img journal

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10
APR 2024

Imagin(g) Heritage

ISSUE 10
04/2024
IMAGIN(G) HERITAGE

EDITED BY
Stefano Brusaporci

ISSN 2724-2463
ISBN 9788899586461
DOI 10.6092/issn.2724-2463/v4-n10-2024

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PUBLISHERS
> on line version:
Department of Education studies "Giovanni Maria Bertin"
http://www.edu.unibo.it/

> print version:
PUBLICA. Sharing Knowledge
www.publicapress.it

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Imagin(g) Heritage

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EDITORIAL

ISSUE 10 APRIL 2024 Imagin(g) Heritage

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Since the 21st Century, the studies and documents dedicated to heritage have increasingly highlighted the inescapable role played by populations, communities, inhabitants, users – and therefore also on the relationship between scholars and people– in the definition and conservation of heritage. In particular, over time, the notion of heritage has grown, gradually blurring the line between tangible and intangible aspects and emphasizing the significance of people's active involvement. At the same time, the awareness of the importance of intangible dimensions of heritage has risen. It must be understood not in opposition to its physical manifestations –immanent witnesses of historical, aesthetic, cultural, use values, etc.– but to develop an inclusive, complex, >

DOI: 10.6092/issn.2724-2463/20562

and interconnected dialogue, where the ontological reality maintains a critical role in the multidirectional relationship with its epiphanies.

The concept of heritage takes on the nature of a 'discourse', that is an act of participatory communication, according to a path of 'heritage making', where the visual paradigm has a consubstantial role with the verbal one. Laurajane Smith, in her book *Uses of Heritage* (2006) proposes the idea that cultural heritage is not simply "a thing" but rather referable to a cultural and social process, related to the act of "remembering", where remembering acts as a vehicle to define ways of understanding and involving ourselves with what surrounds us, therefore not only with the past, but with the present. It follows that all kinds of heritage are first and foremost intangible, but not in the sense of wanting to deny the physical dimension, but rather to resize the tangible aspect that in the past has enjoyed privileged forms of self-evidence.

As highlighted by Smith (2006), cultural heritage refers to a cultural and social process, related to the act of remembering where remembering, acts as a vehicle to define ways of understanding and engaging with what surrounds us, therefore not only with the past, but with the present. It follows that for Smith all heritage is first and foremost intangible, but not in the sense of wanting to deny their physical dimension, but rather in the sense of including the tangible dimension –which has traditionally enjoyed privileged forms of self-evidence– in processes of negotiation of social meaning and practices associated with the definition of the shared meaning of the social and cultural context, to

involve all the actors involved. In this sense, sites, places, and findings have an innate weight in terms of significance that makes them the object of appreciation and attention, where the physical aspect comes to be the embodiment of more complex cultural and social manifestations, which give them value and meaning.
There is the idea that cultural heritage is the basis for building and negotiating a series of identity visions, values and social and cultural meanings in the present. We come to have an idea of heritage as a 'discourse', referring not only to the confrontation on concepts that underlie the definition and understanding of the specific cultural asset, but also, and above all, to a discourse understood as an effective and daily social practice, to involve the shared feeling, thinking and acting of people, in particular the identity of society itself.
This is an attitude that sees the relationship with cultural heritage centred on the concept of discourse and participatory process, where the role of the relationship between history and memory is central: on the one hand, history as a system of critically scientifically and historiographically understood studies, on the other hand, the individual and collective significance of the community's memory, so that the sense of individuality and identity derives from the intertwining of history and memory, but also the idea of authenticity understood as praxis and the daily relationship of the inhabitants of the place with the heritage itself (Smith, 2006, pp. 35-40). In this way, heritage comes to be configured as a cultural process related to the act of 'remembering', an activity to develop ways of understanding and

engaging with the present. It follows that heritage requires an experience, indeed it is itself configured as an experience, where memory, remembering and performance play a central role. Remembering is not to be understood only as a reminder of the past, but as an embodied and participatory act to involve all the actors and the goods themselves, so as to develop new memories. In particular, memory has an intimate relationship with the present, and so collective memory can be constituted as a foundation for a sense of identity and connection with a place and/or a tradition: in fact, collective memory, first-hand or transmitted, feeds a sense of belonging based on eminently social processes. This social approach, based on performance and collective memory, highlights the importance of objects and findings, rituals, sites and places, whose materiality can take on an important symbolic role for the definition of values and identities, first and foremost local. These bodily and material aspects lead Smith's cultural reasoning back to the initial assumption, according to which the dimension of the intangible does not exclude the tangible but includes it. Thus the importance of the place, where the ontological physical dimension induces a sense of positioning in the intangible system of social relations from which the system of meanings and therefore of heritage springs (p. 78). Giannachi (2016) underlines how remembering is a creative act that leads to a definition of personal and collective identity, to define itself as real social memories and that in particular find in ritual –and in places and finds– foundations for narrative paths. Thus, history comes to refer both to facts of the past and to their narration in a mechanism

interrelated to socio-mnemonic mechanisms. Nora (1989) highlights how history, as a representation of the past, poses problems of reconstruction and incompleteness of what is no longer, and how memory is an aspect of present life, constantly evolving, also according to a dialectic of remembering/forgetting.
The themes of memory and remembering, of creating meanings, experiences and collective memories recalls questions of a general nature to the imagination and the imaginary, individual but above all social. Dallari (2023) says that "Social imagination", that is the involvement of the individual imagination in a collective experience, is of particular importance. This concept, which varies according to different cultural contexts and historical periods, is essential to allow a community to represent itself and define its identity, the distribution of social roles and responsibilities, shared beliefs, moral sense, ideal aspirations and all those informal references that help individuals to judge their fellow human beings. to feel part of a group, to develop one's self-esteem and to guide social and relational behaviors. Social imagination also allows individuals to perceive themselves as part of a larger whole. This emotional participation represents an aspect of what we call collective imagination. If a cinematographic or musical experience is experienced as aesthetically relevant, it is internalized, memorized and contributes to forming that heritage of images and symbols known as the imaginary (pp. 69-70). Returning to focus on cultural heritage, the mechanism of remembering and involvement develop an imaginary and therefore a signification starting from the correlation between the physicality

of experience, places and objects, and people's memories, so as to develop new emotions, new memories, new social relationships. Dallani adds that the memories on which these processes of ethical and aesthetic reinterpretation act therefore arise from a collaboration between reality and imagination, between truth and reworking, between memory and nostalgia. Imagination, in this sense, is not only a capacity that we activate voluntarily, but represents an essential part of our identity, the thread that unites our experiences, gives outline and fullness to the inner resonances of lived experiences, and transforms them into a narrative that builds and renews us day after day (pp. 92-93).

The C*onvention on the Value of Cultural Heritage for Society*, aka *Faro Convention* (Council of Europe, 2005) focuses on 'community', highlighting how cultural heritage consists of "a group of resources inherited from the past which people identify, independently of ownership, as a reflection and expression of their constantly evolving values, beliefs, knowledge and traditions. It includes all aspects of the environment resulting from the interaction between people and places through time"; and define "Heritage Community" as "people who value specific aspects of cultural heritage which they wish, within the framework of public action, to sustain and transmit to future generations" (p. 2). Central to this is the concept of sustainability as process that match the needs of the present with the future ones, without compromising the ability of future generations to meet their needs.

This concept originates in an evident educational idea where heritage education –according to an inclusive idea of heritage as described so far– becomes a principle and tool

for an overall education for citizenship. In fact, since the end of the nineties, the European Council has paid particular attention to the issue of Heritage Education: the *Recommendation of the Committee of Ministers to member States on the European Cultural Heritage Strategy for the 21st Century* (Council of Europe, 2018) states that "In accordance with the Faro Framework Convention, the recognition of heritage is conceived as a shared responsibility: heritage is no longer limited to those elements officially recognised as such by the national authorities –the protected heritage– but now includes those elements regarded as heritage by the local population and local authorities. This development prompts new, more participatory and more collaborative management approaches" (p. 8). The cultural heritage encompasses all material and intangible traces of human action and it is important a heritage-based pedagogy that includes active teaching methods, cross-curricular proposals, partnerships between the educational and cultural sectors, and the use of the widest variety of modes of communication and expression.

Tim Coperland, in his *European democratic citizenship, heritage education and identity* (2006) for the Council of Europe, traces a parallel between citizenship and cultural heritage, outlining three dimensions of heritage education: education about heritage, education through heritage, education for heritage. The experts come to take on the role of facilitators, and the overall approach is oriented towards the concept of "memory" of the local population.

This general process is also favoured by the practices introduced into everyday life by Digitality, and in this sense

the ICT renews phenomena of 'pictorial turn'. Certainly, the notion of heritage originates from the passage through time of the asset, that is its being in time, and therefore the concepts of 'history' and 'memory' have an essential role, and they pose related questions regarding the visualisation of the present and the past. The so-called 'information revolution' is succeeded by a new digital revolution: first the search engine Google, and today the Artificial Intelligence show how the approach to data has changed, because actions are no longer listing, cataloguing, remembering, computing, but the act of 'searching' is at the centre of the discourse, in a sphere where data and information are matters delegated to the network (Carpo, 2017).

In addition, with ICT and the spread of smartphones, the system of interconnections has also extended to envelop the objects that surround us (IoT and Smart Objects). The condition is the one described by the *The Onlife Manifesto, Being Human in a Hyperconnected Era* which refers to an everyday life where ICT marries reality through a hyperconnection that correlates reality and digital in a single dimension (Floridi, 2015).

The general picture described so far takes on even more evidence with social media, where there is a transition from mass consumption to daily and continuous mass production. Jenkins (2006) talks about "convergent culture", resuming and renewing the concept of "collective intelligence" (Lévy, 1994), arising in relation to three concepts of media convergence, participatory culture, and collective intelligence. The convergence culture is made possible by digital communication and based on participation and sys-

tems of common interest, no longer necessarily referring to institutional centres or specific territories and societies. The term 'participatory culture' goes beyond the traditional concepts of media producers versus passive spectators –the so called 'prosumers'–, even if some actors may exert more weight than others. Last but not least, 'convergence' refers to the flow of content across multiple platforms in relation to the participatory behaviour of users and the media industry. "I will argue here against the idea that convergence should be understood primarily as a technological process bringing together multiple media functions within the same device. Instead, convergence represents a cultural shift as consumers are encouraged to seek out new information and make connections among dispersed media content" (Jenkins, 2006, p. 3).

At the same time, over the years what could generally be called an 'iconic' or 'visual' turning point has been developed, to suggest the possibility of being able to outline a set of sciences, which we could call "visual sciences". These have their field of application in images and in their cultural context. Thus, if Mitchell, with his *Iconology* has already outlined the birth of a science of images (Mitchell, 1986), Gary Bertoline in *Visual Science: An Emerging Discipline* (1998) proposes the rise of a "Visual Science": also expressly mentioning the "Being Digital" di Negroponte (1995), in relation to the emergence of computer graphics, the consequent transformations in the way we think, behave and work, and the transition from a culture based on oral and written communication to a visual one, he foreshadows the birth of a new discipline: "Converging technologies, such as computer

graphics, information technology, and the web, are contributing to a renaissance in graphics. This renaissance in graphics is coupled with the emerging re-thinking of the role of visualization in basic human intelligence. Converging Technologies, a renaissance in graphics, and better understanding of the role of visualization in human cognition are the catalyst for an emerging discipline called *visual science*" (Bertoline, 1998, p. 182). He describes a context that is that of the iconic (or pictorial) turn, where it is normal to express oneself through graphics rather than expressing information in textual form, and underlines how this is favoured by computer graphics, information technologies and the web.

In general, there is a context where the theme of the 'visual' –a deliberately general, all-encompassing expression of eminently cultural value, and of broad epistemological value– has become a full part of the scientific and cultural debate and is perceived by scholars as a reference topic in disciplinary reflections. Among these, archaeology, whose practice has always found a necessary and natural reference in drawing, for the documentation of sites, remains, excavations and finds, but also for the interpretation, reconstruction and communication of the same. Opgenhaffen (2021), also quoting Mitchell's "visual turn", traces a brief history of archaeology reinterpreted in a visual key and expressly speaks of *Archeology as a Visual Discipline*, but he specifies that by this expression he does not mean archaeological visualization as an integrated part of the general discipline of archaeology and not a new discipline, or a sub-discipline. It highlights how visualization in archaeology is a method of

understanding rather than a simple mode of representation of remains, at the same time related to an interpretative act ('creative turn') that doubles the destructive activities of excavation into creative practices. At the same time, the author also highlights how visualization practices, by concretely describing the finds through the visual and referring to them the reconstructions of the past, can favour a 'material turn', aimed at the concreteness of the objects.
Another field that has visualization at the centre of disciplinary interests and activities is that of the so-called 'graphic expression', whose afferents find in 'drawing', therefore in the production of images –of different types and nature– the common field of investigation. These are scholars largely trained in the field of architecture, but who operate in a structured and inter-collaborative way in the fields of engineering, design, cultural heritage, academia, and not least education. These experiences bring out 'drawing' as a common and disciplinary interpretative key to this work in different cultural frameworks and in very different degree courses. Representation not only as a technical-productive issue, but as an all-encompassing sphere of vision, thought and action, a science simultaneously referred to design, surveying, visual communication, and education. In Italy, over the years, reflection on the role of drawing (and designers) has been developed in cycles of meetings and seminars, and at the same time put to the practical test with interdisciplinary applications and initiatives, according to an inclusive and culturally transdisciplinary perspective. The different scholars offer different approaches to the topic –semioticians, aestheticians, art and representation historians,

experts of visual communication and pedagogy, experts in cultural studies, experts in digitization and modelling, etc.– where the coagulating element is a meaningful common cultural interest rather than the search for a shared method (Luigini, & Panciroli, 2019).

In this context, Vito Cardone (2016; 2017), recalling Bertoline, proposes the definition of "Visual Sciences" (using the plural), concept taken up and developed by Enrico Cicalò (2020) who talks about "Graphic Sciences". In contrast to Bertoline, who prefers the adjective 'visual', Cicalò prefers the term 'graphics' to highlight the role played by the production of images in this field of study. In fact Cicalò believes that the expressions "Visual Science" of Bertoline, "Image Science" of Mitchell, and his "Graphic Sciences" as all equally valid, and on the whole referable to the same field of investigation as the "production, perception, visualization, reading and interpretation of images. Although they represent different approaches and disciplinary traditions, they are often used as synonymous. [...] terms so different in meaning are so interconnected and [...] it is impossible to investigate one of them without considering the others. Visual Science, Image Science and Graphic Science, are often used as synonymous despite the fact that the words they are composed of have profoundly different meanings" (p. 4). Cicalò identifies the following key words, reflecting the main interests of the conference participants: graphic thinking and learning; drawing, geometry and history of representation; digital modeling, virtual and augmented reality, gaming; graphic languages, writing and lettering; graphic communication and digital media; data visualization and infographic (p. 8).

In recent years there have been many conferences on technologies for cultural heritage survey and digitization, but this conference aims to focus on the visual dimension of the discourse on heritage: not 'heritage imaging' but rather 'imagin heritage' and 'imaging heritage', focusing attention on the role of physical and mental images of heritage, themselves heritage, which have as their object the heritage in any way intended. It is a theme that embraces multiple fields, and the aim of the conference is to encourage co-disciplinary confrontation, exchange, and dialogue. The main topics are (but not limited to): Visual Heritage, Heritage Graphical Studies, Participatory Heritage, Heritage Education, Public Heritage, Heritage Interpretation, Heritage Visual Storytelling, Heritage & Museum, Heritage & Archive, Digital Heritage, Heritage Extended Reality, Phygital Heritage. This issue of *img journal* titled *Imagin(g) Heritage* originates from the experiences carried out by an interdisciplinary group of scholars from 2017 (http://www.img-network.it/), focused on studies dedicated to the field of images, imagination and imaginary. Now these studies are specifically referred to a specific topic: the Cultural Heritage. This has already been the focal of a conference held in L'Aquila in 2023 (Brusaporci et al., 2023), and the papers in this issue of the journal further develop the reflections. Focusing on the papers presented in this issue of *img journal*, Serge Noiret in *Public History and Heritage among Communities: Participation and Knowledge Sharing* explains how Public History can enhance the transdisciplinary approach to the study and management of cultural heritage, with reference to the framework of the Council of Europe's *Faro Convention*

that underscores the importance of actively involving local communities in participatory practices.
Pilar Chias Navarro, with her *Graphic Studies on the Built Heritage, a Critical Review: Technical Advances VS Traditional*, reviews the best practices in surveying theories and methodologies, underlying the importance of a critical and responsible use of technologies, where traditional and archival graphic information sources can support the digital approaches.
In *Re-Imagining the Unconscious Heritage: From Trauma to Project, Ethics and Aesthetics of Afterwardsness*, Chiara Agagiu starts from the Lacanian theory and the philosophy of education to present a concept of heritage that rise from the idea of subjectivation, identifications and symbolizations.
In *Unveiling the Art-Science Tapestry: Optical Methods in Cultural Heritage Conservation and Restoration*, Dario Ambrosini, Annamaria Ciccozzi, Tullio de Rubeis, and Domenica Paoletti, show how visual scientific methodologies and techniques can change the way we engage with and imagine of art and artworks.
In *From Archives of Lost Architecture to AR. Canonica's Farmhouses from the XIX Century to the Present Day*, Cecilia Maria Bolognesi and Deida Bassorizzi reconstruct a rural complex taking into account both the physical aspects and the intangible traces of heritage, where VR and AR are intended as tools for heritage storytelling.
In *The Discovery of Abandoned Villages in Abruzzo. Exploring the Potential of Drawing as a Research Method*, Giovanni Caffio underlines the importance of architectural drawing and visualization in the study of cultural and material heritage of minor villages, and to develop projects of sus-

tainable revitalization, rooted on the identitarian aspects of these communities.
Enrico Cicalò and Michele Valentino in *Representing and Visualizing Archaeology. The Contribution of Graphic Sciences to Research in Archaeology* discuss the role of images and graphic sciences in the archaeological field, where visualization represent both a practice to document the material remains and to reconstruct and understand the past.
Alessandra De Nicola and Franca Zuccoli present the paper *Working with cultural heritage. Achieving active participation by means of collective drawing and design activities* where explore how the intentional design process can engage the individual with cultural heritage.
In *Urbino Explored in a Multimedia Travel Notebook*, Elena Ippoliti and Flavia Camagni highlight the importance of engaging in cultural heritage communication, with AR integrated experiences on multiple spatial and temporal levels.
In *Theater Directors and Graphic Designers' Interpretations of Chinese Narratives in Teater Koma Posters*, Saut Irianto Manik analyses the role of posters as a media for visual communication, according to the idea that poster interpretation favours the study of symbolic language and messages.
In *Expanded' Experiences of Knowledge of Cultural Heritage: The Castle of Roccarainola, A Case Study*, Ornella Zerlenga, Margherita Cicala and Riccardo Miele show the use of photogrammetry to realise virtual itineraries to study small urban centres, understand their historical and cultural values, and re-valorise them.
The title *Imagin(g) Heritage* highlights that heritage representation is primarily a cultural issue, where "imaging" –

whether traditional and/or digital, assuming that nowadays the discourses cannot be totally distinguished– combines 'imagination' and 'imagery'. In the same way and at the same time the idea of heritage itself develops through a discourse between the blurred dimensions of the tangible and the intangible, in the sphere of history, memory and remembering. Thus heritage becomes the protagonist, in a game of trilateration between scholars, population, and heritage itself, where heritage is an active subject and no longer just the object of representation (Brusaporci, 2023).

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GRAPHIC STUDIES ON THE BUILT HERITAGE, A CRITICAL REVIEW

TECHNICAL ADVANCES VS TRADITIONAL STUDIES

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ARCHITECTURAL SURVEY
CARTOGRAPHY
SPANISH ROYAL SITES
BUILT HERITAGE
TEACHING STRATEGIES

Research on the built heritage should periodically review the good practices to be used in surveying theories and practices. Written and graphic precedents provide a valuable knowledge of historical buildings built over centuries. Previous surveys must be checked through an exhaustive fieldwork because of their lack of accuracy and reliability, that results from the fact that ancient methodologies are based on direct measuring. Therefore, old datasets must be compared with later outcomes obtained with modern photogrammetric or scanning techniques. Accordingly, our teaching strategies must promote a critical and responsible use of technologies. Moreover, graphic information sources such as perspectives, photographs, and ancient cartography can be used to supplement the information of the building provided by other methodologies. The Monastery of El Escorial is a paradigmatic case study because of the large amount of written and graphic information that is preserved, that includes the original 16th century traces and drawings, together with surveys dating back to the 18th, 19th, and 20th centuries.

INTRODUCTION

Since the Renaissance period, survey methods and techniques have been refined. Recent advances have made it possible to digitally model heritage, use virtual reality –VR– and link metadata to drawn elements through the infinite possibilities of augmented reality –AR– to provide a holistic simulated experience of architecture (Spallone et al., 2022); but at the same time, the incorporation of artificial intelligence –AI– is opening fields of research in architecture that were inconceivable just a few years ago.

Such an increase in possibilities requires a change of mindset, having clear criteria, and approaching any work from the priority established by the objectives, from a critical position that is fully aware of the possibilities, but also of the limitations. Nowadays, more than ever, an image can be spectacular and fake at the same time.

This paper is a critical reflection on the documentation, study, and dissemination of built heritage in today's context, from the experience and perspective of the six centuries that have elapsed between the drafting of the Charter and the complex and multifaceted context of today. Consequently, the objective of this study is essentially didactical and can be summarised as 'to know before acting' and stresses the importance of knowledge and critical think.

It is not the aim of this article to detail each method or technique deeply, as this has been dealt with in the classic manuals (Marino, 1990; Di Grazia, 1991; Docci & Maestri, 1993; Cundari, 1997), as well as in the more recent and updated compendium by Antonio Almagro (2004), who provides an interesting critical perspective from his long practical and theoretical experience with surveys. Examples also abound in compilations such as Chías and Cardone (2016) and in prestigious specialized journals as *EGA Revista de Expresión Gráfica Arquitectónica*, *EGE Revista de Expresión Gráfica en la Edificación*, *Arqueología de la Arquitectura*, *Disegnare. Idee immagini*, *diségno*, *DISEGNARECON*, in

which, with an increasingly analytical approach, they already constitute most contributions. In addition to the circumstances associated with the specific purpose of each work, it must be pointed out that science today is embedded in the European context and consequently must consider its objectives and strategies, especially regarding the public information of processes and results –Open Data, Open Science– citizen participation and transfer to society (Chías, 2023).

Case study is the Monastery of San Lorenzo el Real de El Escorial in Madrid, a Spanish Royal Site that was built in the 16th century (Figure 1). It is an outstanding example because of the numerous historic documents kept both on site and in the Spanish archives. This collection encompasses most of the original work contracts and traces, and other related to later refurbishments and partial reconstructions. Surveys dating back the past three centuries are available too. Such an outstanding 'graphical corpus' allows for comparisons and analysis of documents in many ways, not only formal or aesthetical but structural and constructive.

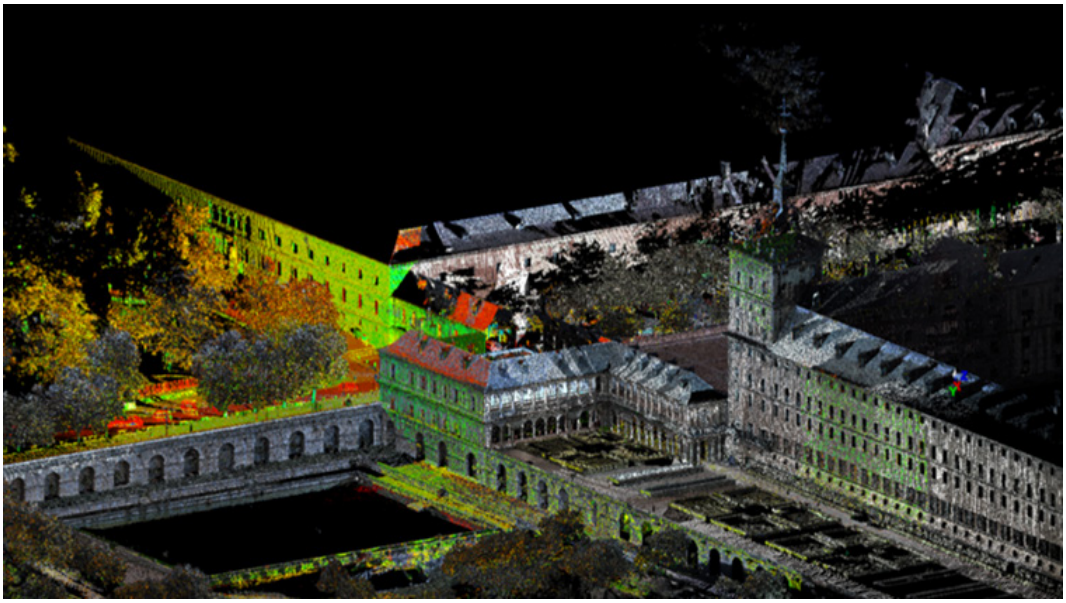

Fig. 1 Monastery of El Escorial, point cloud obtained with a laser scanner with a range of 60 metres. Author's image, 2017.

METHODOLOGY

Methodology is grounded on two main questions: firstly 'Why?' should be related to the targets of each survey, while 'How?' must meet the demands of a critical use of methodologies and techniques.

Why: The Purpose of the Survey

The role of the architect and the archaeologist in the tasks involved in the survey is to collect, select, order, and process the data obtained in the fieldwork, exercising rigorous metric and geometric control (Zerlenga, 2016), and with clear objectives. As Bertocci resumes:

> We can therefore have thematic surveys for historical knowledge, surveys for restoration, surveys for archaeological documentation, surveys for cataloging, surveys for formal and dimensional knowledge, or something else; we can also have an experimental survey, which is also developed in a didactic manner, aimed at understanding the tools and working methods. (2016, p. 30)[1]

Implicit in this list of possibilities should be the fact that a comprehensive knowledge of historic architecture and the historic city should not be limited to what is visible, but should investigate other aspects such as the internal order and its construction mechanisms (Fatta, 2016), structures, construction methods and techniques, deformations and pathologies, even if this requires the application of other strategies and instruments –such as infrared thermal cameras or X-rays, to mention only non-invasive techniques– that reveal the interior of the walls. In this regard, it is also essential to investigate what is hidden in hidden or difficult to access spaces such as vaults, attics, and crypt and dome infills that can be visited, etc. (Figure 2). Moreover, historic buildings have barely been built in a single phase[2], and even in these rare cases later interventions have affected the original masonry variably; therefore, this approach to the interior of the walls and residual spaces allows us to understand the

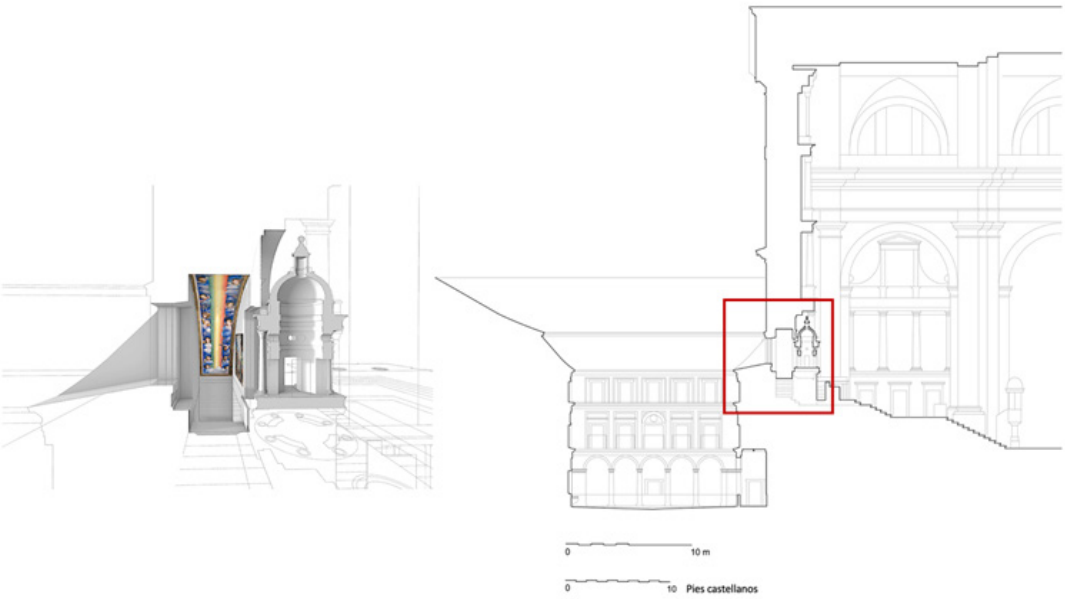

Fig. 2 Royal Monastery of San Lorenzo de El Escorial, transaltar, longitudinal section and detail of the fugated section (Chías, Abad, De Miguel, & Llorente, 2020).

construction phases, to know the historical processes through which they have passed, and to approach their analysis. As a result, the study of architecture cannot be restricted to its public or most representative spaces and the elements that define and shape them, forgetting those that have allowed it to fulfill its fundamental function of habitation over the centuries, such as the galleries and service spaces, the cisterns and basements, etc., as this knowledge is essential and must be before any intervention. It is these spaces that often require the adaptation of established techniques to the challenges they pose –lack of geometry, lack of visual and physical connection between spaces, lack of light, loss of connectivity, etc.– and to make up for the shortcomings with imaginative solutions (Figure 3).

On the other hand, surveys obtained through digital techniques can provide graphic results that have opened a wide range of possibilities in the documentation of historical architecture. Among them, the possibility of making very thin sections of the point clouds from the laser scans and exporting them to CAD programs to make plans and dihedral

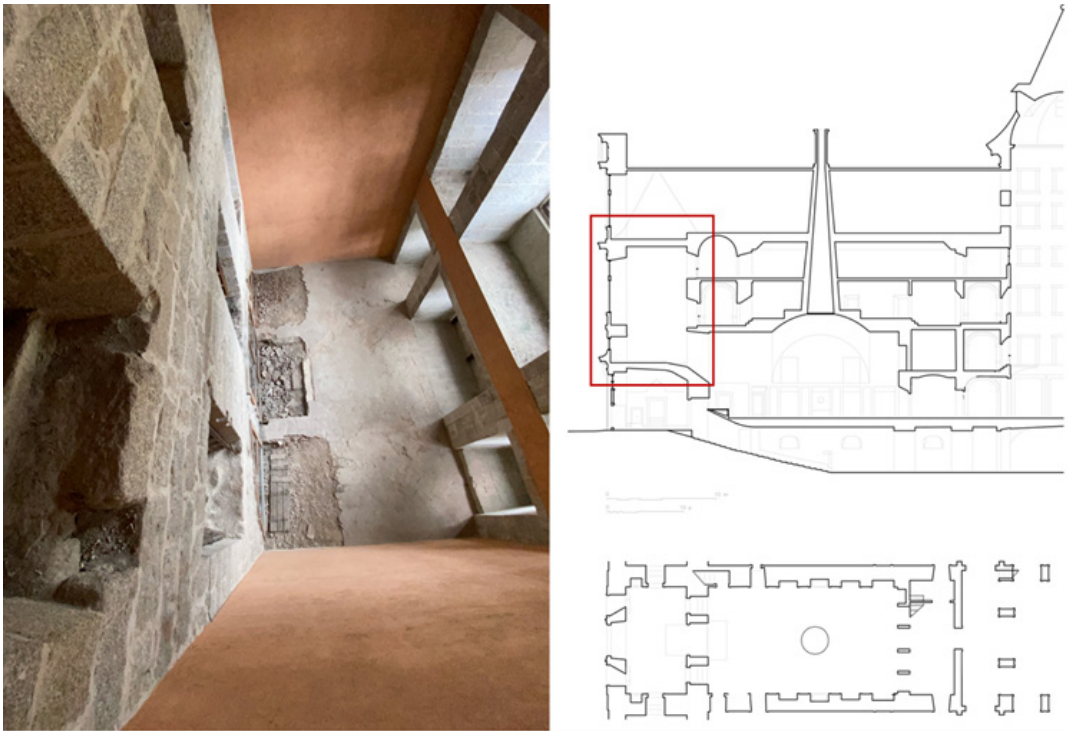

Fig. 3 Left, Monastery of San Lorenzo de El Escorial, photograph of the interior of the double façade space of the old kitchen of the Convent, inaccessible, obtained with a selfie stick from the 45-foot level. Right, longitudinal section along the axis of the wing of the original kitchen of the Convent and ground floor plan. Author's images, 2023.

sections at the desired scale, is as well-known as it is used by professionals and researchers. In recent times, using cameras mounted on drones –UAVs-Unmanned Aerial Vehicles– and specific computer programs are facilitating the formation of these three-dimensional models, improved in appearance and visualization with the superimposition of mappings on the point clouds (Sánchez, Fernández, & San José, 2016), while avoiding the costly assembly of scaffolding. Another set of possibilities opens with the construction of digital models from photogrammetric or point cloud methods obtained from laser scans[3] (Centofanti, 2012), which allow in later phases to link architectural and archaeological elements to each other and to different multi-format databases to create three-dimensional information systems – BIM-Built Information Modelling. These systems can facilitate both construction management (Brusaporci & Maiezza, 2016) and the interventions to be carried out[4].

Besides the documenting and disseminating, these systems facilitate the drafting of master plans, as the linked databases make it possible to give context to heritage in different historical and cultural moments, showing that a historic building "is the result of the concatenation of multiple architectures that succeed one another and constructively superimpose themselves on the same space over time" (Latorre, 2012, p. 52) while highlighting its dual diachronic and historical condition. However, the application of methodologies based on information systems in heritage buildings –HBIM-Built Heritage Information Modelling– must be very critical and even questionable, as it comes to assume oversimplifications such as the homogeneous composition of the different sections of the walls, which is rare in historic buildings. Within this field of 3D simulation, the possibility of generating 360º visualizations and 'fly-through' virtual tours makes it possible to design tailor-made virtual visits and introduce augmented reality (Herráez et al., 2000).

But digital models also have other applications that allow the study of other qualities of architecture such as acoustics, energy efficiency, and even the symbolic and functional aspects that are frequently linked to the treatment of light (Chías et al., 2020), as well as studies on the relationships established between different spaces, in which the simultaneous use of several representation systems is essential (Chías et al., 2023a). Changes of scale open new options that transcend the architectural realm and are applied to environment regeneration, the city and its historic infrastructures, while facilitating the creation of Digital Twins through the use of moving laser scanner captures, which are systems that allow data to be obtained quickly and cheaply without compromising quality (Stendardo et al., 2022). Another application –no less interesting and very didactic– is comparing the information obtained by modern methods to check the reliability and accuracy of surveys considered 'historical' in which direct methods were essentially applied

(Chías et al., 2023b), and even to compare the applicability of contemporary techniques, as we shall see below (Figure 4).

