paesaggio urbano

URBAN DESIGN

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Paesaggio urbano - Urban Design is a bimonthly magazine on architecture and urban design, founded in 1989 and is published by the Maggioli Group. The magazine has a multidisciplinary approach, ranging from design and survey issues to urban morphology, architectural design and local and international cultural trends.

Paesaggio Urbano – Urban Design è una rivista semestrale di architettura e urbanistica fondata nel 1989 ed edita dal Gruppo Maggioli. La rivista ha un approccio multidisciplinare che spazia dalle tematiche del disegno e rilievo a quelle relative alla morfologia urbana, al progetto di architettura e trend culturali locali e internazionali.

Between memory and oblivion

01.

Auguste Rodin, Torse de l'Ombre, c. 1880; bronze donated to the São Paulo Art Gallery in Brazil in 1997 by the Association of Friends of the State Art Gallery | Auguste Rodin, Torse de l'Ombre, ca. 1880; bronzo donato dall'Associazione degli Amici della Pinacoteca di Stato nel 1997 alla Pinacoteca di San Paolo in Brasile
Photo by: Marcello Balzani

The *UID Unione Italiana Disegno* Symposium on Innovation and Internationalisation of Research, part of the 6th edition of the 'Days of Restoration and Cultural Heritage' 2024 in Ferrara, aimed to promote the internationalisation of studies and investigations and the constant innovation. The Symposium offered continuity to the events of previous years to promote research at an international level and to present the roadmap of the work of the UID Innovation Commission, starting from the strategic areas of development that include the themes of digitisation, visualisation and social innovation for the valorisation of cultural heritage, the conservation of the built, historical and artistic heritage, and the contexts of city, territory, landscape and environment.

The theme chosen for this 2024 edition of the Symposium lies between Memory and Oblivion, an extremely topical antithesis that sees the "amnesia project" as a way for society to metabolise unconscious conflicts and negations in an attempt at socio-cultural reset. Memory therefore on the one hand as a fullness: of history, places, buildings and people, as the capacity to remember in order to evolve and innovate. On the other hand, oblivion as an incessant emptiness: of traditions and processes that are thus forgotten in a sort of great island of the Homeric lotos that is characterising the society in which we live. The development model in recent years, especially in that part of the planet that has operated by (apparently successful) market choices, has linked many individual roles in a collective goal of progress, of directed and efficient (exclusive) productivity. A model that seems to contain a warped position, that while it grows it also contaminates its foundations, as if an (announced) disaster could always seem to be just around the corner. Even without recalling René Thom's theory of catastrophes, when a structuralist view began to identify catastrophic processes as conditions of an almost obligatory dynamic in human realities, the current enduring condition of transience in which the development model applies, also shows how conflicts seem to be always at the gates. So, for example, with an analogy proposed by conservation processes, especially in Italy, we realised how even the act of documentation and conservation can sometimes form the basis for a resolution of conflict.

Deciding to preserve a cultural heritage is never a trivial act. Contrary to popular belief, it can represent the resolution of a conflict. A conflict about the vision of the future, about the idea

02.

Dettaglio del portale della "Chiesa del Purgatorio" di Bitonto in Puglia, edificata dopo il Concilio di Trento. Foto di Marcello Balzani. |
Detail of the portal of the "Chiesa del Purgatorio" in Bitonto, Apulia, built after the Council of Trent.

Photo by: Marcello Balzani

that that cultural asset identifies a memory for the community, about the idea that it can express an economic sustainability, and also a real possibility of performing a function as a place, as a landscape, as architecture. Because the "amnesia project" is present and constantly nourished. Amnesia is seductive, winking, easy and smart: it is always easier to forget things than to remember them. The world of indiscriminate consumption, of self-referential productivity also appears as the world of silent destruction. To offer a quantitative indicator, today's active generation is destroying (wars, uncontrolled development processes, the disastrous effects of climate change) more goods and cultural heritage than any previous generation. Memory is not a term with an easy meaning. It is a complex term, which, as its etymology states, requires weaving together, comparing and intersecting, resolving (through critical documentation and preservation) conflicts. Memory is not a repository and it is not an archive.

Human memory is a dynamic tool that serves for the future, structuring images, thoughts and solutions designed for a future that, as Marc Augé wrote well back in 2012, is becoming more and more concrete.

Synapses change. Memories are never maintained in the same way. Memory is an extraordinary goal of mankind: a transfer of experience over generations, through the critical translation of processes and models and an unceasing tension towards innovation. According to editorial specifications, the selected authors, who converge in this issue of Paesaggio Urbano through the specific call of the UID Symposium, were asked to send the full text of the contribution, which allowed the double blind peer review process to begin and complete.

Marcello Balzani | Stefano Bertocci

Tra memoria e amnesia

Il Simposio UID Unione Italiana Disegno sull'innovazione e internazionalizzazione della ricerca, inserito nell'ambito della VI edizione delle "Giornate del Restauro e del Patrimonio Culturale" 2024 di Ferrara, ha avuto l'obiettivo di promuovere l'internazionalizzazione della ricerca e la sua costante innovazione. Il Simposio ha sviluppato l'obiettivo di offrire continuità agli eventi degli anni precedenti per promuovere la ricerca a livello internazionale e di presentare la roadmap dei lavori della Commissione Innovazione UID, a partire dalle aree strategiche di sviluppo che comprendono i temi della digitalizzazione, della visualizzazione e della social innovation per la valorizzazione dei beni culturali, la conservazione del patrimonio costruito, storico e artistico, e i contesti di città, territorio, paesaggio e ambiente.

Il tema scelto per questa edizione 2024 del Simposio si è collocato tra Memoria e Oblio, un'antitesi di estrema attualità che vede nel "progetto dell'amnesia" un modo per far metabolizzare alla società conflitti e negazioni inconsapevoli in un tentativo di reset socio culturale. Memoria quindi da un lato come un pieno: di storia, di luoghi, di edifici e persone, come capacità di ricordare per evolvere ed innovare. D'altro lato amnesia come un incessante vuoto: di tradizioni e processi che vengono così dimenticati in una sorta di grande isola dei lotofagi di omerico richiamo che sta connotando la società in cui si vive. Il modello di sviluppo in questi anni, soprattutto in quella parte del pianeta che ha operato per scelte di mercato (apparentemente vincente), ha messo in relazione molti ruoli individuali in un obiettivo collettivo di progresso, di indirizzata ed efficiente (esclusiva) produttività. Un modello che sembra contenere una posizione deformata, che mentre accresce contamina anche le sue fondamenta, come se un disastro (annunciato) potesse sembrare sempre alle porte.

Anche senza ricordare la teoria delle catastrofi di Renè Thom, quando in una visione strutturalista si cominciava ad identificare i processi catastrofici come condizioni di una dinamica quasi obbligata nelle realtà umane, l'attuale perdurante condizione di transitorietà in cui il modello di sviluppo si applica, mostra anche come i conflitti sembrano essere sempre alle porte. Allora, per esempio, con un'analogia proposta dai processi conservativi, soprattutto in Italia ci si è resi conto, come anche l'azione e l'atto documentativo e conservativo possano costituire, alcune volte, le basi per una risoluzione del conflitto. Decidere di conservare un bene culturale non è mai un atto banale. Diversamente da quanto si pensa può rappresentare la risoluzione di un conflitto. Un conflitto sulla visione del futuro, sull'idea che quel bene culturale identifichi una memoria per la collettività, sull'idea che possa esprimere una sostenibilità economica, e anche una possibilità reale di svolgere una funzione come luogo, come paesaggio, come architettura. Perché il progetto dell'amnesia è presente e costantemente alimentato. L'amnesia è seduttiva, ammiccante, easy e smart: risulta sempre più semplice scordare le cose che ricordarle. Il mondo del consumo indiscriminato, della produttività autoreferenziale appare anche come il mondo della distruzione silenziosa. Per offrire un indicatore quantitativo oggi la generazione attiva sta distruggendo (guerre, processi di sviluppo incontrollati, effetti disastrosi del cambiamento climatico) più beni e patrimoni culturali di qualunque altra generazione precedente. Memoria non è un termine dal significato facile. È un termine complesso, che, come recita l'etimologia, richiede di tessere insieme, di confrontare e intersecare, risolvendo (con la documentazione critica e la conservazione) i conflitti. La memoria non è un deposito e non è un archivio. La memoria umana è uno strumento dinamico che serve per il futuro, struttura immagini, pensieri e soluzioni progettate per un futuro che, come scriveva bene Marc Augé già nel 2012, diviene sempre più concreto. Le sinapsi si modificano. I ricordi non si mantengono mai nello medesima modalità. La memoria è uno straordinario obiettivo dell'umanità: un trasferimento di esperienze per generazioni, attraverso la traduzione critica di processi e modelli e una tensione incessante verso l'innovazione. Secondo le specifiche editoriali agli autori selezionati, che convergono in questo numero di Paesaggio Urbano attraverso la specifica call del Simposio UID, è stato chiesto di inviare il testo completo del contributo, che ha permesso di iniziare e completare il processo di double blind peer review.

Emerging archaeological heritage: the continuous and fragmented traces of the Thermae of Baia

Patrimonio archeologico affiorante: i segni continui e frastagliati delle Terme di Baia

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The heritage of the Phlegraean Fields comprises a multitude of sites whose blurred boundaries blend firstly with the natural landscape, from which they emerge and derive their particular morphological configurations, and secondly with the anthropised landscape layered, over the centuries, on top of these millenary memory places. The topic of collective memory thus becomes the basis for a specific reflection on issues concerning collective heritage, where individual memory is constructed by participating in communicative processes. The obstinate presence of the ruins, testifying to their eternity and their victory over the irredeemable passing of time, therefore reveals its entirety in one of the largest and most remarkably articulated archaeological complexes within the archaeological park of the Phlegraean Fields, i.e. the Thermae of Baia, whose monumental domes undoubtedly constitute an archetype for the Roman to build such ambitious *opus caementicium* structures.

Il patrimonio dei Campi Flegrei è caratterizzato da una miriade di episodi i cui confini labili si fondono da un lato con il paesaggio naturale, da cui sorgono e che ne ha spesso dettato le particolari configurazioni morfologiche e costruttive, e dall'altro con il paesaggio antropizzato che nei secoli si è sovrapposto, strato dopo strato a questi episodi di millenaria memoria.
Il tema della memoria collettiva diventa fondante per una riflessione specifica sulle questioni che attengono al patrimonio comune, laddove la memoria individuale si struttura grazie alla partecipazione ai processi comunicativi. L'ostinata presenza delle rovine, che ne testimonia l'eternità e la vittoria sullo scorrere irreparabile del tempo, traspare quindi nella sua interezza in uno dei complessi archeologici più estesi e più straordinariamente articolati all'interno del parco archeologico dei Campi Flegrei quali le Terme di Baia, le cui monumentali cupole costituiscono senza dubbio un momento archetipico per la realizzazione, da parte dei Romani, di tali ardite strutture in opus caementicium.

00.

Ortoimage of the sector of the so-called Temple of Mercury.

00.

0   10m

BAIA SOMMERSA

TERME DI BAIA

1 Settore di Venere – **2** Settore della Sosandra – **3** Settore dell'Ambulatio – **4** Settore di Mercurio – **5** Settore di Diana

A Ninfeo di Claudio – **B** Terme – **C** Villa dei Pisoni – **D** Peschiere e Pilae – **E** Resti di terme e villa con ingresso a protiro – **F** Canale d'ingresso al Baianus Lacus – **G** Ruderi antistanti i cantieri di Baia – **H** Peschiere

01.

