URBINO EXPLORED IN A MULTIMEDIA TRAVEL NOTEBOOK

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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.
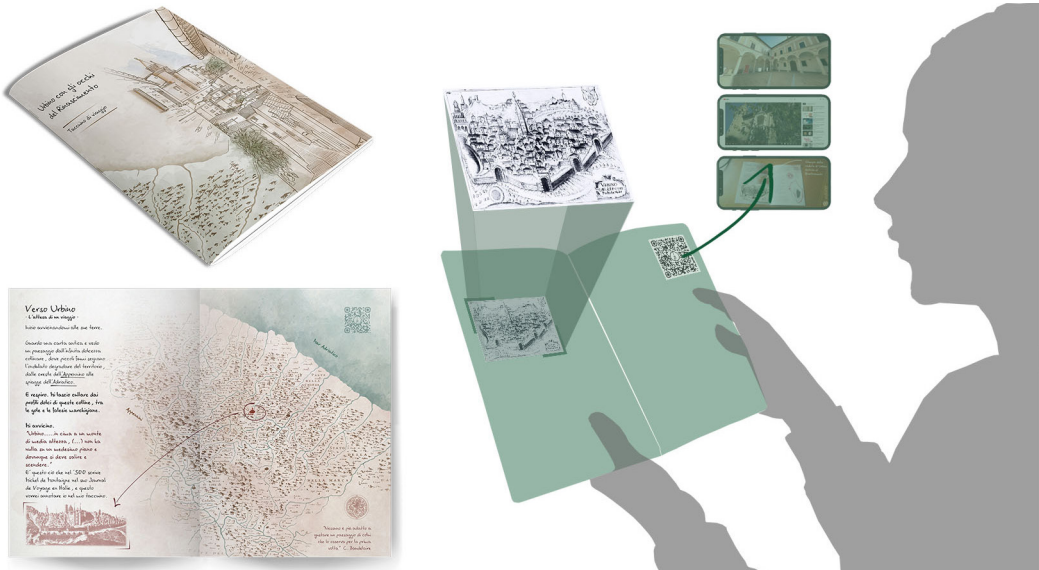
Fig. 1 Mockup of the multimedia notebook.

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 primarily 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>
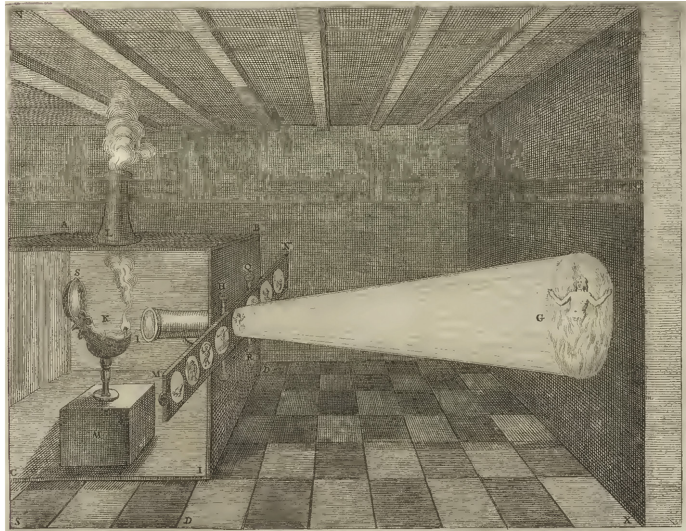
A disposition to exploit vision that became increasingly popular and led to the invention and commercialisation of a wide variety of instruments intended for an ever wider audience. Among the many instruments of particular interest are the so-called 'paper peepshows', or paper shows, which offer three-dimensional 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 Müller (Hyde, 2015). The technological innovation introduced by Müller 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,
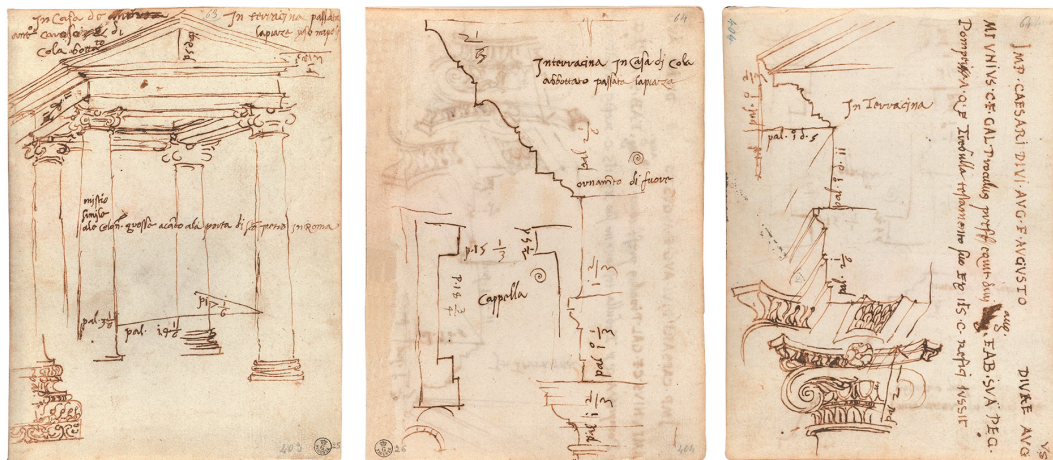
Fig. 5 Baldassare Peruzzi, drawings of the temple of Terracina, Travel Notebook, 1519-1520. In Gabinetto dei Disegni e delle Stampe degli Uffizi, GDSU 404 A, 403 A. Retrieved November, 12, 2023 <https://www.uffizi.it/opere/peruzzi-terracina-iscrizione>

