish church.

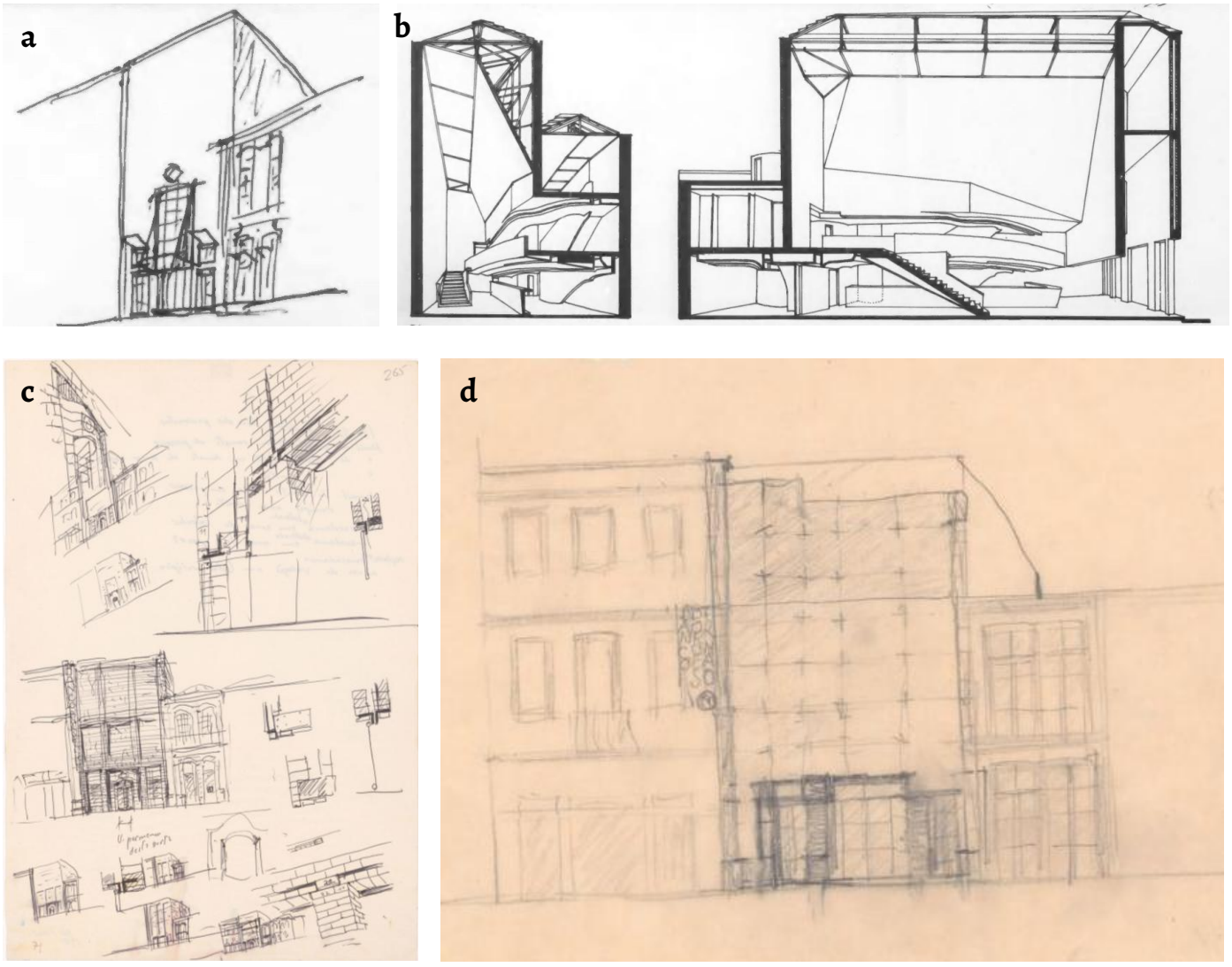

Figure 3. Drawings by Álvaro Siza for the first phase of the Borges & Irmão Bank design (1969): *a)* façade [24, p. 9]; *b)* axonometries [23, p. 54]; *c)* façade study [17]; *d)* façade study [17].

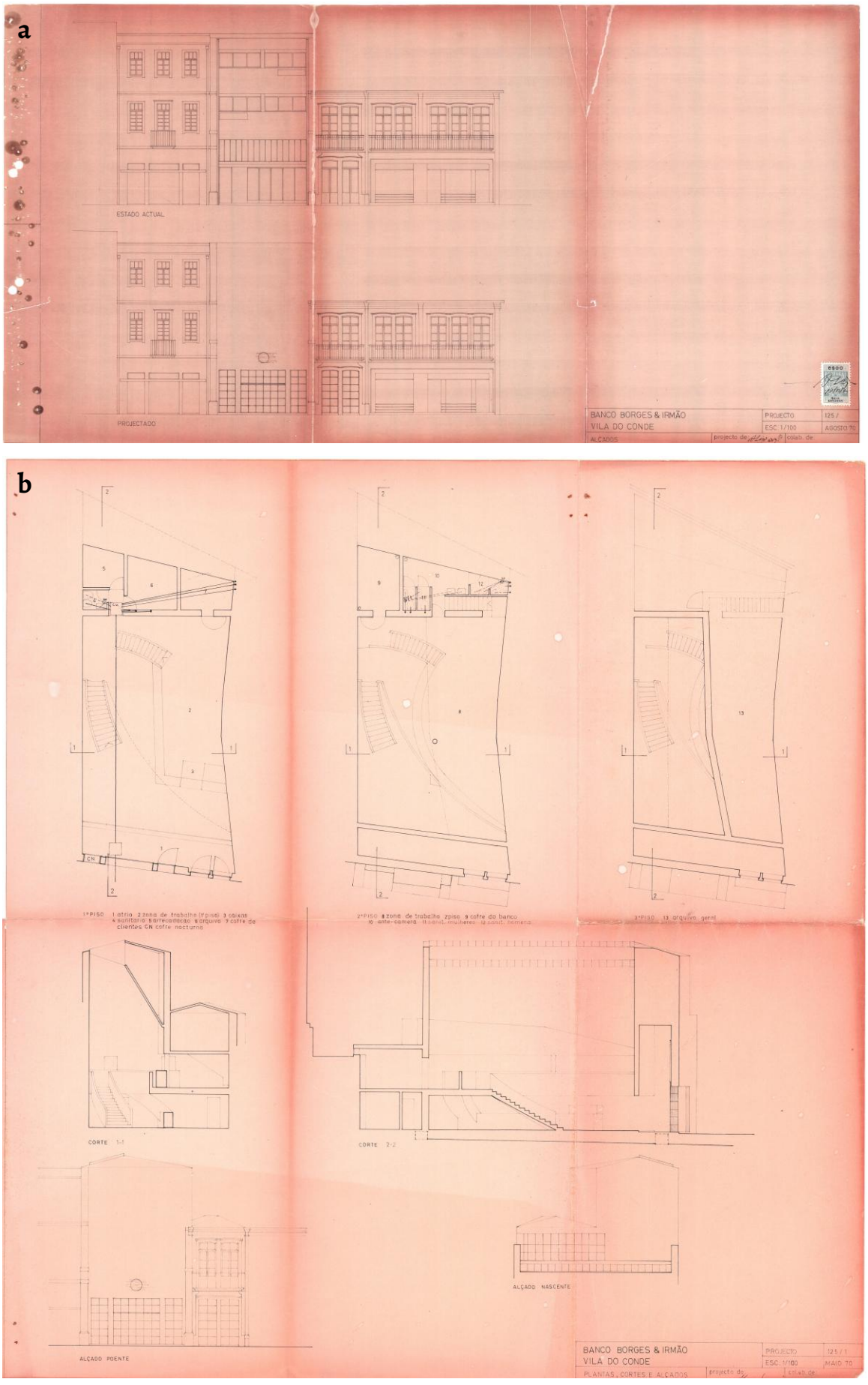

Figure 4. Drawings: *a)* façades of the original design by Francisco Eça Guimarães (1956) and Álvaro Siza's proposal. Archive of the Municipal Council of Vila do Conde, August 1970; *b)* plans, sections, and façades. Archive of the Municipal Council of Vila do Conde, May 1970.

Plans, sections, and elevations, along with axonometric drawings and the development of models, reveal Siza's intention to explore the interior of the bank through the articulation of the two previously separate plots, now unified. The public reception area is treated with the maximum possible ceiling height, while the adjoining volume is organised over three floors, distributing the remaining programme (Figure 4).

The end of the public area, marked by a full-length service counter, is punctuated by a staircase that provides direct access to the upper floor. The interior lighting design takes advantage of large glazed surfaces, which generously illuminate the interior spaces. Despite the proposed changes to the façade, the former bank building retains its pitched roof, tiled in the traditional technique, preserving the urban profile. A sloped wall, a feature later employed in the Santa Maria Church, completes the scenographic effect of the ensemble.

Besides this version that was refined and submitted for a building permit application, more recently the AMAG publication *Álvaro Siza Unbuilt works* [25, p. 5] includes previously unpublished sketches by Álvaro Siza illustrating the design process. Supposedly dating from 1969, and therefore preceding the first formal proposal, these sketches focus on constructive detail as a guiding element in the design process, namely the idea of a double brick masonry façade, left exposed both on the interior and exterior (Figure 3d).

Although such technical investigations are characteristics of Siza's work during this period, drawings with this degree of focus on construction detail at such an early stage are relatively uncommon. They also demonstrate a wide range of approaches to materials and construction systems. It is worth recalling that, at this time, Siza was experimenting with concrete, as exemplified by the Manuel Magalhães House (1967-1970) and the Unicoope building (1970).

Second phase: 1976-1977

The second design for the Bank (Figure 5) was featured in the monograph of *L'Architecture d'Aujourd'Hui* dedicated to Álvaro Siza [24, pp. 66-67] and more recently, in the AMAG editions *Álvaro Siza Unbuilt works* [25-26]. The 2020 article presented the three design phases together for the first time, allowing for direct comparison.