Area of the archaeological park of the Thermae of Baia in relation
to the remains of "Baia sommersa"

c.d. Tempio di Mercurio (circa 21,55 m)

c.d. Tempio di Venere (circa 26,30 m)

c.d. Tempio di Diana (circa 29,80 m)
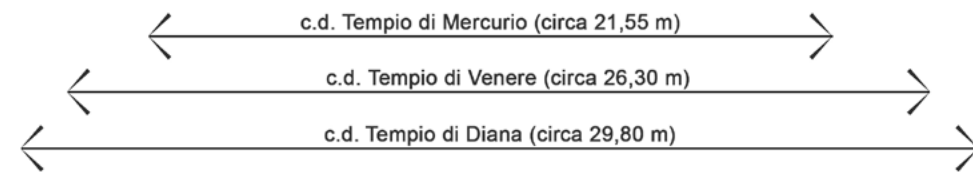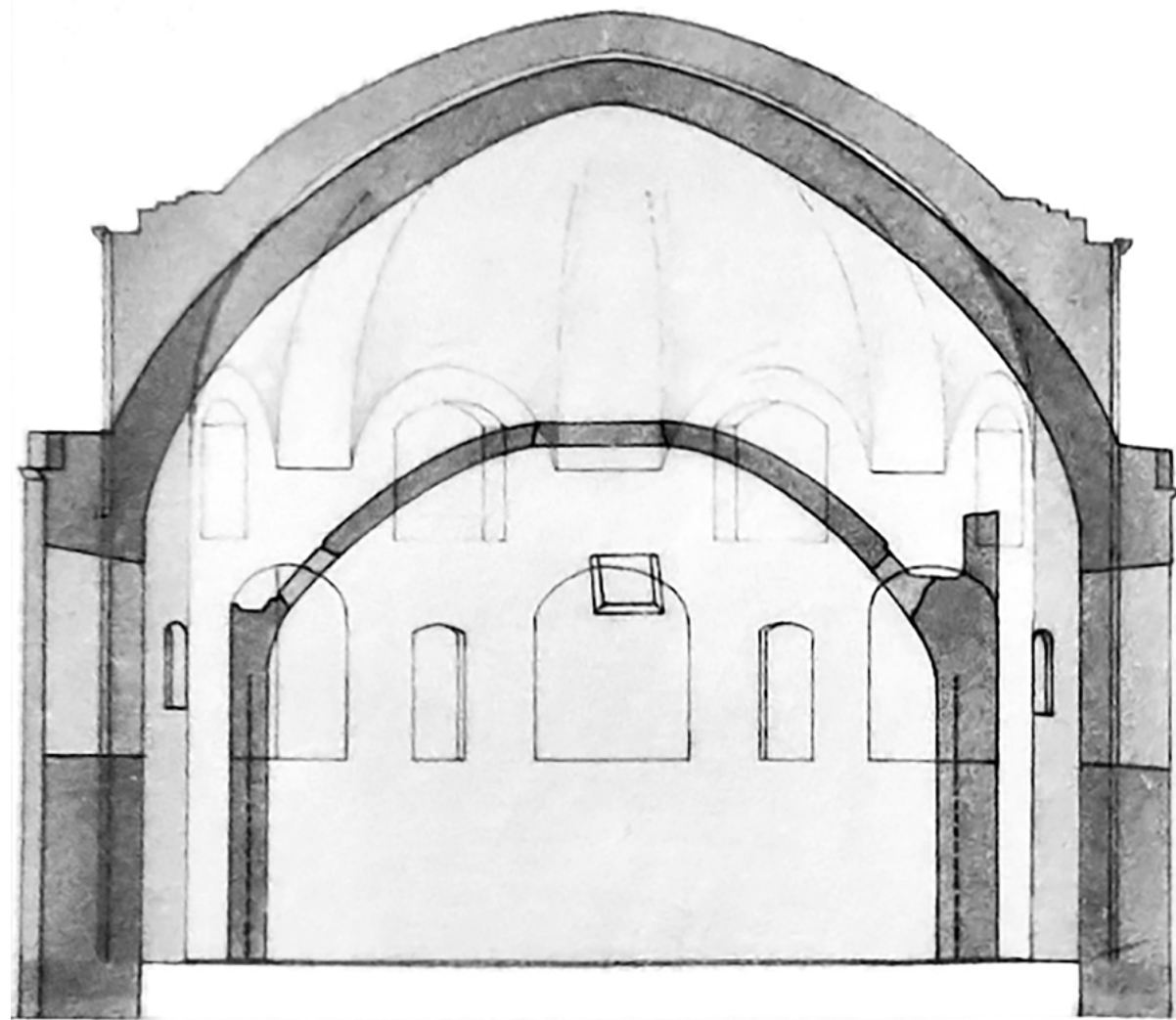
02.

Comparing the dimensions of the three large domes of Baia on the basis of
Rakob's (1992) reconstructive hypothesis.

MEMORY AND RUINS

The effect of the continuous motion of decomposing and recomposing reality into pictures
that appear to be governed by a sort of "[...] metabolism proper to representation" (Florio,
2018; Guillerme, 1981), results in an endless flow of images that pour into our memory.
Therein individual events are set in an interplay of relational connections that determine
the personality and continuity of our *Self*.
Memory is a sort of imaginative place "[...] that captures reality through image-issues"
(Gombrich, 1993)[01] and in which past imprints are dynamically reactivated by triggering a
series of re-elaborative processes, ultimately becoming a true creative act. "Each person,"
writes Israel Rosenfield, "[...] is unique: their perceptions are to some extent creations and
memories belong to continuous processes of imagination. Mind life cannot be reduced to
molecules. Human intelligence consists not only of a quantitative increase in knowledge,
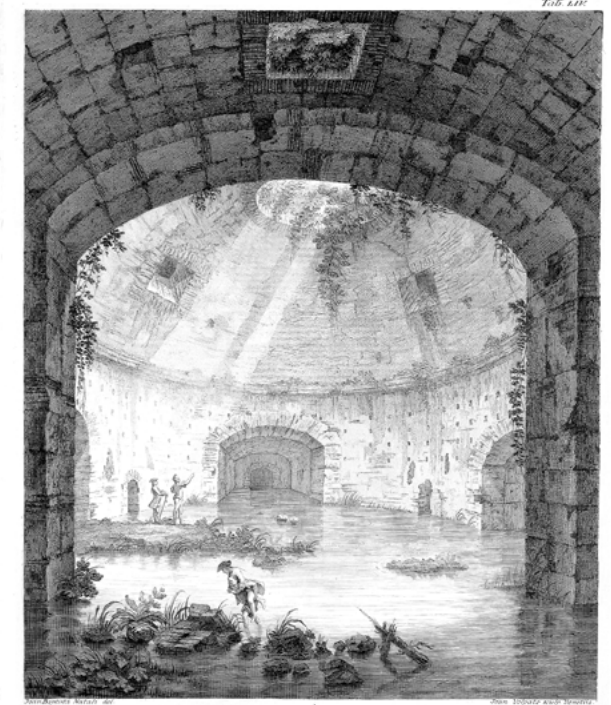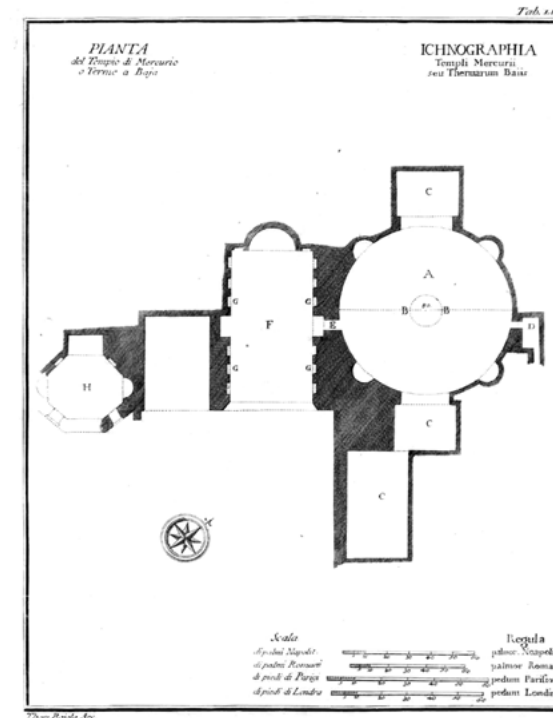
03.

Left, plan of the so-called Temple of Mercury in Baia, drawing by Rajola T.
(draughtsman active in the second half of the 18th century) in Paoli P.A.,
"Avanzi delle antichità esistente a Pozzuoli Cuma e Baia (1768).
On the right, engraving by Volpato G. and drawing by Natali G.B., "Fabbrica
rotonda a Baja la dicono le terme" (1765).

but of reworking, recategorising, and then generalising information in new and surprising
ways" (Prattico, 1993).
Thus, the ability to explore becomes extraordinary; our interpretation increasingly assesses
the essence of things and provides, by means of representation procedures, significant
elements for understanding what is under analysis and for disclosing the investigative
abilities of the one analysing.
The image of tangible reality that we give back is not only attributable to sensory
perception, but above all to the reprocessing activity that the cerebral system performs on
the information received. Perception is thus not the mirror image or 'photograph' of reality,
but rather the result of an inferential mechanism through which man shapes the world he
inhabits. "It is a fact that the totality of sensory experiences is constituted in such a way
that allows us to sort them out through the power of thought - something that ends up
astounding us, but also something we will never really be able to understand. One could
almost argue: the eternally incomprehensible thing about the world is its intelligibility [...]
the most beautiful experience we can possibly gain is the mystery, the underlying emotion
one encounters in the genesis of art and the authentic sciences" (Holton, 1992)[02].
In Bergson's words, there are two fundamental memories, one physiological and one that
declares an act of consciousness; the former, "[...] fixed in our organism, is nothing more
than the set of cleverly constructed mechanisms that ensure an adequate replication of
the various possible interpretations [...] Rather a habit than a memory, it involves our past
experience, but does not evoke its image. The latter is true memory. Co-extensive with
consciousness, it holds and arranges our states of consciousness progressively, giving each

fact its proper place and, consequently, date-marking it, and effectively allowing it to enter the definitive past, rather than, as per the former, relentlessly restarting the present" (Bergson, 1986). It is also true, as Ferrarotti (1993) states, that memory, in its dynamic aspect, preserves and recreates, reassembles and develops, selects, chooses and transforms, and makes the future grow whilst guaranteeing it. "[...] In the very moment in which it is conceived - and remembered - the past is no longer past. It is once again present, it is *re-presented*". Against Bergson's pristine memory and his conception of a wholly intimate image, Maurice Halbwachs (1975) opposes the continuity between image and social framework whereby the function of context is discovered and animated, as well as the connection between memory and collective history intended not as the absolute experience of time but rather as history, i.e., "[...] a node of multiple times, differentiated rhythms, behaviours and directions that only field research can uncover, describe, interpret, explain, predict (Ferrarotti, 1987, p. 95).

The theme of collective memory becomes the basis for a specific reflection on issues pertaining to the shared heritage, in a perspective that measures the "capacity of a community to construct and internally acknowledge a shared memory of the past" (Christillin & Greco, 2021) where individual memory is structured through participation in communicative processes.

Memory is also to be considered as "[...] resilience as fidelity to the original, rediscovery and re-evaluation of its bases, re-enactment of the past, perceived and understood as a repository of seeds that have yet to bear fruit" (Ferrarotti, 1994); then art, in particular figurative art, hence architecture, in its ancestral essence, is none other than a huge type of remembrance, which re-enacts the Ancient by building its image. "The existentially significant recollection, that [Wilhelm] Dilthey defines and indicates with the term *Erlebnis*, does not only recall past experience as past, i.e., the already endured and forever concluded, but also its yet unexpressed experiencing potential for recalling and bringing to life the past-future, *the seeds of the future hidden in past experience*" (Dilthey, 1954; Ferrarotti, 1987, pp. 84-85). Figurative art presents itself as the result of human experience in which past and present coexist, a *hic et nunc* where the character of contemporaneity is consolidated alongside historical memory, according to a hermeneutics process that "[...] is no different from the one carried out by contemporaries and will be carried out by posterity" (Strinati, 1994). Indeed, it is architecture that concretises the concept of figurative art as a historical place of excellence of memory and identity and that implies "[...] meditation on the criterion of the *model* [...] legitimised by the weight of the Ancient and constantly reworked and adapted to circumstances" (Strinati, 1994).