How: Critical Use of Methods and Techniques

Once the objectives of the survey have been established, it is time to consider how to carry it out; but the successive choices must be made from a critical stance that compares the methods and optimizes the available means according to the objectives. Ortega (2000) commented on the difficulties he had encountered in carrying out some partial direct and

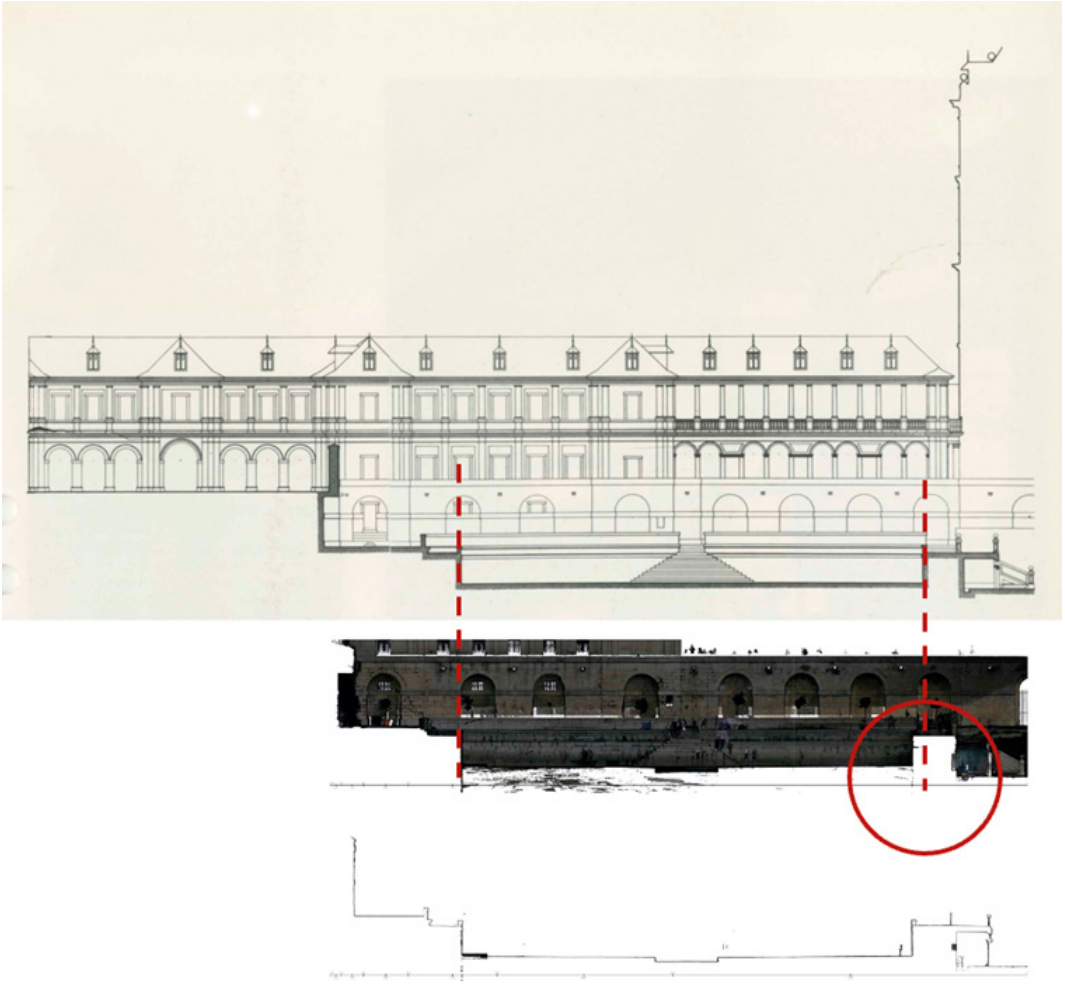

Fig. 4 Monastery of San Lorenzo de El Escorial, east-west section. From the top, comparison of the survey by Cervera Vera, 1985, with direct methods, the one by the author, 2022, with laser scanner, and the section obtained by choosing a very thin section of the point cloud. Circumference shows the metric mismatch in the width of the pond.

'artisanal' surveys of the Escorial, to which he attributed the great advantage of direct contact with the factory.

This direct experience of architecture and the knowledge it provides is, from my point of view, indispensable and unavoidable regardless of the method to be followed later to carry out the survey. Prior visits to the building before undertaking the fieldwork serve to obtain complete knowledge, choose the means and techniques to be used, and to be able to plan the work. During this phase, accessibility difficulties are anticipated, a contingency plan can be drawn up and solutions, sometimes as imaginative and inexpensive as using a selfie stick, can be proposed. Another benefit of direct surveying is its low cost and immediate availability if there is no need to incorporate personal or auxiliary means that would make it more expensive. Disadvantages include slower processes, greater inaccuracy, and occasional difficulties in accessing certain architectural elements, especially at heights. However, direct measurements must be part, even if only on an ad hoc basis, of other indirect survey techniques because they serve as a check on the data obtained with instruments based on digital techniques. The topographic supports provide consistency to the data obtained and allow to detection of possible errors of scale when entering or exporting the data to other computer programs. Another aspect to bear in mind is that most historic buildings were constructed before the widespread introduction of the decimal metric system[5], so the units of measurement used in their construction responded to anthropometric patterns and diverse traditions, often local or regional in scope[6].

Knowing these patterns or moduli is essential if conclusions about dimensions and proportions are to be drawn, as the metric system would provide decimal fractions. Hence the interest of drawing a double graphic scale that reflects both units in the required projections. In the various indirect methods, digital instruments play a major role, such as techniques based on digital photogrammetry and laser

Fig. 5 *La Cachicanía* –house for the orchard's keeper– at the Monastery of El Escorial. Top, elevation (Cervera Vera, 1949); bottom, point cloud obtained with a laser scanner, author's image, 2023.

scanning. In both cases, it is advisable to plan the station points and draw the necessary sketches to locate them, even if they are recorded by the instrument itself. The former is cheaper and more accessible but requires certain rules to be followed in the capture of the photographs, such as obtaining overlapping pairs and not forcing the camera to tilt the camera concerning the walls, as well as composing high-resolution photomosaics and rectifying the images, and using georeferencing systems. It should also be borne in mind that there are serious limitations when erecting towers and high vertical elements if scaffolding is not used, due to the lack of parallelism between the camera plane and the photographed plane and the convergence problems that this implies; with distance, loss of detail can also occur (Molina et al., 2021). Laser scanners pose other problems such as their high price, which may not be justifiable or cost-effective in cases such as surveying small areas or facades, even if they are highly ornamented. It is obviously necessary to consider operational aspects such as the need for intervisibility between consecutive or nearby station points, leveling –even if automatic– georeferencing or the duration of the batteries –sensitive to low temperatures– when long campaigns are to be undertaken. On the other hand, its major advantages include its range –which can avoid the use of drones– and accuracy, as well as the possibility of densifying the point cloud in areas where more information is required. There is little discussion of the importance of point cloud management software, as depending on its functions and ease of use –even with a tablet to check during fieldwork– it can facilitate automatic alignments or require lengthy model assembly processes. Other techniques such as georadar are interesting in specific survey cases like buried features (Franco et al., 2004).

Finally, I believe that it is necessary to reflect on the aspects related to graphic design, since the cultural context in which the surveys are produced not only reflects technical limitations, but also graphic fashions.

The Mudejar façade of the Palace of King Don Pedro in the Royal Convent of Santa Clara in Tordesillas serves as an example, since although both drawings coincide in the aim of documenting the morphology and ornamentation, the one on the left –a praiseworthy survey carried out with direct methods by Torres Balbás– tends to complete the information that is not visible or that has disappeared, incorporating graphic assumptions that do not necessarily correspond to reality. Almagro's photogrammetric survey, on the other hand, includes exclusively what he sees, in an exercise of graphic honesty that leads him to leave blank everything that is not verifiable.

The comparison is also relevant if we consider the different use of graphic codes shown in the two images, the former reflecting the historicist academic tradition, while the latter is essentially synthetic (Figure 5).

CONCLUSIONS

After six centuries, surveys have broadened their expectations, objectives, and scope thanks to new techniques that allow the recording and processing of data of diverse nature and origin, the digitalization of methods of analysis and information management, and new and powerful means of dissemination and communication. But this has been possible because this advance in methods and techniques has been accompanied by the necessary conceptual development, while progress has been made in holistic experience and towards new ways of enjoying architecture. From these theoretical approaches, the focus is no longer on methods and techniques, but on the knowledge they provide of architecture, and on the analyses that can be made that transcend the mere visual appearance of its surface elements.

Finally, the European Union has set itself two priorities in relation to heritage research: firstly, it calls for a science

that is open to society, not only in terms of the possibility of accessing data, processes, and results without limitations – Open Science, Open Data– and in terms of requiring citizens to become involved through transfer activities; and in this regard, the multiple applications of virtual and augmented reality and artificial intelligence are as varied as they are promising. And secondly, the dissemination of Europe's heritage will effectively contribute to strengthening the sense of identity of the different communities that comprise it.

NOTES

1 Translation by the author.
2 Even the seemingly monolithic Monastery of El Escorial, built in a record time of barely twenty-three years, has different phases and features in its construction due to various causes such as changes in the management of the work or even quarries; to these must be added the changes suffered after the fires and the interventions carried out in the second half of the 20th century, which have introduced modifications to the original masonry.
3 From the point clouds, specialised programs construct triangular meshes – TIN-Triangulated Irregular Network. Another option is to construct simplified solid models of the building elements with primitives adapted to the three-dimensional mesh.
4 Particularly useful when applied to new buildings or relatively modern constructions for which reliable and accurate information is available.
5 Universal implementation officially began in 1875 at the Metre Convention, with the signing of the relevant treaty in Paris on 20 May.
6 For example, the Monastery of El Escorial was built using the Castilian foot, equivalent to 0.2786 metres, and the Castilian rod, equivalent to three feet.

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Article available at

DOI: 10.6092/issn.2724-2463/18869

How to cite

as article

Chías Navarro, P. (2024). Graphic studies on the built heritage, a critical review: technical advances vs. traditional studies. *img journal*, *10*, 24-39.

as contribution in book

Chías Navarro, P. (2024). Graphic studies on the built heritage, a critical review: technical advances vs. traditional studies. In S. Brusaporci (Ed.), img journal 10/2024 Imagin(g) Heritage (pp. 24-39). Alghero, IT: Publica. ISBN 9788899586461

PUBLIC HISTORY AND HERITAGE AMONG COMMUNITIES: PARTICIPATION AND KNOWLEDGE SHARING

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PUBLIC HISTORY
CULTURAL HERITAGE PRESERVATION
COMMUNITY PARTICIPATION
INTANGIBLE HERITAGE
DIGITAL CURATION

This article explores the role of Public History in managing and preserving cultural heritage, emphasizing participatory practices and community engagement. It highlights the interdisciplinary application of PH, which evolved in the 1970s, to engage local communities in narrating and preserving collective memories, thereby shaping cultural and social identities. The study considers the implications of the Faro Convention, which underscores the value of community-driven heritage preservation, expanding beyond material assets to intangible aspects, such as oral traditions and collective memories. This essay demonstrates how PH fosters a connection between cultural institutions and the communities they serve by examining examples from Italy, Belgium, Brazil and the United States. This participatory approach is further enriched by digital curatorial practices, enabling a new paradigm of citizen's crowdsourcing heritage management, wherein communities contribute to digital heritage preservation through user-generated content. The essay argues for a redefined curatorial ethic that values collective memory as part of an inclusive cultural heritage framework, advancing a co-curated model for history and heritage management.

INTRODUCTION

My contribution aims to briefly describe how Public History (from now on PH), with its historical path, methods, and practices, can enrich a transdisciplinary history and management of cultural heritage. How PH could meet the needs and enhance some tasks of heritage professionals will be explained through some examples of participatory practices that involve local communities in the context of the Faro *Convention of the Council of Europe* (2005). These participatory practices in historical-archaeological heritage, emphasize the importance of direct involvement of local communities.

PUBLIC HISTORY AND HERITAGE

PH has long been part of the methodological toolkit of many professionals dealing with the historical and memorial dimension of heritage. As a 'glocal' discipline, PH engages with local communities and uses methods that are universally applicable (Noiret & Cauvin, 2017). PH unfolds on the ground with local communities, using methods that apply universally within communities and in local heritage contexts. Even though there were earlier practices from the early 20th century (Shambaugh, 1912), PH emerged as a discipline of history only in the 1970s, thanks to the pioneering work of American and British historians. PH operates globally, emphasizing that history is alive, relevant to the present, and publicly useful to study collective memories, cultural and anthropological identities. Its main characteristics include the interdisciplinary openness of historians and cultural heritage professionals to applied participative activities with communities willing to contribute to their own history and heritage preservation, trace individual and collective meanings and shape plural identities made of material and intangible heritages. The research and narratives of community life stories are based

on a transdisciplinary analytical perspective, focusing on the changing cultural role of past experiences in shaping new multiple identities and social affiliations[1] (Passerini, 2018). Public historians, along with other social scientists, analyze how memories have reached the present and actively focus on their changing perception or persistence through generations, feeding into intangible heritage and shaping the definition of identity, as investigated by Levy-Strauss (1995).

THE IMPORTANCE OF THE FARO CONVENTION (2005)

Public historians studying intangible individual and collective memories connected to places and landscapes, fit in the purposes of the UNESCO (2003) and Council of Europe (2005) conventions on cultural heritage as social assets directly inherited from the communities to which they belong. Involving citizens actively in the management of that heritage is implicit in the provisions of the *Faro Convention on the Value of Cultural Heritage for Society*. Giuliano Volpe professor of archaeological research methodology, wrote a 2015 cultural heritage manifesto in which an interdisciplinary approach to such a path involves the direct participation of citizens and their communities. In such a context, the creation of archaeological parks and museums for a 'renewed awareness of places', has become an essential component of social and economic identity of local communities. This has been done promoting cultural paths in a territorial ecosystem that privileges the historical identity of the territories and their populations through various participatory cultural activities.

In 1999, the UNESCO published a guide of digital resources to cultural and historical heritage projects for the new millennium which indicated the desire for direct communities' participation. The guide announced a path that would develop in the 21st century with the idea that "people want to participate and share" their documents and memories of the past. It highlighted what would characterize the rethinking

of the world's cultural heritage according to the communities to which they belong.

> Do people want to participate and share in the emerging networks? One of the most far-reaching examples at the national level is the Museum of the Person established in Brazil (Museum, 1999). Using simple oral history documentation techniques, this project collects stories and photos from citizens across the country. The conjunction of the various narratives enables the reader to absorb a multiplicity of views. The collective effect is a documentation of life and language across all economic, geographic, and social layers. In a cultural context, these multiple points of view reinforce appreciation of the differences among people and strengthen individual values and beliefs (Holland & Smith, 2000, pp.186-196).

The same 1999 UNESCO report quoted the Italian *Mu.Vi* project, the *Virtual Museum of the Collective Memory of Lombardy*, in which the methodological characteristics of the Council of Europe's Faro Convention were anticipated.

> All together, [wrote the project coordinators], let's build a large Gallery, a Memory Museum of images and memories, visible to all, consultable by all on the Internet, a unique undertaking to capture the recent history of the territory and its inhabitants, before the documents are irretrievably lost (UNESCO, 2000).

Intangible Cultural Heritage is defined by the UNESCO *Convention for the Safeguarding of the Intangible Cultural Heritage* in its article 2 as:

> The practices, representations, expressions, knowledge, skills –as well as the instruments, objects, artefacts 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 environment, 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. (UNESCO, 2003, art. 2).

Five categories of goods belonging to the Intangible Cultural Heritage were identified which include:

> Traditions or living expressions inherited from ancestors and passed on to descendants, such as oral traditions, performing arts, social practices, rituals, festive events, knowledge and practices concerning nature and the universe or the knowledge and skills to produce traditional crafts. (UNESCO, 2003).

The *Faro Convention* (2005) signed by Italy in 2020[2] updated the 2003 UNESCO convention on intangible heritage, adding the role of local communities in identifying heritage, underlining the intrinsic relationship between cultural heritage and heritage communities, made up of a "set of resources inherited from the past that populations identify as a reflection and expression of their continuously evolving values, beliefs, knowledge and traditions" (Council of Europe, 2005). The *Faro Convention* starts from the idea that knowledge and use of heritage are part of citizens' right to participate in cultural life, as they concern human rights and democracy. The Convention promotes a broader understanding of heritage and its relationship with communities and society and encourages us to recognize that urban and landscape objects and places are not, in themselves, what is important about cultural heritage, but are important because of the intangible meanings and uses that people attribute to them and because of the social and cultural values they represent.

The convention thus highlights the history rather than the aesthetics of heritage when it says:

> Cultural heritage is a group of resources inherited from the past which people identify, independently of ownership, as a reflection and expression of their constantly evolving values, beliefs, knowledge and traditions. It includes all aspects of the environment resulting from the interaction between people and places through time. (Council of Europe, 2005)

The intention was to move from a bureaucratic and administrative definition of material cultural heritage to a public and participatory one of heritage communities which gave an essential and continuously evolving value to the history of heritage. The mourned Massimo Montella, who was professor of Economics and Management of Cultural Heritage, wrote that "the survival and ultimate meaning of cultural heritage depend on society's way of thinking, rather than on that formalized in institutions and legal provisions which may no longer respond to the need" (Montella, 2016, n.p).

A landscape heritage historian like Rossano Pazzagli underlines the importance of the participation of local populations in the 'awareness of the place' or in the construction of an identity heritage that also involves a collective memory of the local communities' industrious past. It encourage "the use of the past as a recreational resource with economic and cultural purposes thus responding to an identity claim of the local populations". Communities "contribute to strengthening the feeling of belonging, to determining the sense of a place and therefore to produce social and political awareness as a driving force that leads to correctly considering to safeguard this heritage. All this is social capital: it is the awareness of place" (Pazzagli, 1996, p. 110).

IDENTITY OF PLACES, HERITAGE COMMUNITIES AND PUBLIC ARCHAEOLOGY

Let's take one of the fields of application of PH's participatory methods, namely Public Archaeology (now PA) (Bonacchi et al., 2020; Bonacchi, 2022), and only with a specific area of PA practices such as industrial archaeology. Recovering the collective consciousness of 'the places' in a participatory way allows us to interact with the communities that live around the sites. Participation is built on a double track, that of historical research and attention to the territory's history, and to its landscapes shaped by

industrialization and deindustrialization. PH practices need to establish a dialogue with local communities' generations and their memory and reconstruct the long history that has shaped these territories for centuries. A collective awareness has grown of the importance of "heritage understood as cultural heritage, which includes a mix of tangible and intangible elements: historical buildings and monuments, production sites, traditional landscapes, popular events and practices, lifestyles, typical productions, etc." (Pazzagli, 2017, p. 110). Giuliano Volpe, insists on the fact that a landscape is certainly not to be understood exclusively aesthetically, as a "beautiful landscape", but as "a complex system of relationships [with] the traces of the millenary relationship between man and nature", a condensation of memories of the Anthropocene, which imposes a global gaze (2020, p. 35).

In Italy, the AIPAI, the *Italian association for industrial archaeological heritage*, was founded in 1997 and became a member of TICHII, the International Committee for the Conservation of the Industrial Heritage, founded in 1973. That attention to industrial archeology, in the long run, was present elsewhere in Europe at the same time. For example, the museumization since 2012 of the UNESCO World Heritage site of the Grand-Hornu in Belgium[3], or Luxembourg's ARBED steel industry blast furnaces heritage defining the identity of the place even in the space that houses the library and the University of Luxembourg campus in Belval and Esch-su-Alzette[4].

In the USA, Cathy Stanton, pillar of the *National Council of Public History* (NCPH), studied the industrial archeology national historical park in the town of Lowell in Massachusetts. The park was created in 1978 and has allowed to reinterpret elements of the history of work, immigration, and women's history. As a long-standing and well-known example of "culture-led redevelopment," Lowell is an exceptional site for tourism studies in the context of the heritage communities envisioned by the principles of

the European *Faro Convention* (Stanton, 2006). In Lowell, the public archeology and PH experiment led to the creation of local cultural assets building on deindustrialization and a necessary reconversion, also in tourist terms, of the industrial heritage, its landscape, and the collective memories that populate this National Historical Park[5]. As Stanton describes, it has become a real testing ground for American public historians, professionally trained historians who have had to deal with other professions and the local public. Such a PA experiment carried out in Lowell adopted a multidisciplinary approach involving anthropology: the complex creation of the cultural park was in fact based on the preservation of local memories, and on the need for economic redevelopment through forms of cultural tourism and maintenance and promotion of the industrial landscape.

CONNECTING ANTHROPOLOGY AND PUBLIC HISTORY

Between 1986 and 1996, coordinated by an anthropologist, Lucia Carle, the multidisciplinary proto-PH project, called *Urban Identity in Tuscany*, developed with the support of the European University Institute of Fiesole analyzed the long-term persistence of traditions and collective memories of the Tuscan medieval past until today (Carle, 1998). In June 1986 the project was launched during an interdisciplinary conference aiming at a comparison between different social scientists' research around the concepts of places and identities, a way to bring historians and anthropologists into dialogue about urban identities. For Martine Segalen and Lucia Carle "as individuals think of them, mental images of space are clearly determined by the social context in multiple and complex ways. Furthermore, conflicting images of social space coexist in each society and individuals move between available narratives as if to redefine their identity in relation to different alter-

native identities". (Carvalho, 1986, pp. 443-445).

Based on traditional archival research and ethnographic methods and interviews that involved local communities between public and private (Klapisch-Zuber, 1986), this study of centuries-old civic and popular traditions also used the knowledge of architects and urban planners as well as the work of historians. It investigated the permanence of collective memories inside and outside the walls of six small medieval villages and produced six distinct monographs, each dedicated to the urban community investigated (Carle, 1986; Carle, 1996; Capelletto, 1996; Chabot, 1997; Mineccia, 1996; Pazzagli,1996; Pirillo, 1997;). The researchers remained on site for three years and their fieldwork made it possible to outline the changes and permanence of urban identities and how these solidified from the 15th to the 20th century. Carle wrote "the term identity is intended as a research area in which to investigate the multiple and complex aspects of a problem that is in many ways extremely current, that of the socio-cultural identity of a defined population" (Carle, 1986, p. 226).

The importance of not limiting oneself to applying only the tools of the historian's craft (mainly working with local archives) was emphasized. In the various essays of the book, thus indicating the importance of multidisciplinary and participatory investigation, with its ethnographic dimension, the history of landscapes, the urban and rural architecture, and historical demography. The participatory method of the project included meetings between historians and local communities to carry out the study of the entire historical period required, up to the end of the twentieth century.

Looking at the civic traditions of local communities, an important element of the work hasn't been stressed at the time: the need to also deal with the knowledge and methods of other social scientists, an essential characteristic of proto-public history practices. The project ignored that it was anticipating what had not yet been formalized in such research contexts: the methodological implications

of PH with forms of shared authority and a participatory construction of knowledge directly with the local comm unities, a method that is now central in today's PH hermeneutic that includes citizen's history practices (Adair et al., 2011; Ridge, 2014; Gardner, 2010; Gardner, 2020).

PARTICIPATIVE MUSEUMS AND HERITAGE

Let's go deeper into talking about museums that have followed a similar path of opening to territories and communities. The 2017 code of museums' ethics mentions that they operated in close collaboration with the territories and that:

> "Museum collections reflect the cultural and natural heritage of the communities from which they have been derived. As such, they have a character beyond that of ordinary property, which may include strong affinities with national, regional, local, ethnic, religious, or political identity. It is important therefore that museum policy is responsive to this situation" (ICOM, 2017, p. 21).

The latest revision of ICOM's museum definition dates from the Prague conference in August 2022. And it stipulates that

> A museum is a not-for-profit, permanent institution 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" (ICOM, https://icom.museum/en/resources/standards-guidelines/museum-definition/).

And especially referring to heritage communities mentioned in the Faro Convention, it writes that museums are:

> "open to the public, accessible and inclusive, museums promote diversity and sustainability. They operate and

communicate ethically and professionally and with community participation, offering diverse experiences for education, pleasure, reflection, and knowledge sharing" (ICOM, https://icom.museum/en/resources/standards-guidelines/museum-definition/).

An initiative such as the *Manifesto of the small villages and territories museums* for a new cultural model open to communities (Barreca, 2020) takes up the socio-cultural approach of a heritage that comes to life in its history and through the shared memories of local communities. This manifesto insists on the fact that the cultural sector (MAB in Italy) and especially museums, as tools for developing cultural networks and social relations, must adopt new, more inclusive museum formats, closer to communities. Establishing a relationship with the local communities, it is urgent to rethink its role and the management of participatory activities with and for the public. Of course, the discipline of PH would add to this statement that participation is actively done and takes place not only to understand the kind of public with which to communicate but also to engage directly to build local territorial networks made of small and medium-sized heritage institutions.

In 2010 in Santa Cruz, California, a museologist, Nina Simon, wrote a Participatory Museum practical guide for working with community members and visitors to make cultural institutions more dynamic, relevant, and essential places for the public. Simon describes the museum as a place of dialogue and community involvement, which was centered on the needs of the community itself. (Simon, 2010). In 1997, Barbara Franco, president of the *Seminary Ridge Historic Preservation Foundation*, which manages the museum and landscape of the Battle of Gettysburg in Pennsylvania, wrote that museums as heritage institutions, were "public (for the public), participatory (with the public), activist (by the public) and that they also looked at the public as subjects (on the public)" (Franco, 1997).

CURATORIAL TURN AND HERITAGE MANAGEMENT

A 'curatorial turn' occurred in digital PH projects. It characterizes how heritage legacy can be better managed today worldwide influenced by digital technologies and PH methods (Tebeau, 2022). A new curatorial ethic has emerged at the heart of digital PH, reflecting curatorial work flourishing across cultural institutions. Everyone has become a curator, the disc jockey who selects playlists for streaming Internet radios, as well as the creator of a digital native archive that collects and organizes document sharing through descriptive metadata.

This curatorial breakthrough began with the birth of new digitally invented archives and through public participation. The first major example has been September 11 launched at the beginning of 2002 which used electronic media to collect, preserve and present the stories and memories of the *September 11*, 2001, attacks. The platform encouraged participation by loading sources on the website and calling for the construction of a people's archive: "Contribute to the archive 9/11 Digital: Tell your story, add your email, and upload images, documents, and other digital files to the archive" (Sparrow, 2006). In September 2003, the Library of Congress incorporated this bottom-up popular "invented archive" into its permanent collections. 9/11 became the Library of Congress's first major digital acquisition, ushering in a digitally driven form as a fusion between GLAM institutional missions.

Curating digital archives has been one of the most important activities for connecting cultural heritage institution's data. *Europeana* was launched in November 2008 and became the first transnational European project that, for the first time, linked the digital contents of cultural institutions in the countries of the Union through descriptive metadata. The interoperability of metadata in the 2013 British project, *Connected Histories*, linked the resources held by the main heritage institutions in the UK, the *Brit-*

ish Library (Library), the *National Archive* (Archive), and the *National Gallery* (Museum). *Connected Histories* brought together a range of federated digital resources relating to the early modern period and the nineteenth century that "enabled sophisticated searching of names, places, and dates, as well as the ability to save, link and share resources within a personal workspace"[6]. These projects served both the academic research community, and the large public made of amateur. It did not yet propose participatory content production as it happens today in institutions that practice PH and curate digital content with the help and participation of the public such as with the 9/11 project.

The construction of new participatory curatorial practices has also contaminated *Europeana* over time which has collected directly from the public memories and documents related to the First World War during its Centenary commemoration. This digital PH upgrade allowed *Europeana* to "mix documentation from libraries and archives across the globe with memories and memorabilia from families throughout Europe"[7].

This new curatorial ethic of knowledge provided by the public and for the public defines what is now commonly understood as crowdsourcing and user-generated content practices. They are technically demanding because their promises of inclusion and participation are made possible thanks to data interoperability, and they strongly depend on the mastery not only of techniques but also of increasingly specialized administrative procedures in the management and sustainability of data in digital platforms.

CONCLUSIONS

The models of production and transmission of culture have been transformed by a digital revolution that used new forms of popular and community participation when dealing with the creation, protection, curation, and access

to common people's sources and knowledge. Today, communities inheriting local heritages do not only help to preserve and valorize such heritage but create new contents, new memories, and narratives directly generated by the communities which build their plural identities around their diversified and complex cultural heritage.

In Europe, the content of the *Faro Convention* took care of what had already emerged with the new field of PH in the 1970s at the University of Santa Barbara in California as a new professional ethic of the making of history in public and with the public through different forms of authority sharing. The digital dimension of these new practices, introduced with a participatory Web 2.0 and through the semantic Web 3.0 allowing for new forms of "co-curation" thanks to descriptive metadata, has boosted a new relationship between history professionals and inheriting communities identified by the Convention.

Making history and promoting hereditary heritage are practiced in direct contact with the communities to which they belong. Faro has taken note of this, valorizing the production of history as a common good and an integral part of the inalienable rights of humanity to access its past through the participation of individuals and their communities. The right to access one's history (heritage is an integral part of it) is central to the hermeneutics of PH.

NOTES

1 See *#Memorecord*, the project to collect the memories of migrants in Luxembourg by Anita Lucchesi https://memorecord.uni.lu/.

2 Law of the 1st October 2020, n. 133, "Ratifica ed esecuzione della Convenzione quadro del Consiglio d'Europa sul valore del patrimonio culturale per la società, fatta a Faro il 27 ottobre 2005", https://www.normattiva.it/uri-res/N2Ls?urn:nir:stato:legge:2020;133.

3 MACS, *Musée des Arts Contemporains de la Fédération Wallonie-Bruxelles, Site du Grand-Hornu*, https://www.mac-s.be/en/grand-hornu.

4 The five-year Project (2019-2024) coordinated by Stefan Krebs, *Remixing Industrial Pasts in the Digital Age: Sounds, Images, Ecologies, Practices and Materialities in Space and Time* offers an advanced form of enjoyment of

these industrial heritages with the participation of local communities; https://www.c2dh.uni.lu/projects/remixing-industrial-pasts-digital-age-sounds-images-ecologies-practices-and-materialities.

5 See the park website, https://www.nps.gov/lowe/index.htm

6 *Connected Histories: British History Sources, 1500-1900*, http://www.connectedhistories.org/.

7 *Europeana 1914-1918 – untold stories & official histories of WW1*, now available in Internet Archive: https://web.archive.org/web/20240107011617/http://www.europeana1914-1918.eu/en

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Article available at

DOI: 10.6092/issn.2724-2463/20563

How to cite

as article

Noiret, S. (2024). Public History and Heritage Among Communities: Participation and Knowledge Sharing. *img journal*, *10*, 40-57.

as contribution in book

Noiret, S. (2024). Public History and Heritage Among Communities: Participation and Knowledge Sharing. In S. Brusaporci (Eds.), *img journal 10/2024 IMAGIN(G) HERITAGE* (pp. 40-57). Alghero, IT: Publica. ISBN 9788899586461

RE-IMAGINING THE UNCONSCIOUS HERITAGE. FROM TRAUMA TO PROJECT, ETHICS AND AESTHETICS OF *AFTERWARDSNESS*

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ESSAY 150/10

PHILOSOPHY OF EDUCATION
PSYCHOANALYSIS
LACANIAN THEORY
IMAGO
HERITAGE

In the field of a Philosophy of education that recognizes in *Subjectivation* the core of its research, this contribution adopts the articulation of subjectivity through Lacanian-derived instances at both clinical and theoretical levels. Starting from the notion of 'the subject of the unconscious', the associated concept of "heritage" takes shape as the sum of identifications and symbolizations that constitute subjectivity. From this point, the pedagogical perspective, directed towards the authenticity of the process of subjectivation, plays its role through the ethical-aesthetical possibilities for the subject to retrospectively reinterpret its own 'endowment'. In the second section, the contribution provides an insight into the dialogue between art and ecology, proposing a design intervention born from the *Xylella* emergency in Salento and the need to use Land Art as an educational and awareness tool. It begins with a community art experience that reconfigures the signifier 'heritage' as a product of cultural discourse in the dialectic between subject and institution.

THE HERITAGE OF "THE SUBJECT OF THE UNCONSCIOUS". A LACAN-ORIENTED SUBJECTIVATION THEORY

Beyond its semantic scope, the term 'heritage' refers to the concepts of 'belonging' and 'possession', both in its literal usage and in its metaphorical extension. The Latin word *monium*, the complex of material and immaterial assets that constitute the 'endowment' in the individual, viewed from a psycho-pedagogical perspective with a dynamic orientation and considering its intangible aspect, forms the foundation of the subjectivation of an individual or a community (Massa, 1996). In the effort to critically explore the concept of heritage and ensure its interaction from a transdisciplinary perspective, this contribution suggests examining the immateriality of individual and collective unconscious heritage, considering the latter as a technical term within the psychoanalytic domain, specifically in the Lacanian context. This not only allows for problematizing the concept of heritage itself but also for subverting the ontological perspective within which it is usually considered ('memory'). It then lays the groundwork for psycho-pedagogical intervention in terms of defining the *Bildungsroman* as a category/possibility given by the ethical-aesthetic perspective within the psychoanalytic framework. The consideration of heritage in terms of a discourse, a technical term that refers to the Foucauldian-Lacanian matrix of the concept (thus understanding 'discourse' as the set of myths, rituals, languages that constitute identity and make the subject the product of discourse on a body), allows us to connect the notion to a dimension, as will be seen, not only cultural and symbolic, to which the concept of heritage is usually linked. The theoretical and methodological assumptions, briefly mentioned for space reasons, precisely involve considering subjectivation as the process through which a subject constitutes itself by assuming "the subject of the unconscious" as a privileged object of analysis (Agagiù & Pesare, 2023a).

Remaining within the semantic realm of heritage, Jacques Lacan embraces Freud's assumption that there would be no subject if not in the unconscious, and truth would reside precisely in formations liberated from the arbitrary use of language. If "the unconscious is structured like a language" (Lacan, 1966, p. 262), and this language is tropic, symptomatic, non-linear, then it is possible, in the meantime, to find the consubstantiality between visual and verbal paradigms that, even before the 'digital turn', psychoanalysis had clearly identified. In the seminal essay *The Function and Field of Speech and Language in Psychoanalysis* (1953), the symptom is defined as akin to the "double-click" mechanism of metaphor, closely connected to the visual component of speech, and a device capable of telling the truth: "the symptom is entirely resolved in an analysis of language, as it is itself structured like a language, a language whose word must be liberated". (Lacan, 1966, p. 262).

In the language of dreams, to provide a universally experienced example, the verbal and the visual operate through juxtaposition, reconstructing narratives otherwise suppressed by the conscious ego. Freud, in fact, intuited in *The Interpretation of Dreams* (1900/1967-1980) that the oneiric language, while being iconic, originates from a verbal substrate, leveraging its figurative potential (generating, for example, phenomena of displacement and condensation).

Well, what this contribution aims to bring to light –discarding, however, a view of the unconscious as the "pentacular area" of subjectivity– is the complex unconscious heritage that every individual carry, both on an individual level and collectively. It explores how this notion can be enriched by the latest problematizations put forth by contemporary psychoanalytic and theoretical discourse. Assuming, therefore, that the unconscious is structured as a language, comprising both verbal and visual elements, it is added that, according to psychoanalysis:

1. it is transindividual;
2. it is not ontic but ethical;

3. as non-ontic, it transcends the categories of space and time, acting retroactively (*après-coup*) in the construction of meaning.

Therefore, one can imagine the complexity that the notion of heritage carries, especially on the transindividual level, when even the set of images broadly defined as 'mental' is considered. It becomes apparent to what complex realm heritage belongs in the construction of subjectivity and how this process is constantly at play, at the unconscious level, within each individual.

We will explore how the characteristics of the unconscious (transindividual, ethical, retroactive) engage the three *Registers* of subjectivity, and how the subject actively interacts with their unconscious heritage in a transformative perspective. In the ethical-aesthetic moment of constructing one's *Bildungsroman*, this grants the subject the possibility to transform their inherently neurotic inquiry into their 'endowment' and finally attain a more congenial self-view.

THE SIMULTANEITY OF LACANIAN REGISTERS

From this perspective, imagining the *unconscious heritage* of an individual or a community corresponds to considering the sum of identifications and symbolizations that a subject undergoes throughout an entire existence. Lacan identifies in the *Big Other* the 'operating system' that ensures the subject's cultural intelligibility. The code delivered to the subject, with which they are always in a unique/plural dialectical relationship of subjectivation and subjection, refers, as mentioned earlier, to the Foucauldian-Lacanian notion of 'discourse' (Pesare, 2020). Despite the orientations that traverse the entire philosophical tradition and the more recent perspectives, which attribute a key role to *visual knowledge* at an epistemic and phenomenological level –among the various arguments brought up are the relationship between concept and intuition, the role of

Fig. 1 Ulderico Tramacere (foto di), *Il Campo dei Giganti il primo albero*, 2022. Courtesy il Campo dei Giganti.

imagination, the visible/invisible dialectic–, the reference here is to the unconscious as "a knowledge that does not know" (Lacan, 1975, p. 3).

The "Copernican revolution" of psychoanalysis, with the discovery of the unconscious and the identification of a non-arbitrary linguistic structure constantly operating within the subject, reveals the inherent connection between image and word. In *The Interpretation of Dreams* (1900), Freud observes, as mentioned earlier, the mechanisms of signification in dream language. Building on Freud's insights, Lacan, especially during the 'structuralist' phase of his teaching, will delve into the significance of a non-arbitrary use of language, particularly in situations where it is not the ego of consciousness expressing itself – dreams, slips of the tongue, witticisms, symptomatic formations.