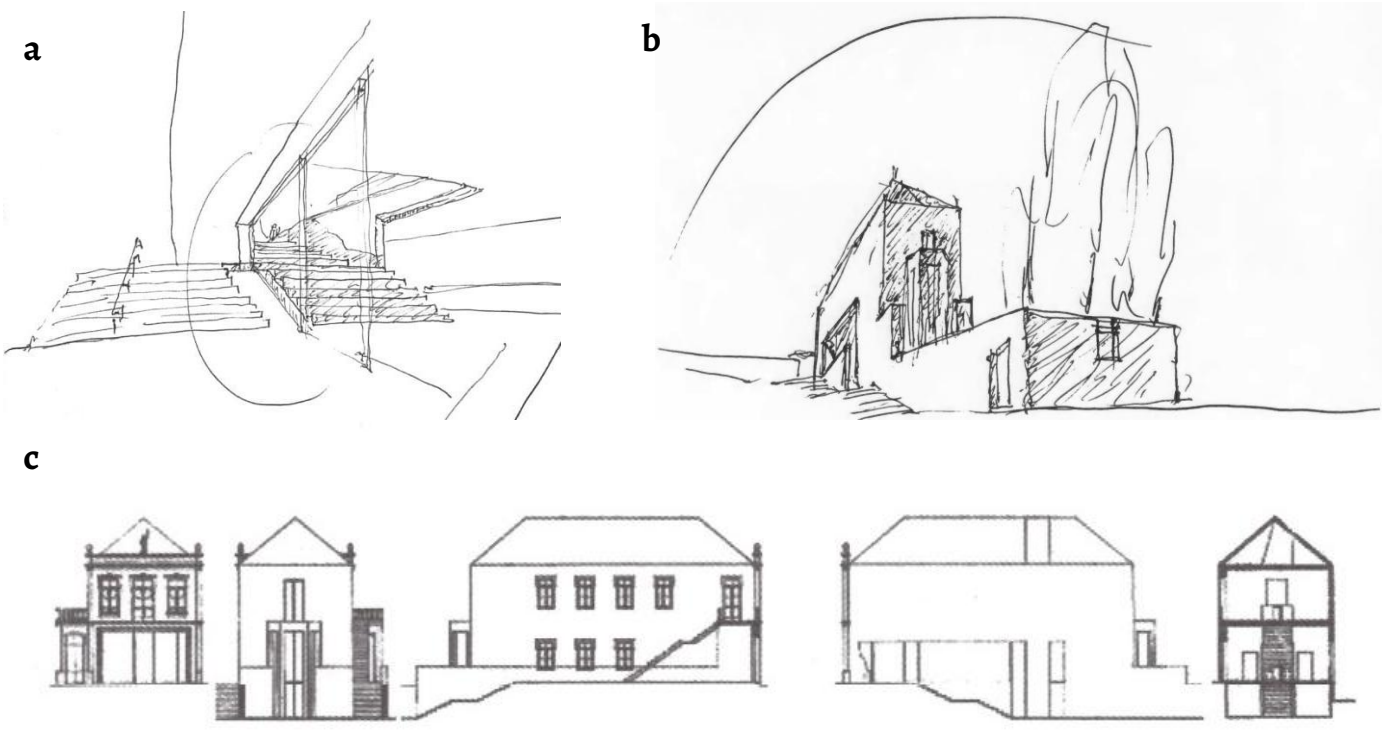

Figure 5. Drawings by Álvaro Siza for the Borges & Irmão Bank II: *a)* perspective detail, 1979, Sketchbook 41, p. 39, Drawing Matter Archive; *b)* sketch; *c)* façades and sections by Álvaro Siza, including the redesigned street-facing façade with glazed elements, the rear (south) façade, the east and west side façades, and a longitudinal section [25, p. 5].

The second design epitomizes simplicity, with its central feature being a magnificent staircase with multiple flights aligned along the room's axis. This striking staircase is bathed in natural light from a generous lantern that seamlessly stretches through the roof above. Additionally, the redesigned street-facing facade introduces a contemporary touch with a sleek glass section that gracefully extends along the building's side, enhancing both its aesthetic appeal and functionality [24, pp. 66-67].

The new intervention is only revealed on the main façade through a large glazed opening at ground-floor level. The remaining façades are entirely redesigned, with the rear elevation characterised by a "bow window" that transforms into a balcony on the upper floor. As seen in the final built proposal, the design is defined by a monolithic volume anchored to the main street. The basement level is enclosed by a wall that defines a garden with trees and, due to the slope of the terrain, aligns with the street level at the rear of the building.

Third phase: 1978-1986

The final version of the design is authored by Álvaro Siza, with assistance from architect José Luís de Carvalho Gomes and collaboration from Miguel Guedes de Carvalho, Eduardo Souto de Moura, Manuela Sambade, Nuno Ribeiro Lopes and Luiza Penha. The structural engineering was overseen by Fernando Eça Guimarães, while the electrical and air conditioning systems were executed by engineers Fernando Madeira and Jorge Maria. The construction itself was executed by *Sociedade Cooperativa dos Operários Pedreiros Portuenses*.

The third design was first published in the monograph of *L'Architecture d'Aujourd'Hui*, dedicated to Álvaro Siza [24, pp. 66-67], preceded by the presentation of the second design. It was later published in Domus [9, pp. 20-21], showcasing photographs capturing the final construction phase, depicting the site set-up and the building without window frames. The accompanying text emphasizes that the "predominant aim of the project is to merge into the landscape, without yielding to mimetic temptations or allowing itself to be swallowed up by the charming scenario" [9, pp. 20-21]. The bank was subsequently published in *Obradoiro* [27], documenting the construction works (Figure 6).

The debut of the bank's completion in 1986 marked the beginning of its prominence in the architectural discourse, with appearances in esteemed publications (Table 2).

Table 2. Key Publications featuring the Borges & Irmão Bank, after its completion in 1986.

Year	Author(s)	Publication data
1986	Fernandes, J.M.	'Agência Bancária em Vila do Conde, Álvaro Siza Vieira', in *Revista Arquitectura Portuguesa*
	Safran, Y.	'City Segments', in *Building Design*
	Siza, Á. *et al*	'Banco Borges & Irmão III, Vila do Conde 1982', in *Álvaro Siza: Professione Poetica*
	Capitel, A. *et al*	'Banca Borges & Irmao, Vila do Conde', in *Revista do Colégio Oficial dos Arquitectos de Madrid*
	Croset, P.	'Álvaro Siza Vieira. Banca a Vila do Conde/ Bank in Vila do Conde',in *Casabella*
1987	Bru, E. & Mateo, J. L.	'Agencia bancaria, Vila do Conde (Portugal)', in *Arquitectura europea contemporánea*
1988	Siza, Á.	'Banco Borges & Irmão III, Vila do Conde', in *Álvaro Siza: Profissão poética*
	Siza, Á.	'Uma espécie de cruzamento de escalas', in *Jornal dos Arquitectos*
1989	Nakamura, T.	'Alvaro Siza, 1954-1988', in *A + U*
1990	Frampton, K. *et al*	*Mies van der Rohe Award for European Architecture*
	Costa, A. A. Siza, Á.	'Banco Borges & Irmão', in *Álvaro Siza arquitecturas 1980-1990*
	Mardaga, P.	*Architectures à Porto*
	Siza, Á.	*Arquitecturas 1980-90. Álbum de la exposición*
1992	Rodrigues, J.	*Álvaro Siza / obra e método*
1993	Santos, J. P. *et al*	*Álvaro Siza, Obras y Proyectos 1954-1992*
1995	Fleck, B.	*Álvaro Siza*
1997	Trigueiros, L. *et al*	*Álvaro Siza 1954-1976*
1998	Testa, P.	*Álvaro Siza*
1999	Jodidio, P.	*Álvaro Siza*
2000	Cecilia, F. M.	*Álvaro Siza: 1958-2000*
2023	Choupina, A. *et al*	*Siza: 90 anos. Volume 10. Siza por Kenneth Frampton*
2024	Ferreira, T. C. *et al*	*SizaAtlas: Borges & Irmão Bank, Vila do Conde*
	Pedreirinho, J. M.	*Álvaro* Siza. Unbuilt Works
2025	Quintáns, Carlos *et al*	*Siza – Catálogo Gulbenkian*

Tectonic, construction and details

The built Vila do Conde bank replaces a previous building that was demolished. In contrast to other works by Siza, this design privileges spatial plasticity over explicit structural expression. This choice has sparked a broader discourse on the building's tectonics. However, the careful selection and use of materials underscore the architect's vision, particularly evident in the seamless visual connection between the interior and exterior spaces. Large glass surfaces and marble claddings bridge the gap between inside and outside, enhancing the sense of continuity.

The bank's interiors were also developed with a focus on materials, especially the use of marble, with special attention to stone cutting. The design of the wooden furniture includes desks, credit cabinets, and file trays, among others. The side gate was carefully designed and features the bank's logo.

The Borges & Irmão Bank building, with three floors, has a reinforced concrete structure and walls. The structural solution sought to interpret, as faithfully as possible, Álvaro Siza's design principles. The steel adopted was type A/40 N and concrete B/225. The foundation walls are in cyclopean concrete, remaining exterior to the projected reinforced concrete walls.

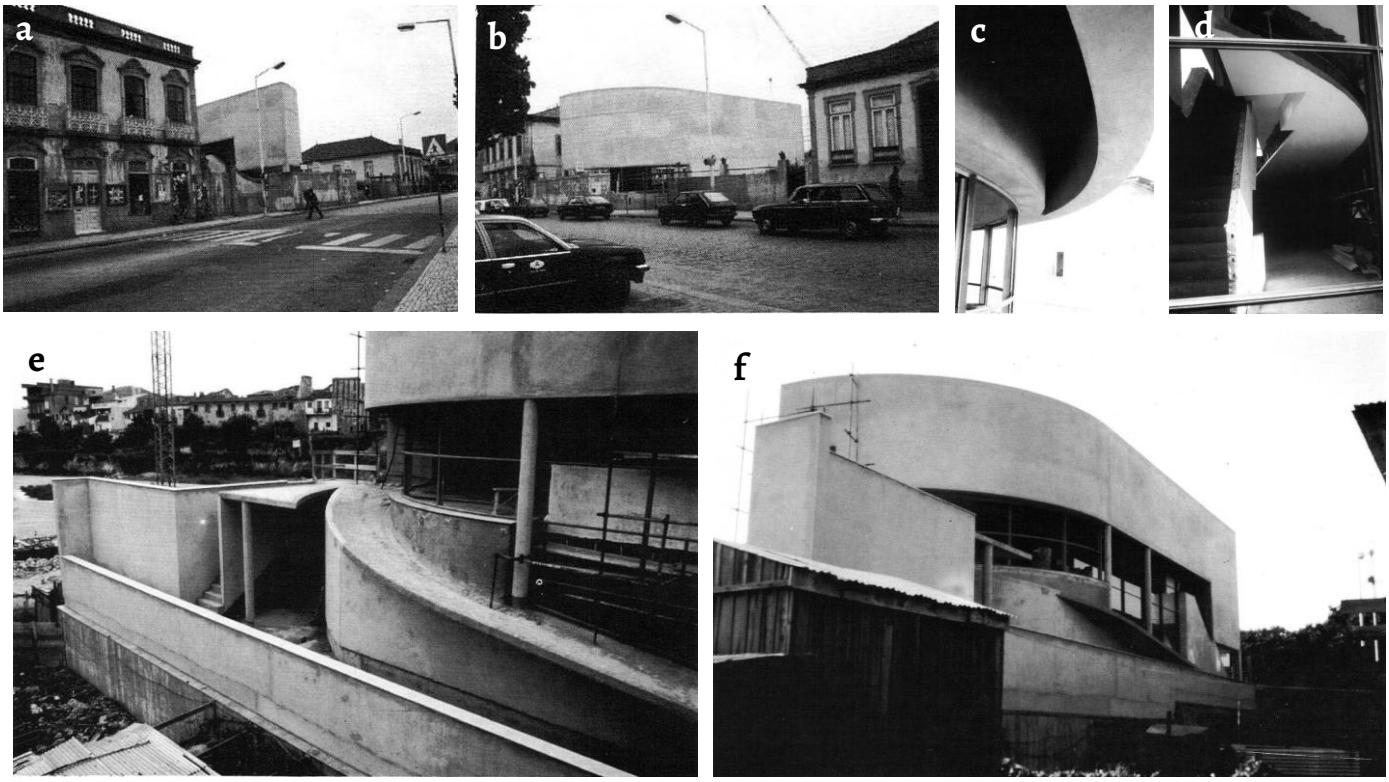

Figure 6. Construction site photographs (*a-f*) [27].

The exterior walls consist of a double construction: concrete on the outer layer, an air gap, and perforated brick masonry on the inner layer, with both surfaces finished with plaster. The reinforced concrete walls have a distinct structure, comprising panels reinforced with Malhasol welded wire mesh, and are reinforced by pillars and belts at floor levels, at the top, and mid-height. Interior walls are constructed of perforated brick masonry and finished with painted stucco.

All floors are integrated through a circulation system that, in addition to vertically connecting the building's rooms, articulates it with the public space. From the second floor, with the main atrium and reception areas, two staircases connect both the administrative area and the loan department on the third floor, as well as the deposit boxes on the ground floor (first floor). There is also an elevator that connects the three floors. An external ramp is attached to the east side of the building to provide direct access to the top floor. The interior flooring is marble. The exterior surfaces, including the ramp, street, and English courtyard, are finished in asphalt or asphalt concrete, with curbs in granite and limestone.