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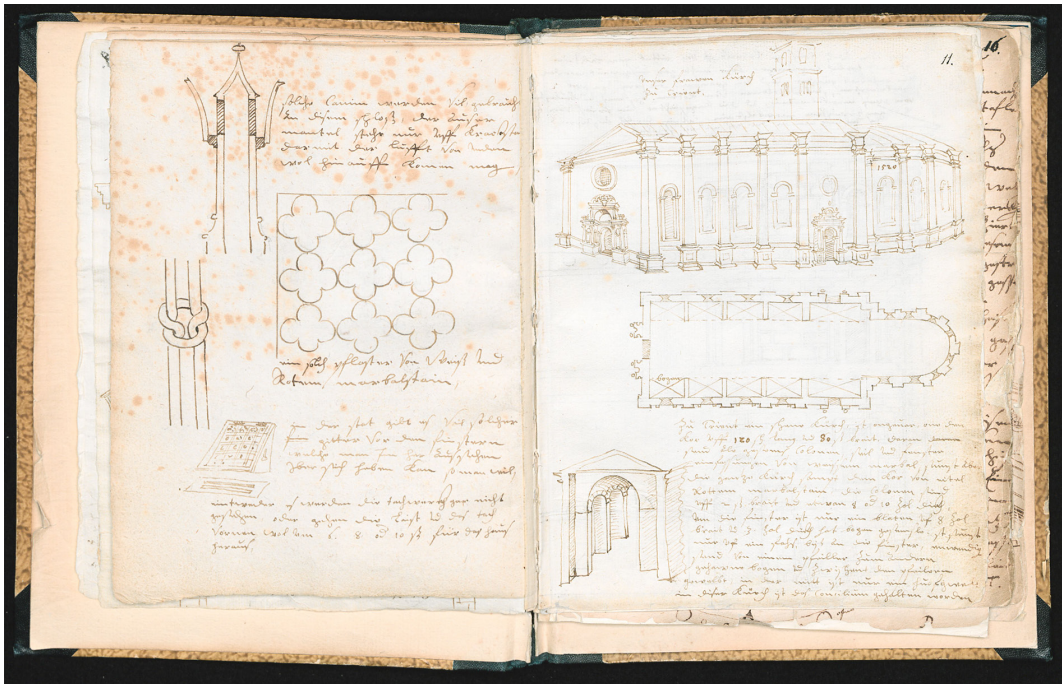
Fig. 6 Heinrich Schickhardt, Raiss in Itaia, 1598, 10 verso, 11 retro. In Württembergische Landesbibliothek. Retrieved November, 12, 2023 <https://digital.wlb-stuttgart.de/sammlungen/sammlungsliste/werksansicht?tx_dlf%5Bdouble%5D=0&tx_dlf%5Bid%5D=16555&tx_dlf%5Border%5D=title&tx_dlf%5Bpage%5D=26&cHash=d15ca09f3a7f474428f1bf2fc665bd24>