For space reasons, we will briefly introduce the articulation of subjectivity into Registers in Lacanian clinical practice, which is the result of a progressive elaboration

throughout the work of the French *maître à penser*. In Lacanian theory, the subject is viewed as a convergence of three Registers, or three different psychic instances that would operate simultaneously at both the intrapsychic and transindividual levels. They are never considered as separate agents, to the extent that Lacan uses the figure of the 'Borromean Knot' to depict this inseparable constitution. These Registers are named as the *Imaginary*, the *Symbolic*, and the *Real*, as they will be briefly defined here.

The *Imaginary* concerns the inherently projective and relational nature of the subject (of its otherness) and emerges with the encounter of one's specular image between 6 and 18 months of life through the medium of a reflective surface (mirror or surfaces with mirroring properties). In *The Mirror Stage as Formative of the 'I' Function* (Lacan, 1966, pp. 87-94), Lacan identifies in the infant's first autoscopic moment a morphogenic function at the identity level, defined as the foundation of all subsequent identifications that will follow from that moment.

The *Symbolic* concerns the encounter with language, a specificity that defines the subject (referred to by Lacan as the *parleêtre*, a being of speech). Language here refers to the engagement with cultural signifiers, both as they operate on an individual level and as the subject is incorporated into a *symbolic order*, i.e., a *social discourse*. Lacan defines the *Big Other* as the collection of rituals, myths, and structures operating within a specific socio-symbolic context in which the subject is situated and cannot do without. The *Symbolic* animates the singular/plural dialectic in which the subject is immersed to ensure its cultural intelligibility (Pesare, 2020).

The *Real* is, instead, what pertains to the relationship that the subject establishes with its drives, as well as with the 'causative void' operating in its structure. The *Real* represents everything that is not symbolizable and yet *exists*, everything that concerns the subject and yet eludes ontology, infiltrating it by short-circuiting with the symbolic structures that overdetermine the subject.

THE AFTERWARDNESS (*APRÈS-COUP*) AS THE RESTRUCTURING OF THE UNCONSCIOUS HERITAGE

However, the choice is not made to focus solely on the Imaginary register when dealing with matters related to *visual knowledge*. This is because, as mentioned earlier, the Registers always operate simultaneously. Among the various examples that can be drawn from Lacanian work, one recalls the intersections between the Imaginary and Symbolic realms as presented in L-Schema, or the function of the gaze as described in the phenomenon of anamorphosis, which imbues the scopic function with a quotient of the Real.

To better define Lacan's conception of the *Imaginary*, it is clarified that it does not concern the semantic field of imagination understood as the human faculty for creating knowledge outside a logical or realistic context. In Lacan, the *Imaginary* relates to the projective status of identity, specifically identification as a projective mechanism that is a primary operator in the subject's relationship with the world. Lacan conceives the Ego as constituted by a set of layered identifications, specifically images of ourselves that others have reflected back to us. The function of the *imago* is thus foundational to ideal identifications and the phenomena of psychic processes and the constitution of subjectivity, both individual and collective. From this perspective, psychoanalysis challenges a commonly understood notion of heritage, as it not only tells us that the Ego is a derived product but also that the knowledge of the unconscious is a knowledge that does not know. It is here that we propose a notion of *unconscious heritage*, linked to the authenticity of the subject, critically recognizing its transindividual nature –thus interacting with the notions of belonging and possession–. Here, we establish the departure from a predetermined ontological horizon (the unconscious cannot be said to 'be' because the Real undermines the symbolic structures of subjectivity). Finally, this is where the consideration of unconscious heritage is situated in an ethical perspective, precisely subverting the

categories of space and time, finding in the afterwardness, or retroactivity of meaning, the key movement of a singular/plural dialectic that underlies the production of subjectivity.

For Lacan, the unconscious represents a truth that can be rediscovered because it is already written elsewhere: in monuments (i.e., in the body), in archival documents (memory), in semantic evolution (one's 'stock' of vocabulary), in one's 'family romance' , a notion borrowed from Freud (pages of glory or shame equally bind the subject to their history), in traces whose exegesis restores the meaning of its discourse (Lacan, 1966, pp. 252-253). "You must become what you already are" implies that subjectivation, and thus the notion of heritage that we embed here, concerns the imaginary dimension as the result of layered identifications in subjectivity, and the language as the result of the 'words' in which our unconscious is immersed. This occurs in a constant relationship of active *subjectivation* and *subjection*.

Desire is indeed the primary vector that allows the subject to retrospectively reinterpret (*après-coup*) its own unconscious heritage, moving from the *family romance* to their own *Bildungsroman*. This is not understood as a *Bildungsroman* of romantic memory but as an *Umbildungs-roman*, a narrative of transformation (on the notion of *Umbildung*, see Sola, 2003). In this sense, the ethical-aesthetic perspective of restructuring one's heritage is constructed through the vector of desire, which moves along the path of authenticity in existence. It transforms the heritage into not an 'Ate' (from the Greek, 'misfortune'), as recalled by Lacan in his *Ethics of Psychoanalysis* regarding Antigone's heritage, but critically and creatively reinterprets not only the *Big Other* as the guarantor of the subject's cultural intelligibility, but also the complex heritage of layered identifications at the individual and collective levels (Agagiù & Pesare, 2023b).

Therefore, it is understood how the concept of heritage, from a psycho-pedagogical perspective, engages with the culturally constituted verb-visual structures of an individual or a community. In the process of subjectivation, it

retrospectively unfolds its own heritage to respond to the demands of the contemporary. It is here that the political dimension lies in the persistent questioning of subjectivation and the intangible heritage of subjectivity. This pertains to issues ranging from gender identity to community identity and involves a civic commitment to definitively relinquish a innately defined self. It embraces the inherently derivative, transformative, and relational nature of identity.

ART AS A FORM OF ORGANIZATION AROUND A VOID. FROM TRAUMA TO PROJECT.

In this second section of the contribution, a further perspective is offered on the cultural signifier 'heritage', illustrating a project born from the Xylella emergency and the need to use Land Art as an educational and awareness tool. This adds another piece to the mosaic of new practices of 'Heritage Care' through artistic means, starting from community-art that reconfigures educational signifiers (from schools to museums) as products of a cultural discourse. This occurs in the constant dialectic between the subject and the institution. The attention to various forms of projectuality, a construct that forms the basis of any pedagogical research, aims to take a careful look at the dynamics, even unconscious, that permeate social relations at a transindividual level. This is particularly relevant to contexts of informal structuring of socio-cultural and community responses capable of generating social cohesion (De Luca, 2023). The regenerations produced 'from below', in fact, are often capable of retrospectively restructuring landscapes and imaginaries. The shared path is to propose an ecological and transdisciplinary vision that is open and experimental, representing an ongoing challenge in contemporary pedagogical reflection: to explore the resilience of relationships between the subject and the world, and between the subject and cultural and educational institutions (Pesare, 2023). Artistic practice as a moment of

subjectivation, therefore, as a possibility that the subject takes on in a training project, even outside formal learning contexts or the institutional framework of heritage conventionally understood (e.g., museums), becomes a progressive lens for the study of aggregation phenomena and a site for the dialectic between the subject and the institution, grappling with the environmental and cultural emergencies permeating contemporary society (Agagiù, 2023).

The path highlights foundational insights in psychoanalytic theory for the theory of subjectivation. It aims to extract from a solid and generative theoretical foundation the tools for a pedagogical reflection that cares of contemporary phenomena, where the artistic domain becomes a privileged vector for awareness and study. From a psychopedagogical perspective, artistic creation, including the articulation of 'heritage care', takes on the full implicit significance of the notion of a project (*Entwurf*): *poiesis* becomes a way of illuminating truth through design, structured in contact with the sense of the transience of existence, without negating or anesthetizing it.

As anticipated in the second paragraph regarding the simultaneity of psychic instances in subjectivation, Recalcati (2012; 2018) asserts that the artwork is indeed a form of language, but what it addresses does not exclusively pertain to the symbolic order, or to the imaginary field. If one assumes that art can touch the circularity between life and death, giving some form to the unrepresentable, then one becomes aware of how, pedagogically, aesthetic education coincides with the moment of subjectivation. Regarding art as the elaboration of trauma and mourning, especially in the realm of public art, Recalcati offers a perspective on the Gibellina's Cretto where "Burri shows the most proper lesson of art: its dignity is such only if it does not avoid the encounter with the reality of trauma" (Recalcati, 2018, p. 10). What it pedagogically teaches, therefore, is that "death does not have the last word on life" (*ibidem*). Beyond entertainment, aestheticization, or provocation, art takes shape as a necessity for

confrontation with the Real, where the artist can point the way to sublimation. In the particularly relevant case of the Cretto, the shock is environmental and collective; heritage is re-imagined through an artistic intent that is not to repeat the trauma, but to elevate its impact to the redemptive dignity of poetry (in the Heideggerian sense of *poiesis*).

Pedagogically, emotional and relational education should precisely start from the theme of *ungovernability*, from how one can value a subject's reaction to the unpredictability of trauma through the notion of 'project'. If we assume, in a Heideggerian sense, that *Sein-zu-Tode* (Being-toward-death) makes us participants in the truth of being, such an experience does not configure in nihilistic terms, but is absolutely generative in relation to the anesthetizing claims of trauma. The meaning that the subject attributes to 'Cultural Apocalypses' (according to a fitting definition by de Martino, as mentioned by Pesare, 2023) occurs retrospectively through *aprés-coup*, resemanticizing the otherwise unspeakable nature of trauma. Here, the possibility for the subject lies precisely in *poiesis*, which equally involves an alignment with *physis*, resulting from the dialectical encounter between the internal world of the subject and the external world through a series of encounters that take place throughout the course of existence.

Educating about the imponderability, means vaccinating against every defensive strategy that provokes sclerotizing identities, closed within their own imaginary boundaries, opening the subject to the relationship with trauma and education to the response. Faced with collective elaborations of trauma denial, as seen, there is a wide range of psychopathological elaborations (Pesare, 2019; Pesare, 2023). Education to the response, unanesthetized to emotionality and the authenticity of existence, teaches to re-signify even the traumatic event, which disturbs the subject's balance but can find the meaning of every life lesson in the creative response.

Even though the act of *subjective rectification* challenges the subject by seeing their defenses overwhelmed, even beyond

tolerability, it is precisely at these traumatic points that a new life can emerge. From this perspective, the ordering action of culture as educational representation may perhaps start from empowerment and education to response, assuming transience as a starting point, even in the face of environmental and cultural solicitations. It contributes to changing the relationships that the subject establishes with reality. Thus, considering the study of subjectivation as a possibility to trace analyses, measures, and understanding of contemporaneity and its emergencies, it progressively approaches the truth of the subject as the *proprium* of Philosophy of Education.

From this standpoint, the reworking of heritage, rather than configuring itself as a monument to memory, psychoanalytically assumes that memory is not a passive matter but an activity in continuous fermentation, an 'Event' (*Ereignis*, Žižek, 2014) always alive, which never ceases to press on our time. It teaches to relate to the Real of trauma and make something of it.

AN EXPERIENCE OF COMMUNITY-ART IN SALENTO: RE-IMAGINING XYLELLA

The *Xylella fastidiosa* in Salento has caused the death, according to current estimates, of around 21 million olive trees (Coldiretti Report, 2023), resulting in incalculable damage to the identity, economic infrastructure, and socio-political balances of the region. The epidemic has led to desertification and the subsequent abandonment of agricultural land: the inclination towards monoculture has had a devastating impact on the landscape and the economy, where olive growing played a crucial role in the local economy. The olive tree is also a strong symbol of identity and culture in the Mediterranean: the centuries-old specimens, which constituted a material and immaterial heritage through the mapping and protection of monumental specimens, are currently in a state of senescence or have already begun the process of uprooting and transformation.

In 2020, in Boncore (Nardò, Province of Lecce), *Il Campo dei Giganti* comes to life: an inter-artistic collective that, through Land Art, aims to reclaim this historical-cultural heritage in a process of extra-urban regeneration. In this initiative, monumental olive trees are pruned, cared for, and painted white with lime, a completely eco-sustainable material widely used in agriculture – a practice of which the elders of the community are privileged custodians and that the artwork innovatively reinterprets (Cipriani, 2022). The result is of extraordinary visual impact: a monumental complex that has been restored to dignity, thanks to the help and support of the community, which is the first to be affected by the devastation caused by the bacterium, largely consisting of farmers. The homonymous Association aims to counteract the phenomenon of abandonment and neglect of the countryside, which has become an emergency due to the high risk of fires, especially starting from *Xylella*, demonstrating that through creativity and care for places, another life is concretely possible. In addition to the aesthetic impact on the landscape, the participatory land artwork pursues the mission of transforming a peripheral area into a cultural hub, supporting the collaborative ecosystem born from its shared regeneration, and expanding its use. It confirms itself as a meeting place and sustainable experimentation. The art collective started community workshops in 2021, Art Residencies in dialogue with the location, and was a stop during the *FAI Days 2023*, which involved high schools in 'Permanent-Care Workshops'.

Promoting the pairing of art and the environment through a Land Art project as a strategy for urban regeneration means, concerning the symbolic and cultural heritage of olive trees, combining memory and the future. On the one hand, the project enhances a centuries-old landscape that has been destroyed but preserved from uprooting and neglect. At the same time, rethinking the future involves raising awareness of environmental issues, while the artistic medium aims to engage in a cross-cutting dialogue within the community and creatively stimulate responses starting

from the experienced trauma. This process of shared and grassroots planning contributes to the growth of a sense of belonging, reinforcing the concept of community and promoting the idea that it can evolve according to its intrinsic qualities. It involves experimenting with and disseminating innovative and inclusive methodologies capable of developing a sense of identity and belonging to places, which is gradually being lost due to the impact of *Xylella*, along with a widespread feeling of marginalization in territorial and national policies.

With the 'Permanent-Care Workshops', the Association pursues the goal of strengthening the bond between humans and the environment, fostering outdoor activities through the symbolic gesture of taking care of the Giants. In this sense, the project follows a transgenerational strategy that takes place through workshops and involves active participation of adults in the perspective of a cross-disciplinary pedagogy to achieve a public work genuinely participated in by the community. The analogy used is to bring artistic vitality where the 'premature drying syndrome' caused by the bacterium has mortified the landscape and the environmental and cultural heritage. The objectives set aim at a cross-cutting change, renewing the connection with places of belonging and contributing to a regenerated participatory desire capable of processing the experienced grief.

HOW AND WHY TO VALUE TRAUMA

This experience is striking for several reasons: it traces the sense of powerlessness and frustration within the community and, at the same time, manages to actively involve it in an operation to protect the territory in the face of widespread neglect and the inadequacy of institutional measures activated in past years. It is a work that requires, precisely because of the use of an eco-friendly and biodegradable compound (white lime), continuous maintenance. For this reason,

it engages the community in constant involvement, creating a space for spontaneous cultural gathering and bringing life to a piece of land otherwise destined for abandonment.

Furthermore, the very passage of time is valued in a communal sense: time wears down the work, and the decay of the lime allows for the slow and inevitable transformation of materials.

The effects of the weathering process are embraced in the aesthetic-environmental perspective of contemporary art that necessarily operates in synergy with nature; the same nature that brought the trauma of the bacterium and transforms into a beauty that welcomes the wound.

The twisted olive trees, plagued by the disease, oppressed by water scarcity, stand out in the harsh light of the South, seemingly asking for a break from every artificial identity, every comforting truth, and every advertising screen. They make us participants in that pain, in contact with the Real of trauma, reminding us that we are constantly exposed to the impacts of life. The perishability of lime teaches us that the material surface is still alive: despite the drying syndrome, the olive trees are still alive and transform the white where the last moments of life still flow in the bark. The goal for the artist who originated the work is not to achieve an artificial white, but to bring as many people as possible into close contact with nature and the ungovernability of the event and trauma. Not to be overwhelmed by it, but to renew the most authentic self, which, through artistic practice, can poetically participate in a bond with nature.

The Permanent-Care workshops, conceived from a transgenerational perspective, represent the work on a living surface, close, participating in the pain, which does not deny it but welcomes the wound in an explorative painting practice. Regarding Burri's Cretto, and in harmony with what emerges from the results of Seminar VII (Lacan, 1986), "it is necessary for the form to arise from the formless, to spring from the shaking and anger of the earth" (Recalcati, 2018, p. 29). Therefore, it is not a simple monumental evocation of trauma, but

it is about evaluating how artistic practice can suspend horror, and transfigure it.

It is an experience that goes beyond rhetorical commemoration and the archiving of heritage; the testimony carries with it a saving gift through the transfiguration of mourning. When a loss occurs, in fact, not only the object itself is lost, but also the entire world revolving around that object: in this specific case, it is the entire community that revolved around olive oil production, constituting the ecosystem of the intangible heritage around the olive tree. This operation can be shared only if it is conceived as a work of life, and not of death. It teaches to start again from the ashes, from the dry, rescuing from oblivion a landscape otherwise destined to perish. The material being worked on is perishable, configuring a vulnerable monument that can juxtapose, in an intimate and close experience, the fate of a tree with that of a human being, in a vision of heritage that is dynamic, alive, and participatory.

NOTES

1 Reference is made to Agagiù 2019 for a parallel treatment of dream language with experiences of narrative in literature and aesthetic representation in photography on the theme of portraiture.

2 Relevant and interesting in this regard is the investigation into the phenomenon of art-collecting, explored during the Study Days at MIA Fair (March 12-15, 2019) dedicated to the relationship between photography and psychoanalysis (C. Agagiù, S. Ferrari, G. Fiorentino, M. Pesare, M. Recalcati). This exploration delves into the Symbolic and Imaginary intersection in the dimension of the photographic image as visual heritage.

3 The term 'family romance' refers to the complex of conscious and unconscious fantasies that the subject activates during the Oedipal phase. This occurs due to the mechanism of identification or misrecognition towards the image derived from one's family history.

4 "All the resubjectivizations of the event that seem necessary to him to explain its effects at each turn in which the subject restructures itself, according to his term, *Nachträglich*, subsequently, après-coup" (Lacan, 1966, p. 250). Lacan takes up the Freudian notion of *Nachträglichkeit*, making it react both with the evolution of his clinical work and with his personal reception of the teachings of structural linguistics. As mentioned earlier, this is discussed in the essay *Function and Field of Word and*

Language in Psychoanalysis (1953), where the analyst's work of speech is synthesized, along with Lacan's theory of the unconscious structured as a language (Lacan, 1966, pp. 230-316).

5 https://www.coldiretti.it/comunicato_stampa/news-la-forza-del-territorio-del-15-marzo-2023. Retrieved Month Day: 30/11/23.

6 For the writing of these paragraphs, we relied on the consultation of the project proposals from the Association, along with the complete press review from 2021-2023.The project's initiator, Ulderico Tramacere, is an artist who, before engaging in Land Art, utilized photography as a language of contemporary art. The project is led by an informal collective of artists and researchers to carry out the actions of the pilot project, which has recently garnered attention from the Italian Environmental Fund, the support of the Municipality of Nardò (Lecce), and the Library-Museum Center of the Province of Lecce.

7 Cfr. Giovara 2023 for a review of the Art Residencies 2023 (Cristiano Pallara, Daniele Papuli) and events of presentation involving children and students from local socio-educational centers, in addition to interventions by theater companies (TerramMare Teatro), poets and authors (Mario Capanna, Dario Muci, Giuseppe Semeraro), and musicians (Daniela Diurisi, Roberto Gagliardi).

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Article available at

DOI: 10.6092/issn.2724-2463/18540

How to cite

as article

Agagiù, C. (2024). Re-Imagining the Unconscious Heritage: From Trauma to Project, Ethics and Aesthetics of Afterwardsness. *img journal*, *10*, 58-77.

as contribution in book

Agagiù, C. (2024). Re-Imagining the Unconscious Heritage: From Trauma to Project, Ethics and Aesthetics of Afterwardsness. In S. Brusaporci (Ed.), *img journal 10/2024. Imagin(G) Heritage* (pp. 58-77). Alghero, IT: Publica. ISBN 9788899586461

UNVEILING THE ART-SCIENCE TAPESTRY: OPTICAL METHODS IN CULTURAL HERITAGE CONSERVATION AND RESTORATION

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ARTWORKS
OPTICAL METHODS
REFLECTOGRAPHY
HOLOGRAPHY
THERMOGRAPHY

Optical methods are a formidable tool in the conservation of cultural heritage; a large number of techniques are currently available, and the search for new methods is flourishing. In this paper, we will discuss some of these techniques, which, in addition to making a significant diagnostic contribution, have profoundly changed the way we engage with and imagine art. The selected techniques are primarily visual, thus their results are presented as images. The visual nature of these methods is crucial, as it allows an easy comparison with the artwork under study and enables their use by researchers from different backgrounds. These images may also be appreciated by the general public. In particular, the paper proposes a reflection on the relationship between the artwork and its representation through a scientific method.

INTRODUCTION

It is a matter of fact that Western thought is *oculocentric* and that the visual approach permeates our society (Luigini & Menchetelli, 2022). Technologically speaking, the ever-increasing capability to record and process images will further enhance the pervasive importance of the visual approach: we live in an age of images. Just to give an example, with more than 5 billion mobile devices in use in 2021 (covering around 67% of the world's population) and more than 7,5 billion smartphone connections by 2025 (GSMA, 2022), images can be produced virtually anywhere and in any time.

A similar (r)evolution has happened in science. Scientists have always used images and graphs, even if the use of non-representational pictures to display data is relatively recent: statical graphics was invented around 1750-1800. It requires a diversity of skills, the visual-artistic, the empirical-statistical and the mathematical, as Edward Tufte pointed out (Tufte, 2001). According to him:

> Modern data graphics can do much more than simply substitute for small statistical table. At their best, graphics are instruments for reasoning about quantitative information. Often the most effective way to describe, explore, and summarize a set of numbers –even a very large set– is to look at pictures of those numbers. Furthermore, of all methods for analyzing and communicating statistical information, well-designed data graphics are usually the simplest and at the same time the most powerful. (Tufte, 2001, p. 9)

The attention to data graphics lead to a theory of visual display of quantitative information (Tufte, 1990; Tufte, 1997; Tufte, 2001; Bertin, 2011). However, this was only a part of the (r)evolution. John D. Barrow wrote:

> In just a few years, the presentation of science at all levels, from technical seminars for fellow experts to popular expositions for the general public, has become extremely visual. The ubiquity of PowerPoint,

> web-streamed video, digital photography, and artificial computer simulation has meant that images dominate science in a way that would have been technically and financially impossible just 20 years ago. There is a visual culture in science and it is rapidly changing.
>
> Visuality penetrated the practice of science just as deeply as it fashioned its presentation.
>
> The future of science will be increasingly dominated by artificial images and simulations. (Barrow, 2008, pp. xiii-xiv)

There is a field in which images are usually the result of measurement that has also developed tremendously since 1960: optical methods (Prenel & Ambrosini, 2012; Ambrosini & Ferraro, 2018). This extraordinary development has been driven by two revolutionary changes: the invention of the laser light source and the invention (and great development) of digital recording and processing.

We can now add the last thread to our tapestry and talk about cultural heritage.

Conserving and restoring cultural heritage is a crucial task that requires the integrated use of different scientific and technological approaches (Borg et al., 2020). Among these approaches, optical techniques have emerged as a powerful non-destructive and non-invasive tool for the analysis of cultural artefacts (Alfeld et al., 2013).

Optical methods, including holography (Amadesi et al., 1974; Paoletti & Schirripa Spagnolo, 1996), electron speckle pattern interferometry (ESPI) (Paoletti & Schirripa Spagnolo, 1996; Ambrosini & Paoletti, 2004), reflectography (Ambrosini et al., 2010), and optical coherence tomography (OCT) (Targowski et al., 2012), have transformed the field of cultural heritage with their ability to provide insights, for instance, about surface conditions, structural defects, hidden layers and pigment identification.

Although the contribution of optical methods to the conservation and restoration of cultural heritage cannot be underestimated at all, this article highlights the cultural

importance of their use in the field of art. In fact, this intersection (this *tapestry*, as we wrote in the title) between art, science, technology, and a visual approach has proved to be vital and instrumental to a better understanding of the past, providing us with a window to see things in a different and deeper way.

In the following, we will discuss some of the many optical methods available today that, by providing results in the form of an image, are best suited for comparison with the artwork itself and, at least in part, are easily understood by the general public.

THE BEGINNING: PHOTOGRAPHY AND X-RAYS

Photography was the first revolutionary application of optical methods in the field of cultural heritage; it finally made possible the accurate reproduction of works of art. For many of them, which had been destroyed, photographic reproduction is now the only way of appreciation.

But optical methods were soon to go even further, making possible to see the hidden side of masterpieces; with X-rays, at the beginning of the 20th century, it became possible to 'see the invisible', i.e. what was hidden behind or inside works of art. X-rays could also be used for diagnosing the cultural heritage, for example to find galleries of woodworms in panel paintings or to reveal buried structures such as nails or other materials, but they could also open a window to another world, a world in which the artist made mistakes and changed his mind, erasing and moving arms and hands, faces, expressions and clothes.

The world of artworks revealed through X-rays is full of *pentimenti*, the emotive word employed by restorers to describe these works of art *in fieri* that have remained concealed for centuries. Decades ahead of its time, X-ray diagnostics functions much like a modern text editor, enabling you to trace the mistakes and corrections that guided the artist to

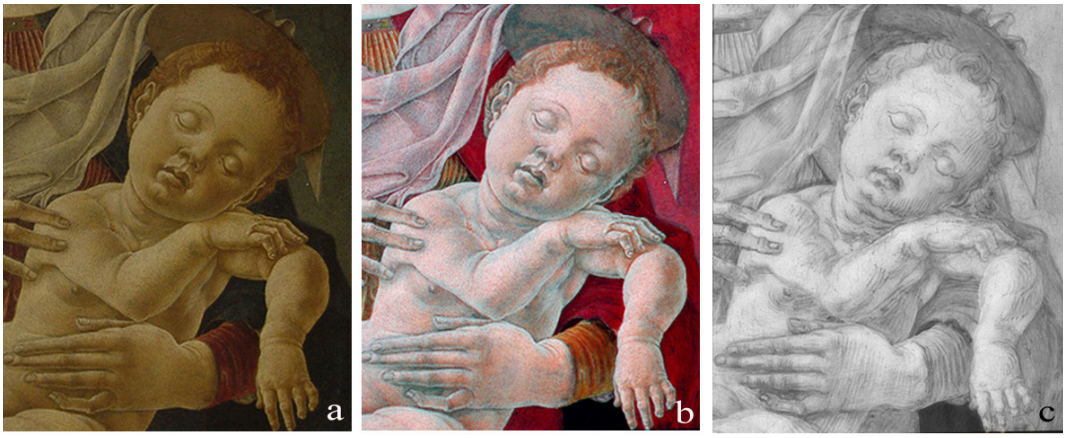

Figure 1 Cosmè Tura, *Madonna dello Zodiaco* (detail), painting on wood, 15th century, Accademia Galleries (Venice, Italy): a) visible; b) false-color image with IR information mapped as red; c) infrared image. (Ambrosini et. al, 2011).

the final result. In some fortunate cases, shifts in taste or the necessity to reuse materials have led to the discovery of entirely different works hidden beneath the surface.

UNVEILING THE HIDDEN ART: IR REFLECTOGRAPHY

Another major contribution to the study of cultural heritage has come from infrared radiation. Initially, traditional cameras, when equipped with infrared film, could record radiation up to approximately 1,1 microns. From the late 1960s onward, electronic devices were developed to record infrared radiation at even longer wavelengths, extending up to approximately 2,5 microns. The technique of infrared reflectography (De Boer, 1968; Daffara et al., 2010) is now widely employed, enabling the visualization of what lies beneath the paint layer. In fact, various color pigments exhibit more or less transparency to different infrared wavelengths, depending on their material and thickness. In numerous instances, preparatory drawings become visible beneath the paint, unveiling an entire artistic world. This hidden art, now accessible for study, provides insights into how artists worked, prepared their compositions, and whether they made changes (i.e., had *pentimenti*) during

Figure 2 Cosmè Tura, *Madonna dello Zodiaco* (detail), painting on wood, 15th century, Accademia Galleries (Venice, Italy): a) visible; b) false-color image with IR information mapped as red; c) infrared image. (Ambrosini et. al, 2011).

execution. Moreover, it serves as an effective method for unveiling copies that typically do not reveal *pentimenti*.

Figures 1-3 show examples of reflectography enhanced by multispectral colour mapping. In particular, in Figure 1, a detail of the *Madonna dello Zodiaco* by Cosmè Tura, the false-colour image shows more information in the dark areas as well as a good differentiation of the pigment under the Virgin's left hand (compare Figure 1a with Figure 1b); the preparatory drawing is clearly visible in Figure 1c.

In Figure 2, the same colour mapping is applied to a different detail of the painting. The goldfinch beaking grapes turns out very dark in the visible range (Figure 2a); the image recorded in IR shows much more details of the drawing (Figure 2c).

A third example is the masterpiece *Madonna con Bambino* (Fig. 3a) housed in the Santa Verdiana Museum in Castelfiorentino (Florence, Italy). Despite the controversy surrounding its attribution, it is generally accepted to be the work of Cimabue from the second half of the 13th century. Moreover, a very young Giotto could be the author of the Child. Extensive restorations are clearly visible in red and purple, especially the horizontal imitative reintegration that filled the gap corresponding to the junction of the two panels (around the centre of the painting).

HOLOGRAPHY AND BEYOND

It was almost by chance that Dennis Gabor invented holography in 1948. For several years, it remained little more

Figure 3 Cimabue, *Madonna con Bambino*, painting on wood, 13th century, Santa Verdiana Museum, Castelfiorentino (Florence, Italy). a) visible; b) false-color image with IR information mapped as red. (Ambrosini et. al, 2011).

than a laboratory curiosity until the advent of the laser in the 1960s, when it exploded and revolutionised the production of images in both science and art.

Unlike photography, holography can record not only the intensity but also the phase of the light wave. This means, for example, that it is possible to create three-dimensional images that are virtually indistinguishable from the original.

The classic holographic technique, which was developed in the mid-1960s and had its heyday in the 1980s and 1990s, requires a laser source for both recording and viewing images.

It is a purely analogue process in which the image is recorded on a glass plate, coated with photographic emulsion, developed and viewed again.

The process was lengthy, expensive and technically complex, requiring dark rooms for recording and examining the image and adherence to strict stability requirements, including the use of anti-vibration tables. The ultimate reward for those overcoming these difficulties was a three-dimensional image of unprecedented quality, never equaled again.

Holography sparked the interest of many artists, and soon museums devoted solely to holograms collection appeared.

From a scientific perspective, holography's most significant contribution was the development of a new diagnostic

technique called holographic interferometry. By recording two holograms at different times and superimposing them, one obtains an image of the object under examination covered by black and white lines; these interference fringes provide information about the deformations it has undergone.

Holographic interferometry, originating in mechanical engineering, spread rapidly. In the early 1970s, at the newly founded Faculty of Engineering in L'Aquila, the group led by Prof. Franco Gori began to experiment with holographic interferometry for the diagnosis of panel paintings (Amadesi et al., 1974). This marked another small revolution in the larger revolution of holography, initiating the development of many optical methods currently used for cultural heritage, such as speckle photography, electronic speckle pattern interferometry, shearography, digital holography and correlation methods (Ambrosini & Paoletti, 2004).

The development of these techniques coincided with the decline of traditional holographic methods: too slow, expensive and difficult for our times.

The same decline happened to holography museums, which closed one after another. Today, the largest collection of holograms open to the public can be found at the MIT Museum, where many of the first techniques were developed.

Superimposing two holograms on the same plate produces two reconstructions of the object, at different times and under different conditions. Visually, only one object appears, covered in black and white lines. The availability of a fully three-dimensional copy radically changed the way we look at objects, even artistic ones, but it was the presence of fringes the real revolution. From their pattern it was possible to obtain information about the deformations they had undergone and the presence of sub-surface defects that were not visible.

Photographing an interferogram does not reproduce the experience of observing it in real life, precisely because the three-dimensionality is lost.

A real interferogram, i.e. one observed with a laser source, will appear as an exact three-dimensional copy of the object,

furrowed by a series of black and white lines related to the displacements and deformations it has undergone, with a sensitivity of the order of a fraction of a micron.

From an aesthetic point of view, this is a beautiful object in which a technical map is superimposed on the iconographic details.

In the case of art diagnostics, the fringes represent isodisplacement lines. Since surface movements are also linked to any invisible (sub-surface) inhomogeneities, it is as if a topographical map were superimposed on a photograph of a known landscape (the artwork), so sensitive as to show the effects of what lies beneath that known surface.

And, as we have said, they can be graphically striking: cracks are identified by lines reminiscent of swallows drawn by children, resembling large Vs; detachments, the great enemy of pictorial surfaces, are identified by vaguely concentric fringes, hinting at an underlying bubble-like structure. An example on a stone statue is illustrated in Figure 4. Figure 5b shows holographic interferometry on a painting of wood. Between the two exposures, the painting was heated with a flow of moderately warm air; some hidden faults are detected (yellow arrows).

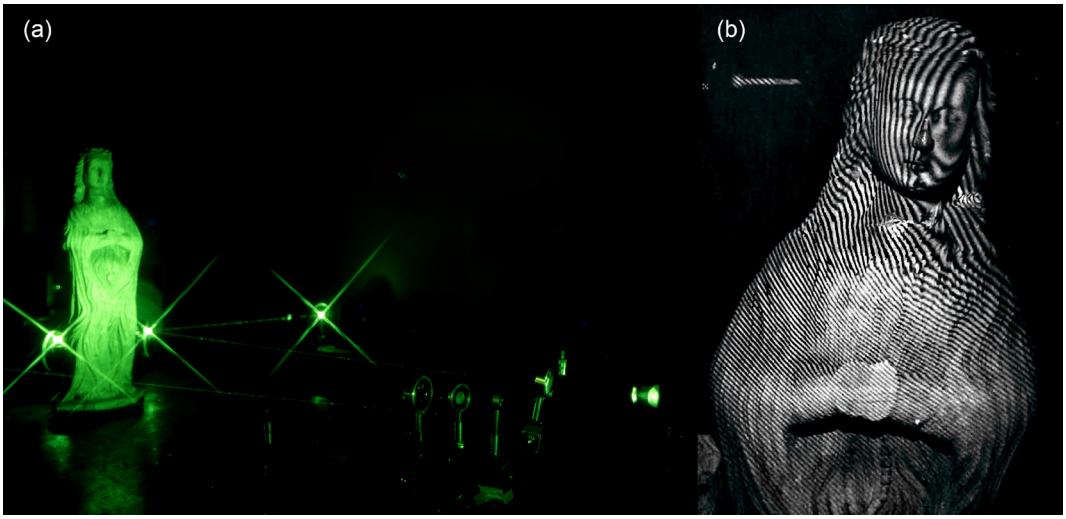

Figure 4 *Maddalena*, stone statue 13th-14th century, Santa Maria di Collemaggio Basilica (L'Aquila, Italy). a) Laboratory setup; b) holographic interferogram revealing cracks. (Paoletti et al., 1989).

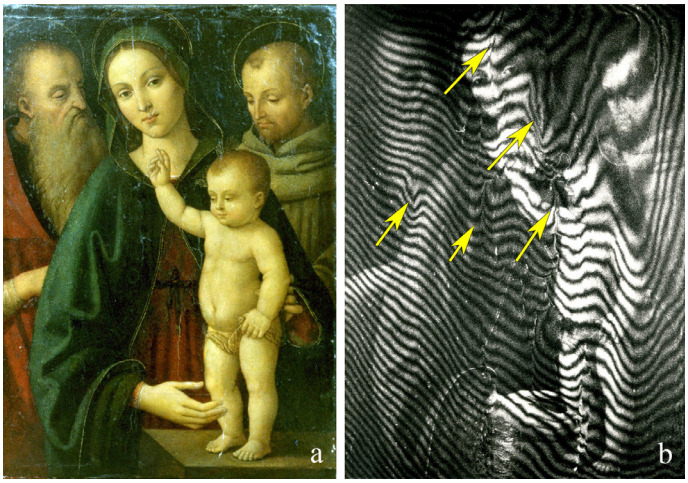

Figure 5 Perugino's school, *Madonna con Bambino*, painting on wood, 15th century, House Museum Signorini Corsi (L'Aquila, Italy). a) visible; b) holographic interferogram revealing defects. (Paoletti & Schirripa Spagnolo, 1996).