Among inherited cultural heritage, archaeological heritage takes on a multifaceted meaning due to its function as a distiller of memories that hold and retain different temporalities: the time of the Ancient, the time of transformations, the time of stratifications, the time of neglect, the time of depredation and oblivion, the time of revelation. "It is a pristine time, [...] time lying in ruins, the ruins of time that has lost history or that history has lost, [...] non-dateable, absent from our world of images, of simulacra and reconstructions, from this violent world whose debris no longer has time to become ruins. A lost time that art sometimes manages to rediscover" (Augé, 2003). Heritage, in its extreme fragility - not only physical but also inherent in the transmission of its testimonial presence -, presents itself as a vast field of events that the complex and articulated action of unravelling makes particularly productive as an active bearer of memories.

But memory, in its deeply reconstructive action of the past, both discloses and conceals at the same time. Every memory holds within itself the risk of forgetting and the temptation of oblivion. It must be questioned in its elusive relationships with oblivion.

In the continual oscillation between present and past in the "[...] grafting of today onto a multitude of yesterday", (Settis, 2006) there is once again a recurrence to the role of the ruins, to the always tense relationship with the relics, the mutilated monuments of antiquity,
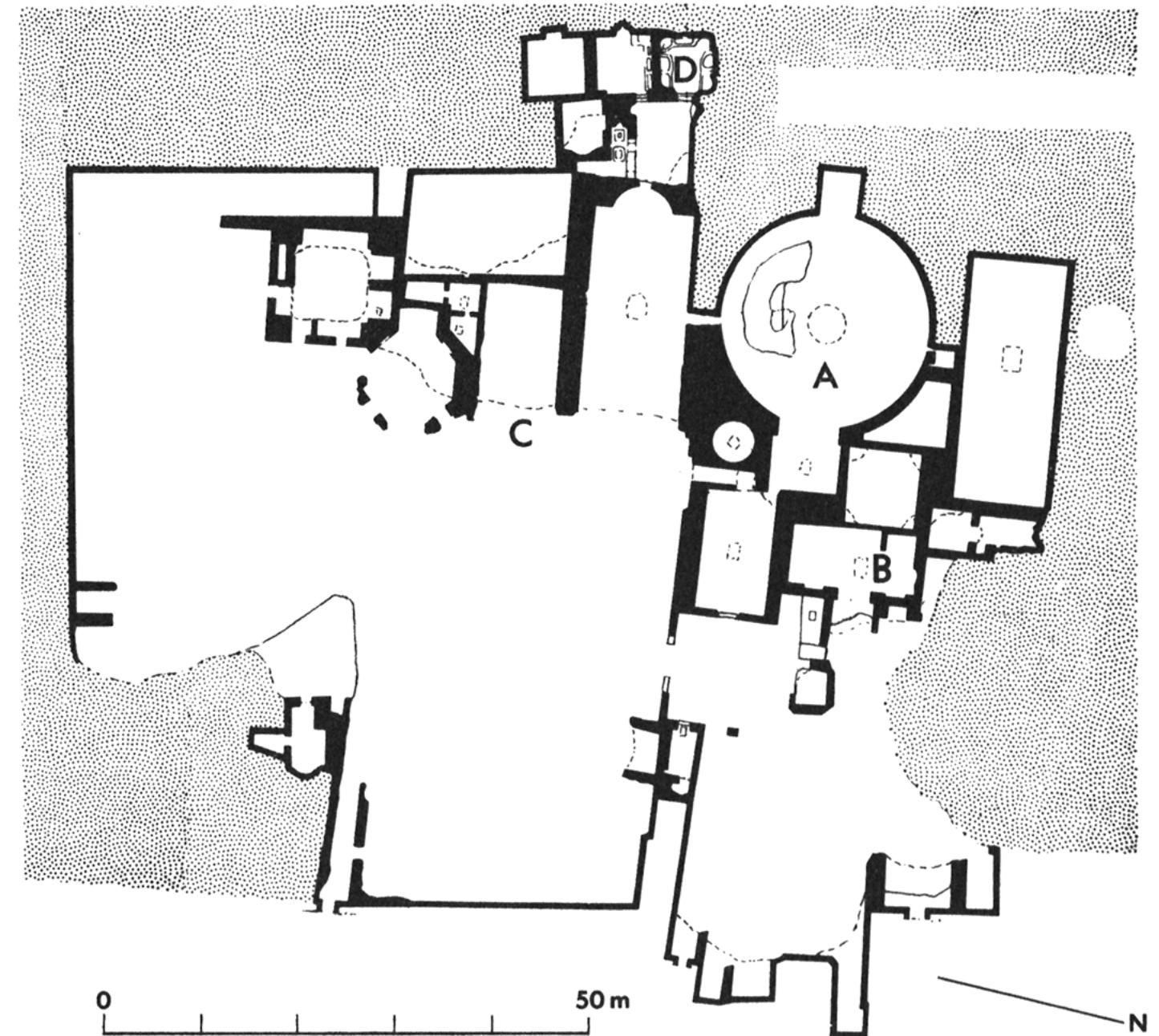
Planimetry of the sector of the so-called Temple of Mercury (Rakob 1988).

06.

those 'remains' that in their state of visible decay mark its end, but which, however, also herald, through the presence of impending traces, its relentless rebirth. "[...] the ruins are both a powerful metaphorical epitome and a tangible witness not only of a vanished ancient world but also of its intermittent and rhythmic awakening to new life. [...] The ruins signal [...] both an absence and a presence: they show, or rather are, an intersection between the tangible and the intangible. What is invisible (or absent) is highlighted by the fragmentation of the ruins, by their 'useless' and sometimes incomprehensible appearance, by their loss of functionality (or at least of their original functionality). But their stubborn visible persistence testifies [...] to the durability, and indeed the eternity, of the ruins, their victory over the irreparable passage of time" (Settis, 2004).
This condition of apparent perpetual and immutable stillness transpires in its entirety in one of the largest and most extraordinarily articulated archaeological complexes such as the Thermae of Baia within the Archaeological Park of the Phlegraean Fields (Amalfitano et al., 1990). From the mighty domes of the so-called temples of Diana and Mercury, through the astonishing vertical profiles of the *Ambulatio* villa that climb the steep slope to the west, where the original intimacy of the inner spaces now becomes an exteriority exhibited with remarkable charm; proceeding to the Aphrodite of Sosandra complex, where from

07.
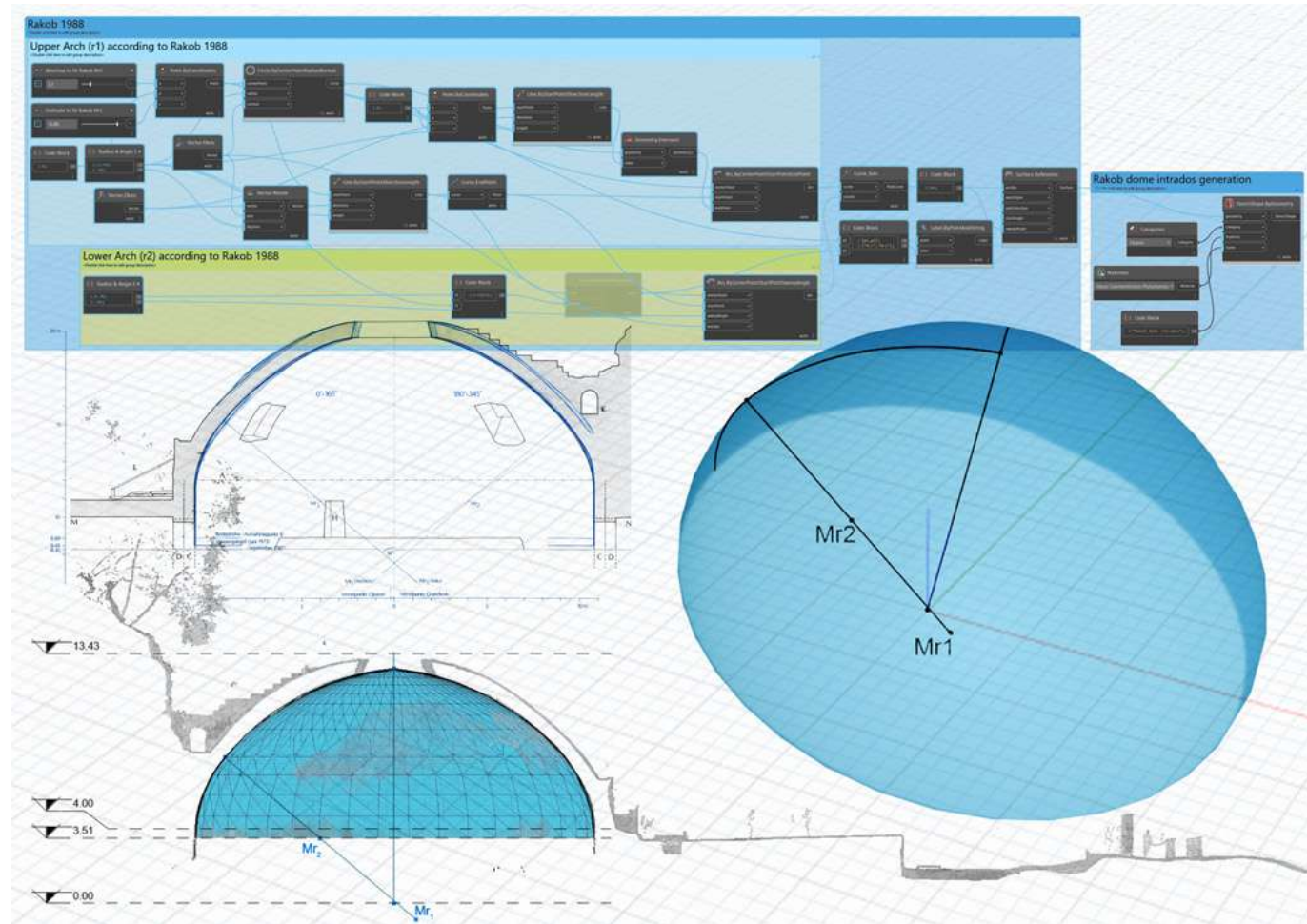
08.
Photobashing of the parametric modelling process of the intrados of
the Mercury dome in the Dynamo for Revit environment designed
according to Rakob (1988).