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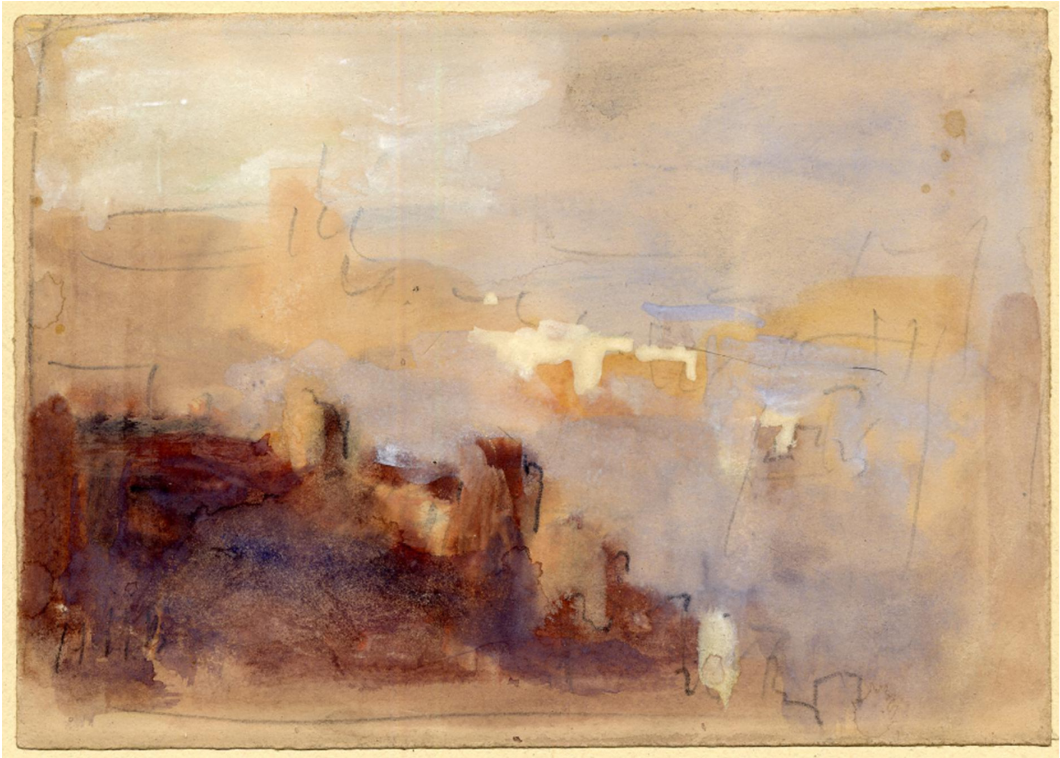
explore and study classical architecture, and the series of magnificent watercolours between the Alps, Venice and Rome (Mammuccari, 2009). Or finally in Paul Klee's diaries from his trip to Tunisia in 1914, in which he describes

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).
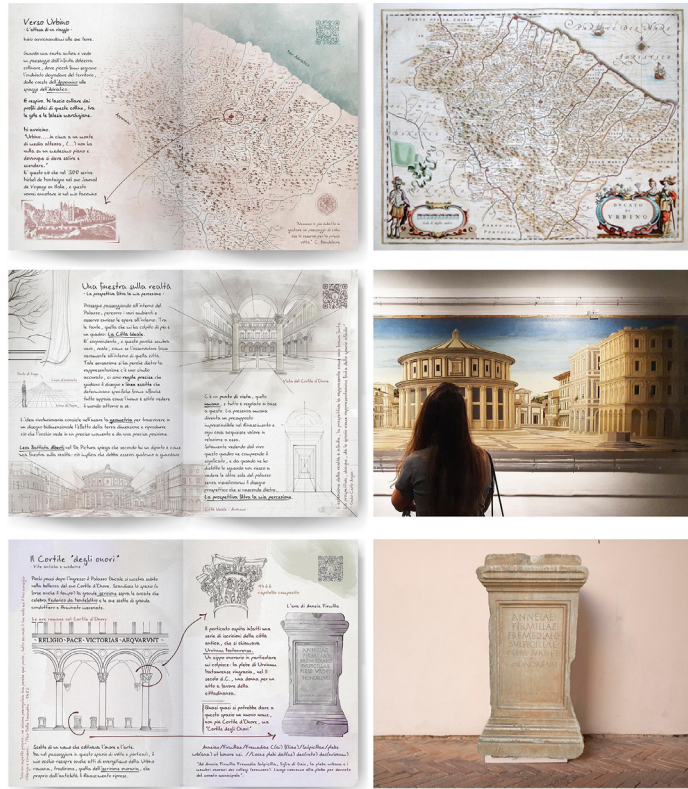
and meanings by activating a network of cross-references: between the courtyard and the control of space using measurement and perspective, between the *Ideal City* and the armillary spheres and musical instruments in the inlays of *Montefeltro's Studiolo*, between the landscape framed by the window 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.
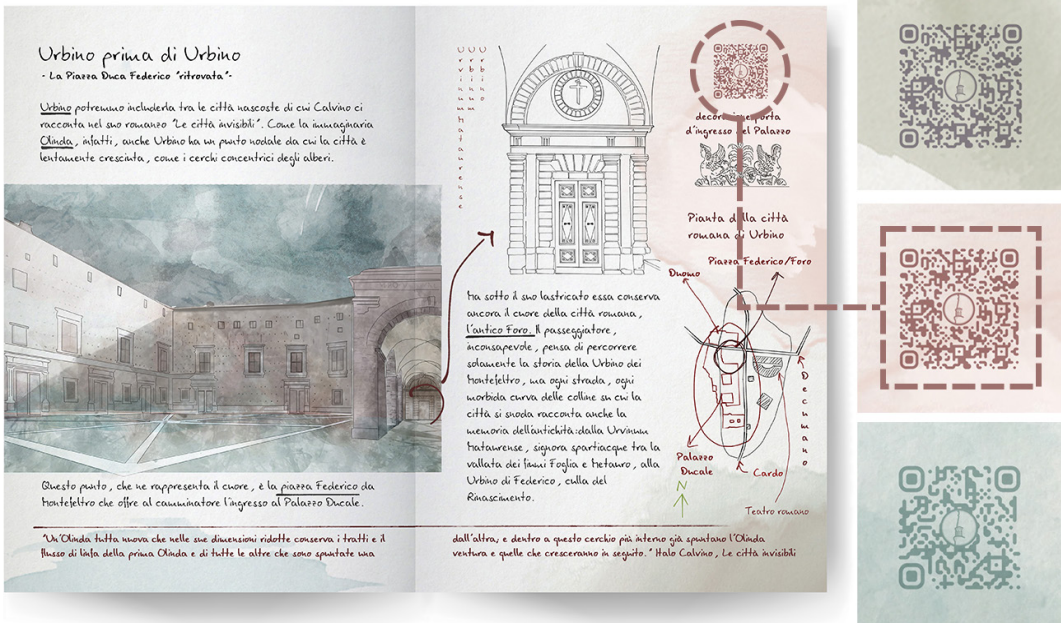
Fig. 12 The QR code system consistent, even chromatically with the page graphics. (Authors: Chiara Castracane, Federica Gallino and Alessia Palladino, revised by Flavia Camagni).