IR THERMOGRAPHY

The advent of thermography has added a new dimension to optical methods. With thermography, which has become increasingly efficient thanks to technological developments and is now available, at least for basic applications, on smartphones, it is possible to capture a temperature map and translate it into a false-colour or greyscale image. Once again, a visual image provides information of a different nature: in fact, temperature differences can be used to detect the presence of moisture, assess differences in materials, identify buried structures (such as windows and doors embedded in walls or support frames), and recognize defects below the surface (Ibarra-Castanedo et al., 2008; Ambrosini et al., 2010; Paoletti et al., 2013; Gavrilov et al., 2014). In the architectural field, the identification of buried structures (masonry, arches, etc.) can greatly aid in reconstructing the changes undergone by the artifact.

Figure 6 shows an application of infrared thermography. Specifically, Figure 6b presents the result obtained by applying a quantitative processing called Differential Absolute Contrast (DAC) (Maldague, 2001) to the thermal map. This enhances the visibility of defects, revealing structural features such as the three dark areas –two under the neck of the

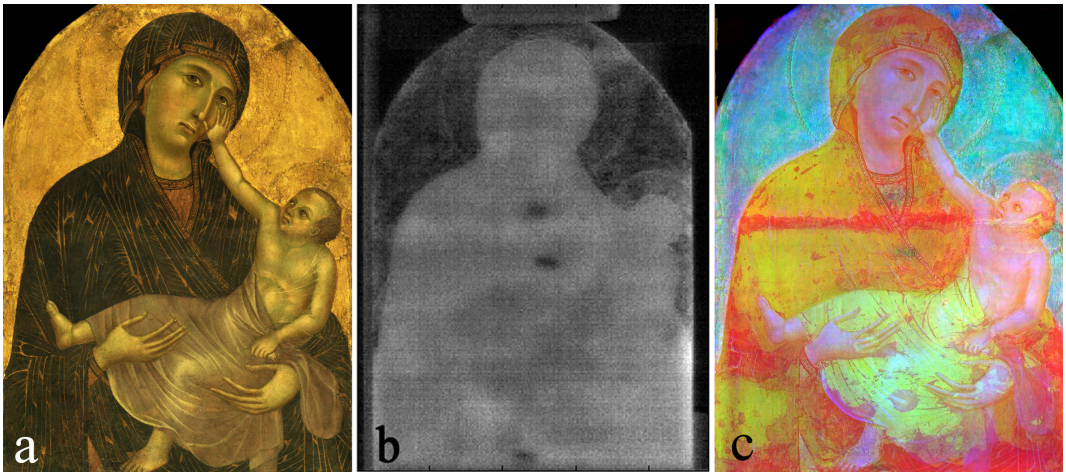

Figure 6 Cimabue, *Madonna con Bambino*, painting on wood, 13th century, Santa Verdiana Museum, Castelfiorentino (Florence, Italy). a) visible; b) thermogram obtained by applying the DAC algorithm (Ambrosini et al., 2010); c) false-color image with IR information from thermocamera mapped as red and IR information at about 1.82 µm mapped as green. (Ambrosini et. al, 2011).

Virgin and one under the left foot of the Child– corresponding to the nails in the wooden panel (Ambrosini et al., 2010).

Figure 6c was created by assigning the thermal map to the red channel, the IR image to the green channel, and the visible green channel to the blue channel. This is an interesting result as it conveys information on both the pictorial layer (restoration and repainting are clearly identified) and the wooden support (the two nails and the horizontal junction of the wooden panels).

CONCLUSIONS

Optical methods have revolutionised the way we study, restore and appreciate works of art. These techniques provide valuable insights into the physical and chemical properties of artworks, offering a glimpse into their historical context and artistic techniques. By employing optical methods, we can explore new avenues in art conservation, enabling restorers to identify and address problems that would otherwise remain undetectable. Furthermore, these methods enhance our appreciation of artworks by revealing hidden details beyond what is visible to the naked eye, shedding light on

the creative process. With the aid of optical methods, we can continue to unlock the secrets of our cultural heritage, ensuring its preservation for future generations to enjoy.

These images are the result of a scientific measurement and are often very beautiful. They convey information about the measured quantities (i.e. temperature, deformation, etc.) while retaining the iconographic features of the artwork. To quote Paul Klee, "art does not reproduce the visible; rather, it makes it visible" (Klee, 1961, p. 76). In this sense, optical methods can be seen as a form of art themselves, as they make the invisible visible.

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Article available at

DOI: 10.6092/issn.2724-2463/18698

How to cite

as article

Ambrosini, D., Ciccozzi, A., de Rubeis, T., Paoletti, D. (2024). Unveiling the Art-Science Tapestry: Optical Methods in Cultural Heritage Conservation and Restoration. *img journal*, *10*, pp. 78-91

as contribution in book

Ambrosini, D., Ciccozzi, A., de Rubeis, T., Paoletti, D. (2024). Unveiling the Art-Science Tapestry: Optical Methods in Cultural Heritage Conservation and Restoration. In S. Brusaporci (Ed.), *img journal 10/2024 Imagin(g) Heritage* (pp. 78-91) Alghero, IT: Publica. ISBN 9788899586461

FROM ARCHIVES OF LOST ARCHITECTURE TO AR. CANONICA'S FARMHOUSES FROM THE XIX CENTURY TO THE PRESENT DAY

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ARCHIVES
MODELLING
EPISTEMOLOGY
HERITAGE

The tangible and intangible traces of our heritage are the means for reconstructing the image of our history; in the context of today's technological advancement VR and AR are pivotal tools for reconstructing and narrating this reality. The pervasiveness of 3D reconstruction, however, requires reflection: how do we validate the products of these techniques within a broader scientific society, and how do we consider reconstructions of our heritage appropriate? In the case study here presented we will deal with the reconstructions of some rural complexes in the Park of Monza that no longer exist because they were demolished in the last century; these rural buildings had been built with specific functions to support the park and the life of the royal palace, which had lost their reason to exist when the productive life of the court had ceased. However, the hand that had built them had left several realizations that have come down to us, making the digital reconstruction with a strong hypothesis of verisimilitude.

INTRODUCTION

In this paper, we will address the methodological utilization of archival images and historical documents as materials for the reconstruction of some no longer existing historical heritage building and its context. Additionally, we will explore how the logical structure of these reconstruction processes can be validated. The archival image heritage of our Cultural Heritage has historically served as the foundation for the philological reconstruction of a heritage that no longer exists, as well as for the dissemination of its historical and educational contents. However, the coherence of reconstructions from archival images, as well as from historical narrative documents, and their validation, is still far from being conclusively established (De Luca, 2021).

The reconstruction of a building that no longer exists involves elements of creativity, while scientifically addressing issues related to scale, measurement, materials, uses, and the accuracy of previous surveys (Aubergel, 2021). Reconstructions of our past can therefore give rise to various interpretations; reconstructions, not only from a geometric standpoint, can lead to the dissemination of outright falsehoods (Piazzoni, 2020).

The epistemological debate regarding the implementation of virtual reconstructions is currently in its early stages. The literature has begun to systematically address these issues, starting with archaeological reconstructions, and progressing to Renaissance reconstructions (Apollonio, 2016), as well as in more recent works (Opgenhaffen, 2020). Currently, the debate is expanding to include computational calculation techniques and artificial intelligence (Croce, 2023), as well as the use of machine learning techniques (Croce, 2021) as tools to support reconstruction hypotheses or interpret existing artifacts (Spallone, 2020).

However, alongside scientific experiments, driven by the opportunities provided by digital survey and modeling tools and market returns, virtual reconstructions

have also captured the interest of other sectors. Virtual reconstructions have become part of tourist and museum routes, as well as in the realm of edugames (Mac Millan, 2019) or standalone video games. In this way, freed from the specific scientific coherence requirements of the academic world, virtual reconstructions have softy permeated culture with alternative images and models that may not necessarily align with historical contexts. Consequently, a world of digital copies has emerged, not necessarily coherent but ready for reuse in the digital domain, thereby spreading potential misinformation.

THE STATE OF THE ART IN RECENT RESEARCH

A common ground for defining the domains of disciplines related to digital reconstructions can be synthesized from their capacity to comprehend, understand, and utilize images or models. This includes the ability to learn and teach through images or models rather than textual content (Munster, 2020).

In this context, 'visual digital humanities' encompass research modalities that pertain to both the consumption and production of images and models, rather than textual content. In recent years, European research has dedicated efforts to this topic through projects of varying scales related to 3D modeling in Cultural Heritage, primarily focused on the 3D dimension derived from digital survey data of existing entities. Projects such as *INCEPTION*, *3DIcons*, and platforms like *DARIAH* (Digital Research Infrastructure for the Arts and Humanities.) are indicative of an open debate between analysis procedures and models to be validated through complex workflows and methodological standardizations.

Simultaneously, other projects such as *Time Machine* (Time Machine Europe-Adding a new dimension to the past) facilitate the interpretation of multiple historized documents and sources of different origins to reconstruct databases of

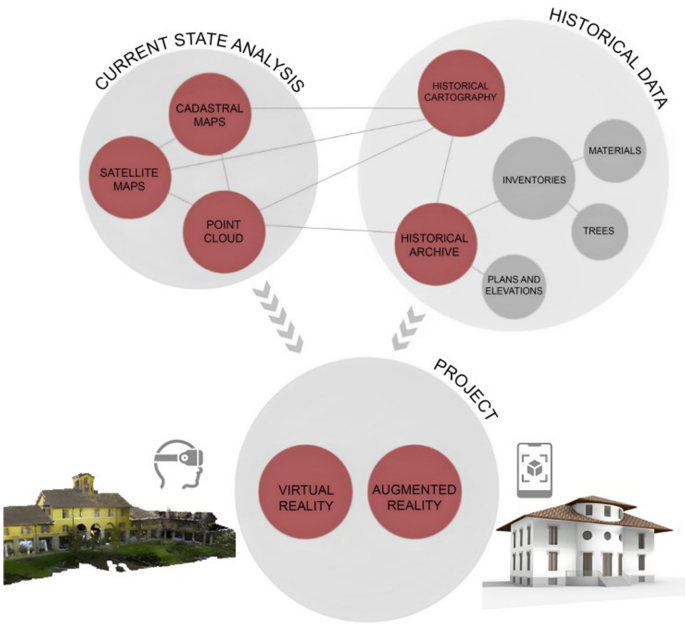


Fig. 1 Bassorizzi, 2023. Reconstruction image of the relationships between historical data, current state, and reconstruction hypotheses.

objects and scenes that no longer exist. This involves merging the vanished past with updated digital technologies, creating a digital information system designed to map economic, social, cultural, and geographical evolution over time. In this process, digitization remains the initial step in a series of data extraction processes from historical documentation, which includes segmentation and comprehension of documents

THE CASE STUDY

The history of Villa Reale begins during the Austrian reign of the 18th century when Empress Maria Theresa of Austria commissions architect Giuseppe Piermarini to build a summer residence for the archducal court of her son, Ferdinando d'Asburgo-Este, from 1771 choosing Monza as the location of a symbolic link between Vienna and Milan. Between 1777 and 1780, the Villa and its Gardens are constructed, characterized by neoclassical rationality and formal taste, respectively; the

Monza Park and the adjacent park of the Royal Palace are the result of a series of projects aimed at establishing royal gardens and a vast green lung, beginning in the year 1771. These endeavors were initiated by Grand Duke Ferdinand of Habsburg himself, initially assisted by Piermarini.

Over time, the park projects witnessed the evolution of green design concepts, initially following the principles of the French garden and later adopting the English style, under the guidance of architect Luigi Canonica.

Later on, Following Napoleon's coronation as King of Italy in 1805, Viceroy Eugène de Beauharnais establishes his residence in Villa Reale and proposes transforming a vast area north of Monza, abundant with particularly rich and diverse vegetation, into a Park. The Napoleonic intent is indeed to transform the Park into a hunting estate and a model productive company, rather than a simple leisure garden for the courtiers.

The inception of Monza Park unfolds as a protracted, articulated, and intricate process, primarily due to its

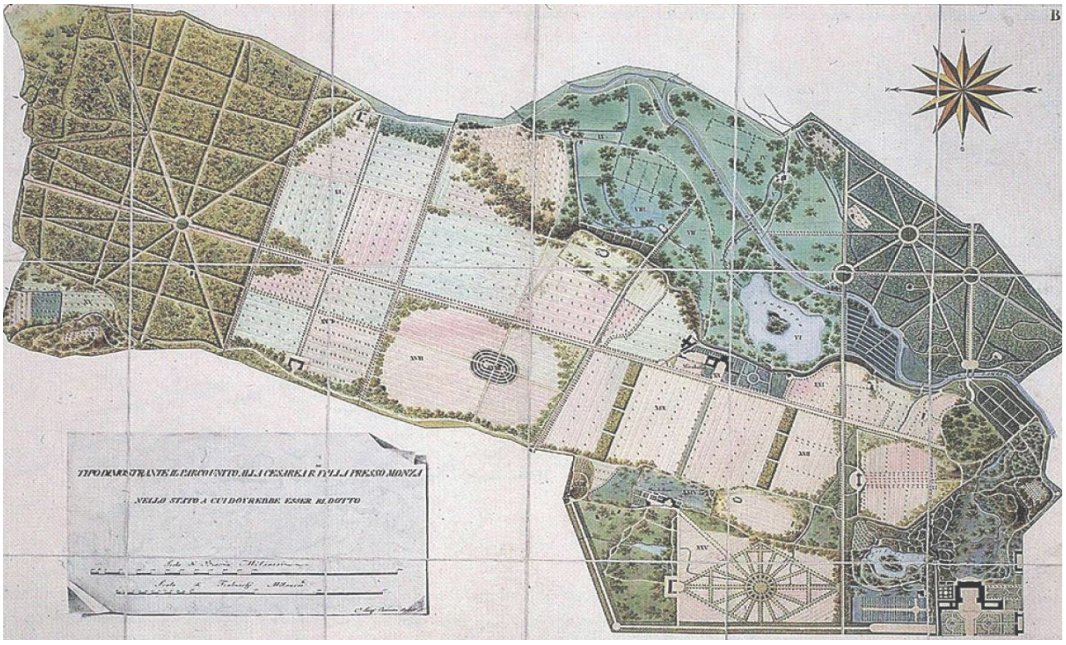


Fig. 2 Masterplan of Monza Park by L. Canonica 1815, State Archive.

realization being preceded by the acquisition of requisite land. Following the completion of the land acquisition process, the project commences to materialize: the design embodies a comprehensive vision of the park, drawing inspiration from modern landscape garden principles and reaching back to Renaissance influences. Architect Luigi Canonica, a prominent figure in Lombard Neoclassicism, assumes leadership, shaping an expansive landscape to complement the existing Gardens of the Villa.

In the initial phase, Canonica dedicates efforts to crafting an extensive landscaped area spanning over 700 hectares as an extension of the royal residence. This entails creating ample green spaces and a diverse array of architectural and decorative elements. The park emerges from the acquisition and merging of new lands adjacent to those already owned by the court. Consequently, the architect focuses on establishing a complex spatial organization, comprising three main areas: the Reggia area, the central zone, and the agricultural zone. The Reggia area encompasses the Royal Palace, its gardens, footpaths, parks, and fountains. The central zone features vast meadows and centuries-old trees, adorned with a diverse array of flowers and ornamental plants. The agricultural zone, situated to the west of the park, is characterized by farmsteads, orchards, and cultivated fields.

With the perimeters and functions of the individual parts established, Canonica shifts focus to creating new architectural and decorative elements within the park. The aim is to craft a natural and lush environment distinguished by high-quality architectural and decorative features. In this phase, Canonica is commissioned, and he himself commissions the realization of various architectural structures, including the Temple of Diana, the Royal Pavilion, the Mirabello farmstead, Porta Monza, and the Lambro Bridge. All are constructed with meticulous attention to detail, utilizing high-quality materials and innovative construction techniques, thereby setting benchmarks for subsequent Park buildings. Canonica's interventions on

farms and mills exemplify 'cultivated rural architecture', representing minor architectural episodes with a controlled, elegant, and solid aesthetic. These changes are enriched by a chromatic interplay of different materials and references to the rural tradition of Brianza.

Parallelly, alongside the significant work of construction and restoration, there is an equally complex task of landscaping entrusted to gardener Luigi Villoresi. This involves maintaining existing elements and integrating them with the addition of thousands of new plants, regularization of plots designated for agricultural activities, and more.

Napoleon envisioned the park not only as a place of delights but also as a standalone agricultural production enterprise. The first function is fulfilled through an extensive reforestation and repopulation plan for wildlife, facilitating hunting expeditions. The second function is made possible by arranging a series of agricultural lands cultivated for fruits, vegetables, and hay, along with the construction of mills and rural buildings for the processing of raw materials.

Canonica's work: examples and typologies

Canonica introduced significant innovations in the design of the park, including the modification, demolition, and reconstruction of all rural buildings within the area. These works were then continued by his successor Giacomo Tazzini.

The existing architectural heritage at the establishment of the park was quite modest: single-story, single-body buildings following traditional distribution, serving essential functions for managing the countryside. In the modified farms, a floor was added to separate residential functions from animal shelter functions often. This pattern evolved in the second half of the 19th century into the creation of agricultural complexes composed of multiple buildings, each dedicated to distinct and independent functions.

In the distribution system, the scale connecting the floors is always external, protected by a portico, leading to a balcony providing access to the rooms. The roof and floor

structures are consistently made of wood with a covering of clay tiles. The load-bearing masonry is constructed with solid bricks (given the ample availability of clay) and coated with plaster obtained from a mixture of sand, a small amount of lime, and readily available farm materials like straw, blood, or pig fat as binders. For coloring, generally green, pink, or ochre yellow, colored sands are used.

Buildings designed by Canonica maintain simple lines and a single body, with modifications involving the addition of porticoes attached to pre-existing structures. Tazzini's intervention, on the other hand, was certainly more decisive, often resulting in changes to floor plans, the addition of new floors, turrets, side wings, etc.

In their entirety, all the farmsteads in the park still constitute a significant example of high-quality Lombard rural architecture. They were constructed for specific service functions while simultaneously needing to embody an image of prestige and power for the court (Regione Lombardia, 2023). However, what has come down to us today pertains only to a portion of the constructions from that era.

Within Monza Park, at least eight farmsteads disappeared during the 19th century, some of which were modified by

Fig. 3 Reconstruction of Cascina Piotta.

Fig. 4 Reconstruction of Cascina Monzina.

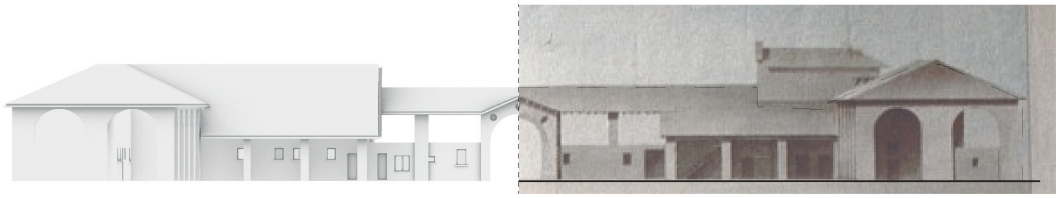


Fig. 5 Reconstruction of Cascina Monzina compared with an archive drawing.

Canonica in the first two decades of the century. For some of these, Canonica himself suggested their demolition due to their deteriorated conditions and the limited architectural value of the buildings, while others were simply torn down when they ceased to serve their original functions.

Documentation for these eight examples, however, remains in the project archive at Canonica's Mendrisio, Switzerland location. Among them is Cascina Caimidi, whose original attribution is uncertain. It was demolished in the second half of the 19th century, having previously served as a residence for hunters and a kennel. Cascina Colombirolo, also of uncertain attribution, was built between 1809 and 1817, later demolished in the 19th century, previously used as a stable. Cascina Michelona, of uncertain attribution, was demolished around 1817, having previously been utilized as a nursery.

The following farmsteads –Geroncello, Latteria, Monzina, Passerina, Piotta– were all modified by Canonica between 1805 and 1818. During this time frame, he reworked the buildings by adding stables, poultry houses, porticos, sometimes additional rooms. However, all were demolished in the second half of the 19th century, leaving their names in the toponymy of the park. Nevertheless, the floor plans and some views are preserved in the Mendrisio archive.

A FAITHFUL RECONSTRUCTION

The case presented here concerns the reconstructive hypotheses of some farmsteads modified by Canonica that no longer exist but were located within Monza Park or the

adjacent park of Villa Reale. These structures belonged to a specific historical phase of the Park, coinciding with the implementation of Canonica's initial project. They aligned perfectly with openings and orientations towards meadows or woods created with specific scenographIC designs, featuring a morphology of specific tree species. The following procedures were employed for the digital reconstruction of these examples:

1. 3D acquisition of existing parts of similar adjacent buildings;
2. Previous 2D surveys of existing parts;
3. Original project documents;
4. Non-metric iconographic sources of the studied artifact (prints or similar);
5. Metric and non-metric iconographic sources related to artifacts similar to the studied one.

All these sources were used for the reconstruction of the historical threshold of Canonica's Park monumental project. The current state of affairs and the still-existing green areas are no longer exhaustive as the park has been repeatedly modified over time. A comparison between the present situation and certain iconographic sources became necessary.

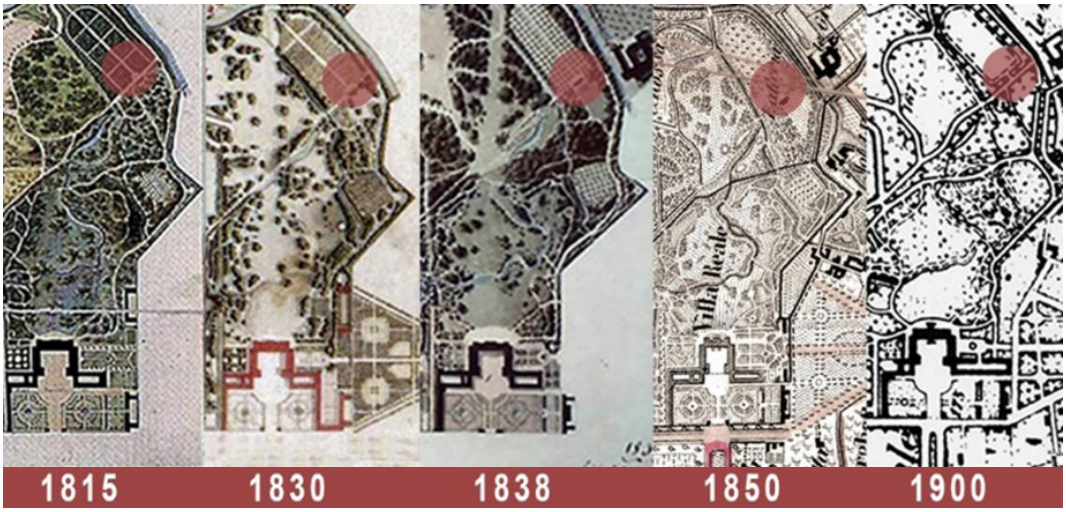


Fig. 6 Historical thresholds related to changes in the gardens, in the fusion between the English and French gardens. In red, the location of the Dairy Farm.

As documentary sources for the reconstruction of the no-longer-existing farmsteads, drawings from the Luigi Canonica Collection in the Modern Archive of Mendrisio were utilized. The documentary sources from Monza Park (Pellissetti, 2009) include survey and project drawings by Piermarini, Luigi Canonica, and Giacomo Tazzini. Through a rigorous and constant comparison of site plans for the expansion of the park with views and images, it became possible to reconstruct the context in which Luigi Canonica's project was realized. Historic site plans and drawings of the farmsteads that dotted this context are preserved.

THE SPACIAL LITERARY RECONSTRUCTION

In the process of reconstruction based on the iconography preserved in the archives of Mendrisio from the Canonica collection and project drawings, the reconstruction of the Monzina, Geroncello, Piotta, and Latteria farmsteads was carried out. The 3D models of the demolished farmsteads required special attention focused on studying their original locations, as the areas where they were once built and later demolished have undergone significant changes. An illustrative example is the Latteria Farmstead, constructed on a pre-existing building between 1805 and 1818 and demolished in the second half of the 19th century. Creating a natural and lush environment around the farmstead is crucial for recreating the design and rural atmosphere of the past, enhancing the authenticity of the virtual environment for potential visitors.

For the Latteria Farmstead, it was possible to verify its original location in the corresponding green area in the current state. In Luigi Canonica's project for the Latteria Farmstead, the building consists of a three-story structure with a rectangular footprint and a hipped roof. The central feature includes an elliptical hall arranged over two floors. Canonica's design demonstrates his skill in combining the

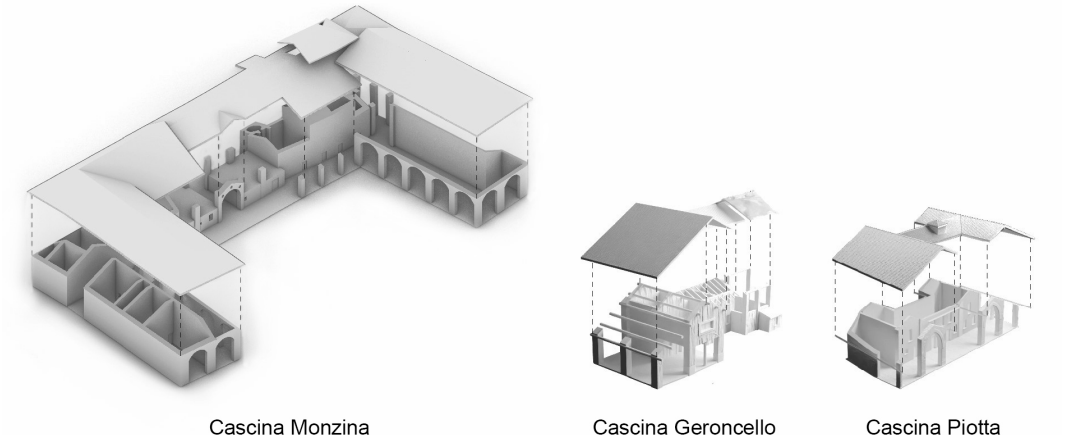
functional requirements of the building within a structure with classical and prestigious features. The facade is adorned with neoclassical elements, providing an elegant touch. With the demolition of the farmstead in the 19th century, the associated green space, designed with a specific optical telescope, lost its original distinctiveness.

The phase of creating the 3D model relied on the original historical documentation produced by Canonica, utilizing the project drawings found in the archive, composed of a detailed project description sheet at a scale of 1:100 (Russo, 2021). Proportions and geometric shapes were directly derived from the document, while for material processing, reference was made to buildings still existing within the park that were constructed by Canonica. From the same period is the restoration of Casalta Vecchia, not far away, later modified by Giacomo Tazzini (Diego, 2001).

The use of NURBS surface modeling software, employing extrusions and the application of textures specifically

Fig. 7 Longitudinal section of Casalta, both old and new, with stylistic elements and materials used for the reconstruction of Latteria Farmstead.

Fig. 8 Decomposition of the general structure of the reconstructed farmsteads.



created and extracted from other existing buildings within the park, allows for a virtual representation faithful to archival documents. Using the same approach, the vanished architectures on which Canonica had worked were then recreated.

THE DOCUMENTED ENJOYMENT OF NEW SPACES

To allow visitors to the Monza Royal Villa Park to explore the history of both existing and lost farmsteads over time, it was decided to develop a prototype smartphone application utilizing augmented reality (Palma, 2019). In this way, walks can not only benefit from the existing heritage but also provide a view of what is no longer there, placed in its original location. For managing augmented reality, the 'Vuforia' plugin was chosen, a mobile software development kit enabling the creation of augmented reality applications, integrated into the 'Unity' asset, a cross-platform graphic engine allowing the creation of interactive content such as architectural visualizations and real-time 3D animations. To use the augmented reality function through the Vuforia software, some modifications to Unity settings are necessary. The first step involves inserting the AR Camera into the settings, representing the device's camera on which the application will be used. Subsequently, the image target is loaded, acting as a visual marker for augmented reality creation. For each of the farmsteads, the corresponding site plan was selected as the image target. By pointing the camera of any smartphone device at it, users can visualize the respective three-dimensional model through augmented reality technology.

To add the image target, a new database was created on the 'Vuforia' website. Subsequently, the package of the new database is downloaded and imported into 'Unity', where the scene is organized by selecting the elements that will be displayed by the AR application on the device.

Fig. 9 General process from modeling based on archival documents to placement on-site through augmented reality (AR).

The final phase of the project involves incorporating the image targets into dedicated boards that provide specific information about the examined phase, enhancing and enriching the AR visualization.

CONCLUSION AND NEXT STEPS

This paper traces the development of a modelling for an immersive use of a series of buildings that no longer exist. The accuracy of the modelling and the coherence with previous realizations was made possible by previous survey work and in-depth analyses carried out on the still existing farmsteads in the Park; it is only scientific expertise, with the geometric study of the proportions and in-depth study of the building techniques of the period that made it possible to reproduce and place the models exactly on the Canonica project drawings.

There is a close relationship between the materials of historical documentation and the modelling of an artefact that no longer exists, where knowledge of the typologies and architecture canonica built in the period of his time play an important role. Stylistic features such as stone arches, large trusses of existing buildings, cornices in masonry and others were reproduced in the existing modelling. In the future space of this research, the benchmarks to be used for the faithful reproduction of the models will be increasingly codified in the search for an effective validation of the models, created with a view to offer immersive experiences that are playful yet effective for the preservation of our architectural heritage.

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Article available at

DOI: 10.6092/issn.2724-2463/18702

How to cite

as article

Bolognesi, C. M., Bassorizzi, D. (2024). From archives of lost architecture to AR. Canonica's farmhouses from the XIX century to the present day. *img journal*, *10*, 92-109.

as contribution in book

Bolognesi, C. M., Bassorizzi, D. (2024). From archives of lost architecture to AR. Canonica's farmhouses from the XIX century to the present day. In S. Brusaporci (Ed.), *img journal 10/2024 Imagin(g) Heritage* (pp. 92-109). Alghero, IT: Publica. ISBN 9788899586461

THE DISCOVERY OF ABANDONED VILLAGES IN ABRUZZO. EXPLORING THE POTENTIAL OF DRAWING AS A RESEARCH METHOD

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SMALL TOWNS
DRAWING
ABANDONMENT
ATLAS
ABRUZZO

This research underscores the vast importance of architectural drawing in the examination of cultural and material heritage in hamlets grappling with a slow abandonment. The representation of towns and villages holds great significance, as it forms the basis for potential architectural, economic, and social endeavours, while also enabling the establishment of communal areas where diverse communities can nurture their shared visions. In order to delve deeper into the subject, an atlas of municipalities in Abruzzo with populations below 500 offers a remarkable chance to stimulate reflection on the factors influencing a drawing that can shape narratives of abandonment through the use of various descriptive methods and tools. Moreover, this endeavour allows for the exploration of new avenues for future sustainable development and revitalization, fostering a sense of identity and gaining pride within these communities.

In today's world, there is a growing need to study and document the different heritage of material and immaterial cultures found in small towns at risk of disappearing due to a slow but inevitable demographic decline. This heritage is acknowledged to play a crucial role in shaping a collective future for towns, regardless of their size or location, whether they are considered central or peripheral, coastal or mountainous – regardless of the dichotomies we use to describe this intricate and elusive reality.

By researching and recording the rich heritage of these endangered hamlets, we can acquire valuable knowledge about their past, customs, and way of living. This information enables us to recognize the distinctiveness of each culture and promote a greater comprehension and admiration for our collective culture. It is through the safeguarding and exploration of cultural heritage that we can lay the groundwork for a more encompassing and interconnected global community.

The significance of this heritage should not be overlooked, as it is through the examination and recording of these cultures (both tangible and intangible) that we gain insight into the lives and perspectives of individuals from diverse locations and eras. This comprehension allows us to create spaces of empathy amidst communities and cultures that are growing further apart. Furthermore, the exploration of this legacy is not solely a subject of intellectual inquisitiveness, scholarly fascination, or historical conservation. This legacy also serves as a crucial economic and social asset that can be utilized to generate employment opportunities, stimulate tourism, and foster the sustainable advancement of mindful communities. By embracing a comprehensive approach to the portrayal and safeguarding of heritage, we can guarantee its enduring vitality and influential role in the advancement of regions.

The challenges related to preserving the heritage of small towns are varied and plentiful. Tackling these challenges necessitates a collaborative approach that

includes multiple disciplines, along with the involvement of civil society and the private sector. However, the advantages of this endeavour are clear and go beyond simply documenting historical structures and artifacts. By studying and promoting our shared heritage through various methods, we also invest in our collective future and lay the foundation for a fair and economically viable future.

Small towns are gaining increasing recognition as significant contributors to today's discourse. This recognition is largely attributed to various exhibitions (Cucinella, 2018), studies –such as the publications coordinated by Carmine Donzelli on the topic of depopulation (Lucatelli et al., 2022); (Barbera & De Rossi, 2021); (De Rossi, 2020); (Cersosimo & Donzelli, 2020)– and conferences (Oteri & Scamardì, 2020; Pignatti, 2020; Fiore & D'Andria, 2019) that have highlighted their strategic importance and potential.

Small municipalities have always played a crucial role in history, but in the current socio-economic climate, their significance is even more apparent, albeit seemingly peripheral. This is occurring during a time when there is a complex crisis involving cultural, economic, and technological paradigms, which are prompting a re-evaluation of the tenets of post-industrial and liberalist progress. This model has long been seen as inevitable because it is supported by a widespread and global digital network.

Historians, economists, and technologists are currently reassessing the assumptions that underpin the concept of infinite growth. The question arises as to whether progress can truly be synonymous with such growth and whether a global digital network can genuinely be seen as 'ubiquitous'. In this ongoing discussion, small cities, with their resilient social and economic structures, can be seen as vital components. Furthermore, small towns provide a distinct viewpoint on the

ongoing crisis that has impacted all facets of contemporary life. By studying how they are adjusting to this crisis, researchers and policymakers can obtain valuable insights into the difficulties confronting larger cities. Small towns have always shown their ability to bounce back and can showcase their resilience once more in the midst of this crisis.