$$(bx^2 + y^2)^2 + ay^3 = 0$$
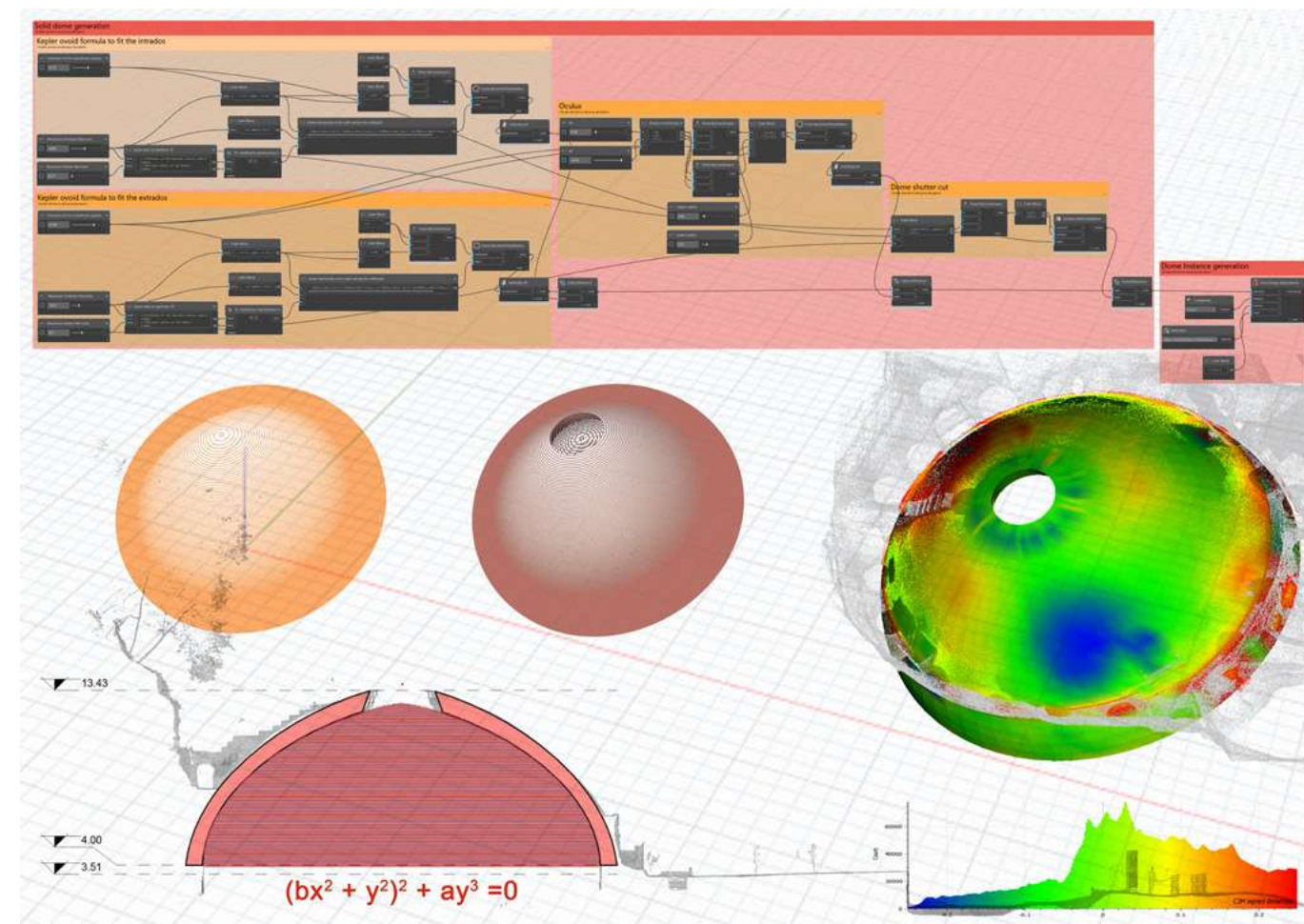
09.
Photobashing of the parametric modelling of the volume of the Mercury
dome in the Dynamo for Revit environment through the identification
of the suitable equations derived from that of Kepler's ovoid.

the lawn of the ancient pool its rooms are placed across the different levels of the rugged overhanging hill, up to the architectural clustering of the small thermae in the southern sector of Venus, which are now separated by the so-called temple whose interior space celebrates, seamlessly, its direct ascent to the sky. This imaginative sequence of mutilated architectures, e.g., the semi-collapsed dome of the temple of Diana, regains the value of its presence through a deafening silence that yearns for a new condition of belonging to the fate of a contemporary landscape, through a combined action of scientific exploration and dissemination of knowledge, which, together with the necessary protection and preservation actions, will explore "[...] the echo of that harmonious insurrection that testifies to human greatness throughout the centuries".

## THE THERMAE OF BAIA AND THE SO-CALLED TEMPLES OF MERCURY, VENUS, AND DIANA

Although the Phlegraean Fields have been appreciated by scholars since antiquity, albeit mainly as a holiday resort, they acquired great prestige between the 17th and 20th centuries when this destination was included among the sites of the *Grand Tour*, for the inherent cultural value of a landscape stratified and reshaped over the centuries by volcanic phenomena and bradyseism. The balanced equilibrium between nature and archaeological evidence, particularly evident in the area of the current archaeological

park of the Thermae of Baia, was, however, altered during the last century when first the opening of the Cumana railway, then the construction of the dockyards - between the Aragonese castle and the thermal area - and finally the urban redevelopment activities created a rift between the park and the so-called temples of Diana and Venus. Although characterised by a high degree of interpenetration with the modern city, the archaeological structures of Baia's Roman thermae were finally declared a 'Monumental Park' in 1936 by the then Superintendent of Antiquities in Campania Amedeo Maiuri, who also supervised the restoration work carried out - albeit not continuously due to the ongoing war - from 1941 to 1961 (Maiuri, 1958; Veronese, 2018).
The so-called Temples of Baia - named so because of the sacrality inspired by their daring dimensions - undoubtedly constitute an archetype for the Roman construction of monumental domes in *opus caementicium*. While the dome of the so-called Temple of Mercury is the first in chronological order, dating back to the late Republican or early Augustan period, it is followed by the dome of the Temple of Venus, dating back to the time of Hadrian; whereas the latest is that of the so-called Temple of Diana, presumably attributed to Emperor Alexander Severus (Rakob, 1992). Of the three aforementioned structures, the pseudo-dome of the Temple of Mercury, built by concentrically superimposed horizontal rows, is the only one that has been preserved in its entirety, while the dome of the Temple of Diana, with an apparent geometric matrix similar to the latter except for the apex opening, has partially collapsed; unfortunately, the 'umbrella' dome of the Temple of Venus has only scarce historical documentation and a few traces still visible at its springing (De Angelis d'Ossat, 1942; Rakob, 1988).

Although the first actual example of an *opus caementicium* dome was the round hall of the sanctuary of Fortuna Primigenia in Palestrina, it was very small in size; therefore, the domes of Baia represent the first example of monumentalisation of this type of construction. In particular, the dome of the so-called Temple of Mercury would also seem to precede the *laconicum* of the Thermae of Agrippina in the Campus Martius in Rome, known to date only in literature, while it certainly predates by two generations the vaulted halls of the *laconicum* in Herculaneum and Pompeii and later became the inspiration for the dome of the Pantheon in Rome (Rakob, 1992). These deductions refer to the complicated constructive circumstances of the Phlegraean Fields, a field of experimentation, both for the use of *pulvis Puteolana* - volcanic ash extracted from the solfatara in the Phlegraean Fields area of Pozzuoli - to enrich the mortar and give it hydraulic properties, and for the traces still visible on the dome caused by uncertainties in the construction process, thus bearing tangible witness to an optimisation of the technique occurring throughout the building process. At the same time, it is possible to read in the spatial organisation of the sector of the Thermae of Mercury - of which the great hall covered by the dome probably constituted a *frigidarium* - an initial attempt to arrange the covered thermal rooms by superimposed levels, yet almost unconscious and only fully resolved in the Hadrianic period.

The first results of the studies conducted in the search for the generative matrices of the domes of the Temples of Mercury and Diana are presented in the following. Certainly, also due to the construction technique employed, the shape of these pseudo-domes takes on a characteristic pattern, described in the literature as a polycentric profile, which adopts two different radii of curvature (*Rakob, 1988*).

These graphic constructions, therefore, involve a cusp at the top, which is visible in the case of the temple of Diana and ideal in the case of the temple of Mercury, where it culminates in an oculus slightly eccentric in relation to the general layout. Thus, the experiments conducted in the literature on the basis of Rakob's first considerations were mainly focused on the search for curvature radii that would best approximate the polycentric profile of the more recent of the two so-called temples (Sinopoli et al., 2018; Sinopoli & Aita, 2021). Drawing on the graphical analyses conducted previously, it was first postulated and subsequently empirically verified (Florio et al., 2024; Maggio & Garozzo, 2024) that the three-dimensionality of the domes under consideration could be described by means of Kepler's pyriform ovoid equation (Davis, 2009). The original formulation of this fourth-degree equation with two variables, however, accounts for a fixed proportion between the maximum height of the ovoid (along the 'y' axis) and the maximum width (along the 'x' axis), so an additional coefficient 'b' was introduced for the purposes of the present investigation, in order to modify the maximum radius of the ovoid keeping the same rise[03]. In order to compare the literature assumptions concerning the geometric genesis of the domes' intrados with the experiments currently in progress, two parametric scripts - implemented via Visual Programming Language (VPL) in the Dynamo environment for Autodesk Revit - were developed and tested on the dome of the Temple of Mercury. The first script aims solely at the three-dimensional generation of the structure's intrados on the basis of the polycentric profile proposed by Rakob [Figs. 08., 10.], while the second can automatically determine - thanks to an *ad hoc* routine - the optimal value of 'b' as the rise and the maximum span taken into consideration vary (being these measurements still uncertain due to the current state of conservation of the complex) in order to obtain a dynamic response in the three-dimensional rendering of the dome. The chosen formulation made it possible to generate both the surface area at the intrados and extrados of the dome - determining a value of 8.85m and 10.77m as the maximum rise and radius for the intrados and 10.4m and 11.7m for the extrados - then compared with the point cloud from the terrestrial laser scanner to detect any deviations; these deviations were summarised in graphs, supplemented with histograms, and marked in red if positive and in blue if negative [Figs. 09., 10.].
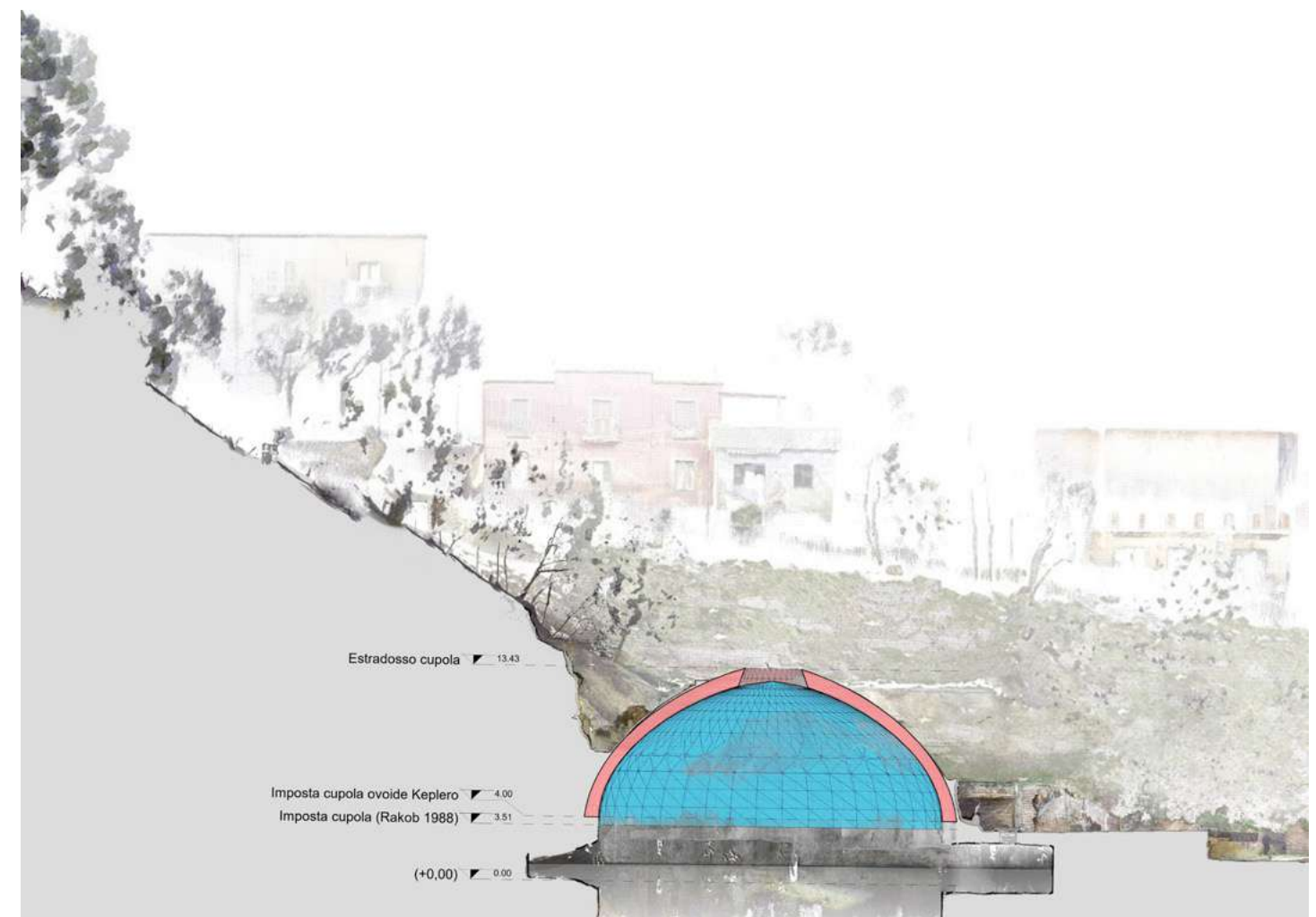
10.