Figure 7. Documentation of Álvaro Siza's Borges & Irmão Bank in Vila do Conde: *a)* interior view, photograph by Teresa Cunha Ferreira; *b)* details of the window frames [19]; *c)* curtain wall plan and façade [19].

The roof is finished with concrete slabs laid over a levelling layer and concrete slab. As construction photos reveal, the false ceilings, are made of panels of plaster and vegetable fibres, named "Estafe" (Figure 6d). The lighting circuits include fixtures designed for two 65 W fluorescent lamps with a metal grid, used in both work areas and above the public area (Figure 7a). As stated in the design report, the window frames are made of wood for interior use and iron for the exterior (Figure 7b-c).

Digital documentation

Photogrammetry

Photogrammetry of the Borges & Irmão Bank clarified its contextual relationships and provided a detailed physical record of the building (Figure 8). Utilizing drone photography from both DJI Air 2 and DJI Mavic Pro, alongside Map Pilot Pro software, comprehensive volumetric data was captured, providing insights into the buildings' integration with their surroundings.

This method not only captured the buildings' physical dimensions but also their visual impact on the landscape. Terrestrial photogrammetry further refined the models' accuracy, supported by Agisoft Metashape software for georeferencing. Employing a BIM approach ensured data interoperability and facilitated the creation of didactic models, allowing for the testing of various resources, including 3D printing.

Figure 8. Aerial photopgraphs: *a)* aerial capture; *b-d)* 360º captures2022 (photos: Ricardo Dias).

One significant challenge in the photogrammetric documentation of the Borges & Irmão Bank concerns the modelling of white surfaces, which are prevalent in many of Siza's architectural works. Such surfaces often lack sufficient texture and contrast, making it difficult for photogrammetry software to detect and match key points accurately. This issue can result in noisy data and artefacts in the 3D models, reducing their overall accuracy and quality.

To address this challenge, multiple acquisition campaigns were combined, integrating both terrestrial and aerial photogrammetry, as well as testing various software processing options to find the best possible combination of results. To further optimize the outcomes, there remains the possibility of combining the photogrammetric model with one obtained through a laser scanner campaign.

360 virtual tours

For the 360 º tours, careful attention was paid to the five OUV attributes proposed for the inscription of "Álvaro Siza's Architecture: A Modern Contextualism Legacy" [12], in the WH list (Table 3). Each tour was designed to highlight the architectural responsiveness to the surrounding physical, social, and historical context. Furthermore, efforts were made to showcase how international and local influences were seamlessly integrated into the design. The virtual tours were structured to foreground volumetric articulation, spatial sequencing, sculptural quality and contextual relationships, from the most significative angles (Figure 9).

Moreover, special consideration was given to providing visitors with oriented spatial experiences, allowing them to navigate through the spaces in a coherent and meaningful way (Table 4 and Table 5). Lastly, the tours aimed to present the buildings as a holistic "Total Work of Art," showcasing not only the architectural design but also the intricate details, furniture, and artworks that contribute to the overall aesthetic experience.

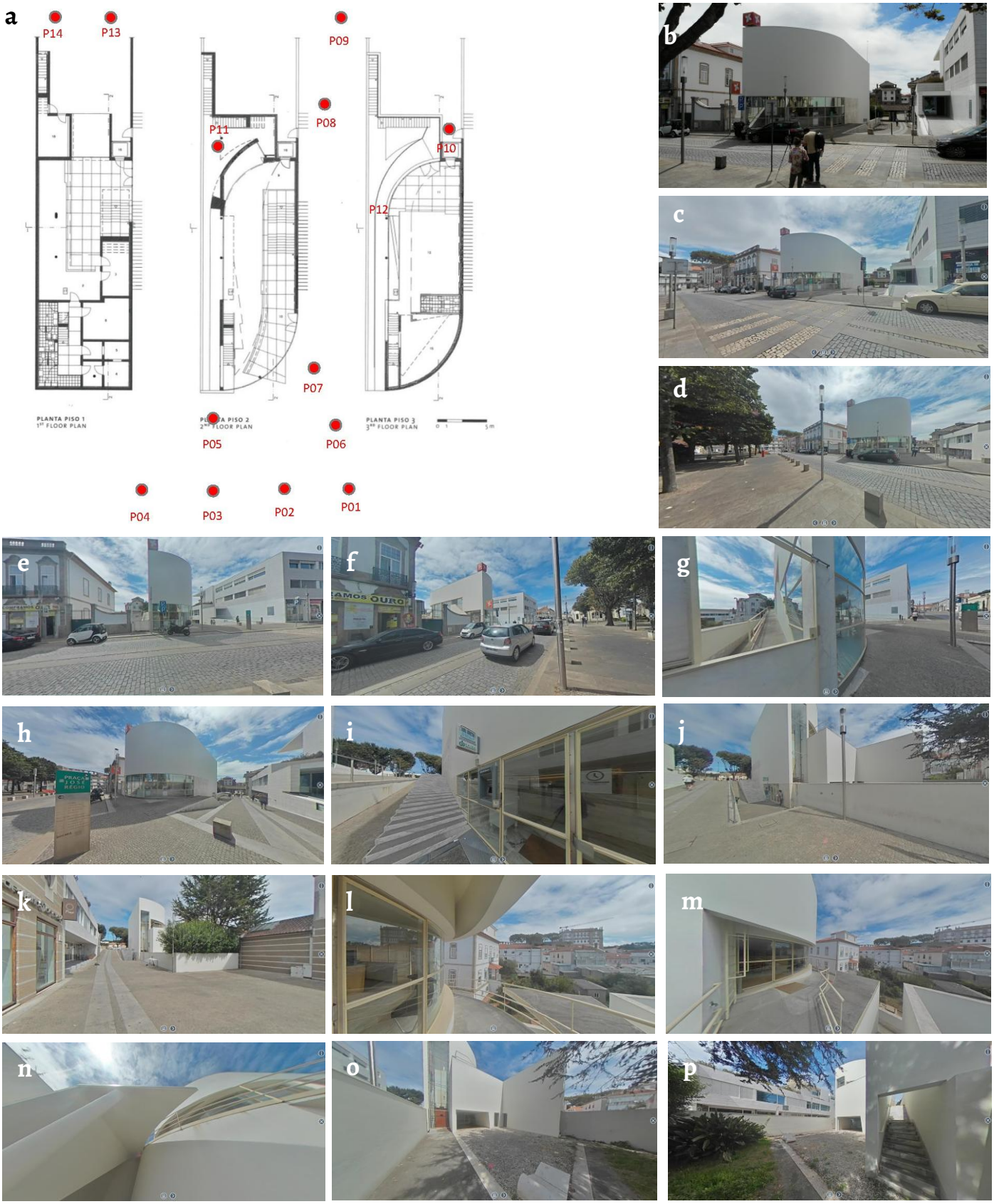

Figure 9. Points of capture: *a)* location on plans; *b)* during the capture process; *c)* north-west perspective; *d)* north-west perspective, from São João Square; *e)* north perspective; *f)* north-east perspective; *g)* north façade, window frames; *h)* north-west perspective, access to the pedestrian pathway; *i)* west façade, window frames; *j)* south-west perspective; *k)* south-west perspective, pedestrian pathway; *l)* view towards the Monastery of Saint Clare; *m)* outdoor walkways; *n)* east façade; *o)* south perspective from the private courtyard; *p)* private courtyard.

Table 3. Attributes proposed for the inscription of "Álvaro Siza's Architecture: A Modern Contextualism Legacy" in the WH list [12, pp. 142-143].

Attributes	Description
Attribute 1	Architecture responsive to a physical, social and historical context
Attribute 2	Integration of international and local references
Attribute 3	Sculptural volumetric expression
Attribute 4	Oriented spatial experiences
Attribute 5	Total work of art including details, furniture and art works

Table 4. Relation between attributes and points of capture.

Attributes	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14
Attribute 1	●	●	●									●	●	
Attribute 2				●										
Attribute 3	●						●	●						
Attribute 4					●			●		●	●			
Attribute 5				●		●								

Table 5. Description of points of capture.

Point	Title	Description
1	Bank's Integration with the surroundings	Relationship with the pre-existing structures; creation of pedestrian access
2	Pedestrian pathway	Integration with existing elements and creation of outdoor walkways
3	Southwest façade of the Bank	Interaction with surroundings, volumetric expression
4	Bank atrium	Interaction with exterior (glass), public reception area
5	Interior circulation	Connection between bank levels for public access; pathways
6	Public access areas	Spatial quality, interior relationships
7	Exterior design	Architectural volumetric expression
8	Outdoor walkways	Promenades
9	Articulation space	Connection between ramp, elevator, and stairs
10	Ramp	Promenades
11	Staircase	Promenades
12	Bank façade from the street	Interaction with surroundings, volumetric expression
13	Bank façade from the square	Interaction with surroundings, volumetric expression

Didactic Models (DM)

In this research, we refer to Didactic Models (DM) as interpretative frameworks designed to foster critical engagement with architectural construction, rather than merely representational or instructive tools. These models serve not only to visualize but to interrogate the tectonic, material, and formal logic of buildings, creating a space for reflection on how design decisions were shaped by Siza, in the interplay between his collaborators, the client and the contextual constraints that informed the project.

Their main objective is to conduct a thorough examination of architectural component properties, highlighting the role of tectonics, technical details, and material selection in architectural design. This process begins with carefully curated building sections that showcase artistic and formal attributes alongside construction principles, presented in sectional and perspective views (Figure 10).

Drawing inspiration from Edward Ford's "The Details of Modern Architecture" [28] these models prioritize clear language to disseminate knowledge effectively (Figure 10e-f). The development process involves cross-referencing between written and visual documentation, physical construction, photogrammetric models, and virtual tours.

Furthermore, by comparing diverse solutions proposed for similar component properties, the models enable a holistic evaluation of Siza's architectural achievements, emphasizing the integration of form, function, tectonics, and materiality.