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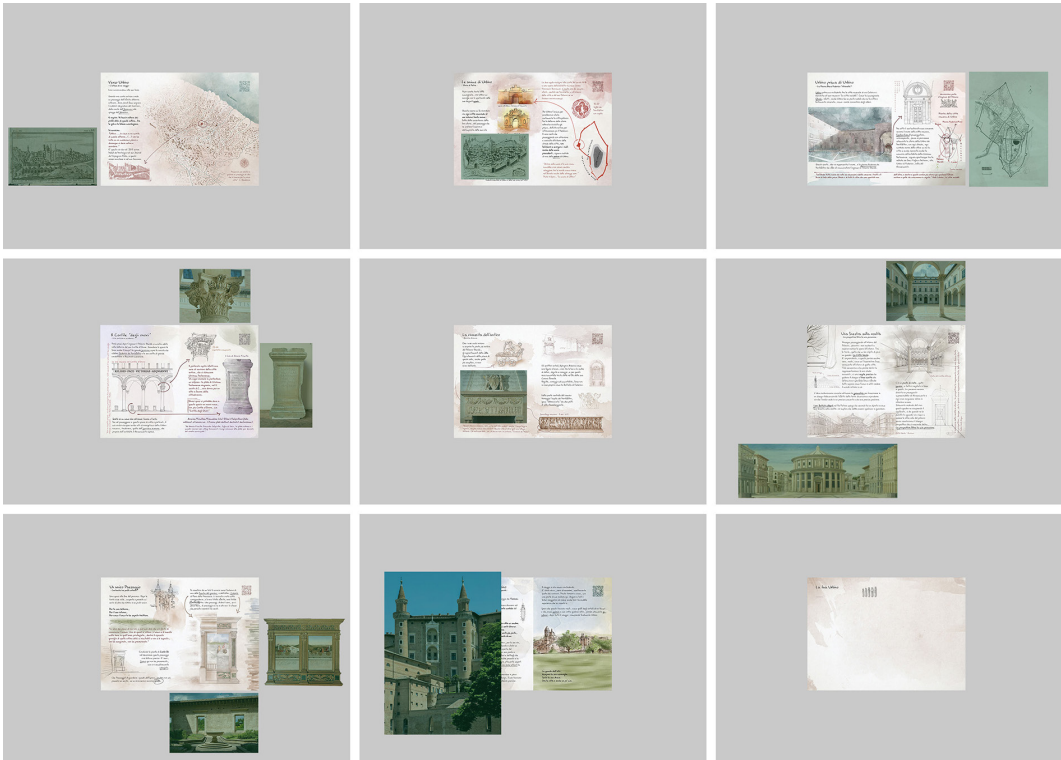
Fig. 15 Notebook pages with augmented reality content, arranged within the area set aside for additional content.

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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