Cross-section of the so-called Temple of Mercury with the insertion of the dome models developed according to Rakob's indications (blue) and derived from Kepler's ovoid equation (red) within the point cloud model obtained from the laser scanner survey.

NOTES

01I Cf. Frances A. Yates (1966), The Art of Memory in A. Biondi (Ed.), trans. it., L'arte della memoria, with the essay "In memoria di Frances A. Yates" by Ernst H. Gombrich (1993), footnote 39.02I
  See: https://civic-city.org/nonsapere/
02I Albert Einstein, in Gerald Holton (1992).
03I Having set the Cartesian reference system at the 'key of the dome' with 'x' positive towards right and 'y' positive upwards, Kepler's ovoid equation $(x^2 + y^2)2 + ay^3 = 0$ was modified as follows $(bx^2 + y^2)2 + ay^3 = 0$. To generate the profile, the two non-imaginary roots of 'x' were then determined for 'y' varying along the negative semi-axis, once the relationship between the coefficient 'a' and the value of 'y' had been empirically determined using a= -ymax/0.563, where 'ymax' is the maximum radius of the dome at the impost. Therefore, the value of 'b' that best approximates the dome analysed is the only one to be determined.

BIBLIOGRAPHICAL REFERENCES

Amalfitano, P., Camodeca, G., & Medri, M. (1990). *I Campi Flegrei: un itinerario archeologico* (1. ed.). Marsilio.

Augé, M. (2003). *Le temps en ruines. A. Serafini* (Ed.), *trans. it., Rovine e macerie. Il senso del tempo* (2004) (pp. 135–139). Bollati Boringhieri.

Bergson, H. (1986). *Matière et mémoire.* F. Sossi (Ed.), *trans. it., Opere 1889-1896* (pp. 28–259). Mondadori.

Camus, A. (1951). *L'homme révolté.* L. Magrini (Ed.), *trans. it., L'uomo in rivolta* (2009) (p. 301). Bompiani.

Christillin, E., & Greco, C. (2021). *Le memorie del futuro. Musei e ricerca.* Giulio Einaudi editore.

Davis, A. E. L. (2009). Kepler's 'Via Ovalis Composita': Unity from Diversity. *Journal for the History of Astronomy*, 40(1), 55–69. https://doi.org/10.1177/002182860904000105

De Angelis d'Ossat, G. (1942). Il Tempio di Venere a Baia. In *Estratto dal Bull. del Museo dell'Imp. Rom.: Vol. XIII.* Stabilimento tipografico ditta Carlo Colombo.

Dilthey, W. (1954). *Critica della ragione storica.* Einaudi.

Ferrarotti, F. (1987). *Il ricordo e la temporalità* (pp. 82–83 and p. 95). Laterza.

Ferrarotti, F. (1993). *La tentazione dell'oblio. Razzismo, antisemitismo e neonazismo* (p. 7). Laterza.

Ferrarotti, F. (1994). *Al setaccio della storia. Sfera, Memoria e Identità, 41*(agosto/ottobre), 9.

Florio, R. (2018). *Origini evoluzioni e permanenze della classicità in architettura* (pp. 41–42). Officina Edizioni.

Florio, R., Catuogno, R., Della Corte, T., Sanseverino, A., Borrelli, C., & Tortoriello, A. (2024). 'Modello' e forma del cosiddetto tempio di Diana presso le Terme di Baia/ 'Model' and form of the so-called temple of Diana by the Therme of Baia. In F. Bergamo, A. Calandriello, M. Ciammaichella, I. Friso, F. Gay, G. Liva, & Monteleone C. (Eds.), *Measure / Out of Measure. Proceedings of the 45th International Conference of Representation Disciplines Teachers* (pp. 1395–1424). FrancoAngelo srl.

Gombrich, E. H. (1993). In memoria di Frances A. Yates. In A. Biondi (Ed.), *tr. it., L'arte della memoria.* Einaudi.

Guillerme, J. (1981). *La figuration graphique en architecture.* L. Agnesi (Ed.), *tr. it., La figurazione in architettura* (1982) (p. 13). FrancoAngeli.

Halbwachs, M. (1975). *Les cadres sociaux de la mémoire* (1925). Mouton.

Holton, G. (1992). Le vie della scoperta. *Sfera, Noto e Ignoto, 26*(marzo), 6.

Maggio, F., & Garozzo, A. (2024). L'analisi grafica tra tradizione e innovazione. *TRIBELON Journal of Drawing and Representation of Architecture, Landscape and Environment,* 1(1), 60–73. https://doi.org/10.36253/tribelon-2857

Maiuri, A. (1958). *I Campi Flegrei. Roma: Istituto Poligrafico e Zecca dello Stato.* Istituto Poligrafico e Zecca dello Stato. Libreria dello Stato.

Prattico, F. (1993). L'Io et l'altro. *Sfera,* 35(luglio/agosto), 53.

Rakob, F. (1988). Römische-Kuppelbauten in Baiae. Die Gewölbeprofile. In *Mitteilungen des Deutschen Archäologischen Instituts. Römische Abteilung* (Vol. 95, pp. 257–301). Verlag Philipp von Zabern.

Rakob, F. (1992). Le cupole di Baia. In M. Gigante (Ed.), *Civiltà dei Campi Flegrei. Atti del convegno internazionale* (pp. 229–258).

Settis, S. (2004). *Futuro del 'classico'* (pp. 84–85). Einaudi.

Settis, S. (2006, October 27). Una panchina davanti ai ruderi. *La Repubblica.*

Sinopoli, A., & Aita, D. (2021). The Dome of the Temple of Diana in Baiae: Geometry, Mechanics and Architecture. In P. Roca, L. Pelà, & C. Molins (Eds.), *12th International Conference on Structural Analysis of Historical Constructions. SAHC 2020* (pp. 433–444). CIMNE. https://doi.org/10.23967/sahc.2021.285

Sinopoli, A., Valenti, G. M., Bruno, M., Conti, C., Romor, J., & Martines, G. (2018). Primato romano delle volte. Il Tempio di Diana a Baia. In S. D'Agostino & F. R. D'Ambrosio Alfano (Eds.), *International Conference on History of Engineering, atti del 7° Convegno di Storia dell'Ingegneria* (pp. 57–71). Cuzzolin.

Strinati, C. (1994). Il ritorno dell'Antico. *Sfera, Memoria e Identità, 41*(agosto/ottobre), 54.

Veronese, L. (2018). Alle origini di una difficile tutela: Amedeo Maiuri ei restauri al parco archeologico delle terme di Baia. *Restauro Archeologico, 26*(1), 20–43. https://doi.org/10.13128/RA-234

The reconstruction of Borgo Caracciolo in Maniace (Sicily) between tangible and intangible heritage

La ricostruzione di Borgo Caracciolo a Maniace (Sicilia) tra patrimonio materiale e immateriale

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**This research explores the case study of Borgo Caracciolo in Maniace, designed by architect Francesco Fichera during the fascist era and later demolished in 1964. The village, caught between historical memory and oblivion, represents a complex heritage with conflicting narratives.
The study aims to digitally reconstruct the ruins using historical documents and digital surveys, offering insights into architectural intentions and historical narratives. This approach emphasizes the preservation and enhancement of design archives for cultural and educational purposes.
The methodology includes a thorough analysis of historical events and project drawings, with the final reconstruction highlighting different phases from its construction to demolition.
Ultimately, the virtual reconstruction serves as a dynamic tool for understanding and engaging with complex histories, preserving cultural heritage, and fostering dialogue on contentious pasts.**

La ricerca esplora il caso studio di Borgo Caracciolo a Maniace, progettato dall'architetto Francesco Fichera in epoca fascista e successivamente demolito nel 1964. Il borgo, in bilico tra memoria storica e oblio, rappresenta un patrimonio complesso con narrazioni contrastanti.
Lo studio si propone di ricostruire digitalmente le rovine utilizzando documenti storici e rilievi digitali, offrendo approfondimenti sulle intenzioni architettoniche e sulle narrazioni storiche. Questo approccio enfatizza la conservazione e la valorizzazione degli archivi di progettazione a fini culturali ed educativi.
La metodologia comprende un'analisi approfondita degli eventi storici e dei disegni di progetto, con la ricostruzione finale che evidenzia le diverse fasi dalla costruzione alla demolizione.
In definitiva, la ricostruzione virtuale funge da strumento dinamico per la comprensione e il coinvolgimento di storie complesse, la conservazione del patrimonio culturale e la promozione del dialogo su un passato controverso.

1. INTRODUCTION

This research addresses the issue of so-called dissonant heritage, a controversial site whose history and *raison d'être* are subject to various interpretations, caught between memory and oblivion. A notable example is Borgo Caracciolo in Maniace, designed by Catanese architect Francesco Fichera during the fascist regime and built at the Nelson Duchy. Construction of the village began in 1940, was halted in 1943, and ultimately demolished by the Nelsons in 1964. Today, the ruins of the hamlet lie abandoned, bearing witness to the historical tensions between the farming community and the Nelson family.

The virtual reconstruction of Borgo Caracciolo, based on project drawings, historical documentation, and digital surveys, provides a tangible connection to the past. It encourages reflection on the historical narratives and architectural intentions, highlighting how memory and oblivion shape our perception of history. Additionally, it emphasizes the importance of preserving and enhancing design archives, recognizing their value as historical records and as catalysts for cultural and educational enrichment and visualization.

2. BORGO CARACCIOLO: AN EMBLEMATIC EXAMPLE OF DISSONANT HERITAGE

The concept of "dissonant heritage" [1], [2] represents a complex challenge in cultural heritage management. It pertains to sites, monuments, or traditions that evoke contrasting or conflicting narratives, often linked to historical memories of oppression, resistance, or transformation. This heritage is not merely a remnant of the past but a battleground for contemporary identities and politics.

Significant examples of dissonant heritage in Europe include remnants of totalitarian regimes, such as Nazi sites in Germany [3] and Fascist sites in Italy [4], which raise questions about how to remember these histories without glorifying them. Moreover, it is crucial to avoid trivializing these sites, particularly in the context of tourism, ensuring that they are taken seriously and respected for their historical significance [5].

Borgo Caracciolo is an example of this complexity. For the local community, this small rural settlement symbolizes liberation from the Nelsons, the English feudal lords, marking a significant social and cultural victory. However, the village is also the result of Fascist propaganda policies, transforming it into a symbol of Fascist power. This dual nature makes Borgo Caracciolo a fascinating and complex case study in the field of dissonant heritage, demonstrating how heritage can be both unifying and divisive, reflecting the multifaceted nature of history and collective identities.

3. AIM OF THE PROJECT AND METHODOLOGICAL APPROACH

The research has two main objectives: on one hand, the creation of digital content for the valorization and virtual reconstruction of the ruins with the aim of countering their oblivion and returning the site to collective memory; on the other, the enhancement of archival funds of architectural drawings using digital techniques.