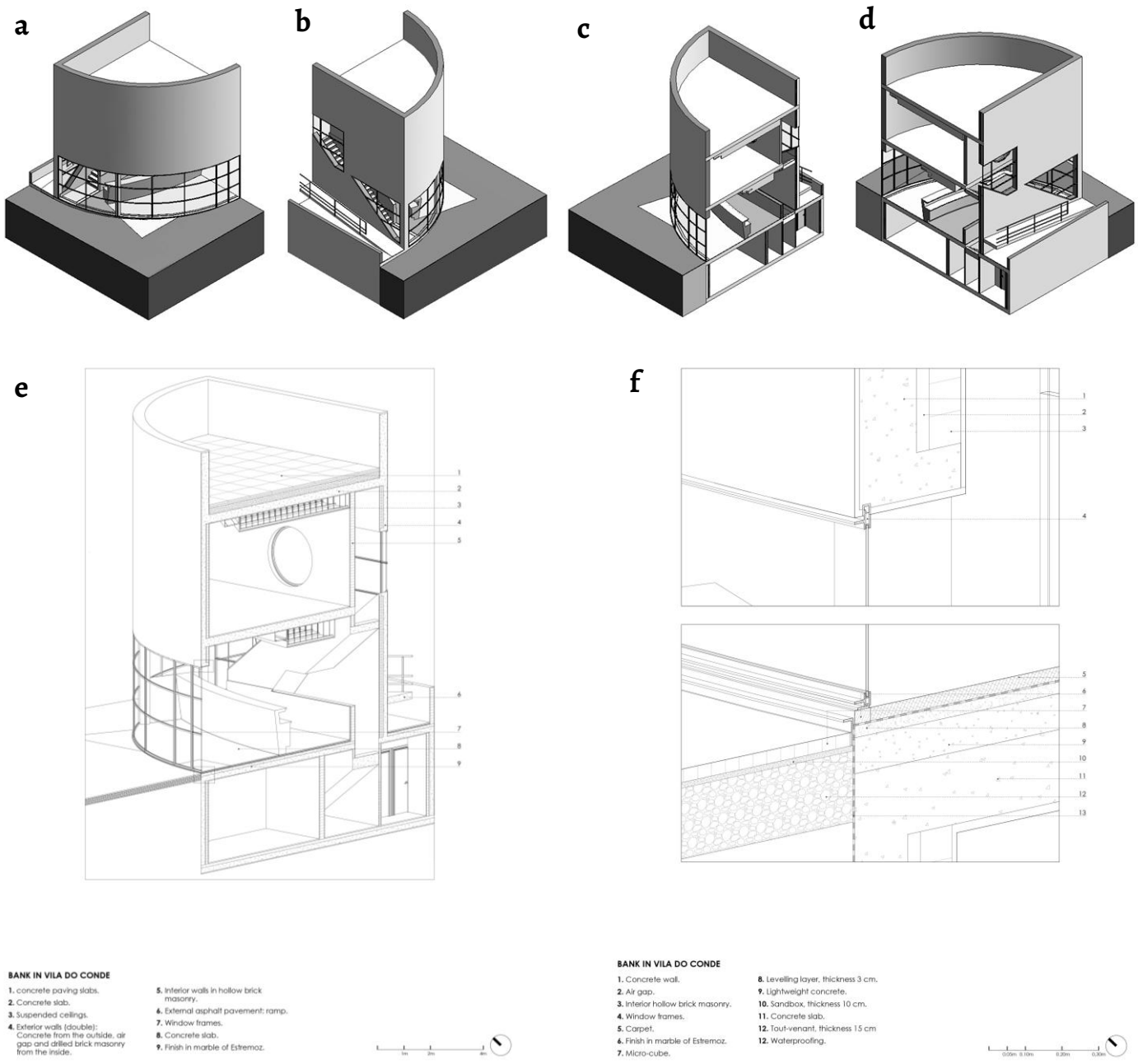

Figure 10. 3D Models of a section of the bank: *a–d)* exploratory studies; *e-f)* didatic models, 2022 (scientific coordination: Joaquim Teixeira, Teresa Cunha Ferreira, Tiago Cruz; 3D modelling: Juan Piedrahita).

Final considerations

This study digitally documents one of Álvaro Siza's most significant architectural works, the Borges & Irmão Bank in Vila do Conde, awarded the inaugural Mies van der Rohe Award for European Architecture in 1988 [29], and contributes to the preservation and critical understanding of its historical, material and cultural significance. This research establishes a replicable methodology that aligns with the required information to address conservation actions in compliance with international heritage documentation standards, developed in the *Principles for the recording of Monuments, Groups of Buildings and Sites* [30]. The paper also integrates the specificities of architectural heritage documentation [31], acknowledging the interplay between cultural meaning and material culture.

Moreover, this article demonstrates the impossibility of developing rigorous digital documentation (photogrammetry, 360 captions, didactic models) without the previous methodological steps of exhaustive archival and bibliographic documentation and detailed fieldwork. These preliminary steps are indispensable for both accuracy and interpretative depth of the resulting digital outputs.

The Borges & Irmão Bank is a relevant case study to apply and demonstrate this methodology because of its complex design process, which extended more than fifteen years. This period included extensive negotiations between the architect and the client, particularly concerning the choice of materials, such as marble, due to budgetary constraints during an austerity period. These contextual layers are essential to provide the critical context for investigating the building's design decisions, construction details and material expression. Limitations of research are related to technical challenges in photogrammetry (white surfaces) and difficulties in accessing and photographing interior spaces due to the building security standards as a Bank agency. Future developments regard the expansion of this methodology to other buildings of Álvaro Siza, as well as other sites with cultural values to be sustained and preserved.

This article also contributes to the broader knowledge and preservation of modern architecture by documenting its construction systems, material characteristics and design principles, which are essential for future conservation and management of change. Finally, it also contributes to support ongoing efforts to articulate and communicate the attributes of the Outstanding Universal Value (OUV) within the serial WH nomination "Alvaro Siza's Architecture: Modern Contextualism Legacy" [12].

Acknowledgements
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Digitalization *vs*. the spirit of place: sixty years after Venice - what is the role of digital technologies in the museum sector?

Digitalização *vs*. espírito do lugar: sessenta anos depois de Veneza - qual o papel das tecnologias digitais no setor dos museus?

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Abstract

Digital technologies have emerged as important tools for the cultural heritage and for the museums sector. When the *Venice Charter* was published in 1964, technological tools were essentially used to collect and store data. Nowadays, with the advent of artificial intelligence, they cover more and more functional areas of work in cultural heritage. This also includes the possibility to visit exhibitions and museums without leaving our houses. But can these immersive experiences replace the direct contact with the spaces and the objects? Without denying the potentialities of digital technologies for the cultural heritage sector, we aim to analyse, through the case study of historic house museums, their impact on the perception of the spirit of place. This concept transforms the visit to the real place into a unique experience, capable of creating in the public a sense of identity, affection, belonging and memory.

KEYWORDS
Cultural heritage
Historic house museum
Sustainability
Management
Artificial intelligence
Genius loci

Resumo

As tecnologias digitais têm-se evidenciado como importantes ferramentas para o setor do Património Cultural e museológico. Quando se publicou a *Carta de Veneza*, em 1964, as ferramentas tecnológicas eram utilizadas essencialmente como meios auxiliares de recolha e armazenamento de dados. Atualmente, no advento da inteligência artificial, cobrem uma cada vez mais áreas funcionais do trabalho no Património Cultural. Bem assim, inclui-se aqui a possibilidade de visualização de exposições *online* ou de visitas imersivas. Mas substituirão estas experiências a visita ao espaço e o contacto direto com os objetos? Não descurando as suas potencialidades para o setor do património cultural, procuramos analisar, através do caso de estudo das casas-museu, o seu impacto na perceção do espírito do lugar. Este conceito, que congrega as vertentes tangíveis e intangíveis, transforma a visita ao lugar numa experiência única, capaz de criar nos públicos um verdadeiro sentido de identidade, afeto, pertença e memória.

PALAVRAS-CHAVE
Património cultural
Casa museu
Sustentabilidade
Gestão
Inteligência artificial
Genius loci

Introduction

Published in May 1964 during the second international congress of architects and technicians of historic monuments, the *Venice Charter on the Conservation and Restoration of Monuments and Sites* remains a foundational document for cultural heritage, emphasising and promoting "the common responsibility to safeguard [it] for future generations" [1].

To keep up with the times, this concept has evolved in recent decades, alongside socio-political debates and cultural needs, to encompass new areas of interest and intervention. These now range from natural heritage to intangible heritage and even include the so-called digital heritage, e.g. the *UNESCO Charter on the Preservation of the Digital Heritage* (2003) [2].

Digital technologies which are constantly and rapidly evolving have emerged as important tools for the Cultural Heritage and for the museums sector. However, the relationship between these domains has not always been consensual, sometimes blurring the boundaries between the real and the virtual.

When the *Venice Charter* was published, technological tools were essentially employed for data collection and storage.

Nowadays, with the advent of artificial intelligence, they cover more and more functional areas of work in Cultural Heritage. They play a critical role in preventive conservation, restoration, and the generation of new knowledge [3, p. 88]. Therefore, digital technologies enable the digital reconstruction of artistic objects and monuments, some of which have already disappeared, the deciphering of inscriptions and symbols, the identification of authorships and chronologies, the communication and heritage education, and many other functionalities supporting their value.

Furthermore, digital technologies support a range of functionalities that enhance the value of cultural heritage and make it possible to "anticipate, support, and extend the physical visit to museums" [4, pp. 17-19].

As an area to which the museum sector has also been adapting, this includes the possibility of online exhibition viewing – a trend accelerated by the recent pandemic – as well as immersive virtual experiences. These developments have been widely explored, as evidenced by the growing number of experimental museum projects and the proliferation of seminars, conferences, and publications on the subject.

Yet can these immersive experiences truly replace the direct contact with the spaces and the objects?

Heritage involves processes of recognition, appropriation, and the cultivation of emotional attachment and belonging – concepts now widely acknowledged as essential to the valorisation, and safeguarding of monuments, sites, artifacts, and cultural expressions.

While recognizing the potential of digital technologies within the cultural heritage sector, we aim to analyse, through the case study of historic house museums, their impact on the perception of the spirit of place.

This concept, which encompasses both tangible and intangible dimensions – and whose significance was reinforced by the *Québec Declaration* (2008) [5] – transforms the visit to the real place into a unique experience, capable of creating in the public a sense of identity, affection, belonging and memory.

It is essential to assess technological and digital mechanisms can foster the sensory and affective relationship between individuals and their perceptions, while maintaining as a fundamental objective the valorisation of local communities and visitors and promoting the identification, safeguarding, and conservation of Cultural Heritage, as outlined by the *Venice Charter*.

This raises another question concerning the typological approach of Cultural Heritage, understood in a holistic manner, whereby it is not possible to dissociate the material and immaterial dimensions associated with other factors: people / communities, time, place / nature.

The meaning conveyed by the surroundings and context in which material heritage evolves is also a focal point of the *Venice Charter*. It emphasizes that "a monument is inseparable from the history to which it bears witness and from the setting in which it occurs" [6].

Historic house museums, with their diverse typologies, dimensions, and goals, offer unparalleled case studies. They merge the tangible nature of objects with intangible aspects, incorporating immaterial values which are embedded in their construction: affectivity, taste, the personality and discernment of the collector, interpersonal relationships.

However, the debate persists, even within these institutions, regarding their adaptability in an ever-changing world, their role in the twenty first century, and the potential impact that new technologies may have on the perception of their authenticity.

In a reflection that is deeply rooted in direct engagement with the public, and in our own experiences as part of that public, we selected the Fernando de Castro House Museum in Porto (Portugal), under the supervision of the Soares dos Reis National Museum, as a case study. Our goal is to foster discussion on the dichotomy between digital and physical spaces – the virtual and the real –, as well as on the role and impact of digital technologies in the museum sector.

Museums and digital technologies

In a continuous process of reinvention and according to their new definition, museums present themselves as institutions

> *[...] in the service of society that researches, collects, conserves, interprets, and exhibits tangible and intangible heritage. Open to the public, accessible and inclusive, museums foster diversity and sustainability. They operate and communicate ethically, professionally and with the participation of communities, offering varied experiences for education, enjoyment, reflection, and knowledge sharing.* [7]

The introduction of digital technologies in museums has proven valuable for its potential to communicate and connect, offering audiences new ways of enjoyment and interaction. Through interactive devices, mobile applications, or even augmented reality, visitors are offered the possibility to explore exhibitions in a more immersive and engaging way, enhancing their understanding and appreciation of Cultural Heritage while facilitating remote access to previously inaccessible collections, aiming for greater democratization and accessibility.

Exploring the collections of the Victoria & Albert Museum (London, United Kingdom), viewing high-quality reproductions of some of the most important works of art through *Google Arts & Culture* [8], discovering which painting resembles us most through a selfie uploaded to a mobile application, experiencing Vincent van Gogh's works in an immersive environment, or virtually visiting the Calouste Gulbenkian Museum (Lisbon, Portugal) [9] are just a few examples of the many possibilities now available to users (Figure 1 and Figure 2).