As noted by Pierluigi Sacco (2020), this is a good time to consider the future of peripheral areas. Sacco em-

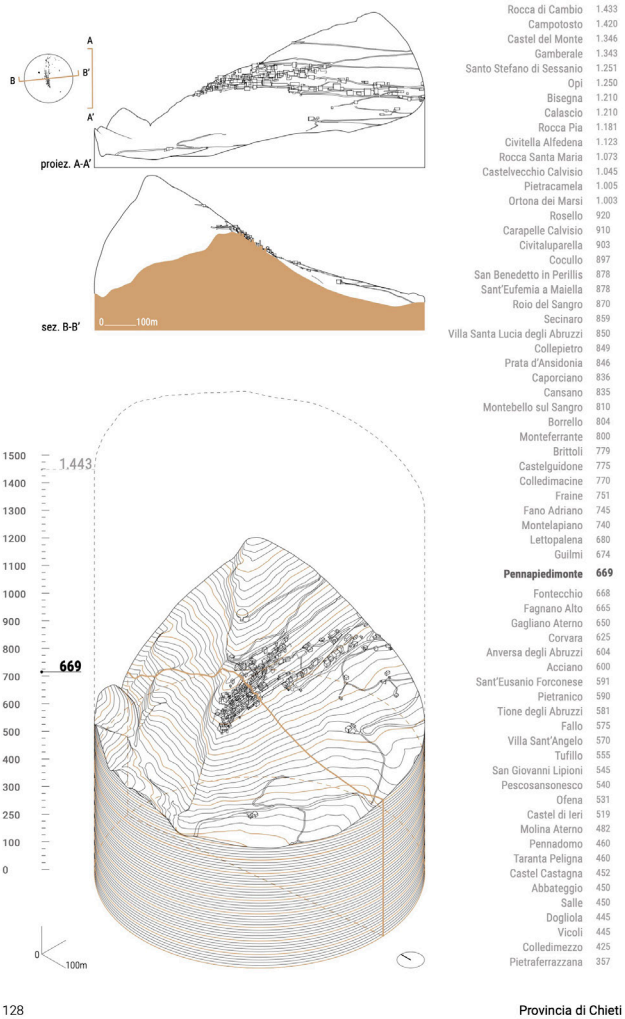


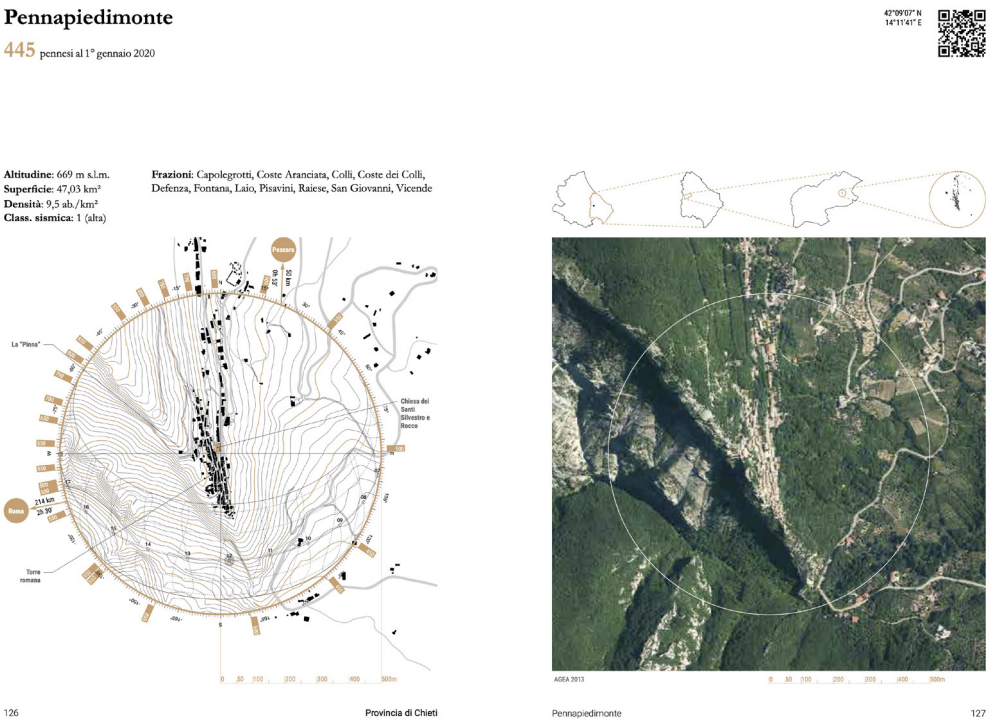
Fig. 1 This isometric axonometry shows a portion of the municipality territory of Pennapiedimonte (CH). It aids in understanding the connection between the village and the surrounding topography, as well as comparing the village's elevation with that of other regions. The page contains noteworthy sections and a frontal orthogonal projection of the model. The images presented here serve as an illustration of the research, analysis, and drawing efforts undertaken in *Atlante dei borghi solitari d'Abruzzo* (Caffio, 2022).

phasizes that during a crisis that disrupts the connectivity of the system, we come to understand the crucial significance of proximity, local social micro-networks, and community social capital. These factors allow us to direct our attention and concern towards even the most vulnerable aspects of society, highlighting their important role in our society and economy.

Italy has successfully launched numerous projects and initiatives that have turned marginalized situations into opportunities for cultural and territorial development. These efforts have created new spaces where culture and society can establish positive connections.

The State has taken a significant step in safeguarding smaller towns with the implementation of the 'Save Villages Law', Law No. 2541 of 27 September 2017. This law establishes a fund of 100 million euros until 2023 to carry out measures aimed at restoring abandoned historic centres or those facing depopulation risks. The law builds upon the 2013 *National Strategy of Inner Areas*, which was promoted by the Agency for Territorial Cohesion. The most recent initiative is the National Village Plan within the PNNR, which aims to revitalize 250 villages. Among these, 21 have been identified by the regions, while the remaining 229 have been selected through a public notice.

However, there are several initiatives by associations and individuals aimed at promoting these villages. These include the Club of the 'Most Beautiful Villages in Italy' and the 'Bandiere arancioni' program of the Italian Touring Club. Additionally, there is a vibrant and active network called BorghiIN, established by Confcooperative Abruzzo (*www.borghiinrete.it*). In addition to the proposals organized at the national and regional levels, many ideas also arise from the grassroots level. These bottom-up experiments stem from the formation of a network among individuals living in or visiting specific areas, who have chosen to collaborate and en-



vision new ways of living and enhancing their surroundings. In these seemingly stagnant and neglected areas, one can observe the presence of active energies. There are forces that leverage community dynamics and aim to establish connections between networks, tapping into their untapped resources and talents. They achieve this by staying attuned to social and cultural changes, as demonstrated by ongoing initiatives in the energy community and repopulation efforts, such as those in the municipality of Gagliano Aterno in the province of L'Aquila.

When examining the situation in Italy, both at the national and local levels, a fragmented and disorganized picture becomes apparent. This disarray is a result of the continuous enactment of laws and announcements, as well as the existence of multiple seemingly contra-

Fig. 2 Each municipality is described through a fact sheet consisting of six pages. The first page provides a summary sheet with essential data, such as altitude, surface area, population density, seismic classification, and the hamlets within the municipality. It also includes a planimetric representation at a scale of 1:10.000, created from the Regional Technical Map at a scale of 1:5.000 (available on the Abruzzo Region Geoportal, updated in 2007). The second page displays the coordinates of the location (latitude and longitude) in the top right corner, along with a QR code that links to a Google Maps page. At the bottom, there are graphs showing the municipality's location in relation to the Region and Province it belongs to, as well as its territorial extent. In the centre, there is a satellite image (Orthophoto 1:10.000 [2013] AGEA - exec. flights RTI BLOM CGR - e-Geos) for direct comparison with the plan on the left page.

dictory strategies and visions to address the pervasive issue of abandoned villages.

Some initiatives aim to revitalize small towns by implementing tourism-based economies or enhancing capital. Others are exploring new models of economic development that involve both permanent and new local community members, encouraging cultural and productive innovation.

Although many research studies have explored and studied numerous experiments and initiatives in innovation, creativity, and grassroots-level planning, these efforts are often sporadic and fragmented, resulting in a lack of significant and widespread impact.

We can observe the coexistence of various perspectives: from an interventionist approach, whether it comes from higher authorities or grassroots movements, to a viewpoint that acknowledges the inevitable decline of the remaining population centres. The latter presents a pragmatic and realistic scenario, albeit one that may challenge our emotional connection to the past, particularly when the conditions for its preservation no longer exist. One might question the value of opposing a phenomenon that could be seen as just another part of humanity's ongoing evolution and quest for new habitable areas (Cocco, 2016, p. 22). The objective of revitalizing villages to their former state needs to be reassessed considering the substantial economic and social transformations that have occurred.

In addition to this fatalist view, we can consider an intermediate perspective that acknowledges the impracticality of preserving the heritage of all countries due to limitations in resources and expediency. Instead, efforts can be focused on a select few cases while implementing appropriate strategies to mitigate the risks, decline, and environmental crises faced by the others (Curci & Zanfi, 2020). We cannot determine which of these roads will ultimately succeed. All of them

have the potential for success, or none of them may succeed, or only some may succeed in specific locations. However, it is evident that we possess a rich heritage of architecture, landscapes, memories, and cultures that serve as a valuable resource for society. We must not allow this heritage to diminish without engaging in collective thinking and action. Each individual can contribute to this endeavour using their own knowledge and skills. The purpose of these pages is to explore how representation can aid in research on the depopulation of villages in Abruzzo. Alongside collecting, organizing, analysing, and presenting quantitative data on the identified areas in the four provinces of Abruzzo, we have adopted an adaptive and inclusive approach to representation. By incorporating other visual fields and methods such as nomography and photography, we aimed to encourage conversations and connections. Ultimately, the drawings produced will be interpreted by readers, who may be urban residents eager to learn more about the lesser-known inland territory or the villagers themselves, who will see their own territory recognized and analysed from a fresh perspective.

Drawing is not considered a work of art in itself, but rather an open and receptive space capable of accommodating a wide range of information. It serves as a fertile ground where disciplines such as architecture, history, economics, demography, and photography can converge and be compared. Through their interdisciplinary interplay, these disciplines can collaborate to offer valid interpretations, decode ongoing changes in processes, and establish a solid foundation for making informed decisions and anticipating potential solutions.

The atlas (Caffio, 2022) poses an open challenge to representation: can a drawing effectively convey the loss and disappearance of objects and people? Is it possible for a drawing to depict both what exists and what is absent? The drawings in this atlas strive to material-

ize stories of abandonment by capturing the essence of architectural elements, bridging the present with the near and distant past. As Manlio Brusatin (1993, p. XI) writes:

> In the beginning, there is a line on the horizon where before there was almost nothing. And afterwards, there is a high and a low, a right and a left, a right and a wrong, a beginning and an end: the encircle-

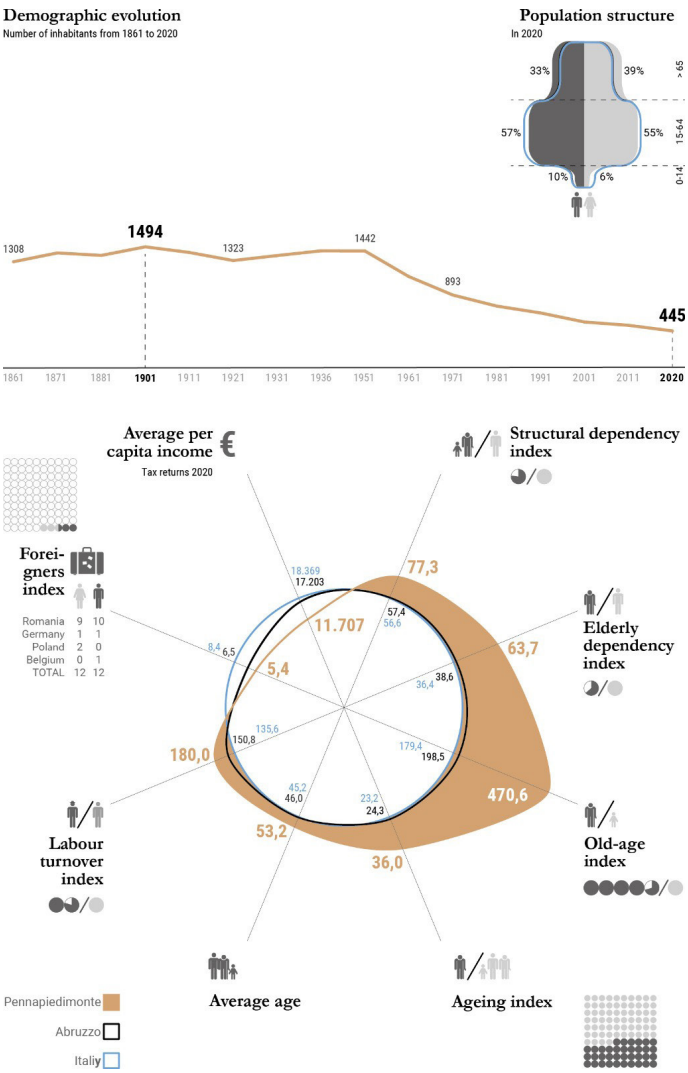


Fig. 3 The data design includes an infographic with several diagrams based on Istat sources (https://demo.istat.it/). These diagrams depict the evolution of the demographic trend from 1861 to 2020, the structure of the population in 2020 by gender within three main age groups (0-14, 15-64, and over 65), and a comparison of this data with the situation in Abruzzo and Italy. Additionally, there is a radar chart that visually summarizes key demographic indices, such as the foreigners index (the percentage of foreign population in relation to the total population) and the average per capita income of the municipality for the 2020 - 2019 tax year.

ment of our own sight. Any line cannot be crossed in vain because it is never firm or because it becomes too high. A line unites, yes, but also divides. It becomes an arrow with an elusive, now-violent direction that breaks the heart.

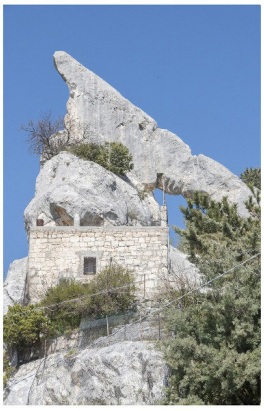
The drawings in the atlas aim to create a deliberate ambiguity, achieved by using 'abstract objects' like numbers and demographic indices, along with their diagrammatic forms, as well as 'objective abstractions' such as terrain sections and orthogonal projections of three-dimensional models. The drawings use the same elements of language –lines and points– but they depict different spaces: solid mineral matter of geology and architecture on one hand, and the ephemeral and constantly changing matter of demographic data on the

Fig. 4 Each municipality is accompanied by a brief text description that indicates its geographical location, urban structure with its main buildings and historical monuments, as well as a selection of photographs taken by architectural photographer Giuseppe Marino.

Pennapiedimonte is located on a steep rocky ridge overlooking the Avello river valley, on the slopes of the eastern slope of the Maiella. The dwellings, with walls made of local stone, have the characteristic of being partly dug into the rock, a very ancient custom as witnessed by the presence of rupestrian houses in the area. The urban layout precisely follows the contour lines according to a north-south orientation and is characterised by narrow, steep steps, only passable on foot, connecting the different levels.
Archaeological traces show that the area was already inhabited in the 6th century B.C. and a Roman tower, now incorporated into the village and housing the local museum on the Italic necropolis, indicates that the village was under Roman control from the 3rd century B.C. onwards.

The original part was located higher up, on the Avella gorges, and controlled several hamlets (Famocchiano, Ugno, Civitas Pinnae and Borgo Lucina) that were abandoned over time, leaving only that of Penna, today's Pennapiedimonte. Today, the hamlet's most important architectural feature is the Church of Saints Silvestro and Rocco located in the lower part of the central Piazza Umberto I. Dating back to the 18th century, it has a Baroque façade flanked by a square bell tower.
At the top, however, is the 'Cimirocco' (literally 'at the foot of the mountain'), a rocky spur or fin that forms a natural arch and which tradition associates with the goddess Maja. The municipality is part of the Majella National Park.

130 Provincia di Chieti



Pennapiedimonte 131

other. The representations are intentionally impartial, achieved through the use of a highly symbolic code that addresses the fundamental question of perception: we can only see what we know, and we know what we see.

Representation is viewed as an ongoing exploration of the nature of design and its applications. It also examines the interaction between perception and the represented object, as well as the possibility or impossibility of such representations.

The process of creating signs helps to reveal hidden aspects of reality while also making the already obvious aspects less noticeable. It is a strategy to overcome the challenge of perceiving reality, which can be influenced by everyday familiarity or cultural biases shaped by collective imagination. For instance, the commercial stereotype of the village as a charming and idealized place from the past (Barbera et al., 2022).

This decision enables both the artist and the viewer to shift their attention. The artist emphasizes the anonymity and intricacy of the depicted object, while the viewer concentrates on the ambiguity of the depicted object.

The gaze shifts across the drawings, alternating between what is visible and what is not. This constant fluctuation continually modifies our perception and thoughts, creating a space that is not conducive to definite, unquestionable observations, but is abundant in subtleties: a misalignment between thought and vision.

Drawing deviates from the perspective point of view, which is typically associated with photography, and challenges the idea that seeing equates to understanding. It achieves this by both rejecting and perpetuating the traditions of cartographic, architectural, and nomographic representation.

Through its use of codes, simplifications, and omissions, drawing does not guide the viewer towards a clear comprehension where all the pieces fit together perfectly

like a jigsaw puzzle. Unlike drawings where obscured parts marked with a dot can be reconstructed to form a complete image, here the puzzle is never solved. Each suggestion of possible meaning leads to uncertainty and a continuous cross-referencing of ambiguity.

Similar to a mystery novel with an open ending, the observer must rely on the circumstantial method to solve the mystery (Ginzburg, 1983). This method is based on peripheral yet revealing information, often overlooked as unimportant, but which actually holds the key to understanding complex situations. The true value of this method lies in its capacity to establish connections between seemingly unrelated phenomena, such as a terrain contour line and the demographic evolution of a population.

The different depictions that present a fragmented and transitory portrayal of these countries are illustrations of something that is vanishing. As a result, they represent the act of disappearance, of transition from fullness to emptiness. This emptiness specifically refers to the gap between reality and its representation, between the routine of everyday life and the capacity to construct a fresh viewpoint of reality through aesthetic intuition.

Through the exploration of drawing as a research method, this study sheds light on the importance of representation in examining cultural and material heritage in abandoned villages. By capturing the essence of architectural elements and bridging the present with the past, drawing becomes a powerful tool for shaping narratives of abandonment and fostering a sense of identity and pride within these communities.

As we continue to study and document the diverse heritage of endangered small towns, we gain valuable knowledge about their past, customs, and way of living. This knowledge not only promotes a greater comprehension for our collective heritage but also lays the foundation for a more inclusive and interconnected future. By safeguarding and exploring all these different aspects of

cultural heritage, we contribute to the advancement of regions, create spaces of empathy, and foster a deeper understanding among communities (both from the cities and the hamlets) and cultures.

In conclusion, the research presented in this paper underscores the significance of drawing as a research method in examining depopulated villages. It offers insights into the complex realities of these communities and provides a foundation for future studies and interventions aimed at preserving cultural heritage and fostering sustainable development.

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Article available at

DOI: 10.6092/issn.2724-2463/18553

How to cite

as article

Caffio, G. (2024). The Discovery of Abandoned Villages in Abruzzo. Exploring the Potential of Drawing as a Research Method. *img journal*, *10*, 110-125.

as contribution in book

Caffio, G. (2024). The Discovery of Abandoned Villages in Abruzzo. Exploring the Potential of Drawing as a Research Method. In S. Brusaporci (Eds.), *img journal* 10/2024 IMAGIN(G) HERITAGE (pp. 110-125). Alghero, IT: Publica. ISBN 9788899586461

REPRESENTING AND VISUALIZING ARCHAEOLOGY.
THE CONTRIBUTION OF GRAPHIC SCIENCES TO RESEARCH IN ARCHAEOLOGY

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ESSAY 154/10

ARCHAEOLOGY
VISUALIZATION
IMAGES
DRAWING
GRAPHIC SCIENCE

This article discusses the role of images in archaeological disciplines and the contribution that graphic sciences can make to research in this subject area.
In archaeology, and not only, 'visualization' differs significantly from the more commonly used noun 'representation.' In this sense, archaeological visualization is a practice of reconstructing and understanding the past rather than documenting and representing only the material remains that have come down to us.From archaeological drawing to virtual reality, numerous techniques and tools from the graphic sciences are applied in archaeology. Some of these can now be ascribed to the disciplinary tools, while others fall outside the specific skills of the archaeologist and require interaction with the disciplines deputed to visualization and, thus, with the graphic sciences.
In order to better understand the difference between visualization and representation in archaeology, the article uses prenuragic altar of Monte d'Accoddi as a case study to focus on the creation of different graphic-visual products starting from the same model, in order to demonstrate the role of different graphic artefacts.

INTRODUCTION

The relationship between archaeology and image production has a long tradition evidenced by the publication of several significant volumes, including *Antiquity depicted: aspects of archeological illustration* (Piggott, 1965, 1978) and *Archaeological illustration (*Adkins & Adkins,1989), but the tradition of images in archaeology has an older history rooted in the archaeological finds of 15th- and 16th-century Rome (Piccoli, 2017). These discoveries sparked the interest of humanists and artists, who began to study the finds from the representation of their material remains (Barkan, 1999).

As emerges from a letter by Francesco da Sangallo, who witnessed the discovery of the Laocoon group in 1506 in a vineyard on the Oppio hill, the act of discovery was always accompanied by drawing: "everyone began to draw, while they were discussing ancient things" [authors translation from Italian[1]] (Da Sangallo, *Lettere su questioni familiari 6.2*, in Barkan, 1999, p. 3). This affirmation is confirmed by Giovanni Antonio da Brescia's engraving (Figure 1), which testifies to the missing arms of the three figures-Locoon and his sons-and the foot and right knee of the younger son, which were found separated from the sculptural group and integrated in later years, as is evident from the find now in the Vatican Museums.

During the same period, dealers-antiquarians commissioned artists to make detailed and often quoted drawings of antiquities, 'catalogue' drawings helpful in communicating the necessary information about the characteristics of the objects for sale (Opgenhaffen, 2021).

With the development of scientific illustration between the seventeenth and eighteenth centuries, a graphic style for representing artefacts emerged (Fejfer et al., 2003). Creating this language for documenting objects was central to using artefacts as 'data' that could be organized and analyzed to achieve knowledge construction in archaeology (Moser, 2014). Produced initially by antiquarians to document their

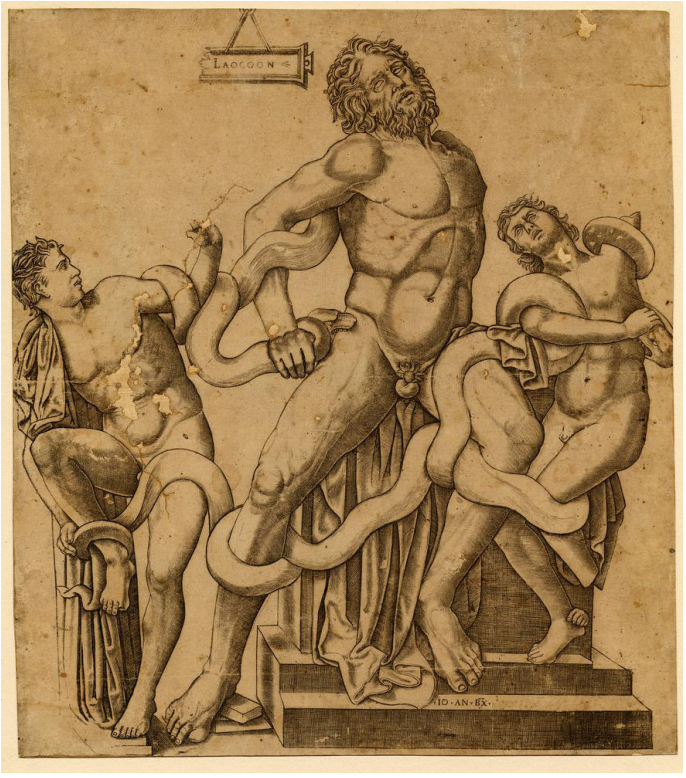

Fig. 1 Giovanni Antonio da Brescia, *Laokoon*, 1506-1520, Engraving, 28,3 × 25,0 cm, Retrieved January, 05, 2024 from <https://www.britishmuseum.org/collection/object/P_1845-0825-707>. The engraving shows it reversed, before the restoration of the right arm, and is probably the earliest print of the group.

collections, artefact illustrations were later adopted to represent the characteristics of ancient objects. With these representations, illustrators went far beyond mere recording, giving the drawings an interpretive dimension.

ARCHAEOLOGICAL REPRESENTATIONS AND VISUALIZATIONS

Archaeology can thus be considered, like other disciplines, a visual discipline in that from its origins; it has developed a distinctive visual language in order to communicate theories, technical principles and data (Moser 1992, 1998, 2016) that forms the very basis of the discipline of archaeology (Opgenhaffen, 2021). Indeed, archaeologists use a wide

range of visualization methods to record, organize, interpret, and reconstruct the past. Thus, the epistemological foundations of archaeology are built on visual elements, which is why how to visualize, represent, communicate, and share objects has become a central theme in archaeological research (Morgan & Wright, 2018; Moser, 2012; Wickstead, 2013). Visualizations are more than mere illustrations accompanying written texts; they build the documentary base on which to base investigations (Witmore, 2006).

In archaeology, 'visualization' differs significantly from the more commonly used noun 'representation.' Suppose representations have a present and actual state of affairs as their subject and require a certain degree of objectivity. In that case, visualizations have something not visible or somewhat no longer visible as their subject, which implies a creative and interpretative practice of reality (Huvila, 2018). In this sense, archaeological visualization is a practice of reconstructing and understanding the past rather than documenting and representing only the material remains that have come down to us (Opgenhaffen, 2021). Drawings of stratigraphic layers, plans of archaeological sites and their settlement patterns, and graphs of the distribution of artefacts can be considered representations (Adkins & Adkins, 1989), while illustrations depicting hypotheses and reconstruction drawings of sites and artefacts can be considered visualizations.

With the proliferation of digital media, their accessibility, coupled with the decreasing costs of visual forms of representation in archaeology, understood as representations of the existing, are expanding exponentially (Dyke, 2006). Visualizations, understood as cognitive and interpretive image processing, have not evolved significantly. Visual outputs often need more than the documentation of findings while forgoing their cognitive and interpretive function (Llobera, 2011).

When we talk about images in archaeology, we can mean two main groups with different purposes: representations aimed primarily at archaeological investigation and visual-

Fig. 2 Joseph-Philibert Girault de Prangey , *Temple of Horus, Edfu (167. ? Temple.)*, 1844, Daguerreotype, 9,3 × 12 cm. (Pinson, 2019, p. 112).

izations aimed primarily at dissemination. Archaeological sketching, archaeological drawing, archaeological maps, 3D models and virtual reconstructions belong to the first group. Today, the latter also allows more accessible public involvement through visual communication strategies such as visual journalism (Cicalò et al., 2021). The following briefly describes the different forms of imagery used in archaeology.

In archaeology, photography is necessary not only for the systematic documentation of sources and artefacts but also for the protection of cultural heritage. Photographic documentation (Figure 2) would provide greater neutrality and impartiality to the representation of archaeological data (Markiewicz, 2022). This is often used as a systematic documentation tool to accurately and thoroughly catalogue the various finds and plays a crucial role in acquiring, preserving, and disseminating archaeological information, even during the complex excavation process.

Like architectural sketches, archaeological sketches made during archaeological excavations are the most informal, rapid, and intuitive form of representation in archaeology. They are intended to record information that cannot

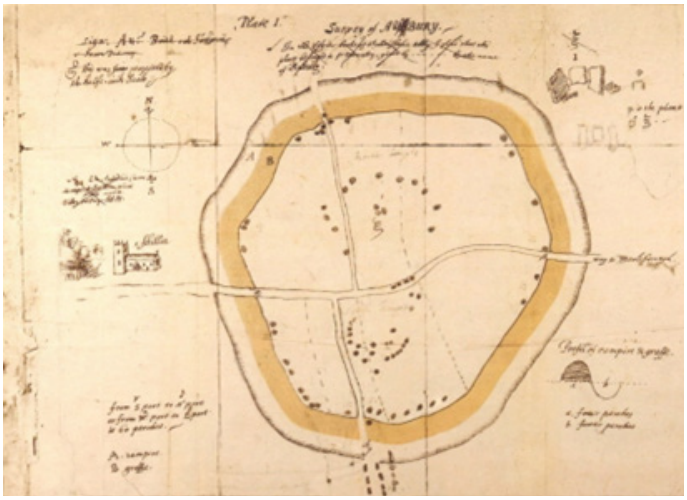

Fig. 3 John Aubrey (1675), *Plan of Avebury*. (Piggott, 1978, p. 41).

be distinguished in photographs of the context also made during excavations. In these sketches, plans, sections, and econometrics of individual contexts about excavations and findings are reproduced. These can be quickly consulted to understand the stratigraphy of the context (Morgan & Wright, 2018). Sketches help to quickly and immediately understand the spatial relationships between different elements within the context, such as the orientation of one structure relative to others or the position of artefacts relative to structures.

Archaeological drawing is a transformative act as a form of recording used expressly to replace through an image what is destroyed through excavation. During excavation, visual recording becomes the mediated expression of the archaeological resource. The destructive excavation process is followed by the creative process of drawing (Bateman, 2006). Archaeological drawing is divided into three general categories: plan drawing of areal excavation, section drawing, and larger-scale landscape drawings (Morgan & Wright, 2018). In this form of standardized conventional drawing, three-dimensionality is achieved through shading, stippling, and multiple views (Opgenhaffen, 2021). Archaeological drawing

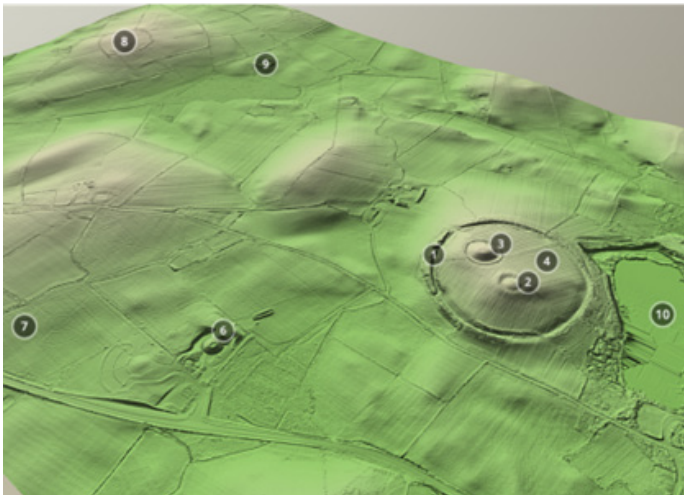

Fig. 4 Mark Walters, *Navan Prehistoric Complex*, Navan, N Ireland. Retrieved January, 05, 2024 from <https://sketchfab.com/3d-models/navan-prehistoric-complex-navan-n-ireland-de280aedb6514c0d99d39b00bdb75bdc>

constitutes an accurate 'visual record' of artefacts, structures, and site features. This record can be crucial for archaeologists in subsequent analysis and interpretation, constituting a tangible representation of discoveries and allowing archaeologists to preserve knowledge of the past and share that information with other researchers (Figure 3).

Archaeological Maps make it possible to confine and order the interpretation of sites. The most advanced technological advances are being made in this field, transforming geographic information systems (GIS) from a simple data management tool to a data collection and interpretation device, also achieved through the use of unmanned aerial vehicles (UAVs), on which the modelling and three-dimensional restitution of sites is based (Landeschi, 2019). Archaeologists often use these maps to analyze archaeological data in a broader geographic and chronological context to identify patterns, connections, and areas of interest that are more difficult to assume with traditional tools.

With 3D models, highly detailed interactive models of objects and sites can be produced. This type of visualization can change how objects, the fundamental 'data' of archaeological research, are thought about and presented (Molloy

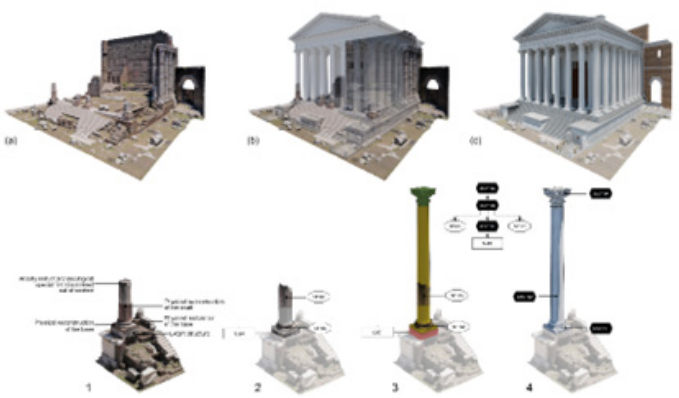

Fig. 5 Emanuel Demetrescu & Daniele Ferdani (2021), *Virtual reconstruction of the Temple of Mars Ultor in the Forum of Augustus.* (Demetrescu & Ferdani, 2021, p. 12).

et al., 2016). Typically, this type of product, even usable through virtual reality, is commissioned from professionals outside the archaeological field, as the skills needed are outside of traditional training (Buccellati, 2015). 3D models, by allowing archaeological objects and sites to be depicted in a highly detailed and interactive manner, allow one to examine artefacts from different angles, focus on the most minor details, and even interact with the models to gain a deeper understanding.

Virtual reconstructions constitute a research strategy in which digital technology supports the documentation and interpretation of archaeological data (Beale & Reilly, 2017) through three-dimensional modelling of the original configuration of archaeological sites (Forte & Siliotti,1997). This interpretive method is often accused of producing images detached from the archaeological data due to the uncertainty of the data that can originate photorealistic representations of the past that are misleading or deceptive (Eiteljorg, 2000). A methodology is much debated in science because of the uncertain original configuration of some sites. These reconstructions are often based on conjecture or assumptions that are not always confirmed but simultaneously allow for the evaluation of hypotheses despite the degree of uncertainty (Figure 5).

Fig. 6 Fernando Baptista (2011), *Building Göbekli Tepe*. Retrieved January, 05, 2024 from <https://www.nationalgeographic.it/popoli-culture/2011/06/16/foto/come_nasce_la_religione-365340/10/#media >

Visual Journalism, while based on the most advanced 3D modelling technologies, is an approach to cultural heritage communication that returns information in the form of an illustration that can be easily read by a non-expert audience (Cicalò et al., 2021). The main goal of this visualization technique is to translate complex data and concepts into images and graphs that are easy to read in order to ensure, in addition to scientific dissemination, journalistic information and communication of cultural events where the public is not always familiar with the disciplinary issues (Figure 6).

REPRESENTING AND VISUALIZING THE PRENURAGIC ALTAR OF MONTE D'ACCODDI

The research illustrated below is aimed at the survey, modelling, graphic restitution and elaboration of immersive fruition projects of one of Sardinia's most peculiar monuments: the prehistoric altar of Monte d'Accoddi, the only monument in the whole of Europe and the Mediterranean basin. This can be traced back to the type of altar with steps sloping upward, morphologically similar to the better-known ziggurats, and is

Fig. 7 Mesh processed from the point cloud of the photogrammetric survey (graphic elaboration by Andrea Sias, GRA-VIS LAB - Laboratory of Graphic and Visual Sciences).

a candidate today, together with the regional system of prehistoric sites, for inscription on the UNESCO World Heritage List. Although the wealth of archaeological evidence in Sardinia has stimulated numerous experiments in recent years in the area of the application of digital technologies to the representation and enjoyment of the regional cultural heritage, the altar of Monte d'Accoddi has yet to be the subject of such actions with scientific value. The morphological peculiarities require the experimentation of an operational method calibrated to the specificities of the same site, which will be presented and discussed in this article. In addition, the experimentation presented seeks to respond to the need to promote the cultural accessibility of sites and the transmission of knowledge to different types of audiences with different abilities and levels of literacy, including digital literacy.

In this regard, an operational method is therefore proposed that is capable of using the most advanced surveying, modelling and restitution technologies both for high-tech fruition of the sites, aimed at users with a strong propensity to use digital tools, and low-tech, more appropriate to meet the needs of users belonging to other demographic and socio-cultural categories.

Fig. 7 Representation of the monument and its state of preservation (graphic elaboration by Michele Valentino and Andrea Sias, GRAVIS LAB - Laboratory of Graphic and Visual Sciences).

The first result of surveying and modelling the site was graphic boards that accurately render the monument in its state of preservation. Subsequently, the model was used as the basis for virtual enjoyment of the site and the various reconstructive hypotheses for educational and recreational purposes. To this end, a possible mode of fruition of the site through Virtual Reality (VR) was tested. The survey

and modelling of the site were then used for the elaboration of visualization through the Visual Journalism approach of the altar of Monte d'Accoddi (Cicalò et al., 2023) and an answer to the new questions of accessibility and fruition of cultural heritage sites, with particular attention to archaeological ones, was sought. Moreover, the research seeks to adopt an inclusive approach by proposing different ways of fruition of a site using the same information base and operational path of information construction.