The methodological approach involved an initial phase of comprehensive analysis of the design projects and understanding of the site, followed by a detailed reconstruction.
In particular, the following steps have been carried out:

— Contextualization of the project and the architect: study of historical events, the role of the designer, comparison and study of archive drawings preserved at the Museo della Rappresentazione (MuRa)[1] in Catania;
— Digital survey of the site: 3D acquisition, 2D restitution of the footprint of the buildings, verification of the current planimetric layout of the site against the design drawings;

01.
Territorial overview of Borgo Caracciolo.

— Identification of the phases of Borgo Caracciolo (from its original design to its demolition);
— 3D virtual reconstruction of the buildings based on the design drawings and in accordance
   with the identified construction phases.

Particular attention was paid to the dual objective of making explicit the paradata, namely
the data that describe the relationships between the digital representation, the characteristics
of the artifact, the archival sources, and the decision-making process underlying the
reconstruction, while simultaneously preserving the narrative and informative nature of the
representations.
Reference was made to methodological approaches and significant case studies present in the
literature [6], [7], [8].

4. BORGO CARACCIOLO

4.1 HISTORY OF THE CONSTRUCTIVE EVENTS
To understand the creation, destruction, and subsequent neglect of Borgo Caracciolo in
Maniace, it's essential to look at the key historical events and local sentiments that shaped
the area [9] [Fig. 01.].
Maniace was established in 1173 with the founding of the Abbey of Santa Maria di Maniace.

In 1799, Ferdinand III rewarded Admiral Horatio Nelson for suppressing the Neapolitan Republic by donating the Abbey to him, leading to feudal rule by the Nelson-Bridport family, which caused significant local discontent. In 1940, the Colonization Authority began constructing Borgo Caracciolo, but work halted in 1943. Post-war, the Nelsons briefly regained control, but the Agrarian Reform of 1950 ended their feudal rule. The heirs of the Nelson family demolished the rural village in 1964. By 1981, Maniace gained autonomy from Bronte, and the Nelson family relinquished their last holdings to the municipality. After the village's demolition, some ruins were used to commemorate the town's agricultural heritage. An entrance arch was reconstructed with materials from the site, placed at the town's entrance, and adorned with glazed tiles depicting the municipal coat of arms [Fig. 02.]. Although intended to honor the town's history, this act left the actual ruins largely abandoned and neglected.

02.
Arch reconstructed after the spoliation of the site.

4.2 PROJECT ANALYSIS
The design of the village was entrusted in 1940 to Francesco Fichera (Catania, 1881 – 1950) a highly prominent architect from Catania, active mainly during the first half of the 20th century. His style is characterized by a strong integration of elements from the Sicilian architectural tradition with the more modern trends of Eclecticism and the emerging Rationalism of that period [10]. In particular, the village project consists of 52 drawings in good condition, made in pencil or ink on tracing paper.
The village, facing the Nelson residence, is organized around two squares, differing in shape and function. The main square, larger and enclosed on all sides, is square-shaped and bordered by a portico with side towers (1) acting as a buffer with the Nelson residence, the Fascist house (2), the administrative offices (3), the school (5), and the post office (6). Access to the main square is via three porticoed entrances near the corners. The health house (4) is accessed from the street. The second square, called the Rural square, is rectangular and enclosed on only three sides. This square faces the post office building (6), the tavern and retail shop (7), the employees' accommodations (8), the artisans' accommodations (9), and the carabinieri station (10).
Both squares feature a centrally located square basin used for collecting rainwater. Additionally, the project includes two more buildings, the veterinarian's clinic (11) and another building (12), which were not included in the building contract.
The entire village is set within an Italian-style garden, with flower beds arranged to define the main alignments of the buildings [Fig. 03.].
The in-depth analysis of the corpus of drawings led to their identification and classification into two categories: **definitive project and executive project**.

The **definitive project** drawings are characterized by: – headers and text created using a lettering guide; – use of a 1:100 scale for two-dimensional drawings (plans, elevations, and sections with internal, external, inter-floor dimensions, and use designations of various rooms); – use of a well-defined stroke; – the architect's signature made using a lettering guide [Fig. 04.]

The text of the **executive project drawings** (headers and descriptions) is done freehand and includes terms like "bis," "variant," and "details." Regarding the drawings, they mostly represent details made freehand with a very careful stroke, contextualized with extracts of plans, elevations, and sections. Also, instructions are provided on the materials to be used and the construction element implementation. The representation scales vary from 1:50 to 1:1. All drawings are initialed by the architect [Fig. 05.].

4.3 THE DIGITAL RECONSTRUCTION

The reconstruction of the constructive history of Borgo Caracciolo is depicted through images, highlighting the project's knowledge phase. A crucial support in the reconstruction was the on-site survey phase, which involved reading the existing ruins and comparing them with the project drawings.

Two survey campaigns were conducted using the Leica Geosystem BLK360 laser scanner. In the first campaign, 26 scans were performed to capture the entire site. In the second, focusing on the buildings around the rural square, 13 scans were completed after the removal of vegetation revealed previously hidden masonry elements. The final point cloud, after the cleaning process, consists of about 250 million points

The reconstruction considered the two identified project phases, contextualizing them with historical events, and documenting the ruined state of the village. This led to the following conceptualizations:
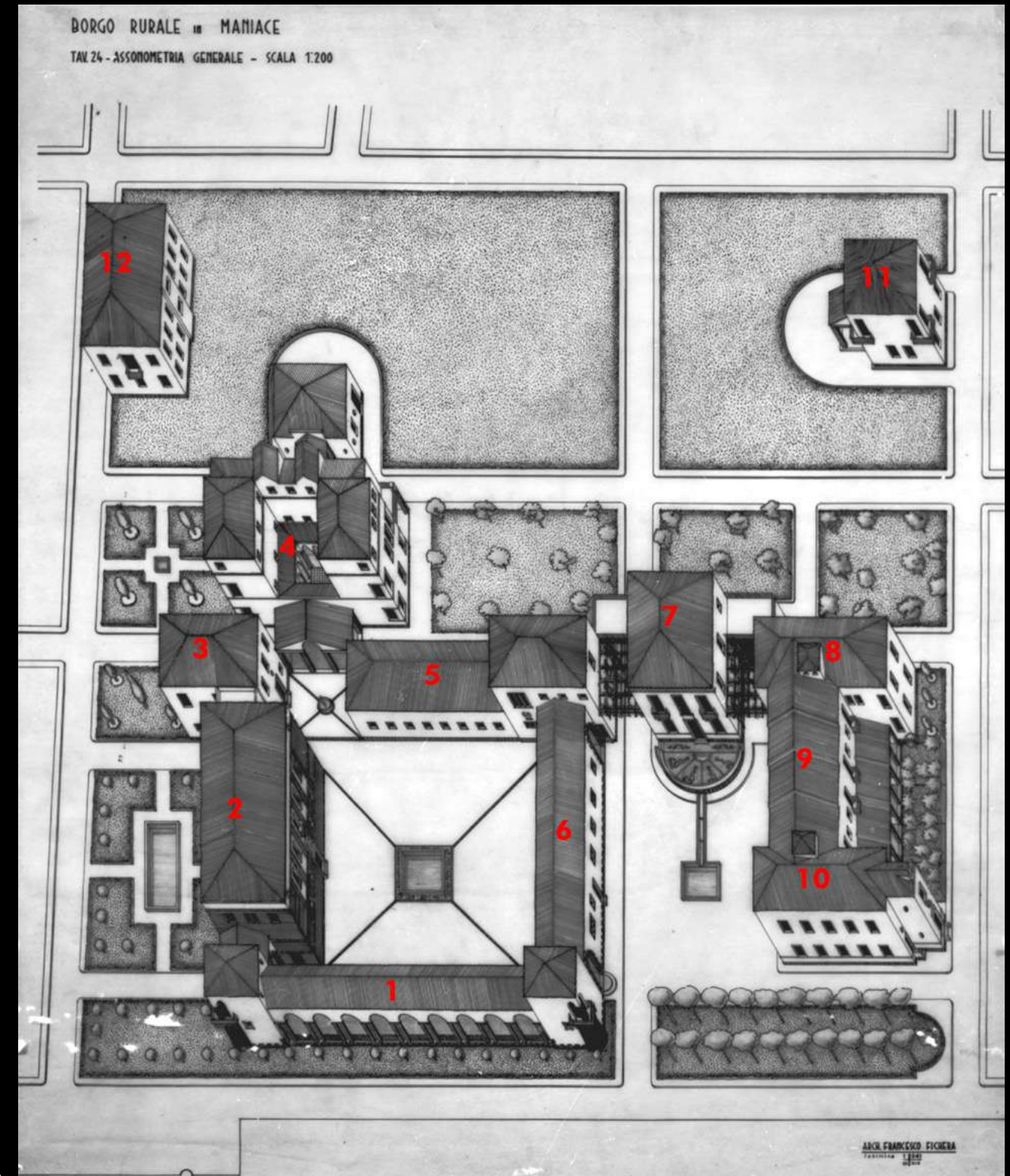
1. Reconstruction of the definitive project (1:100);
2. Reconstruction of the executive project (1:50), considering both the entire village's reconstruction from the executive project drawings (2.a) and the project as completed up to the interruption of works (2.b);
3. Documentation of the ruined state.

Following the principles of the London and Seville charters, five levels of reliability were defined for the reconstruction to clarify the reconstruction choices:
– existing state; – reconstruction based on the interpretation of project drawings of individual buildings; – reconstruction based on the interpretation of axonometric drawings; – reconstruction based on typological and dimensional comparison with other buildings in the settlement; – portions of the project not realized after the interruption of works.

For the reconstruction of the **definitive project** [Fig. 06.] the base axonometric view was used as the main reference for the volumetric modelling of the buildings' external envelope (decorative elements such as the base, cornice, etc., were simplified, and the openings were highlighted). Differences in the floor plan with the current state were evidenced. There is a one-meter difference in the Casa del Fascio, precluding the alignment between some of the buildings, visible in the project's axonometric drawing.

The reconstruction of the **executive project** was split into two models. The first model reconstructs the entire village following the project drawings [Fig. 07.]. The modelling focuses on the external envelope with a detail scale of 1:50 and includes all the constructive elements characterizing the individual buildings. In the absence of information deduced from the drawings, some elements were reconstructed for typological similarity with other drawings of the village buildings. In comparing the executive project with the current state, it was found that the alignments between the buildings are respected IMG07. The second reconstruction model is derived from the previous model but considers what was built up to the suspension of works (1943), representing the portions of the buildings never realized in transparency, defined