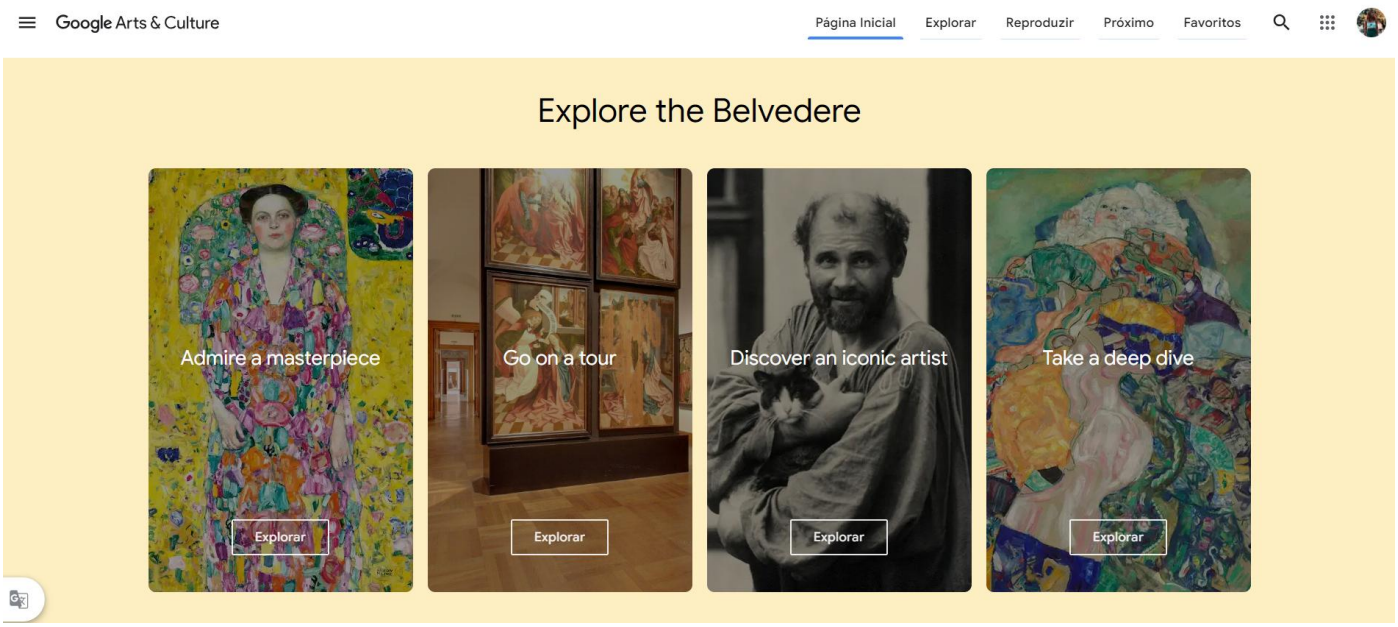

Figure 1. Google Arts & Culture homepage [8] (2024-05-15).

Figure 2. Calouste Gulbenkian Museum virtual tour. View of the East Islamic Art gallery [9] (2024-05-15).

This debate between reality and its reproduction (or reproducibility) is not, however, a new one. Walter Benjamin, in his seminal essay *The work of art in the age of mechanical reproduction* (1935) [10, p. 79], offers a foundational critique of how technological reproducibility modifies the status of art and, more broadly, of the real: "[...] what withers in the age of mechanical reproduction of the work of art is its aura".

Benjamin anticipates the destabilization of authenticity that now finds an intensified expression in the digital age. Today, it is not merely artworks that can be reproduced; entire realities can be simulated, enhanced, and manipulated, blurring the lines between the original and the copy. What Benjamin identified as the loss of aura in art has evolved into a broader cultural condition, where simulated experiences often rival and sometimes surpass the real, reshaping how individuals perceive and engage with heritage, memory, and presence.

Aligning with this thought, in *Travels in hyperreality* (1973) [11, pp. 7-55], Umberto Eco reflects on and critiques the (specifically American) obsession with simulation, replication, and what he terms hyperreality, a version of reality that is more convincing or desirable than reality itself.

Eco argues, through some examples such as Disneyland or wax museums, that in the United States (and this may equally be applied to the Chinese context) there exists a cultural tendency to produce copies so meticulously crafted that they ultimately surpass the original. The objective is not merely to imitate reality, but to create an enhanced version – something more real than the real.

In this paradigm, the false is preferred over the authentic not out of ignorance, but by deliberate choice, because it is geographically closer, more convenient, or more spectacular.

The recent and unprecedented COVID-19 pandemic crisis compelled museums to reevaluate their operational frameworks, hastening their shift towards the digital realm. This transition was vital for maintaining relevance and continuing to serve communities while striving to retain audiences. Consequently, it required a transformation in how individuals engage with museums, marking a significant evolution in their relationship with these institutions [12, p. 7].

Quoting Rosali Henriques and Lucas Ferreira de Lara, Moraes [13, p. 315] highlights that one of the main cultural challenges for museums is the need to rethink their activities and structures in ways that allow them to continue engaging with the public – even when the doors are closed.

However, embracing digital transformation extends beyond the mere implementation of mobile applications or the digitisation of collections; it entails a comprehensive, end-to-end process that looks at the entire association between the museum and its audiences [14, p. 3].

In her analysis of social media, Wong [15, p. 281] observes that "their myriad forms and promising reach may help expand and diversify audiences, make museums more responsive and transparent, and acknowledge and incorporate the knowledge of audiences into practice"; a reality opposed to the intimidating (and outdated) perception of museums as spaces designated for silent contemplation exclusively tailored to intellectual elites [16, pp. 158-159].

In a context where communities are in constant transformation – driven by large-scale movements of people, goods, ideas, and economies – new forms of communication continually emerge. These are often marked by tensions and contradictions, including moments of opposition and conflict [17, p. 7].

As museums have evolved to embrace inclusivity, expansiveness, and sustainability in response to the contemporary needs of the communities they serve [18], it is crucial to acknowledge that while new technologies have undoubtedly played a significant role in this transformation, there are other aspects often unnoticed in these discourses that worth consideration.

Within a theme that has been receiving increasing practical and theoretical interest and not overlooking its potentialities we are also interested in reflecting on the challenges associated with the integration of digital technologies in the museum sector.

Indeed, it is important to note from the outset that the adoption of digital technologies in museums demands a substantial financial investment. This expense can pose a significant obstacle for many institutions, particularly smaller ones, or those with limited resources, such as historic house museums.

The integration of digital components into a museum's overarching strategy is more likely to occur when there is a clearly articulated vision, well-defined institutional priorities, and adequate investment conditions, including financial, logistical, and human resources [19, p. 21].

More than the initial acquisition, it is in the maintenance that the main costs are concentrated since the rapid obsolescence of software and devices requires ongoing planning and updates. This concern is reinforced by the *Charter for the preservation of digital heritage*, which states: 'Digital materials […] are frequently ephemeral, and require purposeful production, maintenance and management to be retained' [20].

Simultaneously, the integration of digital technologies requires training for museum professionals, as one of the essential elements for their proficient utilization in these environments [21, p. 3]. As highlighted, "[…] weaknesses in the museum sector were identified at the level of digital and transversal competences" [22]. However, whether due to constraints in time or resources, there tends to be a general oversight regarding this aspect, creating limitations that manifest in the communication and mediation processes within museums.

While Generations Y, Z, and Alpha – often labelled digital natives – navigate digital platforms with ease, there are individuals for whom new technologies pose a significant challenge. These groups include the elderly and those with limited access to technology. As noted, "The dizzying pace of a world in constant digitalization is increasingly breaking the bonds between those who stay within and those who are left out, between those who move ahead and those who fall behind" [23, p. 156]. It is imperative for heritage professionals to address the needs of these individuals as well.

Nevertheless, the central concern of this reflection lies in the increasing reliance on technology and its potential impact on the direct experience of cultural heritage:

> *Digital is making us less physically active, less private, more exposed to new information, more globally connected, and more active in choosing, creating and contributing to content, Digital is massively impacting how we shop, design new products, collaborate on projects, do science, consume music and film, use libraries and museums, manage our education, join clubs, learn new skills, meet people and plan our travel. There is more to come […].* [24, p. 96]

As Maurizio Felicori, former director of the Reggia di Caserta (Italy), aptly emphasizes [19, p. 18], before fostering a digital culture, it is essential to first establish a culture of communication.

In fact, all these challenges can be a particularly pertinent issue within the area of historic house museums. In many cases, these spaces are arranged as *bona fide* theatres of memory [25, pp. 25-26], representing a person, their lifestyle, and their sociocultural context.

Genius loci and the experience of space in historic house museums

Whereas collections stand for themselves in museums, they gain an intangible dimension as part of in-house-museum, one that is established in the dialogue between building, collection, collector, and society. Container and content merge into a cohesive whole, driven by its patron.

To understand what a historic house museum is, we use the definition provided by Giovanni Pinna, former Chair of the ICOM Committee for Historic House Museums, DEMHIST from 1999 to 2001:

> *[…] the power of these museums, more than any others, [is] to evoke history and put the visitor into direct contact with it. This aspect of the historic house takes on special importance against the background of another exclusive characteristic of the historic house, that is, its immutable significance and the impossibility of manipulating that meaning with the same ease with which objects can be made to tell different stories in other museums* [26, p. 4]

The principles underlying the creation of historic house museums include paying homage to a particular personality, bearing witness to a specific era, and sometimes commemorating a historical milestone. In these museums, objects are not merely curated for display; rather, they serve to reenact experiences, enriching the visitor's understanding and immersion in the historical context.

The significance of the house museum lies not in the value of isolated objects, but in their interaction with the reality they seek to recreate and / or with the personalities they aim to honour. This aspect brings challenges in terms of presentation and communication with the public.

Given the concepts of authenticity and integrity inherent to the essence of historic house museums, the integration of digital technologies has the potential to compromise the unique character of these spaces.

The interplay between history and memory, the private and the public, as well as the tangible and the intangible, can find its fullest expression within the spaces that are organised as historic house museums.

These spaces are idiosyncratic structures in the museum scene, since they contribute both to micro-history, through the actions of those who constituted their collections, and to macro-history, by offering insights into specific historical periods and their living conditions.

House museums add an intangible dimension to the tangible nature of their buildings and collections, thanks to the emotional connections embedded in their construction, which are further enriched by the layers of narrative they contain.

As such, they are deeply ingrained in the past, which can lead to challenges in interpreting or relating to them in the present. As noted by Butler III, "[…] there is a sense that the house-museum lacks a relationship to the modern world" [27, p. 41].

Museums today must focus on building a sustainable future. This involves not only preserving their core assets and collections but also ensuring that the museum remains relevant and valuable to future generations [14, p. 3].

In a society marked by a swift and constant change, it becomes imperative to reflect on the role and impact of historic house museums for future generations, who may perceive these institutions as distant relics of the past.

These spaces – through the diverse scenarios and activities they can promote, and the multiple layers of interpretation they offer regarding collections, stories, and memories – have the power to evoke emotions and forge meaningful bonds with communities, emerging as a constructive element of their collective identity: "Because cultural objects provide evidence of our affinities, associations, values, and tastes, they are inevitably associated with our own sense of identity" [16, p. 138].

Hence, it becomes necessary to strike a balance between past and present, between the tangible and the intangible, by adopting appropriate tools and narratives that engage new audiences through a continuous, interdisciplinary, and collaborative effort.

Acknowledging the inherently social nature of humanity – a concept often emphasized in philosophical discourse – and embracing Mike Murawski's assertion that "museums are us" [28, p. 59], it becomes evident that museums, including historic house museums, serve as privileged spaces for communication, promoting dialogues, confrontations, and even discomforts between the public and cultural manifestations.