The research presents some innovative and original aspects in the field of graphic representation and visualization of cultural heritage, such as:

- Experimentation of an operational method. The research introduces an operational method of surveying, modelling, graphic restitution and virtualization of an archaeological monument that has not yet been investigated from this point of view and is specifically designed to adapt to its dimensional, morphological and historical-archaeological characteristics, requiring a definition and methodological experimentation calibrated to its peculiarities;
- Complementary system of representation and visualization. The research develops an operational method capable of systemizing the entire chain of methods and tools for representing and visualizing cultural heritage, starting from the photogrammetric survey and crossing 3D modelling, graphic restitution, VR, and AR, arriving at illustration and Visual Journalism. This approach allows for a narrative that engages audiences in different ways and deepens the understanding of cultural heritage;
- Different graphic-visual products. The research focuses on creating different graphic-visual products from the same 3D model about the need to make the subject site accessible to multiple audiences having different skills, abilities, and literacy levels. This allows the subject site to become accessible to a broader range of people,

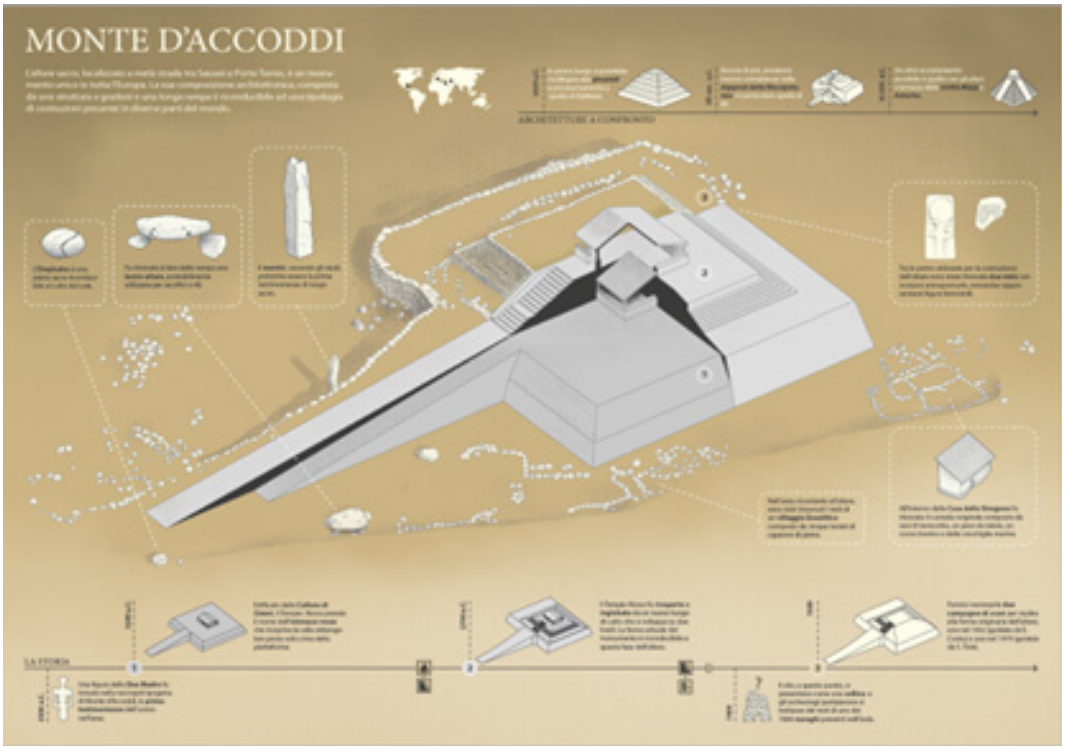

Fig. 8 Visualization of the monument using the Visual Journalism approach (graphic processing Chiara Zuddas, GRAVIS LAB - Laboratory of Graphic and Visual Sciences).

helping to spread knowledge and appreciation of cultural heritage more inclusively and effectively.

Real and virtual, digital and analogue, high tech and low tech find through the proposed method a form of balance in which, within each dichotomy, each element does not compete with or replace its antagonist but on the contrary, supports and strengthens it. Only through collaboration among all the different components involved in the process is it possible to adopt an inclusive approach and truly foster the accessibility and enjoyment of cultural heritage and the transmission of knowledge related to it from a democratic and universal perspective.

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CONCLUSIONS

As the history of archaeology shows, the use of images and their production must be considered a constitutive part of the disciplinary tools aimed at constructing knowledge. The more traditional graphic tools and representation techniques have now become part of the profile of the archaeologist, who must necessarily be able to operate from a graphic point of view to translate the information necessary for archaeological investigation into images, visual notes, and technical drawings. On the front of visualization aimed at dissemination, starting from modelling for virtual archaeology up to graphic products for public communication, skills from other disciplinary fields and, in particular, from the graphic sciences are necessary. These can support archaeological investigation from the survey and graphic restitution aimed at three-dimensional modelling, virtual fruition, and dissemination through visual communication strategies appropriate to the new demands from different audiences and contexts, as demonstrated by the case study presented.

NOTES

1 The Italian text of the quotation is as follows: "tutti cominciarono a disegnare, mentre discorrevano di cose antiche" (Da Sangallo, Lettere su questioni familiari 6.2, in Barkan, 1999, p. 3).

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Article available at
DOI: 10.6092/issn.2724-2463/18884
How to cite
as article
Cicalò, E. & Valentino, M. (2024). Representing and Visualizing Archaeology. The Contribution of Graphic Sciences to Research in Archaeology. *img journal*, *10*, 126-143.
as contribution in book
Cicalò, E. & Valentino, M. (2024). Representing and Visualizing Archaeology. The Contribution of Graphic Sciences to Research in Archaeology. In S. Brusaporci (Ed.), *img journal 10/2024. Imagin(g) Heritage* (pp. 126-143). Alghero, IT: Publica. ISBN 9788899586461

WORKING WITH CULTURAL HERITAGE. ACHIEVING ACTIVE PARTICIPATION BY MEANS OF COLLECTIVE DRAWING AND DESIGN ACTIVITIES

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DESIGN
HERITAGE EDUCATION
PARTICIPATION
TANGIBLE AND INTANGIBLE HERITAGE
VISUAL EDUCATION

In this paper, we examine selected keys to the appreciation of cultural heritage: first, the use of different languages, and in particular drawing, in approaching heritage; and second, the importance of actively engaging audiences in heritage appreciation projects, right from the planning stages. In presenting and working with heritage, with audiences spanning school students to the general public, one strategy that has proven extremely successful is to explore the intentional design process underpinning artistic creations. Focusing on the conceptualization, creation and execution of works (from design to sculptures and paintings and from architecture to landscapes) has been shown to offer much scope for inquiry, allowing the individual consumer to connect more deeply with the cultural heritage being encountered. This exercise in discovering and closely observing the conceptual and material aspects of heritage works has also informed the design of a range of tools, in some cases co-designed with audiences; the practical aspect of this process has proven to be of particular value.

EMBARKING ON A HERITAGE APPRECIATION JOURNEY, ONE SMALL STEP AT A TIME

Since 2014, the faculty of the Image Education course at the University of Milan-Bicocca has emphasized the importance of engaging with local cultural heritage, constantly pursuing opportunities for conducting collaborative action research (Marani, 2014) with heritage managers and audiences. This continuously evolving and expanding trajectory has gone through phases of review, further study, in-depth analysis, and comparison with other contexts, leading to the development of a range of projects and materials.

The first step in this journey was driven by requests from heritage sites for guidance in enhancing their audience engagement actions.

An initial monitoring period was followed by the joint design of tailored strategies for individual heritage sites. Over time, we developed an operational method comprising a series of key steps, or phases, some consecutive and some parallel. These are: targeted observation of existing practices and actions, alongside the definition of a shared language and clarification of the desired outcomes; initial experimentation including the collection of new data; development of provisional test materials; implementation and testing of the materials with the collection and analysis of further data; and design and production of the definitive material for the targeted audience engagement action (albeit with built-in flexibility to accommodate future developments). During the observation phase, several different tools have been used, selected as a function of the different heritage sites. The most frequently implemented include paper-and-pencil observations of audiences and their patterns of movement around cultural heritage spaces, video footage, checklists, interviews with key informants involved managing the heritage site and interviews with heritage consumers.

Throughout this rich and intricate journey, from the earliest actions undertaken with different heritage sites, one

key aspect has been the development of new materials, whether tangible or digital objects, which were designed to enhance audiences' connection with the site and to draw out aspects it that often go unnoticed during an initial, frequently solitary, visit.

In the next section, we offer a more detailed description of some of these materials, which have been used at two very different types of heritage sites: first, heritage sites in Milan linked to the world of design; second, three different sites that lend themselves to drawing connections between art and science, that have jointly identified different modes of fruition and participation (Bishop, 2006). The journey towards developing new tools has evolved into an increasingly collaborative endeavour, involving not only representatives of the heritage sites themselves but also their target audiences and the community at large. This has prompted more in-depth, mindful and documented exploration of the concept of participation.

THE INTERGENERATIONAL SUITCASE, A JOURNEY INTO DESIGN BASED ON DRAWING AND STORYTELLING

One of the first stages in this journey involved a project on the theme of design, funded by the *Cariplo Foundation*, and organized with the Milanese design 'circuit' comprising the Franco Albini, Achille Castiglioni, Vico Magistretti and *Triennale Milano Foundations*. Preliminary research on visitor profiles suggested that these sites were almost exclusively accessed by a specialist audience. The foundations were therefore interested in exploring the potential for expanding access and creating novel avenues of engagement for attracting new audiences (Zuccoli et al., 2016). Among the segments of the population that the foundations had previously found difficult to engage, the project team identified specific groups as target users and active contributors to the project. These were lower secondary school students

Fig. 1 Vico Magistretti's concept design expressed through synthetic drawings/designs. From the catalogue *Vico Magistretti. Illustrated Words*, 2010, Grafiche Mariano.

(specifically fifteen classes, totalling 350 students, from two groups of schools located in the suburban Bicocca and Gratosoglio districts) and older adults with no background in design (specifically 15 individuals who participated in all stages of the project work). The action research paradigms informing this project were design-based research (Barab & Squire, 2004; Design-Based Research Collective, 2003; Wang Hannafin, 2005) and art-based research (Cahnmann-Taylor & Siegesmund, 2008; Sullivan, 2010). The trajectory, involving numerous encounters in the participating schools and museums with educators, teachers, and members of the theatre company (and project partner) *Teatro degli Incontri*, resulted in the joint creation of four sets of customized materials, one for each foundation. These suitcases evolved over time, with the addition of new physical and digital contents.

Among the various aspects of this project that we set out to explore in this paper, in addition to the development of a language to be shared among the action research participants –a step that was key to identifying shared goals and collaboration strategies– is its focus on the importance of drawing. First, drawing as a tool used by the designers themselves, in distinctive ways that reflect their individual personalities. Second, drawing as a tool for designing and documenting the process of change as it evolved. Third, drawing in the context of designing the different suitcases that travelled around the city, entering and exiting the foundations, arriving at the schools, and finally returning to the *Triennale* for a closing exhibition.

Fourth, drawing as the drawing products of the various target audiences. In sum, the language of drawing became an active mediator (Bruner, 1988; Damiano, 2013) of knowledge contents, as well as a form of knowledge and knowledge content in its own right. The great potential displayed by drawing as a language of exploration, discovery and reflection was a partly unexpected outcome.

In considering the diverse approaches to design and drawing among designers themselves, learning about, an-

Fig. 2 Extract of Illustrated register of works 1953-1989. From the catalogue *Vico Magistretti. Illustrated Words*, 2010, Grafiche Mariano.

alysing, and appreciating these differences, as well as understanding how they may be interrelated, may be viewed as key to understanding the design process and its implications. This requires participants to grasp the importance of design, and to recognize its value and role in their own lives, even though –as in the case of many older adults, but also many lower secondary school students– (Bonaccorsi, 2022) they may never have previously had occasion to reflect on the theme. By way of example, Vico Magistretti's habit of quickly sketching down ideas, including on tram tickets held in the archives of his foundation (Kaplan & di Lenardo, 2020), and later describing them to the manufacturer on the telephone, stands in contrast with the engineering-like precision of Franco Albini, who would spend long hours drawing and wore a white coat to avoid staining his clothing in the process (Albini & Albricci, 2023). This coat was included in the suitcase developed for his foundation as an unequivocal representation of a distinct approach to design.

Magistretti's way of thinking, drawing and designing evokes ethics, rigor, cleanliness, and a focus on playing with the relationships between forms and spaces (Jones, 2007).

From a didactic perspective, further insights may be drawn from observing the close relationship between teaching in general and subject-specific teaching (Martini, 2020).

Using archival drawings and objects to illustrate the steps in the designers' work, and leveraging drawing as a tool for producing thought (Innocenti, 2014), as a conceptual instrument, enabled us –as consumers of a given

work– to retrace its creator's steps and to peer behind the scenes of the creative process. It should be underlined that all these designers were also university lecturers and had therefore devised a specific teaching method based on their own work. For example, Pier Giacomo and Achille Castiglioni (Polano, 2001) are remembered for presenting their students with a vast collection of objects to be exhibited, touched and commented upon. Achille Castiglioni's ironic and close observation of each object he brought into class was both a teaching method in itself and at the same time a method for understanding his work. "It was this same approach that rendered Achille Castiglioni's university teaching and lectures distinctive and remarkable. He would notionally –or, like a magician, physically– extract various objects from a suitcase, captivating his audience with vivid descriptions of features and solutions" (Bassi, 2019, p. 98). The same methodology was systematically deployed with young students and older adults visiting the Castiglioni Foundation, who were then invited to produce a design drawing for a futuristic object.

CULTURAL LANDSCAPES: FROM USING IMAGES TO DESIGN VIP KITS TO SUBSEQUENT ACTIVITIES WITH ADOLESCENTS AND CHILDREN

The second project, another action research initiative (Mariani, 2014; Mortari, 2003; 2010) , whose final output was the VIP (Visitor in Practice) kit, leveraged the overarching concept of cultural landscape to promote three extremely diverse heritage sites and types of heritage (De Nicola & Zuccoli, 2016). Indeed, the leading aim of this project, funded by the Lombardy Region, was to educate audiences about Villa Carlotta, Comacina Island and Bergamo Botanical Gardens. The first two of these places are located on Lake Como, while the third is situated in Upper Bergamo and the Astino Valley.

The first case study in this project is thus a delightful villa overlooking Lake Como. It is home to several modern

painting masterpieces (by artists including Canova, Hayez and Thorvaldsen, to name only the most famous) and surrounded by different kinds of garden – Italian, romantic, Japanese and agricultural; a place which, to paraphrase Emilio De Marchi, embodies a Pandean relationship between art and nature, leaving the visitor in doubt as to the connection between them and, above all, as to how the one disguises the flaws of the other.

Comacina, on the other hand, is Lake Como's only island, which has been inhabited since Roman times. Its early medieval archaeological ruins recall the skills of the local masters, but also the bloody warring between the communes and the Church or the exploits of Frederick Barbarossa. These ruins stand alongside three artist's houses built during the so-called thirty years in the style of Como rationalism (D'Amia, 2010) and designed to blend respectfully with the natural landscape of the lake and to boost the creativity of the resident artists.

Finally, Bergamo Botanical Gardens is distributed across the Bergamo area. The site's administrative headquarters, show laboratory, historical archives, herbariums and research collection are located in a historic building in Bergamo's Upper Town, with the original arboretums occupying a large terrace overlooking the local valleys. The more recent collections of food plants are located in the Astino valley (half an hour's walk from the old town), a landscape of great environmental importance which was redeveloped on the occasion of the 2015 Universal Exhibition in Milan.

The study, conservation and promotion of different kinds of heritage require the input of different disciplines and languages. Thus, after analysing the needs and behaviors of the visitors to the three places, as well as data from interviews with those involved in the day-to-day running of the sites (from volunteers to gardeners and from educators to directors), it was decided to deploy graphic language to produce a set of infographics as the main output

Fig. 3 High School Students at work on their collective extend drawings. Drawing as a metacognitive tool (with adolescents struggling to express themselves).

of the project. These infographics had two main purposes: to engage the widest possible range of audiences; and to facilitate observation, exploration and interpretation activities. Such activities, which are typical of cultural heritage education and mediation, were offered at all three places with a view to affording visitors a truly active role in their personal experience at a given site and to encouraging them to visit all three sites.

The graphic dimension of the project consisted variously in:

1. coming up with graphic representations of the activities that it is possible to do at the site;
2. using a photographic device to investigate particular points of view/ideas or to record a detail or scene that bears personal meaning;
3. using botanical illustrations, drawn from the Leonardi archive (Leonardi & Stagi, 2018), to encourage visitors to reflect on the changing shapes of trees across the season;
4. drawing one's own personal landscape on a transparent sheet, or using the frottage technique, or even creating

a personal collage using small objects collected during the visit.

Unlike in the first project described above, where drawing was used as an educational tool to investigate the meaning of doing design, in the current project, drawing, and in part photography, served as a medium for observing, analyzing and cognitively appropriating the landscape with the same spirit that has guided the great masters since the teachings of Leonardo da Vinci.

Whether the images produced represented a real or imagined landscape –or whether they were the result of a process of abstraction (Luigini, 2020), a painstaking effort to provide a faithful likeness, or a hasty sketch (Dalisi, 2008)– the visitor was invariably induced to remain focused for longer than in the 'snap and run' approach of the souvenir shot collectors that we identified across our research with different audiences.

From 2016 to the present, the VIP kit has been used in a variety of ways and with different audiences, with or without a mediator or educator. Among these usages, let us briefly report on a work experience project with school students during which the kit was used as a stimulus for drawing and image-based activities.

During the summer holiday period, three groups of high school students from Como City (classical studies, human sciences and languages curriculums respectively) and a group of vocational school students from the greater Como area, were tasked with identifying new exhibits for the recently founded Lake Como Landscape Museum. The first phase in this activity involved training, via an active and participatory process that lasted four days, during which the VIP kit was used to informally investigate the concept of landscape. The participants were guided to work on drawing, self-representation and representing one's perceptions of the landscape via an extended drawing technique (Grevenstein & Kleijn, 2011). The students were invited to come up with an abstract representation

Fig. 4 Drawing as a tool to collect the children's point of view (a teenagers' proposal).

of their own idea of landscape, based on a reflective approach and a kind of drawing that transcended the traditional limitations built into any medium and tools. We thus focused on using alternative media and formats and on overcoming spatial boundaries. Furthermore, interpreting the body as a scientific mediator of the learning process, we adopted an embodied cognition approach

(Gallese, 2005; Gomez Paloma et al., 2013; Rittelmeyer, 2022), inviting students to work with peers on the relationship between body, sign, sheet and landscape. At the end of the training course, the students identified four different thematic areas and relative target audiences with which to work. One such theme was 'children's relationship with the landscape of the lake'.

In this case, the students decided to make use of the VIP kit (unlike their counterparts in other groups who came up with other themes/strategies) to prompt visiting children to discuss the landscape in the context of an interview –halfway between autobiographical and geographical– that included drawing as a narrative tool.

CONCLUSIONS

This article[1] has briefly explored the themes presented at the *4th International and Interdisciplinary Conference on Image and Imagination Imagin(G) Heritage*, through the paper 'Heritage fruition and interpretation. A journey of kit construction: the importance of images'. The paper was awarded *Best Paper* for combining 'the core values of disciplines such as education, design and graphic representation. The integration between the methodologies leads to a clear innovative edge'.

In particular, we focused on experimenting with the image of different cultural heritages. We have shown its use as a tool for direct cultural experience, which has been reduced by an educational perspective based on workshop methodologies (Dewey, 2020; Frabboni, 2004; Panciroli, 2010; Zuccoli, 2020). In particular, the work with the different types of audiences has been rejected in favour of the valorisation of the design aspects hidden, in the case of the first project described, behind the artistic realisations, in the case of the second, behind the specially designed supports for fruition.

The content objectives identified, such as the conception, creation and execution of the works (from the objects of fruition – design, sculpture and painting to architecture and landscapes) and the kit were the result of the research accomplished, allowing each person to make a participatory and personal contact with what they observed. Design was interpreted as "a language, process and approach – to enhance the creative learning and imagination of children (aged six to thirteen) in formal and informal multicultural educational contexts, such as schools and museums" (Camuffo, 2021, p. 88), extending this perspective to adult audiences. In this sense, we dedicated ourselves to drawing, understood as a familiar tool for all generations to come into personal contact with reality. In the second case, in addition to focusing on a more personal visit based on an understanding of the logic underlying the interpretation and mediation of cultural heritage, we described the use of the image as an invitation to direct experience in the different landscape contexts. In this case, the actions were declined through a phenomenological approach (Merleu-Ponty, 2003) in which the body, the first technical object (Mauss, 2017) available to every human being thanks to sensitive perception and its representation through drawing, became the protagonist of the experience.

From Leonardo to the 'contemporary' pedagogist Joseph D. Novak, D. Bob Gowin, drawing is also a means of knowledge. For Novak and Gowin, the first theorists of the concept map, a graphical representation of knowledge "is a way of bringing out the meanings inherent in the material to be learned" (1984, p. 19).

Drawing promotes knowledge because its practice makes it possible to understand the logic and existence of things.

NOTES

1 The article was conceived collectively, but the individual paragraphs were written by Franca Zuccoli for *Embarking on a heritage appreciation*

journey, one small step at a time and *The intergenerational suitcase, a journey into design based on drawing and storytelling*; Alessandra De Nicola for *Cultural Landscapes: from using images to design VIP kits to subsequent activities with adolescents and children* and *Conclusions*.

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Article available at

DOI: 10.6092/issn.2724-2463/19022

How to cite

as article

Zuccoli, F., De Nicola, A. (2024). Working with cultural heritage. Achieving active participation by means of collective drawing and design activities. *img journal*, *10*, 144-159.

as contribution in book

Zuccoli, F., De Nicola, A. (2024). Working with cultural heritage. Achieving active participation by means of collective drawing and design activities. In Stefano Brusaporci (Eds.), *img journal 10/2024 IMAGIN(G) HERITAGE* (pp. 144-159). Alghero, IT: Publica. ISBN 9788899586461

URBINO EXPLORED IN A MULTIMEDIA TRAVEL NOTEBOOK

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COMMUNICATION OF CULTURAL HERITAGE
COMMUNICATION AND VISUAL PERCEPTION
MULTIMEDIA COMMUNICATION
NATIONAL GALLERY OF THE MARCHES
PALAZZO DUCALE IN URBINO.

To communicate Cultural Heritage, it is essential to emotionally engage the audience by offering integrated experiences on multiple spatial and temporal levels. In this context, the reinterpretation of a traditional product –the travel notebook– is described, renewed through digital technologies. A high-quality graphic paper booklet that, through 'augmented drawings' via Augmented Reality and various QR codes, proposes a journey to discover the Early Renaissance offered by the National Gallery of the Marches at the Ducal Palace in Urbino. Integrating with low-impact immersive technologies such as Augmented Reality (AR) and QR codes, the notebook provides a unique aesthetic experience, combining emotions and multimedia content. Through pages illustrated with graphic elements resembling a Renaissance diary, the notebook guides the visitor on a journey of discovery into the Renaissance, offering QR codes to access videos, audio, and virtual tours. The article emphasizes the importance of bridging the imaginative-recollection gap to strengthen the connection between the observer and cultural heritage, promoting an education in vision and a reappropriation of historical values.

MUSEUM RENEWAL BETWEEN COMMUNICATION MODELS AND DIGITAL TECHNOLOGIES

Over the past 40 years throughout Europe, the museum institution has been subject to deep transformations that have expanded the space beyond the limits of the building's walls, expanded the collections from material to intangible evidence, and, above all, broadened the missions of the museum institution: from preserving and enhancing its heritage to promoting public participation with a focus on cultural and social emancipation of the public. This has introduced a radical change of perspective in communication models, no longer asymmetrical and unidirectional –from the museum to the public– no more limited only to the transfer of knowledge, but 'intentional and purposeful' cultural models of communication, designed so that the recipient/interlocutor can be a participatory subject in the processes of heritage enhancement and promotion and active in the construction and representation of meanings (Hooper-Greenhill, 2003). Such communication models require solving the issues of accessibility and participation first. Concerning accessibility, because it is certainly physical, socio-economic and sensory, but it is realised from the cognitive one. Regarding participation, which is indispensable for concrete valorization and promotion, because it is realised in the activation of synergistic links, not generic but specific and differentiated, between and with the various stakeholders, heritage-patrimony communities (Faro Convention, 2005), including in these all citizens, individually and in groups, and those who work in various capacities in the cultural and creative sector, public and private (bodies and entities in charge of management and valorisation, schools, universities, local authorities, museums, libraries, archives, research bodies, companies, enterprises, foundations, associations, etc.).

Therefore, accessibility is not generic and undifferentiated, but requires a process of interpretation of cultural goods from time to time, a process that needs to be careful and

documented and that uses clear and diversified languages, tools and modalities according to the needs of different audience categories (MiBACT, 2015, p. 8). This process takes on the role of 'cultural mediation', achieved through a synergistic relationship between 'interpretation' and 'presentation', where interpretation aims to increase public awareness and improve understanding of cultural heritage, while presentation concerns a carefully planned communication of interpretive content (ICOMOS, 2008). Accessibility, mediation, interpretation, and presentation are thus the goals that define the new role of the museum institution and the museum. However, we know they are far from being achieved. In fact, despite the important policies put in place in the last two decades, in Europe and even more so in Italy, the rate of participation in cultural productions is still low and the audiences reached have mostly had the same characteristics for over half a century "white, educated, well-off, middle-aged" (Gariboldi, 2017).

In this context, there is no doubt that digital technologies can play a significant role in fostering "effective experiences of knowledge and public enjoyment" (Lampis, 2019, p. 11) by activating that indispensable conversing relationship between heritage and recipient. But it is equally beyond doubt that the experiences of applying digital technologies to cultural heritage, which are nothing new, even in the most recent years have demonstrated cognitive and experiential benefits that are insignificant compared to the theoretical potential and technological power put into place. There are many reasons for this, but certainly, the most relevant one relates to the finalisation of applications often limited to the same technological field, where the recourse to "emphatic stunning techniques" (Lampis, 2019, p. 6), although of the highest level, may not contribute to a truly enriching experience.

Therefore, while the difficulty of a deep paradigm shift in cultural production, in Europe but especially in Italy, is evident, there is a growing cultural demand from the public. This demand, as highlighted during the forced distance

imposed by the COVID-19 pandemic, emphasises the need for an 'experienced' culture that cannot avoid the inescapable relationship of our bodies with cultural objects.

TOOLS FOR COMMUNICATION, BETWEEN ANALOG AND DIGITAL

Within the framework of the reflections conducted so far, the following described experience is included, carried out at the National Gallery of Marche housed in the Ducal Palace of Urbino , a paradigmatic example of a condition common to many other Italian museums where the 'container' itself is the object of the collection, or rather, an additional collection (Ippoliti & Albisinni, 2017).

A case study strongly characterised for being that exemplary 'city in the form of a palace' of the early Italian Renaissance, a concretisation of the all-round projection of Renaissance man and the control of the 'inner' and 'outer' world that is realised precisely through vision and its aesthetic-geometric-projective control. Everything here speaks of the aspirations of early Renaissance man: indeed, this is the residence that Duke Federico di Montefeltro had built for himself to surround with spaces and objects constructed "to the measure of the perfect man of the palace", so that they would be an expression of Renaissance court life (as later, between 1513 and 1524, Baldassarre Castiglione would describe in *The Book of the Courtier*) and also, by translation, a tangible manifestation of the effects of his good governance.

A specificity, of course, which cannot be generalised, but which was for us a further stimulus to experimentation since the discipline of representation finds historical and scientific roots, even in its most innovative forms, precisely in the Palace and many of the objects in its collections. But at the same time, we also realised that such spaces and objects, precisely by their 'measured perfection', may appear abstract, algid, distant to a non-expert audience.

Fig. 1 Mockup of the multimedia notebook.

Starting from these considerations, we focused on identifying communicative strategies to reduce this distance, so that visitors could 'recognise' those spaces and objects as part of their cultural world and thus be naturally interested and oriented to relate to them. in this context, the communication product that seemed consistent with this goal was a 'multimedia travel notebook' (Figure 1), that is, a reinterpretation of a traditional device like the travel notebook expanded by digital technologies.

In this perspective, it was initially chosen to resort to 'low-impact' technologies, so to speak, utilised for the possibilities they offer to enhance the power of images. The aim is to broaden the scope of visualisation by proposing, through virtual simulation, 'simulacra' of objects and spaces. In this way, the goal is to activate a more effective interaction through the combined process of perception/response/action. Thus, technologies are primarly used to re-establish those relationships between object-heritage, historical-cultural reference context, and visual codes that are indispensable for understanding the original meanings of the works, i.e., the intentions for which they were created by artists, patrons, craftsmen, etc.

For a work of art –a sign-communicative, sensitive and cultural artifact– to fulfill its communicative function, which is the ultimate and sole purpose of a museum institution, it is necessary to have "the code that signs always underlie and on which their interpretation necessarily depends" (Antinucci, 2010, p. 29).

In the history of science and the arts, many devices, machines, and artifices have been created to make ideas and principles visible, that is, to make them concrete and tangible, often through curiosities and divertissements.

For example, in the *Wunderkammer*, places of the 'marvelous' that preceded museums, it was possible to conduct experiments and observe certain wonders with various instruments, many of which were based on vision technology. Optical games and instruments, arising from the visual culture of the Renaissance and later perfected by the Baroque, were aware of the allusive and persuasive power inherent in the image, especially spatial and perspective, that is, somehow immersive, engaged in the continuous comparison between vision and reality, between deception and disenchantment.

In the *Chamber of Wonders* created in 1652 by Athanasius Kircher in Rome's *Collegio Romano* –which brought together archaeological finds, art collections and scientific devices (Lo Sardo, 2001)– among the scientific instruments and curious machinery was the magic lantern. With this one, extensively described by Kircher in his 1646 treatise *Ars magna lucis et umbrae* (Kircher, 1646), exploiting in reverse the operating principle of the camera obscura, it was possible to make large-format projections of specially painted images onto plates (Figure 2).

The suggestive power of vision soon determined its widespread use for both educational and entertainment purposes: landscapes, city views, objects, plants, animals, real or fantastic, were projected, even juxtaposing and mixing them. Later, the illusion of motion was also simulated, by a mechanism for loading alternating images in rapid succession.

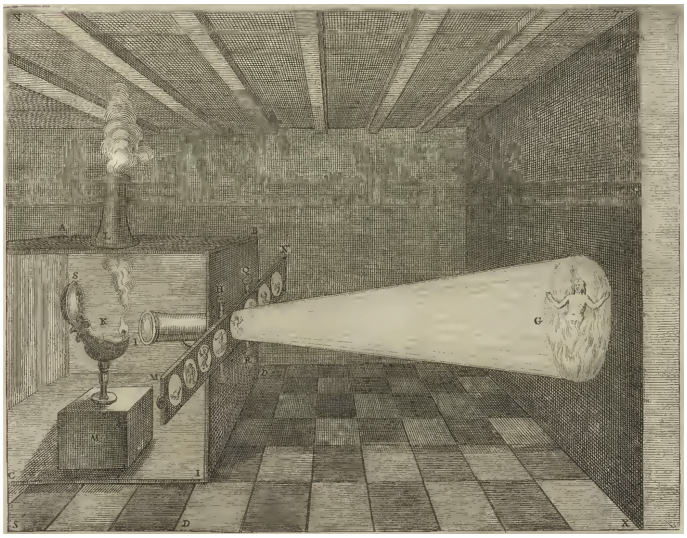


Fig. 2 Athanasius Kircher, Magic Lantern, Ars magna lucis et umbrae, 1646, p. 178.

Fig. 3 The Thames Tunnel at London, paper peepshow, about 1851, Germany Museum, Gestetner no. 176, photography by Dennis Crompton (left); Perspectivische Ansicht des Tunnel unter der Themse, paper peepshow, about 1835, Germany Museum, Gestetner no. 118, photography by Dennis Crompton (right); Retrieved November, 12, 2023 <www.vam.ac.uk/articles/paper-peepshows>

A disposition to exploit vision that became increasingly popular and led to the invention and commercialisation of a wide variety of instruments intended for an ever wider audience. Among the many instruments of particular interest are the so-called 'paper peepshows', or paper shows, which offer three-dimensional visions in a portable and compact device. Although born in a pre-digital era, they share striking similarities with today's Virtual Reality headsets: they both seek to amplify the power of images by illusorily simulating three-dimensional scenarios to stimulate interaction (Figure 3).

Paper peepshows were popular entertainment objects in the 19th century, first popularised by German printer Heinrich Friedrich Műller (Hyde, 2015). The technological innovation introduced by Műller was to transform bulky devices into small objects that were very handy and light because they were constructed from paper and fabric.

These simple but ingenious mechanisms were constructed of staggered paper panels connected laterally by bellows of flexible material and opened accordion-like. Looking through a small hole located on the first panel, thanks to the perspective effect, one was transported into an immersive visual experience.

Each panel represented a portion of the entire scene. When the viewer looked through the hole, the strategic arrangement of these panels and the masterly use of perspective gave the impression of a three-dimensional space extended beyond the peepshow itself.

These perspective sets were particularly effective in accentuating the sense of depth; for example, if the theme of the peepshow were a natural landscape, the panels could be arranged so that objects farther away appeared smaller, taking advantage of linear perspective. This gave viewers the illusion of being transported to a distant world, almost as if they were looking through a time window.

The other choice, as mentioned, was to revisit a traditional product such as the travel notebook, a device that has always been an essential tool in the equipment of the traveller - explorer, scholar, merchant, trader, architect. But more generally, through the centuries, curious men have employed their notebooks to jot down immediate sensations, record observations, and fix ideas generated by the experience of travel (Horan, 2009).

During the Middle Ages, Christian pilgrims often jotted down their experiences while on pilgrimage to holy places. An interesting example is the manuscript found in 1884 in the Tuscan city of Arezzo, with the diary kept by a Christian pilgrim, named Egeria, who made a journey to the mountain of Moses in the late fourth century (Cotter-Lynch & Herzog, 2012).

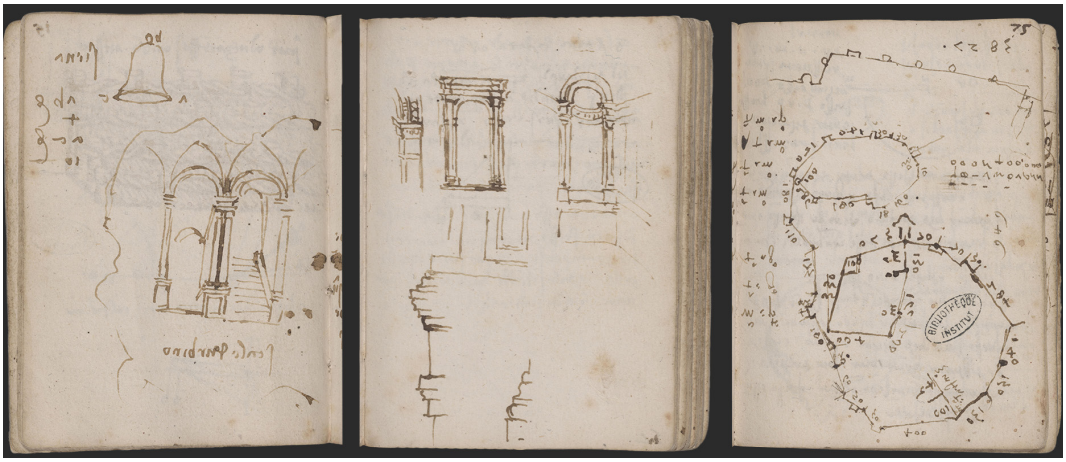


Fig. 4 Leonardo Da Vinci, Manoscritto L, 6 recto, 19 verso, 73 verso, 75 recto, 1485-1515. In Bibliothèque de l'Institut de France, Manuscrits de Léonard de Vinci, Ms 2182. Retrieved November, 12, 2023 <https://bibnum.institutdefrance.fr/ark:/61562/bi24199>

The Renaissance marked a turning point for travel notebooks, as an increasing number of travelers began documenting their experiences not only through storytelling in words but also through pictures.

A case in point is Leonardo's notebook in which he records his stay in Urbino, a stop that marks the beginning of a journey in which he joins Cesare Borgia on an official assignment as architect and engineer. In their pocket notebook , Leonardo becomes the medium through which he captures the essence of what he observes while exploring Urbino and the palace of which rumours of extraordinary wonders circulated (Gamba, 2023).

Leonardo alternates between studying architectural elements and details, such as the spiral staircases and ramps, the *Cappella del Perdono,* and the inlays in the *Studiolo,* to careful urban surveys such as that of the urban wall circuit, immortalised through sketches and annotations. And more notes on the surrounding landscape and the fauna that animate it, demonstrating Leonardo's well-rounded curiosity (Figure 4).