03.
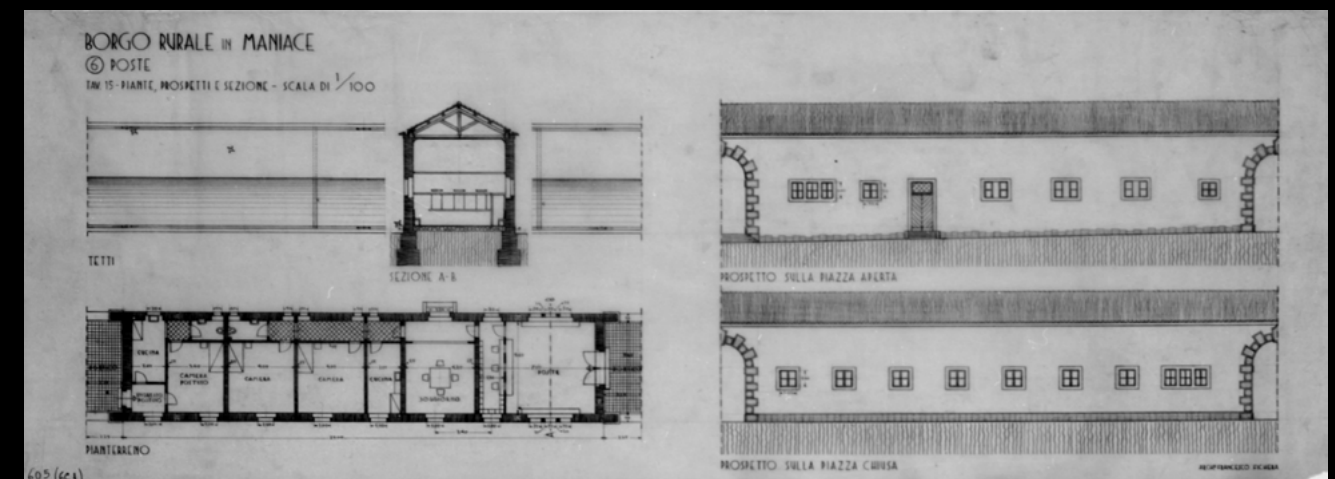
04.
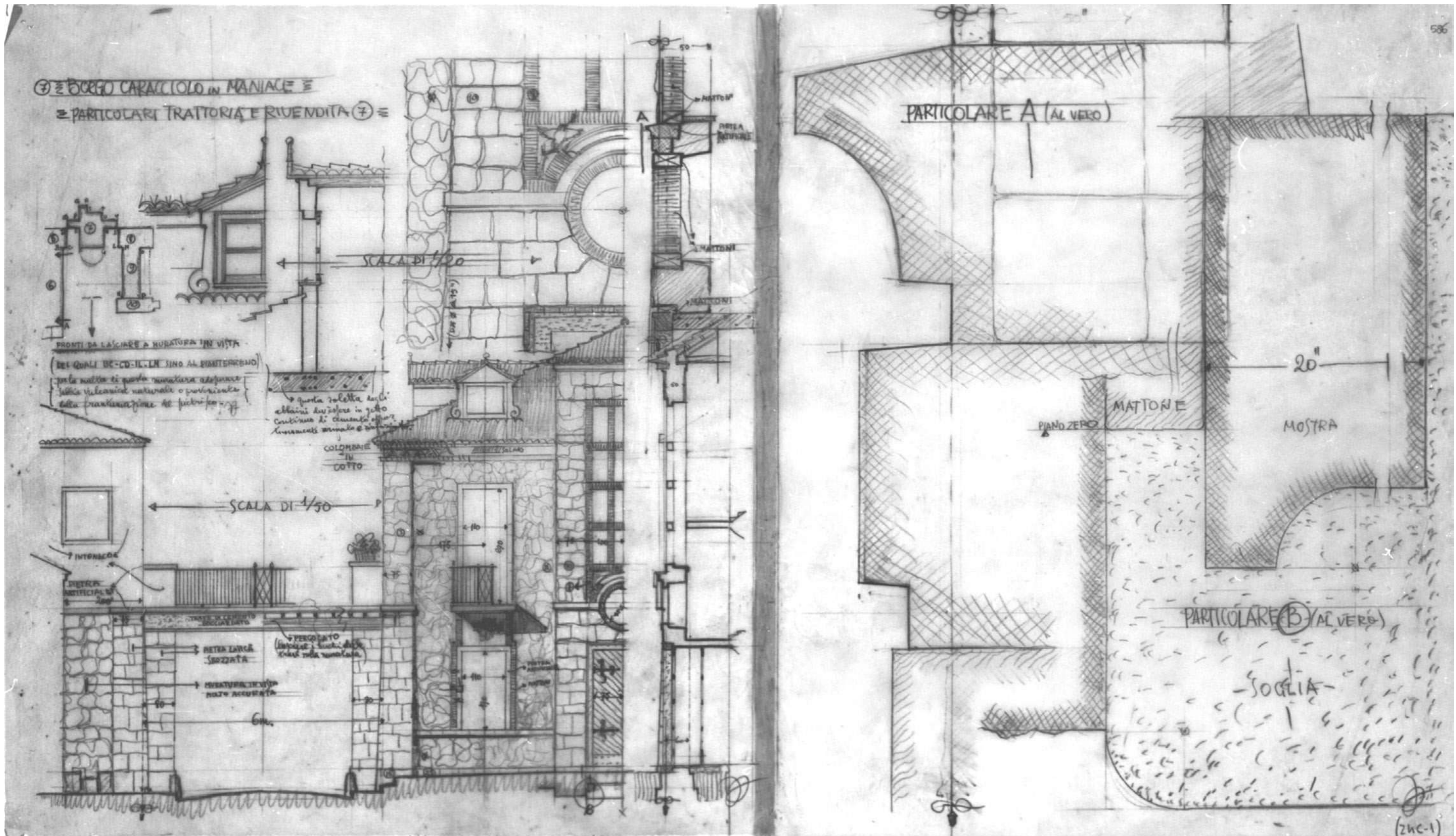
05.
Executive project drawing, details of the Trattoria and retail building.
Inventory number 24(C-1).

Raissa Garozzo | Rosaria Privitera | Cettina Santagati

5 Scuola   7 Trattoria e Rivendita   8 Alloggi impiegati

LEGEND
☐ State of the art
▨ Reconstrunction from the interpretation of
   individual buildings' project drawings
▨ Reconstrunction from the interpretation of
   axonometric drawings

06.
Reconstruction of the definitive project, top left the axonometric drawing
showing alignments, top right the reconstructed plan highlighting
misalignments, bottom the perspective view with degrees of reliability.

LEGEND
☐ State of the art
▨ Reconstrunction from the interpretation of
   individual buildings' project drawings
▨ Reconstrunction from the interpretation of
   axonometric drawings
▨ Reconstruction from typological and dimensional
   comparison with the other buildings of settlement

07.
Reconstruction of the executive project, top the reconstructed plan,
bottom the perspective view with degrees of reliability.

through comparison with documentary and photographic sources [Fig. 08.].
The **current state** describes what can be seen on site today, i.e., a pile of rubble and the few traces of the buildings' foundations. In this case, the three-dimensional model is inserted within the point cloud to make the conditions of the entire site visible [Fig. 09.].
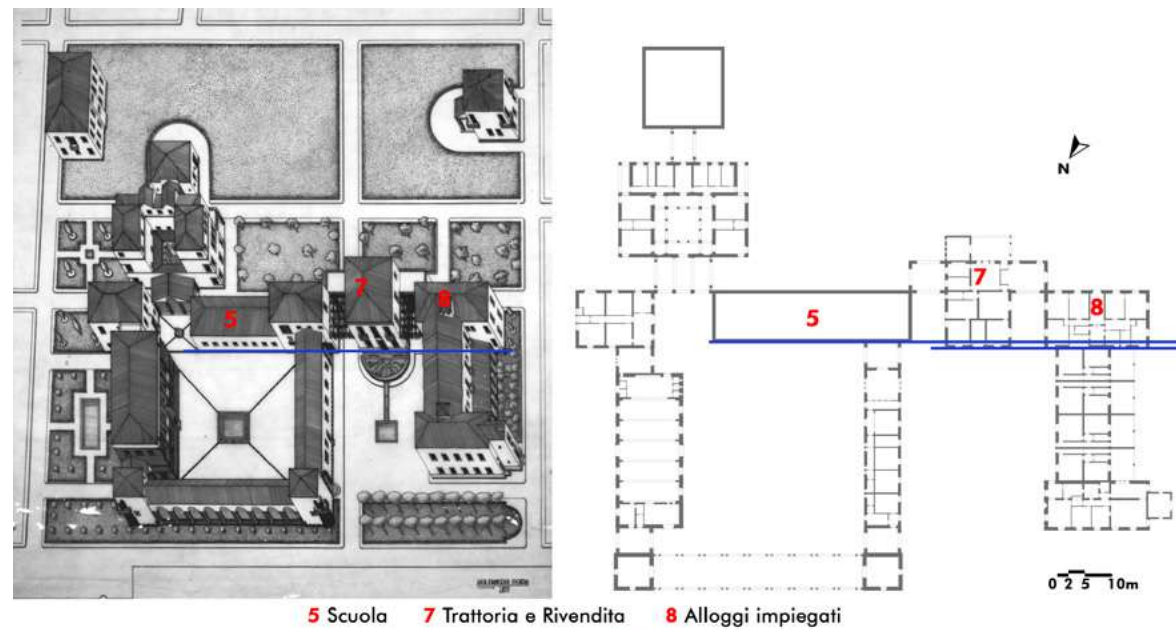
5. CONCLUSIONS AND FINAL RESULTS

5.1 POTENTIAL OF RECONSTRUCTIONS
Digital reconstructions of lost architectures hold significant potential in historical preservation and education. These reconstructions allow us to revive long-lost sites, offering a detailed view into the past that can be both educational and inspirational. Furthermore, digital reconstructions are inherently adaptable; as new discoveries are made, these models can be updated to reflect the latest findings, making them dynamic tools for ongoing research. This evolving nature not only honors the original site's historical significance but also highlights the continuous journey of archaeological and historical discovery. In the case of dissonant heritage, digital reconstructions are particularly meaningful as they allow us to engage with and reinterpret complex or contentious histories. By providing a virtual space to explore these sites, we can foster dialogue and understanding, helping to bridge gaps in cultural narratives and offering a platform for inclusive historical discourse.
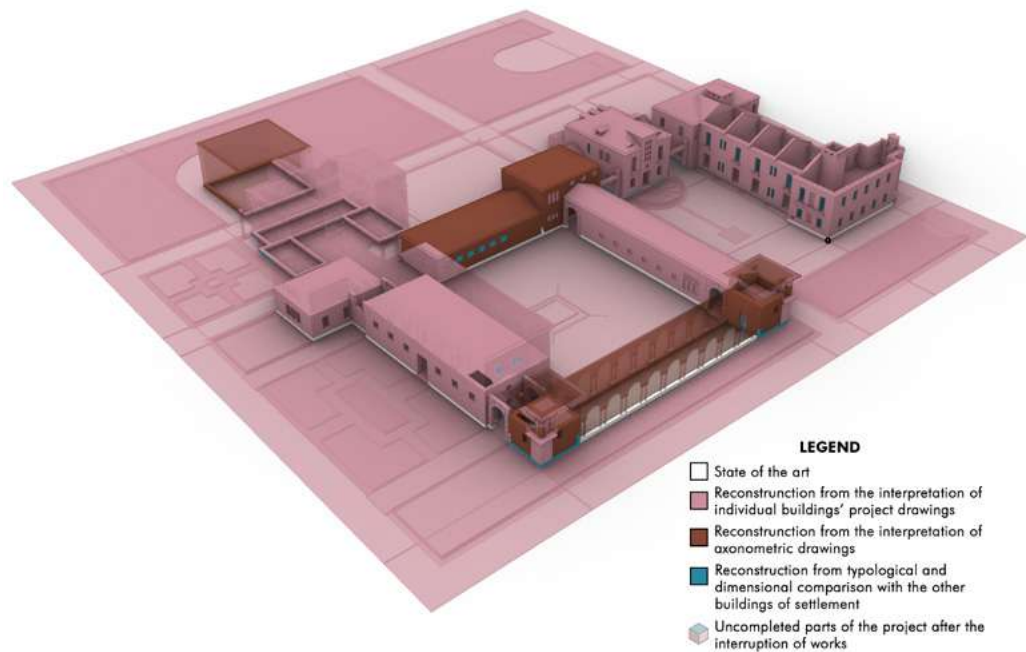
08.
Reconstruction of the executive project until work was halted in 1943, perspective view with degrees of reliability.