The concepts of heritage and memory are intertwined from an early age, shaping our perception of the present through our understanding of the past. Memory, which can be described as "lived, oral, normative, and plural" [29, p. 57], is profoundly influenced by emotions and affections. These aspects frequently shape our historical perspective on events, highlighting the subjective nature of historical interpretation.

It is therefore clear that digital and physical realities can, and should, operate closely, in order to complement one another. Digital platforms are not intended to replace physical visits; rather, they should enrich the visitor experience by serving as tools for updating narratives and communication. These elements ought to amplify the potential of historic house museums without altering or overshadowing their intrinsic configuration [30, p. 315].

Several historic house museums have integrated digital strategies to enhance the visitor experiences. These include audio guides, mobile applications offering insights into specific objects' stories [30-31], and interactive screens integrated into exhibition galleries [32].

Despite being fertile ground for digital experimentation in the museum sector, historic house museums must ensure that their digital interactions preserve the essence and atmosphere of the space, to avoid compromising their authenticity or even generating a form of constructed fiction.

Who dusts?: Fernando de Castro House Museum

Who dusts? Just a few minutes inside the Casa-Museu Fernando de Castro are enough for this question to be heard, voiced by those who are confronted for the first time with the overwhelming *horror vacui* of the construction designed by the Porto poet, caricaturist, and art collector (Figure 3 and Figure 4).

The integrity of the collection, particularly in its connection to the living space and its founder, imbues the museum with a documentary character [25, p. 125]. In addition to the maintenance of the historic house and its artifacts, questions often arise regarding the inclusion of functional spaces, such as bathrooms and kitchens, and whether these areas are also open for visitation.

Beyond what might be construed as a form of voyeuristic curiosity, such inquiries reveal a genuine interest in the domestic aspects and lived experiences, through which individuals often establish a personal sense of connection.

How did these individuals live? What comprised their daily routines? Which objects mirror or diverge from those found in our contemporary lives?

At the Fernando de Castro House Museum, such domestic and intimate spaces are not part of the visitor itinerary. In contrast, in other institutions it is possible to recreate those areas: the Anastácio Gonçalves Historic House Museum in Lisbon (Portugal) includes a fully equipped bathroom that was considered modern at the time of its installation, while the kitchens of the Sir John Soane's Museum in London (UK) showcase remarkable historic ovens.

As Hooper-Greenhill noted, it is essential to build a bridge between the narratives presented and the visitor's prior knowledge, promoting the creation of analogies and connections to familiar elements that can be easier to grasp and remember [33, p. 3].

Figure 3. Fernando de Castro House Museum. View of the second floor (photo: Museus e Monumentos de Portugal / Soares dos Reis National Museum).

Figure 4. Fernando de Castro House Museum. View of the stairs to the second floor (photo: Museus e Monumentos de Portugal / Soares dos Reis National Museum).

In this case, with the guide serving as a mediating element, it becomes crucial to perceive the public's reactions: from amazement and admiration to discomfort and even a sense of claustrophobia. When asked about their impressions, visitors often highlight the density and uniqueness of the collection:

> *One of a kind house museum dedicated to an exceptionally prolific collector of decorative arts. Between the late 19th and early 20th centuries, the former owner lined every surface of his house with materials and objects recovered from predominantly religious institutions – wood carvings, ironwork, paintings, sculptures, furniture, brocade curtains, gilt mirrors and so on –, adapting the objects to fit the space available, which at times meant cutting off parts of canvases or trimming away some acanthus leaves to make a carving fit over a doorway. Walls, ceilings, floors, doors, and windows are all encrusted with antique decorations including an ornate pulpit in the stairwell, a stained-glass window as a skylight, a gilt gate from a church altar, and a domestic scaled hall of mirrors in the main sitting room. You'll enjoy this one regardless of whether you think it's 'tasteful', so make the effort!* [34]

In a lavishly decorated space like the Fernando de Castro House Museum, the incorporation of technological equipment risks creating a kind of sensory interference that disrupts the carefully curated ambiance crafted by the collector. As Coelho emphasizes, any decision to implement new solutions must be carefully assessed to ensure that they do not distract visitors from what is truly unique and authentic in each museum [4, p. 17].

On the other hand, we know that participation in television programs, as well as communication on social media platforms such as Facebook, Instagram, and even TikTok (Figure 5) have significantly increased curiosity about the Fernando de Castro House Museum.

A recent study highlights that even "[Millennials] are almost equally as likely to attend an arts event because it was recommended on a site such as Yelp as they would if it was recommended by a critic or reviewer" [35], underscoring the growing influence of peer-driven digital platforms in shaping cultural engagement.

The publicity generated by these technologies excites an audience that typically does not visit museums or show interest in art. However, a new interest emerges due to the novelty of the medium, as it is a fascinating resource created by technology [36, p. 167; 13, p. 312].

Moreover, in addition to institutional publications, the photographs and videos shared by visitors themselves enrich the iconographic repository of this House Museum, while also providing clues about the details that most caught their eye.

Figure 5. Two examples of posts made by visitors about Fernando de Castro House Museum on TikTok: *a)* 2601; *b)* 4849.

Figure 6. Visitors in the Yellow Room of the Fernando de Castro House Museum during a guided tour, 2023 (photo: Lúcia Teixeira).

The dissemination of the House Museum's image plays a significant role, sparking the interest of viewers and users:

> *My visit to the Fernando de Castro House Museum in Porto was made possible solely through my engagement with RTP2's Visita Guiada program. However, the physical presence at the museum offers an experience that transcends the virtual realm. Exploring each room of this small museum, which serves as a preserved slice of time, immerses visitors in a sensory journey – encompassing smells, sights, stories, and objects. This tangible encounter cannot be replicated by watching the program or viewing images online.* [37]

The smells, lighting, and sounds of a space are vital components of its *genius loci*, or what Walter Benjamin referred to as the aura [10, p. 79]. These elements evoke impressions in visitors that are impossible to replicate virtually (Figure 6), becoming ingrained as memories of an experience that resonate in future encounters and interactions with other cultural artifacts.

Final remarks

There are numerous spaces that we only experience virtually, while others, due to their disappearance or inaccessibility, can only be accessed through this medium.

Digital technologies applied to cultural heritage, particularly within the museum sector, have the potential to enhance visitor experience by providing novel modes of interaction and perception. This technological enrichment enables a deeper understanding and appreciation of cultural artifacts, while also supporting the preservation and broader dissemination of information.

Acknowledging the significant contributions of digital tools to cultural heritage, it remains imperative to maintain a balanced and inclusive approach that integrates technological innovation with the preservation of the *genius loci*.

This ongoing debate – one that, as demonstrated, has raised deeper questions since the twentieth century by emphasizing the thin line that separates the real from the virtual – becomes even more pressing amid the rapid pace of technological advancement, especially in an era where accessibility seems ubiquitous, available at the mere touch of a screen.

Considering that heritage evolves through 'constant processes of interaction and renewal' inherent to the cultures, landscapes, and locales of each era [38, p. 13], it is imperative to ensure that museums can explore emerging technologies to their fullest potential while upholding their educational, social, and cultural mandates:

> *For those of us who do not think in terms of ones and zeros, we need to make the effort to understand and mine the technology for what it can do. For the technologically proficient, we must help create a community of digitally savvy staff in all sectors of the museum and foster a collaborative environment in which everyone thinks about both digital space and gallery space as venues for creating meaningful collections-based experiences with and for visitor.* [39, p. 177]

These institutions transcend the mere displays of accumulated objects; they function as spaces for the interaction of personal and collective identities, as well as for the exchange of memories and narratives.

Historic house museums unveil more than the history of their creators or the objects within them – though these elements are undoubtedly of considerable interest. They act as repositories of traditions, narratives, history, and what is commonly referred to as collective memory. It is in this capacity that their true strength lies, enabling them to (re)unite communities. Using Robert Stein's words, "[…] the evidence that museum participation can result in significant and tangible benefit to society is present and well-documented" [40, p. 69].

The Fernando de Castro House Museum exemplifies this concept by fostering connections to the history of its patron's family, the city of Porto, the broader history of Portugal, and the individual histories of the objects on display.

The comprehension of cultural heritage is inseparable from the intertwined concepts of past, present, and future, as well as the dynamic interplay between materiality and immateriality.

As António Ponte asserted, "[…] It is up to museums to promote internal reflection processes to review their positions with the public, with local communities […]" [41, p. 68].

In this regard, the historic house museums should not present themselves merely as static representations of the past. Instead, they should make it understandable in the present, serving as a platform for discussing contemporary issues through the intrinsic values of the house, its objects, and its patron.

It is essential to develop and implement a balanced and sustainable museum system, grounded in strategic programming that fosters and strengthens connections with communities through direct engagement with spaces and objects. This approach provides the foundation for each visitor to create a personalized and meaningful perceptual real experience.

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AI-created heritage and its relationships with cultural rights

Património criado por IA e as suas relações com os direitos culturais

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Abstract

With the exponential growth of Artificial intelligence (AI), the heritage field must reflect upon a set of unclear opportunities, challenges, and risks. By proposing and testing the concept of "AI-created heritage", we aim to identify the connections between AI, heritage, and human rights, more precisely, cultural ones. Our methodology encompasses the state of the art, the clarification of conceptual and normative frameworks, and the analysis of international examples raising hopes and concerns around accessibility, copyrights, and ethics. The selection of examples will follow three criteria: mediatic impact, pertinence, and novelty. Guided by the principles of "future-thinking", this approach contributes to broaden the debate about the development of ethical guidelines and cultural rights in the face of upcoming AI-dominated scenarios.

KEYWORDS
Accessibility
Artificial intelligence
Copyrights
Ethics
Human rights

Resumo

Com o aumento exponencial da Inteligência artificial (IA), o campo do património deve refletir acerca de um conjunto de oportunidades, desafios e riscos ainda pouco definidos. Ao propormos e testarmos o conceito de "património criado por IA", pretendemos identificar as conexões entre a IA, o património e os direitos humanos, mais precisamente, os direitos culturais. A nossa metodologia consiste num estado da arte acerca da matéria, na clarificação do seu quadro conceptual, normativo e na análise de exemplos internacionais que têm suscitado interesse e preocupação em matéria de acessibilidade, direitos de autor e ética. A seleção de exemplos seguiu três critérios: impacto mediático, pertinência e novidade. Guiada pelos princípios de "future-thinking", esta abordagem permite alargar o debate acerca do desenvolvimento de diretrizes éticas e dos direitos culturais face a futuros cenários dominados pela IA.

PALAVRAS-CHAVE
Acessibilidade
Inteligência artificial
Direitos de autor
Ética
Direitos humanos

Introduction

With the development and increasing visibility of Artificial intelligence (AI), the heritage field must practice future-thinking to reflect upon a yet not completely defined panoply of opportunities, challenges, and risks [1-8]. Despite the considerable academic production on AI in connection with other fields, its linkages with heritage and human rights can benefit from further reflection [9-11]. Which risks and opportunities does "Artificial Intelligence-created heritage" – from now "AI-created heritage" – impose on human rights and cultural ones? Which ethical principles should guide our approaches towards it?

By introducing and experimenting with the concept of "AI-created heritage", we will explore the tensions between AI and traditional notions of heritage. We aim to understand how the interaction between the two fields can benefit or impair human rights, specifically cultural ones. Our discussion will have three main concerns: accessibility, copyrights, and ethics when approaching these technologies and "new" forms of heritage.

We will approach the subject-matter from an international viewpoint, focusing on sources, references, and examples that date predominantly from the 2000s. Guided by the principles of "future-thinking" [5-6], this approach has the potential to broaden the debate on the development of ethical guidelines and cultural rights in the face of future AI-dominated scenarios [12-13]. The next subchapter provides further information on the methodology adopted.