An important, albeit indirect, testimony to this is the so-called *Venetian Booklet* by Raphael, preserved in the *Gallerie dell'Accademia* in Venice, probably made by his student. These pages contain a series of graphic notes by Raphael during his years of study and on his travels,

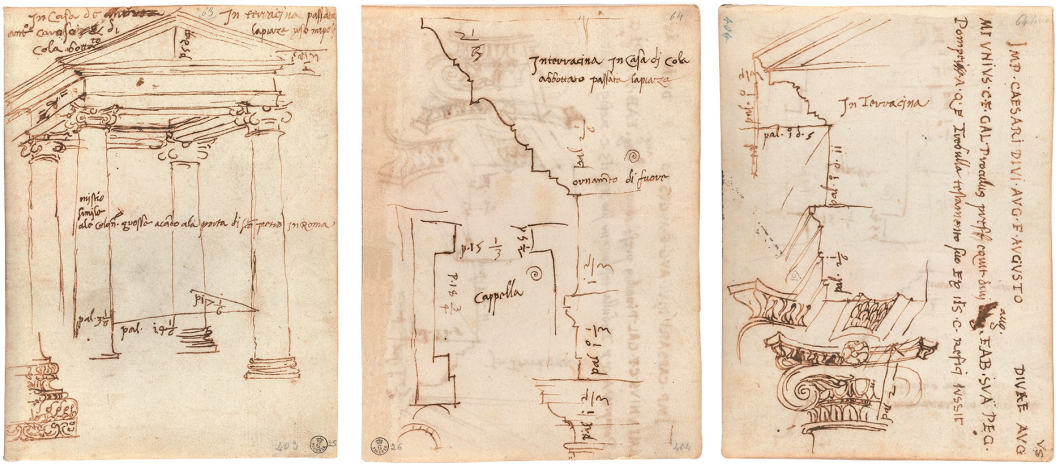


Fig. 5 Baldassare Peruzzi, drawings of the temple of Terracina, Travel Notebook, 1519-1520. In Gabinetto dei Disegni e delle Stampe degli Uffizi, GDSU 404 A, 403 A. Retrieved November, 12, 2023 <https://www.uffizi.it/opere/peruzzi-terracina-iscrizione>

arranged in fair copy. The places the artist experienced during his adolescence, especially Urbino, the *Palazzo* and the *Studiolo*, appear (Farinella, 2016).

Also of great interest is Baldassare Peruzzi's Notebook of Travels with sketches made by the artist on the journey he undertook between 1518 and 1520 in central Italy. The 36 surviving pages preserved at the *Gabinetto dei Disegni e delle Stampe* in the Uffizi show his architectural and archaeological interest in the monuments of antiquity in Roma, Ferento, Bomarzo, Todi, Via Appia, Terracina, Mola, Gaeta and Capua (Figure 5). Additionally, there is the so-called *Taccuino Senese* of the *Biblioteca Comunale di Siena*, traditionally attributed to Baldassare Peruzzi, but more likely the work of several authors (Toca, 1971; Frison, 2021). Rich in drawings and annotations, this document demonstrates a focus on architecture, with sketches of projects at various stages of development, while notes in the margins of the pages provide insights into the creative process and the conception of architectural spaces. In addition to architecture, the Notebook features urban perspectives, landscape scenes, and anatomical studies, reflecting the wide range of artistic and scientific interests of Peruzzi and his circle. The pages are enlivened by precise and detailed sketches, evidence of technical skill and deep observation.

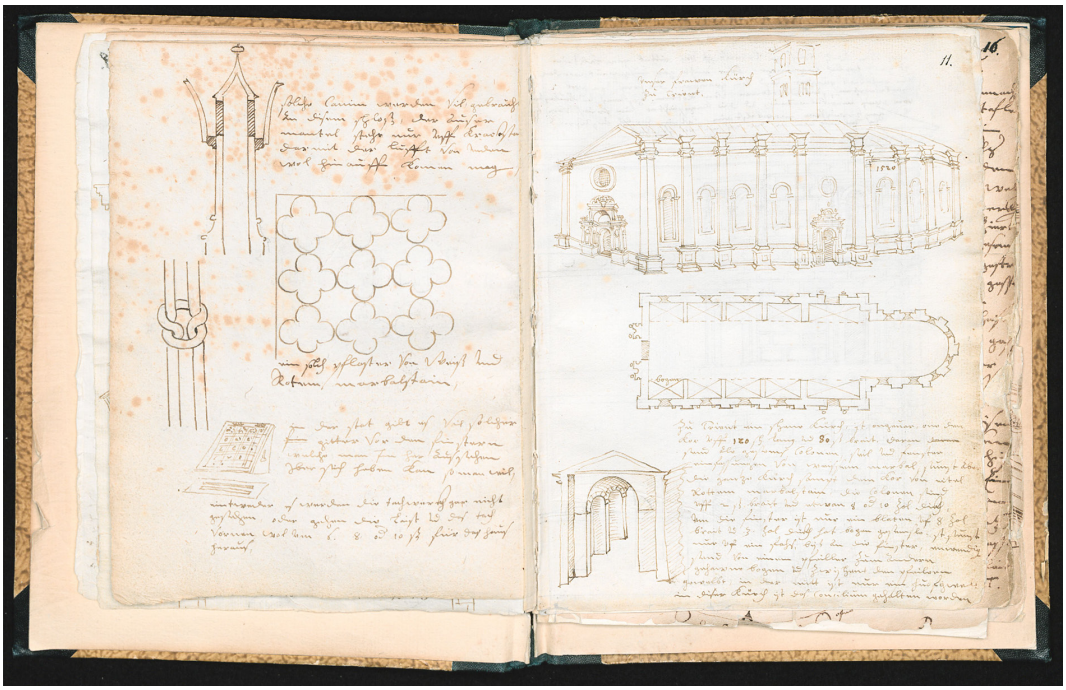


Fig. 6 Heinrich Schickhardt, Raiss in Itaia, 1598, 10 verso, 11 retro. In Württembergische Landesbibliothek. Retrieved November, 12, 2023 <https://digital.wlb-stuttgart.de/sammlungen/sammlungsliste/werksansicht?tx_dlf%5Bdouble%5D=0&tx_dlf%5Bid%5D=16555&tx_dlf%5Border%5D=title&tx_dlf%5Bpage%5D=26&cHash=d15ca09f3a7f474428f1bf2fc665bd24>

During his trip to Italy in 1598, German architect Heinrich Schickhardt reserved ten pages of his sketchbook for the buildings of Trento, thus constituting the earliest surviving series of architectural representations of the city. These pages document some of the city's most famous Renaissance buildings, including the *Buonconsiglio Castle*, the church of *Santa Maria Maggiore*, and the *Tabarelli Palace*. The notebook's later section delves into a hydraulic silk mill, the *San Lorenzo bridge*, and the river dam chain near *Torre Vanga* (Figure 6). Finally, further unpublished studies illustrate details still recognisable in the castle or hypothetically related to decorations and furnishings of the *Buonconsiglio*, now lost (Gabrielli, 2012).

The 17th and 18th centuries saw the explosion of the Grand Tour phenomenon, a rite of passage practiced mainly by young European aristocrats who completed their education by travelling. Travel acquired value for its intrinsic properties, and the purpose of travel was travel itself and

Fig. 7 Johann Wolgang Von Goethe, Evening atmosphere at the Muro Torto in front of the Porta del Popolo a Roma, 1787. In Stadel Museum. Retrieved November, 12, 2023 <https://sammlung.staedelmuseum.de/en/work/abendstimmung-am-muro-torto-vor-der-porta-del-popolo-in-rom>

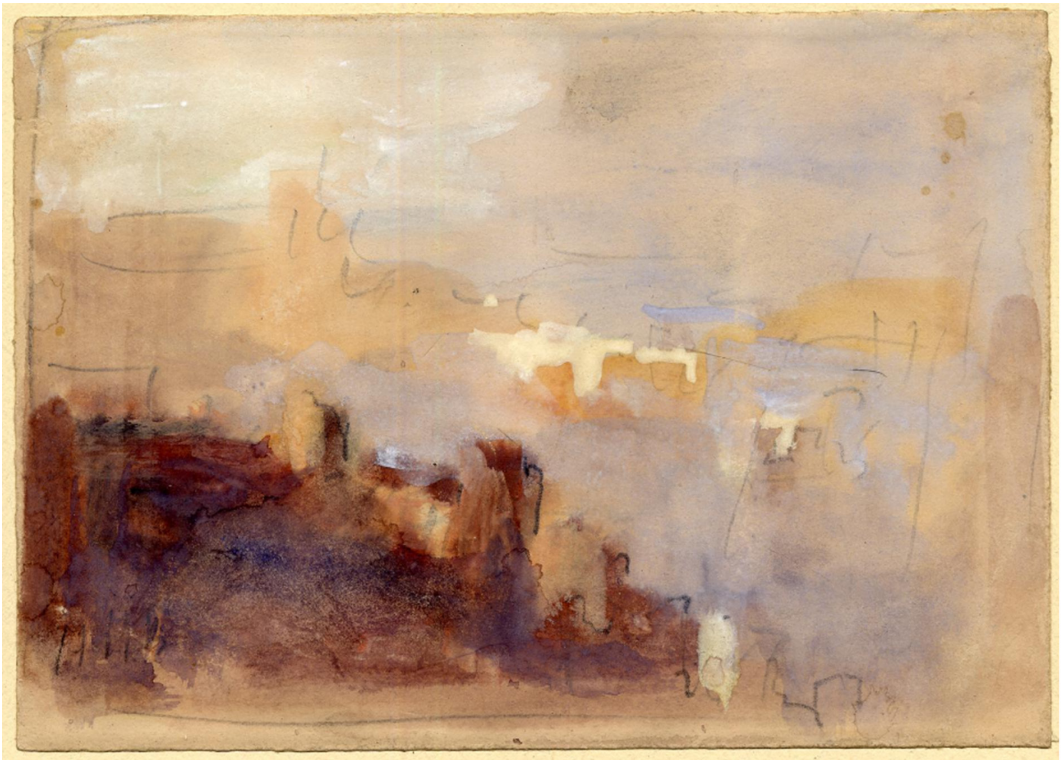
Fig. 8 Joseph Mallord William Turner, Italian hill town, 1821-1906. In British Museum. Retrieved November, 12, 2023 https://www.britishmuseum.org/collection/object/P_1945-0714-48, (in the next page, above).

Fig. 9 Eugène Delacroix, Various Arabic sketches and handwritten notes, RF 1712.BIS, 28, 29, 42, 43. In Louvre, Cabinet des dessins Fonds des dessins et miniatures (in the next page, below).

was undertaken in the name of knowledge and learning on the one hand and pleasure and pure enjoyment on the other. Travel, mostly through Italy, which consequently generated a proliferation of travel notebooks.

Among the very numerous experiences, we barely mention the diaries and notebooks in which Johann Wolfgang von Goethe jotted down on his trip to Italy between 1786 and 1788, observations on works of art, landscapes and daily life, later merged in his work *Journey to Italy* (Goethe, 1991) (Figure 7). Or William Turner's dozens of notebooks, where very rare are the notes left to drawings and especially watercolours the task of expressing the feelings of travels (Figure 8).

Once the trend of the Grand Tour ended, the travel notebook continued to accompany travellers and preserve emotions, impressions, and ideas. As in the case of Eugène Delacroix's notebooks on his travels in North Africa, where drawings and annotations crowded together filling each page and from which the strong emotions felt by the artist leaked out (Figure 9). Or in the diary kept by John Ruskin during the legendary journey he undertook to



explore and study classical architecture, and the series of magnificent watercolours between the Alps, Venice and Rome (Mammuccari, 2009). Or finally in Paul Klee's diaries from his trip to Tunisia in 1914, in which he describes

Fig. 10 August Macke, Market in Tunis II, 1914. In Staatliche Museen zu Berlin. Retrieved November, 12, 2023 https://id.smb.museum/object/831751/markt-in-tunis-ii; Paul Klee, vor den Toren v. Kairuan, 1914. In Zentrum Paul Klee. Retrieved November, 12, 2023 https://www.zpk.org/de/ausstellungen/rueckblick_0/2014/die-tunisreise-klee-macke-moilliet-657.html

impressions with almost exclusively textual notes, while his friend August Macke records faces and landscapes in some watercolours (Figure 10).

THE MULTIMEDIA TRAVEL NOTEBOOK

What is offered in a Museum is always, and always must be, an aesthetic experience, that is, an experience 'of and through' images and that advances between perceptual analysis, emotional reaction, cognitive analysis and attribution of meaning (Mastandrea, 2011). A process whose different moments –those so-called bottom-up and top-down– integrate each other "between the universal and the particular, between the global and the analytical, between pre-comprehension and interpretation, between understanding and evaluation, between the cognitive and the emotional dimensions" (Consoli, 2017, p. 69).

An aesthetic experience whose ability to evoke emotions is not a consequence of either the realism achieved by visualisation, or the power of the technologies employed. Instead, it stems from the intelligence with which knowledge paths are designed, that is, the precision of the narrative presented to

museum visitors as an opportunity for both entertainment and learning. This narrative should never be trivial but, on the contrary, should provide essential keys to accessing knowledge "that are useful in realising an experience of genuine growth and enrichment" (Lampis, 2019, p. 6).

In this context, the narrative strategy behind the product was to propose the experience of travel to the visitor, a powerful argument because to undertake a journey is to connect with other cultures and make oneself available for transformation. This is an innate human aptitude and an experience that has always been practiced, narrated, and even represented, but in recent years it is mostly reduced to a trivial transit to the final destination, deprived of the desire for discovery and the necessary slowness to associate reflections, memories, and recollections. Everything is instantaneously consumed in a distracted frenzy that leads to the loss of much of the emotional supply underlying the experience of travel, of that web of recollective connections and emotional transport across space and time.

The travel notebook thus seemed to us an effective device in soliciting an emotional attitude to travel because the annotations, sketches, and drawings of the carnet de voyage invite us to exercise our gaze and allow ourselves those pauses necessary for the intimacy of experience. With a notebook clutched in our hands, we are led to move forward slowly, to shift our perception of space, as unsuspected architectural glimpses and extended views of the landscape are revealed to us. A printed booklet of a few pages but of high graphic quality that, through 'augmented drawings' using Augmented Reality, QR codes and virtual tours, proposes a journey of discovery of the early Renaissance offered by the *Galleria Nazionale delle Marche* at *Palazzo Ducale* in Urbino.

In the context of this purpose –the re-proposal of a traditional product such as the travel notebook– digital technologies deemed to be consistent with this, namely technologies with low immersive impact, so to speak. These technologies were used to reconnect the relationships between objects

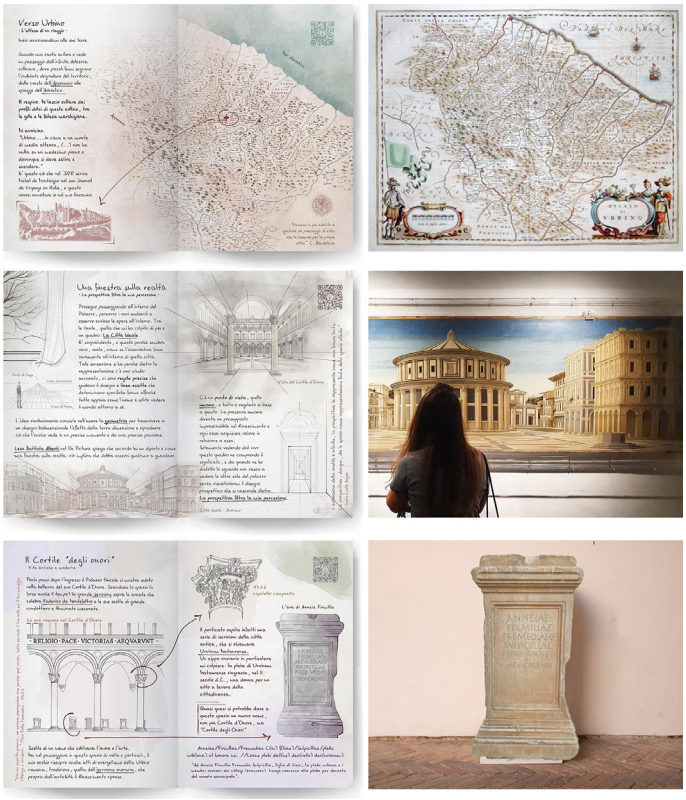


Fig. 11 The three themes of landscape, perspective and the ancient declined in the pages of the notebook. (Authors: Chiara Castracane, Federica Gallino and Alessia Palladino, revised by Flavia Camagni).

and meanings by activating a network of cross-references: between the courtyard and the control of space using measurement and perspective, between the *Ideal City* and the armillary spheres and musical instruments in the inlays of *Montefeltro's Studiolo,* between the landscape framed by the window frames, the revisiting of sacred history in the *Flagellation* and the rediscovery of the ancient, etc. Relationships and cross-references that transform a traditional visit to the Museum into an integrated, multi-layered experience, both spatial –for digital content accessible through AR displayed on a device but in close relation to the real environment when enjoyed in presence– and temporal –for the content accessible through QR codes usable in presence in the Museum during the visit, or before in preparation for it or even afterwards to recall the experience.

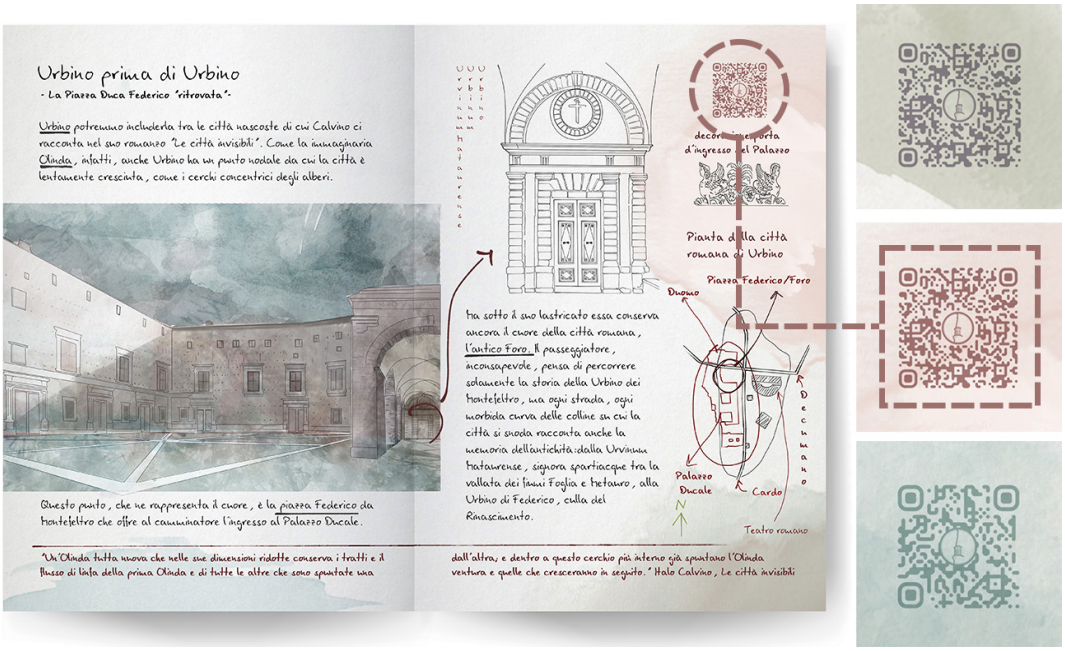


Fig. 12 The QR code system consistent, even chromatically with the page graphics. (Authors: Chiara Castracane, Federica Gallino and Alessia Palladino, revised by Flavia Camagni).

The stages of this journey towards knowledge and understanding of the Gallery and the Palace, that is, of Urbino and the Renaissance, are gradually punctuated in the double pages of the A5-size notebook, each developing a theme of Renaissance culture, including, for example, the value of landscape, perspective as a tool for controlling architectural space, and the rediscovery of classical art (Figure 11). The different levels of reading, those of visual and textual narrative, are proposed in close synergy, integrating images and words into the tale laid out in the illustrated pages. They are carefully composed based on a set of stringent rules –layout, lettering, graphic signs, figures, colour palettes– specially designed so as not to disorient the visitor/reader and to encourage them to advance in the journey following the thread of the proposed narrative. In particular, the graphics are designed in analogy to the style of a diary of a traveller who had visited those places centuries earlier, with the digital simulation of analogue techniques such as ink and watercolour, a calligraphic script, the arrangement of annotations next to the different sketches, etc.

The narrative entrusted to the texts and drawings of the analogue product is then augmented by various QR codes, each always arranged at the top of the right-hand page, providing access to multimedia content -video, audio, panoramic images and virtual tours –that enriches and deepens the subject matter (Figure 12).

During the proposed journey, the user is led to explore not only real worlds but also virtual spaces that amplify and enrich their understanding of the surrounding context. The synergy between physical and virtual exploration results in an enriching experience in which the discovery of concrete places is intertwined with immersion in digital environments, offering the visitor a unique and engaging narrative journey.

The integration of QR codes within the travel notebook represents an example of the desire to merge analogue and digital. These graphic elements, aim to provide a smooth visual experience while harmoniously integrating with the overall aesthetics of the paper product. Graphically, the QR codes have been dynamically adapted to coordinate with the colour of the pages that house them. This choice not only promotes colour harmony within the notebook but also helps balance the visual integration while ensuring adequate contrast for easy camera reading.

The rounded edges of the QR codes represent an additional detail that aims to give a softer appearance consistent with the stroke of the writings in the notebook, which mimics handwriting. This choice helps create a visual harmony between digital and analogue, avoiding sharp contrasts and maintaining a uniform tone that reflects the atmosphere of the Renaissance.

Despite the colour adaptation and rounded shape, the constant position of the QR codes within the page remains an element of continuity. This constancy facilitates user enjoyment by providing a visual guide to easily locate the position of the codes. Once the first QR code is located, the user can expect a similar arrangement to the others, improving the usability of the application.

Fig. 13 Two settings featured in the virtual tour: main entrance dela Ducal Palace (left) and Cotile D'onore (right).

The inclusion in the centre of each code of the project logo, inspired by the aesthetics of a Renaissance stamp, helps to further integrate the QR codes into the atmosphere of the historical period covered. In addition, the logo serves as an element of recognition, ensuring that when used in other contexts, such as signage or promotional materials, it maintains a visual link to the overall project.

The attention to the design of the QR codes demonstrates a thorough consideration for the user experience. These graphic elements contribute significantly to creating a harmonious connection between contemporary technology and the Renaissance atmosphere evoked in the design.

By accessing multimedia content through QR codes, users are immersed in visual and conceptual insights through illustrative videos, explanatory audio, and a virtual tour (Figure 13). The videos, enriched with famous images and texts, provide visual and conceptual insights, offering a more detailed and engaging view of the topics covered. The audios, then, allow users to immerse themselves in captivating narratives that enrich the understanding of the work, offering historical and cultural contextualisation. The virtual tour, with its intuitive navigation system and icons embedded in the scenes, guides the user on a virtual exploration, allowing a three-dimensional understanding of the spaces and places depicted in the notebook.

Fig. 14 The Augmented Reality system allows simultaneous visualization of the original source and its reinterpretation.

This interactivity helps transport the reader into an almost tangible experience, bringing them closer to the historical and architectural context of the *Palazzo Ducale*.

The narrative is further extended using an application structured with the same thematic sections with which, by framing the illustrations in the notebook, it is possible to view in Augmented Reality the original works, illustrations, maps, and photographs from which the drawings were inspired (Figure 14).

The Augmented Reality application is designed to enrich the user experience by allowing users to frame notebook pages through tablets or smartphones and projecting images related to the displayed content into space. The operation of this application is designed to maximize interaction and visual impact.

When the user frames a notebook page through the device, an image related to the topic covered on the page is projected into the surrounding space. This approach aims to create an immersive environment where the user can simultaneously explore the notebook page and additional content in a dynamic way.

To optimise the user experience, the area bordering the notebook was chosen to be used for image placement.

Fig. 15 Notebook pages with augmented reality content, arranged within the area set aside for additional content.

This area was carefully defined to ensure useful sizing for the user experience, allowing them to maintain a clear and consistent view of both the notebook and the additional projected content (Figure 15).

A distinctive feature of this application is the decision to vary the location of additional content within the useful area. This choice was made to stimulate active exploration by the user. Placing content in different positions, although always within the predetermined area, encourages the user to move around the surrounding space, making the experience more dynamic and engaging. In addition, this variation in the position of virtual elements is designed to avoid monotony, keeping the user interested and curious while exploring. The diversification of positions aims to provide a feeling of continuous discovery, making the Augmented Reality experience more immersive and interactive.

The system of QR codes, graphically integrated into the notebook page, and the AR application, whose targets on the pages are identified with graphic signs that surround the 'augmentable' drawings, have thus made it possible to revisit the genre of the travel notebook, which, starting from its material consistency, is transformed into a platform of digital content. Finally, the last pages of the notebook are left to the annotations of the traveller who, inspired by the experience at the *Galleria Nazionale delle Marche*, is urged, on his return journey, to complete the narrative by looking at the route taken with new eyes.

CONCLUSION

In the current wide panorama of communication media for cultural enhancement, we believe that the form of the travel notebook can respond to the need to reduce the gap that prevents one from establishing a relationship with the values embedded in cultural heritage. This is made possible by its reinterpretation for the *Galleria Nazionale delle Marche*, that is, with the mixture of emotional facies and actualisation through multimedia content. This context led to the adoption of technological systems with a low degree of immersiveness (AR and QR code) to enhance the notebook's set of images, characterised by its specific material consistency, and to activate a comprehensive range of perceptual, recollective, imaginative, emotional processes, etc., involved in the experience associated with the cultural asset. The aim is to bridge that 'imaginative-remembrance' gap, that seems to be the most crucial issue, that is, the missing transmission link, enabling the reconstruction of an indispensable intersubjective relationship of mirroring between the 'internal world' of the observer and the 'body' of the cultural good. A product that therefore proposes a renewed vision education, crucial for triggering that complex set of experiential and cognitive processes essential for the recognition and re-appropriation of the values transmitted by cultural heritage.

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Article available at
DOI: 10.6092/issn.2724-2463/19010
How to cite
as article
Ippoliti, E., & Camagni, F. (2024). Urbino Explored in a Multimedia Travel Notebook. *img journal, 10, 160-185.*
as contribution in book
Ippoliti, E., & Camagni, F. (2024). Urbino Explored in a Multimedia Travel Notebook. In S. Brusaporci (Ed.) *img journal 10/2024* Imagin(g) Heritage (pp. 160-185). Alghero, IT: Publica. ISBN 9788899586461

‘EXPANDED’ EXPERIENCES OF KNOWLEDGE OF CULTURAL HERITAGE: THE CASTLE OF ROCCARAINOLA, A CASE STUDY

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ESSAY 157/10

ACCESSIBILITY
DIGITAL CULTURE
ENHANCEMENT
EQUIRECTANGULAR IMAGES
VIRTUAL TOUR

This paper offers a detailed exploration of significant advances in the field of studies aimed at preserving and making accessible virtual experiences related to the Cultural Heritage of small urban centers.
Through the use of the latest digital methodologies for virtual tours, the fundamental importance of the use of equirectangular imagery as a primary tool in the creation of virtual itineraries is highlighted, thus enabling an in-depth understanding and appreciation of the historical legacy represented by the majestic castle of Roccarainola.
The evolution of visual recording techniques over time, from the earliest hand-painted panoramas to monochrome panoramic photographs and, more recently, to high-resolution equirectangular images, illustrates the surprising path and increasing attention paid to digital preservation of Cultural Heritage. Analog panoramic images, although limited compared to the quality and accuracy of today's digital images, have considerable documentary value, offering a unique glimpse into the past and allowing interesting comparisons with contemporary representations.
So, this study focuses on the implementation of innovative techniques for the documentation and enjoyment of cultural heritage, effectively demonstrating how high-quality visual representation plays a crucial role in making tangible, through immersive virtual environments, the cognitive and appreciative pathways related to this important historical record.

INTRODUCTION

In the current context, characterized by the pervasive diffusion of knowledge through Digital Culture, a pressing need emerges to explore and promote innovative methodologies for the valorization and communication of Cultural Heritage. Scientific research in the field of Cultural Heritage has as its primary objective the creation of paths aimed at understanding the historical-cultural heritage.

This contribution aims to examine in depth the experiences, processes and methods aimed at facilitating interventions aimed at understanding and protecting this central aspect of scientific research[1].

Within the context of an epochal transformation driven by digitalisation, this research draws inspiration from an initial reflection by the author, then extending to consider the significant contribution offered by the discipline of Drawing in this transition. In the European context, initiatives such as *NextGenerationEU* and, more specifically in the Italian context, the *National Recovery and Resilience Plan* with particular reference to programming for Tourism and Culture 4.0, underline the crucial importance of digitalisation, involving not only large cultural centers but also the patrimonial riches of small urban centres.

In an era in which the digitalisation of content plays an increasingly predominant role, it becomes imperative to act without delay to guarantee the free use and accessibility of even minor cultural realities, eliminating any form of barrier in the implementation of actions to this end.

Images, especially through advanced technologies such as equirectangular photography and interactive virtual tours, play a key role in the valorisation and enjoyment of cultural heritage (Zerlenga, 2018). These tools allow a detailed and in-depth analysis of architectural sites, allowing specialized and non-specialist users to explore the architectural, artistic and historical elements in a comprehensive and engaging way.

The interactive visualization, supported by high definition and immersive images, offers an experience that goes beyond mere photographic viewing. Through virtual tours, users can explore the details of works of art, architecture, historical finds or archaeological sites, allowing for an in-depth understanding of their complexity and intrinsic cultural value.

These advanced visual tools not only provide a detailed and accurate vision of cultural heritage, but also offer remote access and enjoyment without spatial or temporal limits. This implies that users from any part of the world have the possibility of accessing these cultural resources without necessarily having to physically visit the place, significantly extending the interested audience and ensuring a wider dissemination of knowledge.

In this context, the essential importance of the equirectangular image and the digital methodologies of the virtual tour is underlined (Figure 1). These tools are essential for the creation of a virtual path aimed not only at revealing the authenticity and importance of the castle of Roccarainola (NA), but also at preserving and recovering the historical memory contained therein.

This approach offers a unique opportunity to enjoy and learn about an architectural heritage imbued with meaning, for the benefit of current and future generations.

'IMMERSIVE' IMAGES FOR THE REPRESENTATION OF CULTURAL HERITAGE: BETWEEN ANALOGUE AND DIGITAL

In exploring and interpreting the world, humans rely on their senses, but it is the visual language that has a particularly strong and lasting influence on conscious actions. The brain regions dedicated to vision, more extensive and intricate compared to other senses, impart a considerable impact on an individual's interactions with the surrounding environment through visual perception.

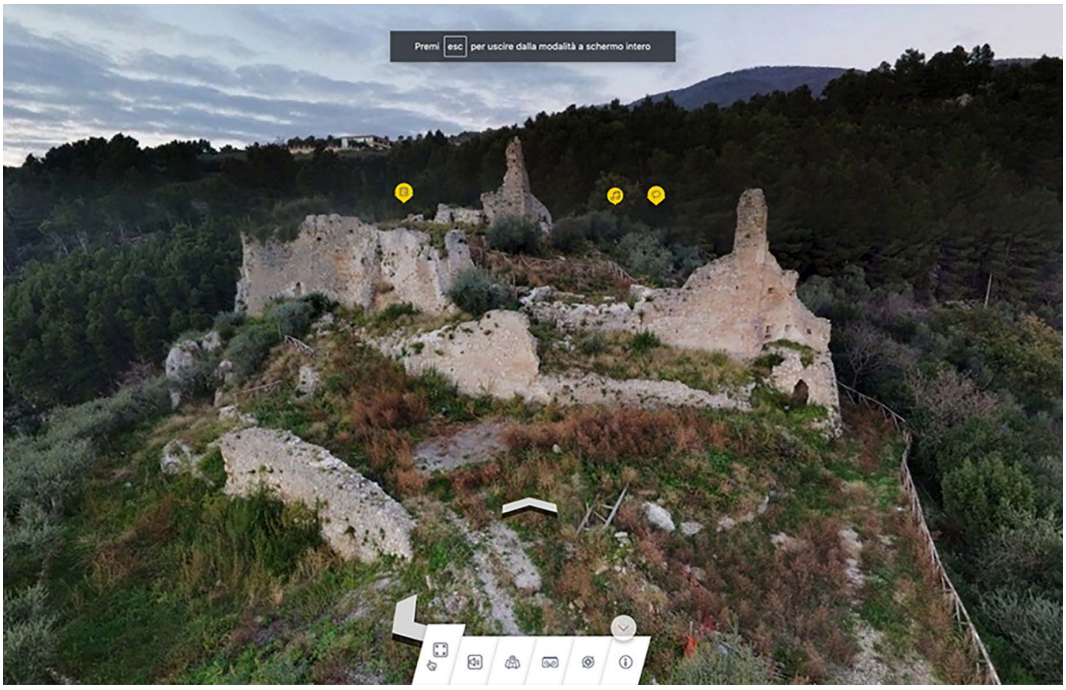

Fig. 1 Roccarainola Castle. The Virtual Tour, (by R. Miele).

As emphasized by Grote, "the sight of a landscape is to mentally travel through it", a concept that retains its validity even when three-dimensional landscapes or environments are reproduced through digital technologies (Unali, 2003). Digital images depicting a landscape become essential tools not only for understanding the place, discerning shapes, distances, and colors, but also for creating a mental connection with it. These images provide stimuli that contribute to "restoring a coherent image to our consciousness" (Grote, 1901).

The ability of digital images to represent an environment in a detailed and precise manner enables mental exploration of those places from a distance, facilitating the experience of an imaginary journey that promotes understanding and connection with the depicted context. In other words, through digital images, we are able to mentally explore real or imagined places, assimilating information and creating cognitive connections that expand our understanding and interaction with the surrounding world.

Fig. 2 Rock art, Caves of Chauvet (top) and Lascaux (bottom), France (Retrieved April, 22, 2023 from https://www.focus.it/).

The theme of 'augmented' reality visualization, understood as an image that surpasses the natural limit of the human visual field, although seemingly linked to digital culture, has roots in much older times. In this regard, the drive to experiment with a pseudo-panoramic or pseudo- spherical vision, hindered by the 'limited' extension of the human eye's visual field, has consistently led humans to experiment with graphic techniques capable of expanding its boundaries, as evidenced in the extensive graphical production inherited from the history of art and cartography. Consider the example of Paleolithic cave art found in the *Chaveaut* and *Lascaux* caves in France (Figure 2). In these caves, mural paintings followed the natural profile of the caves, where prehistoric authors ingeniously utilized their characteristics, employing their shapes, protrusions, and recesses to create scenes and representations that seem to envelop the observer in a 360-degree panorama, thus creating an almost panoramic vision.

This mode of spatial representation then began to spread from the 15th century in an extensive artistic production, which only between the 19th and 20th centuries introduced the concept of 'curvilinear perspective.' Undoubtedly, the initial hints of cylindrical perspective are delineated in specific

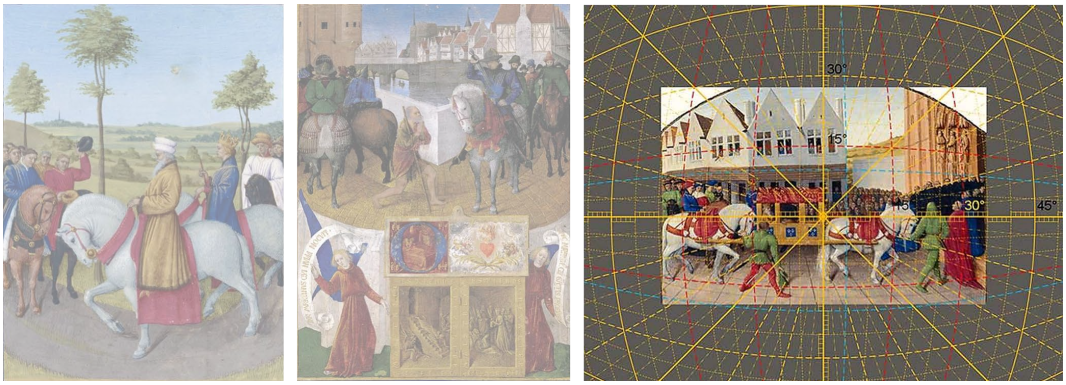

Fig. 3 From left: J. Fouquet, *L'empereur Charles IV et les dignitaires de Paris*, 1455-1460; J. Fouquet, *La charité de Saint Martin*, 1455-1460; J. Fouquet, *Entrée de l'empereur Charles IV à Saint-Denis*, 1455-1460 (Retrieved September, 27, 2023 from https://www.studioargento.com/immersiva/foto-immersiva1.html).

paintings by Jean Fouquet (1420-1481), highlighting the early experiments in this (Figure 3).