Methods

Our goal is to understand the opportunities, challenges, and risks that "AI-created heritage" raises to human rights, cultural ones, and which ethical principles should guide our approaches to it. We will conduct qualitative research based on the principles of "future thinking" [5-6]. Our state of the art focuses on international references dating from the 2000s. Thereafter, we will clarify our conceptual and normative frameworks by analysing international, regional, and national norms regarding AI in connection with cultural heritage, human and cultural rights. Afterwards, we will identify potential opportunities, challenges, and risks when connecting these fields. Finally, we will analyse practical examples in which AI intensifies the discussion about ethics, copyrights, and accessibility [3-4]. The selection of examples follows the criteria of mediatic impact, pertinence, and novelty. In the next subchapter we will elaborate the state of the art about the topic.

State of the art

The state of the art must begin with references to cultural heritage and human rights. Since Smith & Logan [14] claimed the lack of studies about the topic in 2005, it has considerably increased. From the consulted references, we highlight those whose problematics can be extended to the linkages between AI, heritage, and human rights. The article of Vrdoljak et al. [15] establishes a pertinent connection between cultural heritage and sustainable approaches to development. The book edited by Soares and Cureau [16] offers interesting perspectives on how cultural heritage can promote citizenship while exploring connections to cultural rights. The anthology edited by Kapchan [17] raises questions about universality, challenges in protecting human rights and heritage that circulate despite borders. From Langfield et al. [18], we emphasize the reflections on intergenerational approaches to human rights, the risk of appropriation and the decontextualization of cultural heritage. For Silverman and Ruggles [19], cultural heritage is a legitimizing tool. The contributing authors question who has the

rightfulness to manage cultural heritage; they address the risks of approaching history from a unilateral perspective and call attention to nefarious uses of scientific results [19].

Regarding future heritage studies, Holtorf and Högberg [6] address "future thinking" as a way of contemplating multiple scenarios, predicting opportunities, challenges, and planning appropriately. The anthology questions the idea of heritage preservation as something necessarily positive, admitting its potential risks in contexts with non-humans or a decalage between the benefits of technological development and its impacts. From Berg and Fiedler [5], we highlight the recognition of ethical problems in heritage digitization, for example, regarding copyrights.

When it comes to human rights and AI, we consulted international, regional, and national norms, for instance, written by UNESCO and IRCAI, the European Parliament, the European Commission, the Council of Europe Commissioner for Human Rights, and the Portuguese Assembly of Republic [12, 20-23]. Through Silva, we understand the challenges in regulating AI, the interests, and arguments in favour or against it, and the resulting consequences to human rights [24]. Additionally, we stress the author's analysis of the process of human rights' transposition, adaptation, and evolution to the digital context [24].

Regarding the connection between AI and the cultural heritage sector, Münster et al. [10] examine the opportunities and challenges of using AI in connection to cultural heritage, by offering practical examples of its application and by raising questions surrounding accessibility, preservation, and inclusion. The Network of European Museum Organizations (NEMO) makes recommendations for policymakers dealing with AI in museums [25]. From Thiel and Bernhardt [26], we collect different perspectives concerning the potentialities, limitations, risks, and needs of using AI in museums. Ultimately, the book reflects upon how AI can contribute to the museum sector, and vice-versa [26]. The European Parliament [8] also addresses the opportunities, challenges, and practical applications of AI in the fields of cultural heritage and museums. Furthermore, it offers estimates about the use of AI in museums around the world, admits the need to invest in training heritage professionals, and enhances the potential of AI in democratizing the field [8]. Pansoni et al. [13] raise pertinent interrogations concerning the ethical implications of AI for cultural heritage, namely, in terms of authenticity, bias, privacy, representation, responsibility, and allocation of resources. On its end, Neudecker [27] claims that the cultural heritage sector needs to invest in "digital curation" and "data stewardship".

We conclude this state of the art with publications on methods and frameworks to guarantee ethical approaches to AI. The first is *Data Ethics Canvas* [28], which is not exclusive to the heritage sector and is useful to any technological project. *A Museum Planning Toolkit* [29] is specifically designed for the museum sector and can be implemented by its professionals when dealing with AI. UNESCO & COMEST [30] make suggestions to create a standard normative instrument regarding the use of AI in social sciences and creative fields. Lastly, Floridi et al. [31] suggest an ethical framework for an AI beneficial to society, by addressing topics like human agency and decision-making.

Despite the increasing scientific production about the relationships between AI and cultural heritage, some issues remain underexplored. Many publications do not question if resorting to AI is always the best solution. Others address the risks of AI for cultural heritage professionals superficially. However, we believe the topic demands further reflection once AI brings professionals from other fields to an already precarious sector. Some authors seem to minimize the fears of heritage professionals, disregarding the (potentially) life-changing effects that AI may have on their careers. Many publications affirm the need for the heritage sector to invest in AI without questioning how to deal with its lack of resources. Hypothetically, if a museum keeps its workers in precarious situations due to a shortage of resources, should it be investing in AI? Or, if a museum struggles with a lack of funding for the preservation, conservation or restoration of tangible heritage, should investing in AI be a priority? These problems must be addressed in future lines of research.

In the following subchapter we will clarify our conceptual framework, propose, and experiment with the concept of "AI-created heritage". We will be able to test and compare existing heritage categorizations, while reflecting on new ones.

Conceptual framework

If there is a consensus about AI, is that it is a mutable and broad concept, whose definition is made difficult because of its plural nature and fast development but also due to the lack of transparency on how its systems, processes, and applications work [24, 26, 32]. The language used to describe AI has contributed to its misunderstanding by reinforcing the imaginaries in which it is closer to human intelligence and sentient beings [32-34].

Despite the challenges in defining AI, in the *Preliminary Study on the Ethics of Artificial Intelligence* [30], UNESCO & COMEST analyse the concept from a diachronic and international perspective, admitting the lack of a universal definition due to its multidisciplinary nature. Notwithstanding, the organization recognizes a tendency to categorize AI as: "theoretical/scientific" or "pragmatic/technological". In a simplified fashion, the first category is applicable when AI is used to understand living beings, among others being associated with psychology. On the other hand, "pragmatic/technological" AI is led by engineering and includes "natural language processing, knowledge representation, automated reasoning, machine learning, deep learning, computer vision and robotics". As explained in the study, each one of these categories sets possibilities and challenges [30]. Another attempt to define AI refers to the *White paper: on Artificial Intelligence - A European approach to excellence and trust* [22] which describes it as: "a collection of technologies that combine data, algorithms and computing power".

Here, we are interested in the uses of AI in heritage, including its creation. As a starting point for our reflection, we suggest the expression "AI-Created Heritage" to address digital productions which result from the processing, combination, and generation of data by AI. In the following paragraphs, we will be testing this proposal. By adopting these four words, we allude to the processes of creating content. By attributing the heritage status, the expression implies that (in time) these productions may have potential and values to be passed on to upcoming generations.

Multiple values can be attributed to "AI-Created Heritage", among others, based on its novelty, aesthetic, or artistic contours. These values can become less abstract if we think that "AI-Created Heritage" can assume different forms, such as digital paintings, illustrations, musical, audiovisual, and written works. Even though we suggest the expression "AI-Created Heritage", we recognize it is not free from conceptual challenges. The first problem it raises concerns the creation processes of these "new" heritages. Once the data used by AI may have been created or made available by humans, where do the notions of authenticity and authorship lie?

The second issue comes back to the notion of "heritage". Can something not entirely produced by humans be considered heritage? Based on the international normative framework regarding heritage matters, yes. For example, if we consider "natural features" or sites, "geological or physiographical formations" [36]. Following the same line of thought, if we recognize "cultural landscapes" as heritage – meaning, the combination between natural and human-made elements [37], we open a precedent to other heritages that may not be entirely of human origin. But how do we preserve and pass on "AI-created heritages"?

By referring to the concept of "digital heritage", we can take the reflection further. According to UNESCO's *Charter on the Preservation of the Digital Heritage* [35], digital heritage includes resources and information modified to a digital format or produced digitally, which represents a "unique" human "knowledge and expression". By admitting that digital heritage is worthy of being produced, preserved, accessed, and disseminated, UNESCO is opening space to upcoming heritage categories.

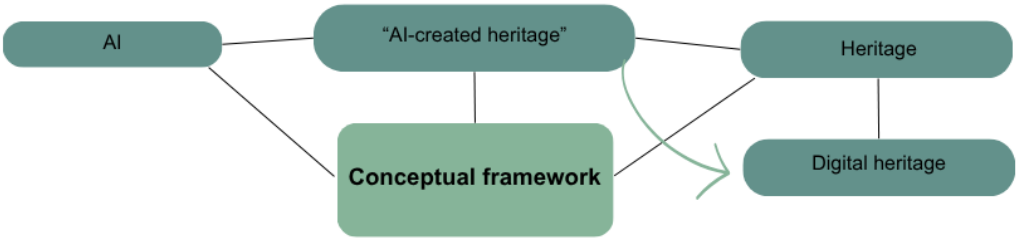

Figure 1. Conceptual framework (graphic created by the author using Canva).

If "AI-created heritage" can have different degrees of connection to humans, can we use this expression as a synonym for digital heritage? We believe it depends on the technologies used. "AI-created heritage" and "digital heritage" are not necessarily interchangeable expressions. "AI-created heritage" has always a digital component, however, "digital heritage" not always resorts to AI. This discussion can be further explored in future lines of research. Now that we have introduced our conceptual framework (Figure 1), we will clarify the normative one.

Normative framework

The regulation of AI is at an embryonic stage. The challenges and risks it creates may result in rethinking, adapting, and creating new human rights. The European Union has been promoting the debate around the subject-matter and creating norms to guarantee human integrity and dignity in the digital universe. This derives from the recognition that the physical and digital worlds are interconnected, and what happens in the digital context has ramifications outside of it [24].

Despite its benefits, AI can also menace human integrity, dignity, and privacy [12, 21-22]. However, economic and (geo)political factors may drive some parties away from this normative process [24, 33]. Some of the arguments against regulation are that it may impair technological development or that it will be unable to keep up with AI's evolution. The proposal of new human rights in the face of new challenges also faces resistance. Some believe these may be irrelevant or menace pre-existing rights. For instance, there is a claim that the right to be protected from misinformation may limit freedom of expression [24]. However, we must continue to question which are the interests behind this resistance. Who wins or loses with the lack of AI regulation?

Even though it is not our intention to make a detailed analysis of the current state of AI regulation, in the following paragraphs we will mention a few normative instruments that raise pertinent questions to our discussion. We recall that when talking about AI regulation, we refer to norms which may implicate States, multinationals, companies, and individuals. Here lies the difficulty in establishing universal standards accepted by all parties [24]. In this subchapter, we will be analysing mostly regional – meaning, European –, and national documents with different binding degrees.

At an international scale, we enhance UNESCO's *Recommendation on the Ethics of Artificial Intelligence* [38], whose values align with the respect for human rights, fundamental freedoms, and sustainable development goals. At a regional level, one of the documents with a broader scope of application is the *Artificial Intelligence Act* [21]. This extensive instrument constitutes an attempt to create a legal framework applicable within the European Union. It defends a human-centred AI, led by European and democratic values, in compliance with international law. The document identifies both the benefits and risks of AI in relation to culture. It offers recommendations, for example, involving diversity and non-discrimination [21].

We equally recall the *White Paper: On Artificial Intelligence - A European approach to excellence and trust* [22], which offers examples of how AI can have both positive and negative, tangible and intangible outcomes for society. The European Commission enhances the need for a human-centred AI, guided by ethical principles, in agreement with fundamental rights,

freedoms, and sustainable development goals [22]. In the same year, the Council of Europe Commissionaire for Human Rights released *Unboxing Artificial Intelligence - 10 steps to protect Human Rights: Recommendation* [12], which defended the need to make human rights assessments by public authorities using AI. The instrument suggested external reviews and evaluations of decision-making processes to mitigate risks, remedy eventual violations and impede their repetition [12].

At a national scale, Portugal was responsible for elaborating a *Charter of Human Rights in the Digital Era* [23]. Among its articles, we can find references to the rights of peaceful digital "*reunion, manifestation, association, and participation*" inclusively for cultural ends. Article 16º pays respect to the right to freedom of creation and content protection, which is complemented by Article 22º about the access limitation or removal of content that violates authorship rights [23]. The document was heavily criticized, among others, because of its terminology. According to Silva [24], the expression "human rights" should be replaced by "fundamental rights" once the document has only a national application. The author defends that since the digital universe is not limited by geographical frontiers, the Charter is symbolic. Despite its limitations, we believe the Charter is a positive sign that the country is preparing itself for what may be an AI-dominated future.

The analysis of normative instruments regarding AI in connection to human rights, cultural ones, and the heritage field help us to identify opportunities, challenges, and risks. In the next subchapter we will list, examine, and develop some of those problematics.

Results

Opportunities, challenges, and risks

Following the normative framework, this subchapter synthesizes some of the opportunities, challenges, and risks that AI – generally and in connection to heritage – imposes on human rights and cultural ones.

From a general point of view, AI entails challenges in connection to human rights due to its lack of borders, transparency, accountability, high levels of abstraction and the possibility of being misused [22, 24, 27, 32]. AI can menace human rights, for instance, by facilitating cybercrime, limiting access to justice, perpetuating discrimination (through its algorithms), misinformation or by dramatically impacting employment [11, 22, 24, 30-31]. Notwithstanding, AI can contribute to safer transportation, sustainable development goals, security, health, and the creation of new jobs [22, 29, 30]. This results in a dual comprehension of AI as potentially beneficial and detrimental to society.

Regarding the opportunities of AI in the heritage field, we enhance new conceptions of heritage and authorship, knowledge amplification, more access "to" and "new" forms of engaging with heritage, support in documentation digitization and management, text recognition, image reconstruction and replication, heritage preservation, fighting trafficking of cultural assets, helping in cataloguing and categorizing content, as well as creating new one [9-11, 13, 26, 33, 40]. About the challenges and risks of AI for the heritage sector, we highlight the difficulty in addressing cultural relativism and the polysemous nature of heritage, as well as the risk of enhancing disputes, for example, by disregarding or overvaluing some segments of history. There may also exist negative consequences for artists and heritage professionals through copyrights violations – resulting from the loss of the notions of authenticity and authorship –, the perpetuation of precariousness, employment displacement, and the superimposition of financial interests over social purposes [24, 26-27, 32-33, 39-40].

In its turn, AI applied to the heritage field offers opportunities for cultural rights [41] by constituting a form of cultural development. By facilitating participation in cultural life, by attracting new audiences or allowing interactions twenty-four seven, outside heritage institutions [26], enabling the enjoyment of scientific progress, and access to heritage itself [40]. Regarding the risks of AI to cultural rights, we believe it can perpetuate multiple forms of

discrimination [12, 20, 33], progressively devalue the work of heritage professionals, limit their job opportunities, impeding the right to choose a profession [24, 31, 39] and impairing author's interests regarding literary, artistic, or scientific productions [11, 41].

The conscience about the challenges and risks that AI creates for human rights – including cultural ones – and the heritage field, led many authors to reflect upon the ethical principles which should guide the use of these technologies. In the next point, we synthesize, analyse, and complement some of them.

Ethical principles

In the last years, several authors and entities suggested ethical principles to guide present and future approaches to AI. In the subsequent paragraphs, we synthesize, explain, and complement a few of them (Figure 2).

The resulting list does not represent a hierarchization of principles, nor does it exhaust the topic:

- Accessibility [10, 13]: AI has the potential to increase accessibility to heritage. For example, by establishing new connections between pre-existing heritages, allowing new forms of interaction in an expanded frame of time, or simply facilitating its creation. We believe this standard is deeply intertwined with equality and diversity, fundamental principles for the respect of human rights.
- Accountability [10, 31]: one of the concerns regarding the use of AI goes back to accountability. In this sense, it is important that when resorting to AI, one follows international, regional, and national norms to avoid human rights violations. We must be able to prosecute (direct and indirect) perpetrators and compensate victims.
- Beneficence/common-good/wellbeing [31, 38]: data is becoming increasingly privatized. As a result, AI should follow the principle of beneficence, considering the common-good and people's wellbeing. Notwithstanding, the concepts of "common-good" and "wellbeing" should be defined by the people affected by these technologies, being only limited by the duty to respect other people's rights and freedoms.
- Cultural continuity [13]: as we mentioned earlier, AI can decontextualize heritage, resulting in biased, limited, or polarized views about it, its topics, and the communities it involves. Therefore, while using AI, one must respect the principle of cultural continuity. We believe the disrespect for this principle may have negative impacts on conservation and restoration practices.
- Democracy [10]: democracy is essential for the full exercise of human rights and fundamental freedoms, as such, the life circle of AI should respect democratic values and processes.
- Diversity/inclusivity/participation [10, 40]: to avoid the so-called "bubbles" promoted by AI algorithms, when using these technologies, we must consider the principles of diversity, inclusivity, and participation. However, it is not clear yet how to materialize the principle of participation when dealing with AI. In fact, the use of AI in decision-making may represent a setback for the sector, if we consider that we are still trying to bring participatory practices from theory to action.
- Human rights [33, 40]: to avoid nefarious uses of AI, it must be developed and used in accordance with human rights and international law.
- Self-determination [32, 41]: AI has the potential both to increase and diminish human-agency and decision-making, as such it must respect the principle of human self-determination.
- Sustainability [10, 31-32]: as we know, AI raises challenges, risks, and ethical problems in terms of sustainability. As such, those using AI must consider this principle in multiple dimensions: economic, social, cultural, environmental.
- Transparency [10, 31]: to avoid human rights violations, there must be an effort to ensure the transparency of AI's processes, applications, outputs, and underlying interests from those using it.

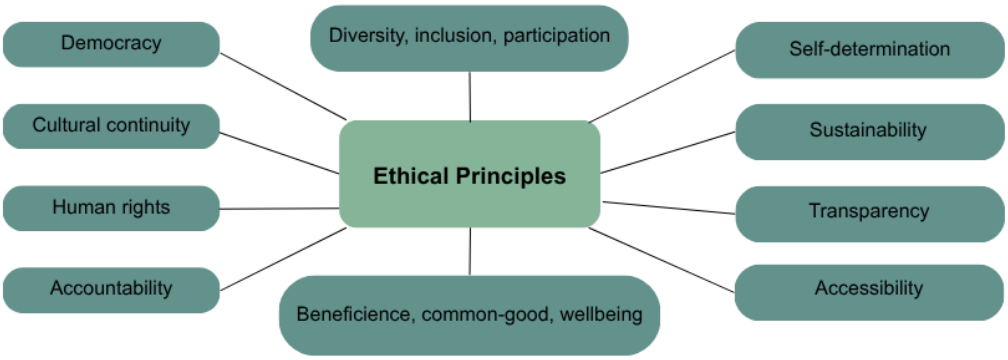

Figure 2. Ethical principles on how to approach AI (graphic created by the author using Canva).

Once we presented, examined, and developed the ethical principles that should guide our approaches to AI, the following subchapter discusses some of the questions raised through the analysis of practical examples.

Discussion: practical examples

To exemplify how AI and "AI-created heritage" raise questions of accessibility, copyrights, and ethics, we selected three international examples. The first one regards a claim made by Jane Friedman. The North American writer made the news by stating that AI generated books were being sold under her name. Friedman called attention to the fact that she had a lot of content with open access that was being misused. This case raises issues around authorship and copyrights once AI was being used to imitate the style of the author and to employ her name for profiting purposes. The case incentivized thousands of authors to ask the US government to create legislation to protect cultural rights. It also led to an open letter directed at companies behind AI applications, asking for consent when using authors' productions [3]. This example exposes the risks of having publications with open access, in a context increasingly dominated by AI. Besides, it demonstrates how AI can be used to fake authorship, take advantage of artists' creativity and identity following the quest for financial gain. Ultimately, it also shows how AI can menace authenticity.

The second example remits to *Thaler vs Permultter* [4], a civil action about the dispute between Stephen Thaler – producer of the *Creative Machine* – and Shira Permultter, Register of Copyrights and Director of the United States Copyright Office. According to Thaler, the system he created – *Creative Machine* – was responsible for producing an artwork independently. The man behind the system tried to register the artwork – entitled *A Recent Entrance to Paradise* (Figure 3) – for copyright. Notwithstanding, the Copyright Office did not agree with the request under the argument that the artwork was not created by humans and, therefore, was not eligible to copyright in the US. Thaler lost the civil action, once human contribution was (still) a necessary component for the attribution of copyright [4]. In the face of AI's developments, we question for how long this will be a requisite for copyright.

Independently of its result, the civil action raises interesting questions about copyrights, ethics, and accessibility. If Thaler created the AI system, the artwork's authorship cannot be (at least partially) attributed to him? If the artwork was not accepted for the purposes of copyright, who can use it and for which purposes? Will systems like *Creative Machine* contribute (or not) to make art creation more accessible? Or will it be a menace to human artists? These are all questions which would benefit from further reflection.

Figure 3. *A Recent Entrance to Paradise* (2012). Figure created by Stephen Thaler using the Creative Machine. This version was produced by DABUS and is available on Wikimedia Commons [42].

In the same logic, we recall the work of Bruno Carnide (2023a), *January: AI cinematic short film* [1-2]. The Portuguese professor had a reluctant attitude regarding AI, however, his responsibility towards his students pushed him into trying new forms of creating [1]. In 24 hours, Carnide produced a short film of little more than two minutes, by resorting to multiple AI systems, available online for free. The systems were used to create and edit images, to give them movement, and to complement them with audio. According to the author, the result is a proof that AI will have a significant impact on the creative sector and that it may lead to the progressive devaluation of artists' work. The author recalls how numerous entities have been asking for regulation, fearing that AI may lead to the "homogenization of art" and the loss of "creativity" [1]. The result of this experimental process is a short film with dramatic contours, in which AI narrates its own consequences for the artistic and cultural sectors, both deeply interconnected with the heritage field [2].

Based on these three examples, we ask: Is this the end of artistic technique? Can AI write a new chapter about (post)conceptual art? Is AI leading to art's dehumanization? Or is it democratizing its creation? Will people prefer to buy AI-created artworks or human-made ones? Will AI checkmate the rights to choose a profession and to benefit from the interests linked to literary, artistic, or scientific creations? Or will it exponentially maximize the right to take part in cultural life, to enjoy scientific progress and cultural development? The answer to these questions will depend on how ethical guidelines and cultural rights will respond to AI's evolution in the following decades.

Conclusion

We started this study with the purpose of understanding how AI offers opportunities, challenges, and risks to the heritage sector. To do so, we suggested and experimented with the concept of "AI-created heritage", testing the limits of current heritage terminology and categories, and unravelling their linkages with human rights and cultural ones.

The methodology adopted consisted of a state of the art, the clarification of the conceptual and normative frameworks – which allowed us to identify the pros and cons of AI to the heritage field, and the analysis of international examples raising questions around accessibility, copyrights, and ethics. Thanks to the analysis of the case studies, we raised questions that my lead future lines of investigation concerning authorship, authenticity, human and cultural rights, as well as future trends in the art market.

Ultimately, we believe this investigation contributed to deepen the debate about the development of ethical principles and cultural rights in the face of upcoming AI-dominated scenarios, resulting in new heritage categories, opportunities, and challenges.

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