However, it's in the subsequent works of artists such as Carel Fabritius (1622-1654) with the view of Delft, Joseph Mallord William Turner (1775-1851) with the view of Petworth Park, and John Vanderlyn (1775-1852) with the panoramic view of the gardens of Versailles that we find a more in-depth exploration and progressive development of cylindrical perspective. (Avery & Fodera 1988) (Figure 4).

These artists expanded and deepened the use of cylindrical perspective through their works, employing this technique to represent landscapes and spaces in a more extensive and engaging manner. Their experiments contributed to the understanding and advanced application of 360-degree vision in art, broadening the possibilities of visual and spatial representation. Meanwhile, the initial steps towards spherical representations can be traced back to the majestic works of Flemish masters who adeptly employed the use of reflective convex mirrors. This technique notably manifested in the artistic production of artists such as Van Eyck (1390-1441), Robert Campin (1378-1444), and Petrus Christus (1410-1475) (Figure 4). Undoubtedly, Flemish artists of the 15th century stand out as pioneers in the use of convex mirrors to achieve more realistic and intricate pictorial representations. Techniques that would undergo improvements implemented by artists like Girolamo Francesco Maria Mazzola, known as Parmigianino (1503-1540),

Fig. 4 Examples of panoramic and spherical representation in painting. a) J. Fouquet, *La charité de saint Martin*, 1455-1460; b) J. Fouquet, *L'empereur Charles IV et les dignitaires de Paris*, 1455-1460; c) J. Fouquet, *Entrée de l'empereur Charles IV à Saint-Denis*, 1455-1460; d) J.M.W. Turner, *Petworth Park*, 1828-1830; e) C. Fabritius, *View of Delft*, 1652; f) J. Vanderlyn, *Panoramic View of the Palace and Gardens of Versailles*, 1818; (Retrieved September, 27, 2023 from https://www.studioargento.com.html).

with his work *Self-portrait in a Convex Mirror* from 1524, as well as by Sandro Botticelli (1445-1510), with his work *Madonna of the Magnificat* from 1483 (Figure 5).

The deliberate use of this reflective technique allowed them to acquire a broader and distorted visual perspective of the painted scenes, resulting in a pictorial rendering that accentuated the perception of depth and spatiality in the artwork. The expansion of these early experiments toward a more spherical vision played a fundamental role in the subsequent development of painting techniques and in the progressive understanding of visual implications in representation. From what has been presented, it is evident that immersive representations of space

Fig. 5 Van Eyck, *Portrait of the Arnolfini spouses*, 1434 (top left); R. Campin, *Saint John the Baptist and the Franciscan master Enrique de Werl*, 1438 (bottom left); P. Christus, *Saint Eligius in a goldsmith's workshop*, 1449 (top centre); Q. Metsys, *Le Prêteur et sa femme*, 1514 (bottom center); Parmigianino, *Self-portrait within a convex mirror*, 1524 (top right); Botticelli, *Madonna of the Magnificat*, 1483 (bottom right) (Retrieved September, 27, 2023 from https://www.studioargento.com/immersiva/foto-immersiva1.html).

are not a modern concept; rather, they have their roots in ancient times. The origins of this concept can be traced back to distant periods, indicating human interest in creating immersive environments since ancient times. In fact, the desire to immerse oneself in the surrounding space and represent it in an engaging and enveloping manner is not a novelty of the contemporary era but reflects humanity's ancient quest to interpret and understand the surrounding world through different visual modalities.

In this regard, tracing back to the previously mentioned Paleolithic cave art in the caves of *Chaveaut* and *Lascaux*, it is evident that from these representations of the ancient Stone Age, a crucial point emerged introducing a significant change in the proportions of the graphic representation framework, favoring a different horizontal ratio, such as 5:4, 4:3, 3:1, 2:1, and so forth (Figure 1).

This change in proportions not only highlights a transformation in artistic approach but also a desire to bring the representation of space closer to human visual perception. This choice aims to establish a more immediate connection between the artwork and its observer, seeking to involve the observer more deeply in the graphic representation. These novelties in the proportions used in art can be understood as among the earliest examples of a graphic approach that

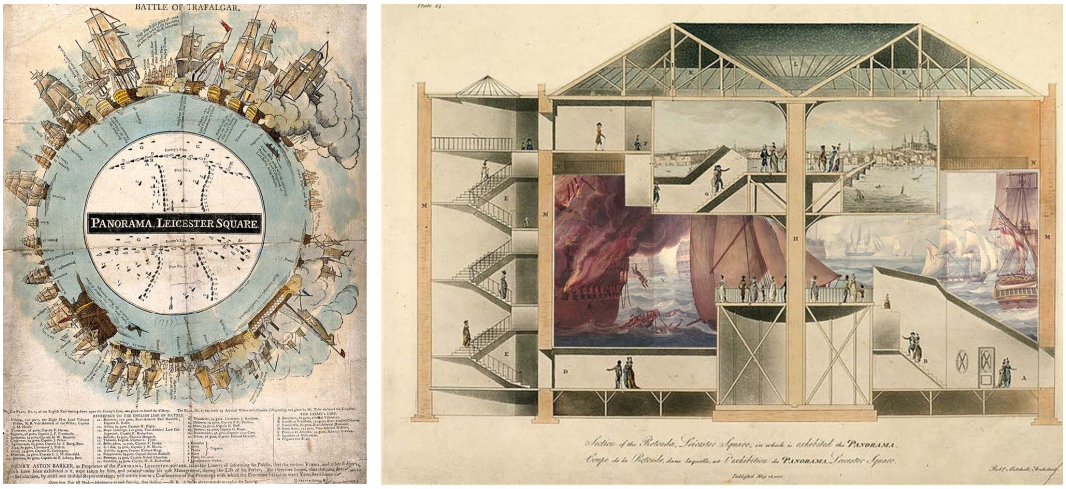

Fig. 6 Robert Barker, *Panorama Brochure of the Battle of Trafalgar*, 1806; R. Mitchell, *Vertical section of R. Barker's Panoramic Rotunda in Leicester Square*, London, 1801; Simulation of the panorama display of the Battle of Trafalgar (1806) by the authors (Retrieved August, 8, 2023 from https://wellcomecollection.org/works/).

explores and exploits the horizontal relationship to broaden the vision and engage the observer more actively in the represented space. It marks a turning point in artistic conception, as it paves the way for a more 'expansive' representation of space, giving rise to a new perspective that aims to involve the viewer more deeply in the reproduced environment.

Closely connected to the theme are also the 'panoramic' views of cities by Robert Barker (1739-1806), from which in 1792 emerged the patenting of a new method to rearrange paintings along a curved surface. This event precisely associates the significance of the term 'panorama': 'pan' (πᾶν) meaning 'all,' and 'orama' (ὅραμα) meaning 'view,' to the concept of a comprehensive vision and the production of spherical, immersive, and augmented images (Figure 6).

In fact, these works consisted of paintings or images arranged along the inner surface of a cylinder, allowing, from a central point of view, a complete 360-degree vision of the artwork. This innovative approach enabled viewers to explore and fully immerse themselves in the artwork because they could rotate around the cylinder and perceive the entire representation from every angle, thus allowing for a deeper and more engaging understanding of the work itself. From the 19th century to the early 20th century, panoramic represen-

Fig. 7 Simulation of the panorama display of the *Battle of Trafalgar* (1806) (elaboration by the authors).

tations, also known as 'cycloramas' or 'dioramas,' became a mass cultural phenomenon in many parts of Europe. Temporary cylindrical environments were created to accommodate large-scale paintings (Figure 7) (Pulvirenti, 2021).

The ability to immerse oneself in 360-degree scenes, embracing images of historical battles, natural environments, or exotic worlds, aroused strong interest and pleasure among the public. These representations offered the opportunity for intense visual experiences, allowing the audience to mentally immerse themselves in distant and fascinating scenarios. The capacity to explore distant places through these panoramic views provided an engaging and unique experience, enabling observers to connect with otherwise remote and unknown worlds. In parallel with cycloramas, promotional brochures for panoramas also began to circulate, such as the well-known Brochure for the Panorama of the Battle of Trafalgar in 1806 by Robert Barker (Figures 7, 8).

In this context, these brochures are significant as they are geometrically connected to current and widely circulated

Fig. 8 Simulation by the authors of different panorama scenes of the *Battle of Trafalgar* (1806) inserted in the vertical section of R. Barker's *Panoramic Rotunda in Leicester Square*, London, 1801 (elaboration by the authors).

spherical photos with the 'tiny planet' effect, derived from images captured at 360 degrees (Figure 6).

From the panoramic paintings of the 18th and 19th centuries, the evolution of technology has opened and continues to open new horizons in the approach to representing the cities and their architectures.

Technological advancements have represented a significant turning point in how we explore and represent urban environments. New techniques and tools, such as photography and digital graphics, have expanded the possibilities of capturing, interpreting, and communicating the complexity of cities and their architectural structures. These advancements have not only enabled faithful documentation of environments but also exploration of new perspectives, visualization of intricate details, and more interactive and engaging communication with the audience. In this way, modern technologies have paved the way for new modes of exploration and understanding of cities, offering increasingly detailed and engaging visions of their architectures and the urban environment as a whole (Cirafici & Zerlenga, 2020).

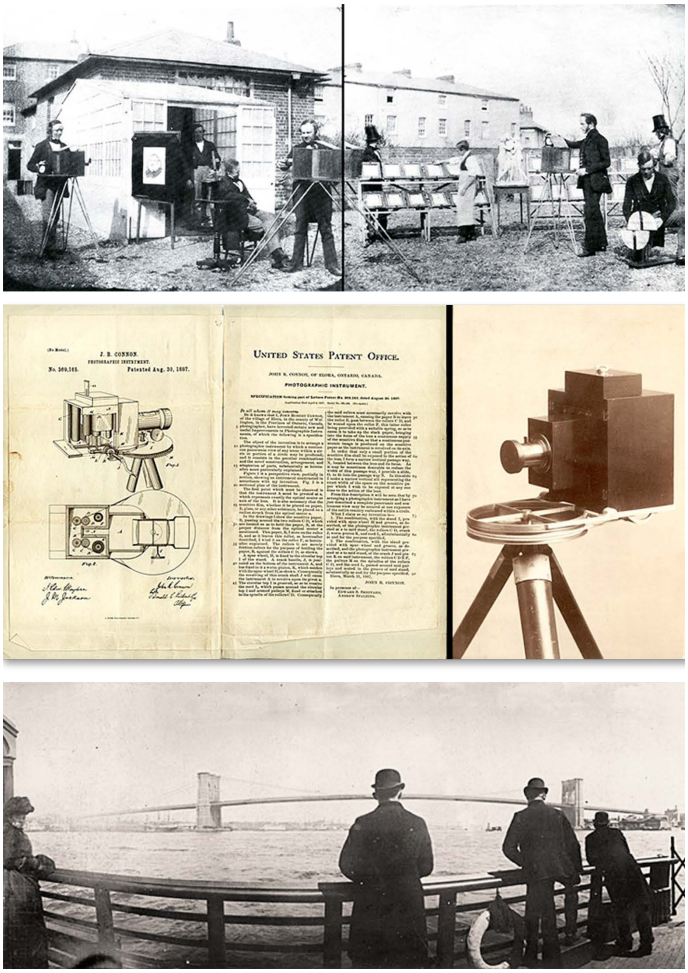

Fig. 9 W.H Fox Talbot, *Talbot's printing establishment at Reading*, c.1845; John R. Connons, patented 360° camera; *Brooklyn Bridge*, 1980 (Retrieved May, 6, 2023 from https://www.metmuseum.org/art/collection/search/283065).

Indeed, the epochal advent of photography marked a significant transformation from painted panoramic views in the 18th and 19th centuries to the early photographic experiments by Fox Talbot (1800-1877) (Carbasso, 2023), the first photographer to conceive the technique of the photo-mosaic (the combination of multiple sequentially taken photos) as a method for panoramic photography (Figure 9).

Therefore, photography marked a significant turning point in the history of visual art, as it introduced a new medium that allowed for a more precise, accurate, and detailed representa-

Fig. 10 . Eadweard Muybridge, *San Francisco*, 1877-1980. (Graphic elaboration on the photo by M. Cicala) (Retrieved May, 6, 2023 from https://www.nyhistory.org/blogs/-muybridges-spooky-panorama).

tion of the world. This innovation not only enhanced the ability to capture reality with an unprecedented level of realism but also transformed the way artists and society viewed and understood their surroundings, influencing various artistic movements and visual culture as a whole.

The initial experiments by Fox Talbot and other photography pioneers paved the way for new ways of capturing images, allowing the immediate and faithful immortalization of reality. Panoramic views, previously hand-painted, found in photography a new form of expression, offering the possibility to document landscapes and cities with an unprecedented level of precision and detail (Figure 10) (Pillsbury, 2023). These experiments opened new horizons in visual exploration, introducing a photographic perspective that changed the way we perceive and interpret the surrounding world.

Nevertheless, despite rapid technological evolution leading to the production of increasingly specific and high-per-

formance machines (rotating cameras, Arthur C. Pillsbury's circuit panoramic camera with a rotating lens) (Scott, 2006), it was with the development of digital imaging in the 20th century that the transition to the new stitching methodology occurred, with images mapped in equirectangular projection.

The digital sphere, particularly through the production of equirectangular images, opens new horizons for the exploration and understanding of cultural heritage, especially when there are limitations in accessing cultural assets.

These images enable a 360-degree visualization, revealing details and contexts that might otherwise be inaccessible (Di Luggo & Zerlenga, 2020).

This type of imagery allows for the examination of intricate relationships between the observer and the represented space. Exploring a 360-degree image enables the simultaneous engagement of multiple dimensions of the human experience: embracing physical, emotional, intellectual, and social aspects. These representations offer a 'virtual experience' that allows users to fully immerse themselves in the cultural and historical context, even when physical presence in these places is impossible or limited. In this way, digital technology amplifies the potential for knowledge and engagement with cultural heritage, leading to an enrichment of historical and cultural experiences without physical boundaries.

VIRTUAL ITINERARIES FOR THE DIGITAL ENJOYMENT OF ROCCARAINOLA CASTLE

This contribution aims to prefigure the intrinsic and multifaceted meaning of a study aimed at enhancing and effectively communicating the cultural heritage and historical memory associated with the ancient remains of Roccarainola Castle. The primary objective of this research is to adopt an innovative approach focused on promoting accessibility and inclusion, aiming to generate interest among diverse users and engage them in immersive virtual interactive experiences.

Fig. 11 . From left: G. Mocetto, *Ager Nolanus cum adjacentibus Regionibus*, in A. Leone, De Nola, 1514; Unknown, *Topographic plan of the city of Roccarainola*, 18th century, Naples, BNN, Sec. Manuscripts, B°5 C 93; *View of the castle from via G. Matteotti* (Drone photography by R. Miele).

In this context, the synergy between images and virtual reality within an expedient approach emerges as the most suitable mode among those feasible and implementable.

In this specific context, this investigation focuses on the significant role played by equirectangular images in the context of digital access to Cultural Heritage.

This type of imagery, commonly known as 'spherical' images due to their ability to represent the projection of a spherical surface onto a rectangular plane, allows users to or-

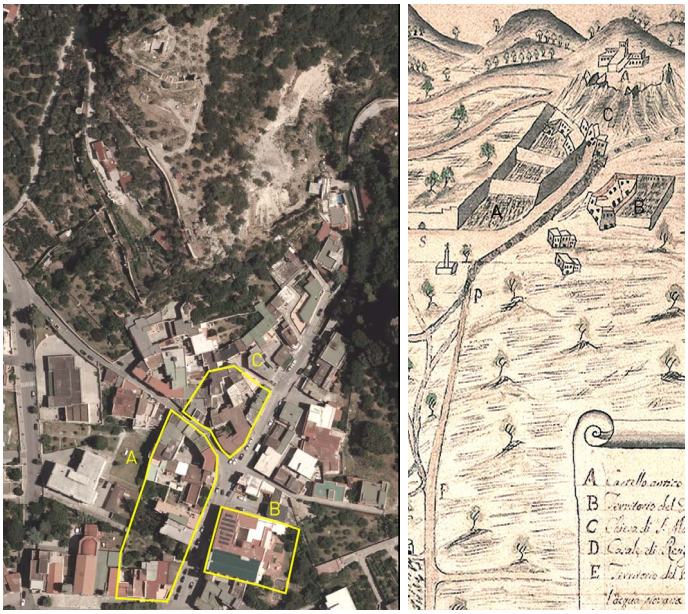

Fig. 12 Reading and comparison of historical documentation with the state of the places: A. Palazzo De Rinaldi; B. Conventual Minor Fathers; C. Medieval village.

bit around their central axis, enabling movements both vertically and horizontally (Figure 15).

This methodology presents itself as an expedient and cost-effective approach, proving effective in rekindling general interest in numerous cultural sites considered 'minor.' These sites, often overlooked or entirely unknown, benefit from the ability of these images to make their exploration in a virtual environment accessible and engaging, thus contributing to the valorization of lesser-known yet significant locations.

From this perspective, Roccarainola Castle stands as an example of relevance, both as a fortified structure of more modest dimensions and as a historical testament scarcely known among its own citizens. Specifically, it's a modest defensive structure situated in the Agro-Nolano, whose remains still today bear tangible connections to the surrounding urban development since its early construction phases (Rocchi, 1908; Manzi, 1999; Capolongo, 2001) (Figure 11). This small fortress, with traces of a glorious past, represents a focal point in local history, highlighting an intrinsic link with the evolution of the nearby settlement over the centuries.

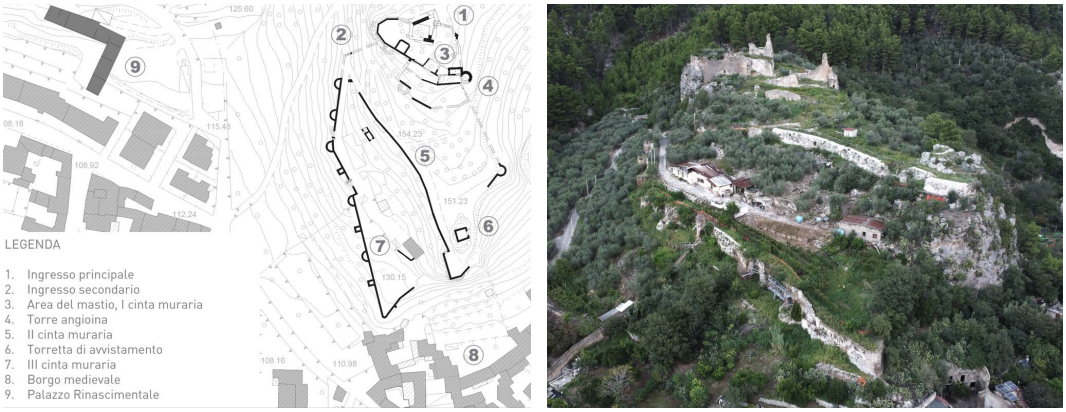

Fig. 13 . Roccarainola Castle, general plan with identification of the constituent elements still visible. Cartography of the Municipality of Roccarainola; aerial photo of the southern side of the castle (elaboration and photo by R. Miele).

Considering its defensive function and, consequently, the need to oversee the entire Agro Nolano valley, the castle perches on a hill of Monte Majo, emerging as a tangible testament to the region's history since the 12th century. During the Swabian era, it harmoniously integrated into the dense network of castles and fortified structures in Terra di Lavoro.

Dominating the landscape from this elevated position, the castle constituted an essential link in the chain of defenses and architectural testimonies characterizing the area, particularly the defensive line stretching from the so-called Matinale Castle of San Felice a Cancello to reaching the castle of Avella at the opposite end. Its presence not only symbolized the power and strategic importance of fortified settlements in that historical period but still today reveals details and stories of ancient Terra di Lavoro, providing a significant window into an era of considerable importance in the history of Campania Pars Orientalis (Cordella, 2007).

The image of the castle, mirroring its history, has undergone transformations over the centuries due to interventions necessary to adapt to evolving defensive techniques. These interventions, occurring over time, have contributed to altering the original structure of the fortress.

The lack of documents and images makes it difficult to analyze the construction phases and reconstruct the castle's appearance at its abandonment.

Fig. 14 The castle in the urban dimension (Drone photography by R. Miele).

The absence of a robust documentary and iconographic apparatus represents a significant obstacle in fully understanding the architectural history of the castle.

This gap makes it difficult to delineate the various stages of its structural evolution and, above all, to reconstruct the exact appearance it had when, already in a state of disuse, it suffered definitive destruction during the German bombings of 1943 (Capolongo, 2001).

Nevertheless, what local scholars have supported regarding the origins and developments of the small fortress still serves as a valid starting point useful for formulating, albeit approximate, hypotheses that allow visualizing how the original structure of the castle might have appeared. Even today, for instance, it is possible to trace among the dense vegetation the path outlined by the three defensive walls which, connecting with each other, wind along the irregular ridges of the rocky terrain. The first of these walls delineates the area of the keep, within which remains of robust walls are still visible, suggesting the presence, according to observations by Manzi, of an imposing palatium (Figures 12, 13). Therefore, by observing the traces left by these defensive walls, it's possible to hypothesize about the layout and function of the different sections of the castle. The evident presence of the remains of considerable height within the first defensive enclosure suggests the hypothesis of an important fortified residence, whose architectural impact is still perceptible from the visible traces.

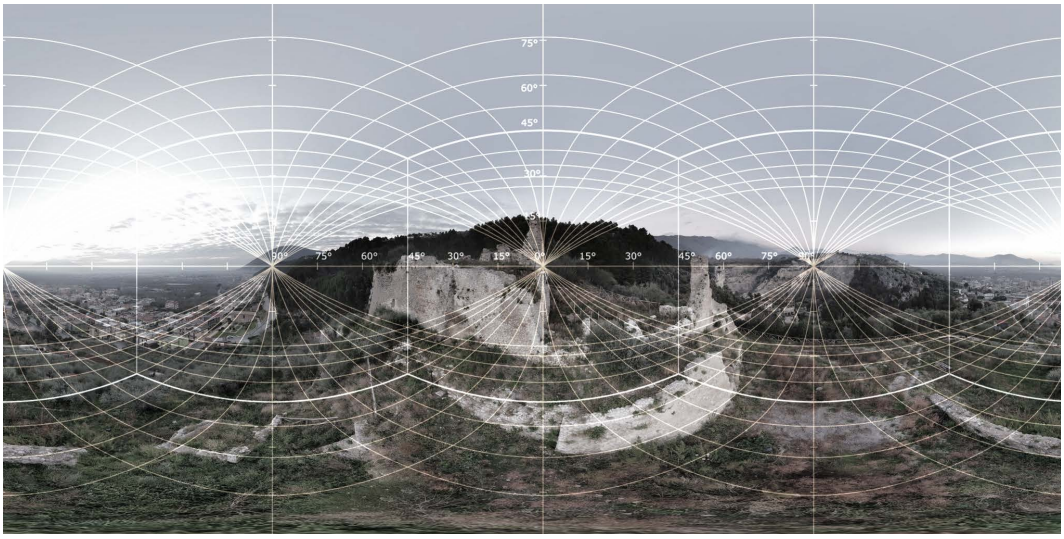

Fig. 15 Geometric construction of the equirectangular images obtained for the castle.

From the southeast corner of this area, the point of intersection between the first and second defensive enclosures, emerges the circular Angevin tower, a structure clearly subsequent to the fortified enclosures. Extending south from this tower is the second curtain wall, strategically positioned to adapt to the complex terrain's configuration.

It's noticeable that this wall exhibited a robust wall structure on the southwest side, while on the east side, it featured smaller dimensions, presumably considering the steep rock face inherently impenetrable.

The third enclosure connects to the second through a small quadrangular-shaped observation turret and further extends along the southwest slope, bordering the rocky outcrop on which the keep and fortified palace stand. The expansion of this third curtain wall contributed extensively and strategically to defending the southern part of the castle complex, embracing and protecting the main structures of the castle in a commanding position (Manzi, 1999; Cordella, 2007).

Therefore, Roccarainola Castle emerges as a focal point for the town's visual and cultural identity, deeply rooted in its history, culture, and traditions. However, despite efforts to revive the surrounding area, the castle, having remained

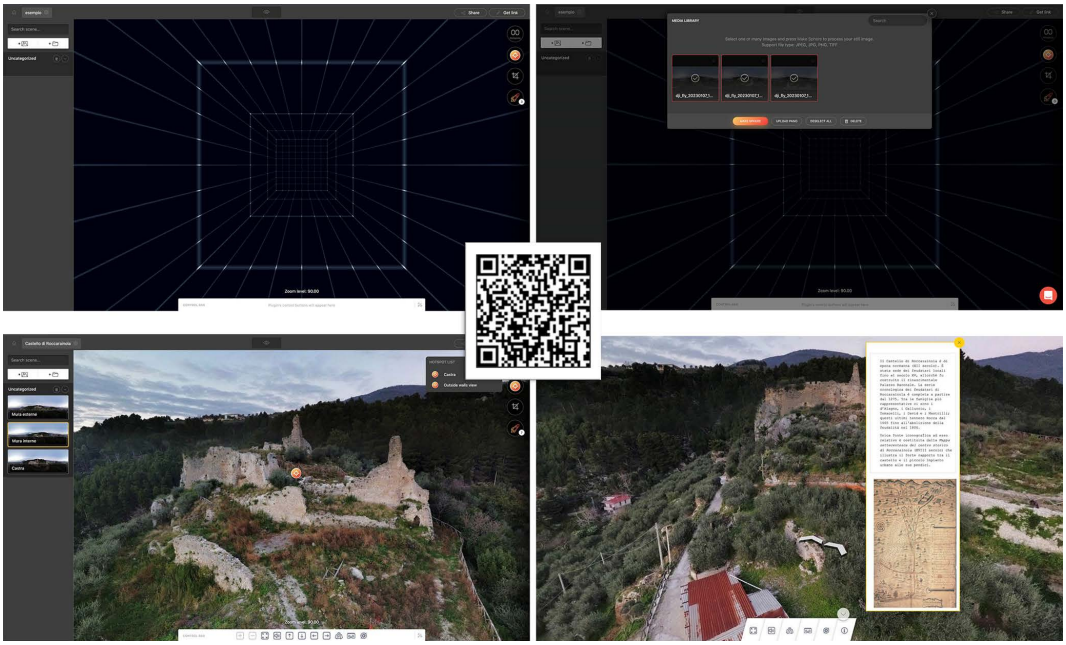

Fig. 7 Configuration phases of the virtual path using the Lapentor open access software. (Graphic processing by R. Miele).

abandoned for an extended period and subjected to evident unauthorized occupation, is currently under renovation and, therefore, not accessible to the public. This situation prompts reflection and a targeted intervention to address the current issues of accessibility and utilization of Cultural Heritage, following the principles of the discipline of Design. Consequently, the urgent need to preserve the castle's historical memory found a practical response in employing Digital Culture tools, particularly through the adoption of the Virtual Tour methodology. These tools have opened up new scenarios in enhancing and experiencing cultural heritage, enabling the public to explore the castle and its history virtually and interactively, even during periods when physical access is limited or impossible.

Given the constraints of inaccessibility, it was necessary to employ a drone, specifically the DJI Mavic Mini 2 model, which, using the panoramic shooting mode, captured the frames required for creating the indispensable equirectangular images to initiate the virtualization project (Figures 14, 15).

The use of *Lapentor* software, a free and open-access VR platform, facilitated the construction of the virtual tour. Through a simple and intuitive interface, the operator could upload various scenes (the equirectangular images) and link them together using specific transition hotspots. In the case of Roccarainola Castle, the project envisages exploring three distinct environments that allow observing the castle from different perspectives: from outside the walls, inside the walls, and in the keep area. The path was customized based on the project's specific objectives and target audience.

The use of multimedia hotspots allowed configuring a journey enriched with content useful for understanding the fortified structure. The description of the layout was facilitated through elaborate graphics and textual information, accompanied by vocal tracks generated using the open-access text-to-speech platform, *FREETTS*.

The Virtual Tour is accessible on all devices via a link or by scanning a QR code, without the need to install third-party apps. The interface, simple and intuitive, offers complete control of the virtual tour through a single control bar, enabling audio management, *VR* experience settings, gyroscopic function, georeferencing information, and project details (Figures 16, 17).

In this context, the use of Digital Culture tools emerges not only as a valid but also as a precious approach. Apart from promoting targeted actions to enhance and preserve historical memory, these tools prove effective in overcoming current limitations hindering direct access to heritage sites.

The application of Digital Culture not only initiates processes for recovering and valorizing the past but also represents a fundamental opportunity to sustain interest in cultural heritage even in temporary situations when physical access is limited. This perspective opens new avenues to make historical and cultural heritage more accessible and engaging for a broader audience, offering an immersive exploration and learning experience that transcends both temporal and geographical boundaries.

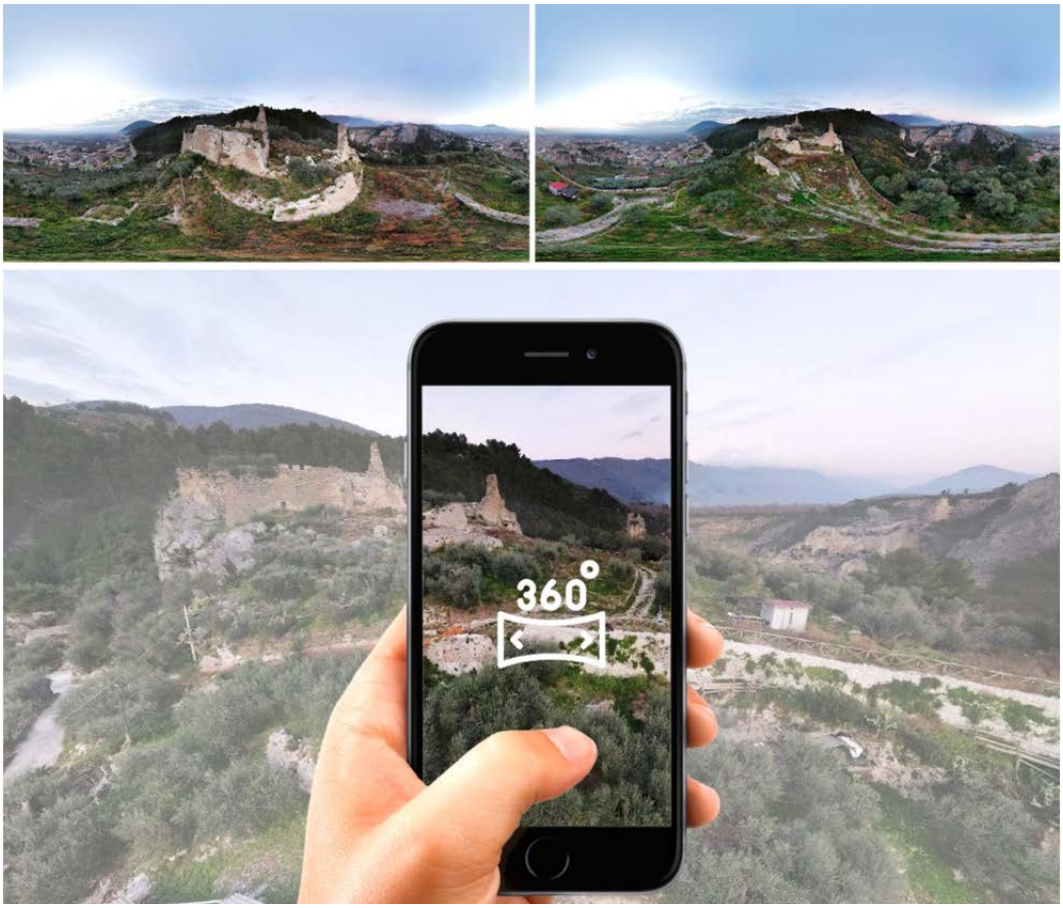

Fig. 8 Spherical (or equirectangular) images of the Roccarainola castle with simulation of the virtual experience using spherical visualization software (elaboration by R. Miele).

CONCLUSIONS

The research analysis conducted, far from being just a reflection, emphasizes primarily the crucial and multidimensional role of Design in the creation of images intended for the virtual consumption of knowledge. This implication not only leads to a deep and thorough reflection on current issues related to the recovery, communication, and valorization of cultural heritage, especially in smaller urban areas but also assumes an increasingly prominent role when the image itself 'expands,' becoming a driving force for initiatives within the sphere of Digital Culture. In this context, the image be-

comes a tool to achieve the goal of making shared cultural heritage more accessible and inclusive, broadening the horizon of users and consumers.

The imperative need to preserve the historical memory of Roccarainola Castle highlights the pressing demand for intervention capable of rekindling a sense of rediscovery among citizens, especially for a place often overlooked due to its familiarity and daily proximity.

A dynamic and expeditious approach takes shape in the development of a virtual tour designed not only to overcome physical and cultural barriers but also to create an immersive and inclusive environment. This approach aims to evoke vivid interest and curiosity in visitors, placing them at the very center of an engaging, interactive, and participatory learning experience that encourages active exploration and deeper understanding of the content. Looking towards the future, the project reveals extensive opportunities for expansion and improvement, offering possibilities for continuous content and scenario integrations. This flexibility allows the project to extend to new historical sites, within a virtual network of cultural routes in constant expansion. Furthermore, with the hope of a probable recovery of the examined area, the virtual tour could not only catalyze the revitalization of local tourism but also act as valuable support for on-site visits, providing an engaging and comprehensive multisensory experience for visitors.

In conclusion, these ongoing advancements not only confirm the cardinal role of Design and digital images as essential elements for the consumption and valorization of Cultural Heritage but also underscore their potential in fostering an innovative and future-oriented approach within the expanding Digital Culture sphere. This evolving landscape shapes itself as fertile ground for creating more complex, personalized, and participative cognitive and cultural experiences, aimed at a diverse and ever-growing audience of cultural consumers, thus contributing to a more inclusive, immersive, and deeply enriching cultural experience for all.

NOTES

1. This contribution is the result of collaborative work. The *Introduction* and *Conclusion* paragraphs are attributed to Ornella Zerlenga; *'Immersive' images for the representation of Cultural Heritage: between analogue and digital* is attributed to Margherita Cicala, and *Virtual itineraries for the digital enjoyment of Roccarainola Castle* is attributed to Riccardo Miele.

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Article available at

DOI: 10.6092/issn.2724-2463/18541

How to cite

as article

Zerlenga, O., Cicala, M., Miele, R. (2024). 'Expanded' experiences of knowledge of Cultural Heritage: the castle of Roccarainola, a case study. *img journal*, *10*, 186-211.

as contribution in book

Zerlenga, O., Cicala, M., Miele, R. (2024). Expanded' experiences of knowledge of Cultural Heritage: the castle of Roccarainola, a case study. In S. Brusaporci (Eds.), *img journal 10/2024 4 IMAGIN(G) HERITAGE* (pp. 186-211). Alghero, IT: Publica. ISBN 9788899586461

Erratum: Title Correction

This erratum regards the following article: Proietti, M., & Zollo, F. (2023). The Architecture of the Virtual Not-Place. Reflections on Design in the Metaverse and the Meaning of Violence. Img Journal, 4(9), 182–193. https://doi.org/10.6092/issn.2724-2463/18254

The correction concerns the title, which contains an incorrect sentence in the last part. The incorrect addition is “and the Meaning of Violence.”

The editorial team apologizes to the authors and the readers for the inconvenience.