LEGEND
- State of the art
- Reconstruction from the interpretation of individual buildings' project drawings
- Reconstruction from the interpretation of axonometric drawings
- Reconstruction from typological and dimensional comparison with the other buildings of settlement
- Uncompleted parts of the project after the interruption of works
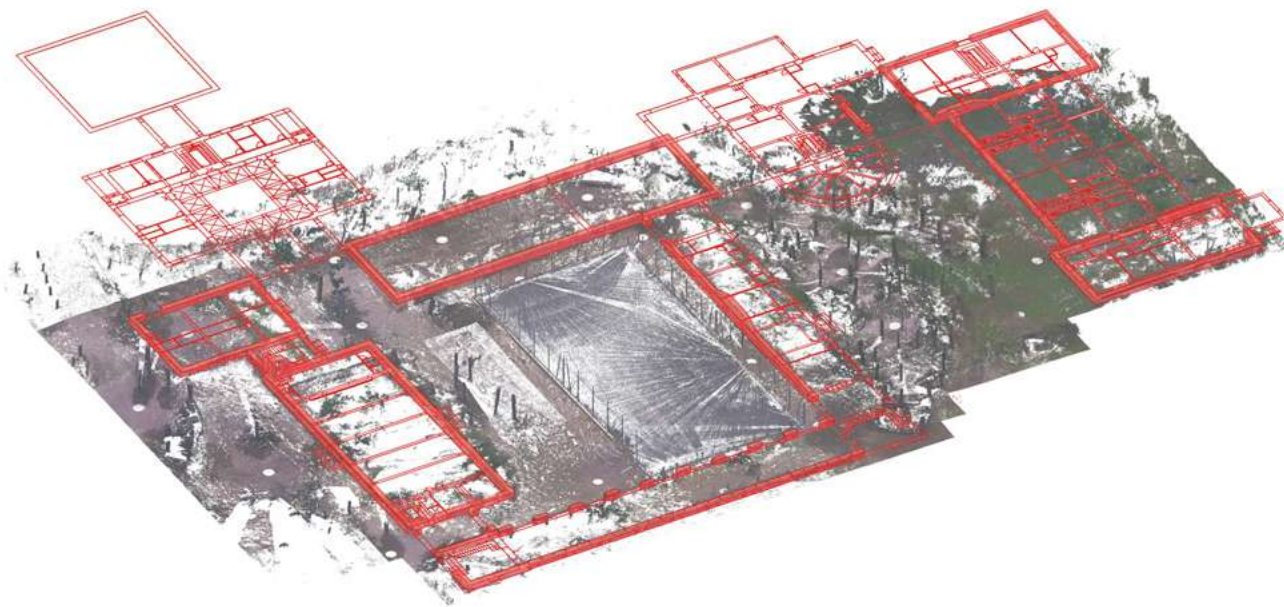
09.
Reconstruction of the current state.

5.2 CONCLUSIONS

The virtual reconstruction of Borgo Caracciolo demonstrated that digital models serve as dynamic gateways to our past and act as beacons of cultural heritage, inviting us to explore, interpret, and reconcile dissonant histories. These reconstructions, rooted in meticulous archival research and contemporary technologies, not only revive lost architectures but also foster nuanced understandings of complex historical narratives helping to reviving memory and removing abandoned sites from oblivion. This comprehensive approach underscores the importance of embracing both technological advancements and historical context in heritage conservation efforts.

NOTES

01| Museo della Rappresentazione is part of the scientific museums network of the University of Catania. It was established in 1996 at Villa Zingali Tetto, an early 20th-century residence, which was restored for the occasion. The museum preserves and exhibits archival collections and prints related to the Department of Civil Engineering and Architecture, including the project collection of architect Francesco Fichera and the etchings by Giovan Battista Piranesi [11].

BIBLIOGRAPHICAL REFERENCES

[1] Battilani, P., Belcastro, M. G., Kowalski, K., Nicolosi, T., Bahlawan, N., Banaszkiewicz, M., Cerulo, C., Davis, J., Faltoni, E. M., González Ruiz, C., Gravari-Barbas, M., Harris-Sánchez, À., Hornok, R., Jinks, N., Leech, J. P., & Willamowski, E. (2024). *Dissonant Heritage: Concepts, Critiques, Cases* (Una Europa Cultural Heritage Series). University of Bologna. https://amsacta.unibo.it/id/eprint/7659/

[2] Żmudzińska-Nowak, M. (2021). Heritage as a Palimpsest of Valued Cultural Assets on the Problems of Frontier Land Architectural Heritage in Turbulent Times: Example of Poland's Upper Silesia. *International Journal of Conservation Science, 12*(4), 1267–1288.

[3] Macdonald, S. (2010). *Difficult heritage: Negotiating the Nazi past in Nuremberg and beyond.* Routledge.

[4] Carter, N., & Martin, S. (2019). Dealing with difficult heritage: Italy and the material legacies of Fascism. *Modern Italy*, 24(2), 117–122. https://doi.org/10.1017/mit.2019.16

[5] Šešić, M. D., & Mijatović, L. R. (2014). Balkan dissonant heritage narratives (and their attractiveness) for tourism. *American Journal of Tourism Management, 3*(1B), 10–19. https://doi.org/10.5923/s.tourism.201402.02

[6] Apollonio, F. I., Grellert, M., Martens, B., & Nußbaum, N. (2019). Experiences with the Reconstruction Argumentation Method (RAM) – Scientific documentation for virtual reconstruction. *Proceedings of the 23rd International Conference on Cultural Heritage and New Technologies (CHNT 23, 2018),* 1–14.

[7] Trizio, I., Demetrescu, E., & Ferdani, D. (Eds.). (2023). *Digital restoration and virtual reconstructions: Case studies and compared experiences for cultural heritage.* Springer Cham.

[8] Fallica, S., Garozzo, R., & Santagati, C. (2021). Retraced memories—Virtual reconstruction of an architectural landmark. *Virtual Archaeology Review*, 12(25). https://doi.org/10.4995/var.2021.15302

[9] Galati, N. (1988). *Maniace: L'ex ducea di Nelson.* G. Maimone.

[10] Guarrera, F. (2017). *Francesco Fichera: La modernità nella tradizione dell'architettura.* LetteraVentidue Edizioni.

[11] Santagati, C. (2019). University museums as digital innovation hubs: The experience of Museo della Rappresentazione in Catania. In *Digital & Documentation: Databases and Models for the Enhancement of Heritage* (Vol. 1, pp. 83–93). Politecnico di Torino.

Integrated workflow for digital documentation of heritage at seismic risk: Emilia-Romagna historic theatres

Flusso di lavoro integrato per la documentazione digitale del patrimonio a rischio sismico: i teatri storici dell'Emilia-Romagna

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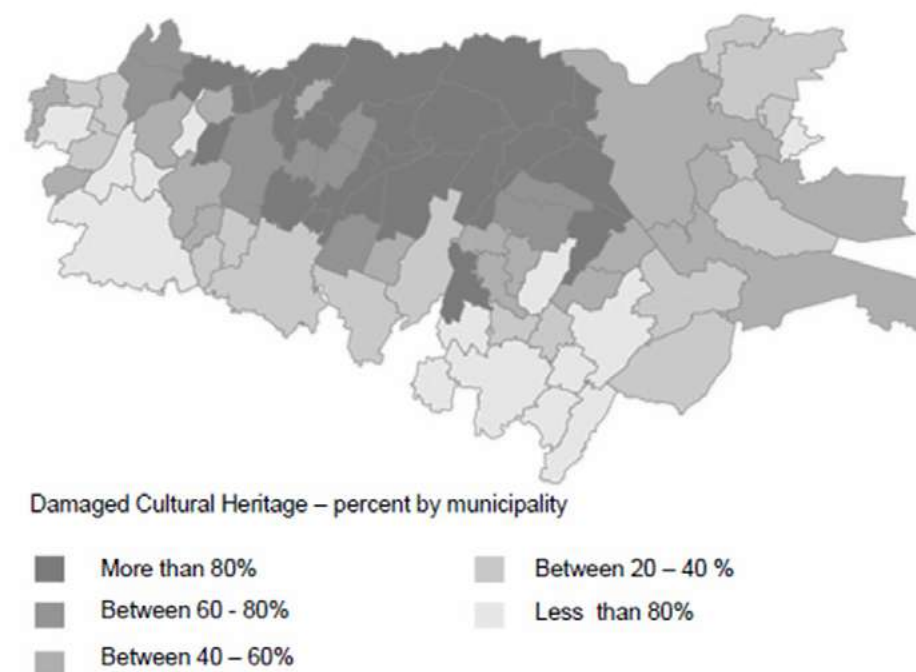
This research began with an extensive review of current earthquake damage assessment procedures, standards and tools. This process culminated with the development of a workflow that integrates procedures to prevent and mitigate risks associated with potential emergencies. This workflow innovation was tested through several case studies using a systematic methodological approach. The study developed and applied an integrated digital documentation workflow adapted explicitly to the earthquake damage assessment of the historical theatres in Emilia-Romagna affected by the 2012 earthquake. The work started with identifying the main objectives and needs outlined by the Regional Agency for Reconstruction, highlighting the challenges in applying the existing Mic forms for damage assessment of complex cultural heritage sites: A-DC for churches and B-DP for buildings. The workflow is divided into three levels of information: a screening level for the visual assessment phases for 3D acquisition and the implementation of HBIM.

Questa ricerca è iniziata con un'ampia revisione delle attuali procedure, norme e strumenti per la valutazione del danno sismico. Questo processo è culminato con lo sviluppo di un flusso di lavoro che integra le procedure per prevenire e mitigare i rischi associati alle potenziali emergenze. Questa innovazione del flusso di lavoro è stata testata attraverso diversi casi studio utilizzando un approccio metodologico sistematico. Lo studio ha sviluppato e applicato un flusso di lavoro integrato di documentazione digitale adattato esplicitamente alla valutazione del danno sismico dei teatri storici dell'Emilia-Romagna colpiti dal terremoto del 2012. Il lavoro è iniziato con l'identificazione dei principali obiettivi e bisogni delineati dall'Agenzia Regionale per la Ricostruzione, evidenziando le sfide nell'applicazione dei moduli Mic esistenti per la valutazione del danno a siti culturali complessi: A-DC per le chiese e B-DP per gli edifici. Il flusso di lavoro è suddiviso in tre livelli di informazione: un livello di screening per le fasi di valutazione visiva per l'acquisizione 3D e l'implementazione dell'HBIM.

Damaged Cultural Heritage – percent by municipality

- More than 80%
- Between 60 - 80%
- Between 40 – 60%
- Between 20 – 40 %
- Less than 80%

INTRODUCTION

Following the earthquake which struck Emilia in 2012, 80% of the existing protected historical heritage [Fig. 01.] suffered extensive damage (Libro, 2019), highlighting the urgent need for a strategic and organic guideline to define policies and practices for the conservation, monitoring and management of the reconstruction of the historical-architectural heritage damaged by seismic action (Cocchi,2016). This need became apparent from the observation of various problems in the application of the current procedures for surveying seismic damage, which at

a national level are still carried out using two forms set up by the Ministry of Cultural Heritage (MiC): the A-DC model for churches and the B-DP model for buildings (according to the DPCM 23.02.2006 'Approval of models for surveying damage, following natural disasters, to cultural heritage assets'). The damaged regional heritage assets were surveyed using the approach developed following the 1997 earthquake in Umbria and Marche, a form-based damage survey. These forms, based on visual inspection, are aimed at studying the damage mechanisms to which the structures are vulnerable, identifying the mechanisms triggered by the earthquake, calculating the global damage index and assessing and quantifying the economic costs for safety measures, first, and consolidation and restoration measures, later.

However, within this framework, the risk assessment follows the 2011 directive standards[01], which consider vulnerability assessment on a global scale. This aspect is a limitation for evaluation on a worldwide scale. In historic buildings, direct experience shows no connections between structural elements, particularly for types characterised by plug walls or planimetric and elevational irregularities [Coisson, 2014]. The specific case of theatres, which have spaces with different heights, unevenly distributed basement surfaces, and floor levels at various heights, such as mezzanine floors, always represents a crucial problem, making the structure particularly susceptible to local collapse mechanisms.

INTEGRATED WORKFLOW DEVELOPMENT METHODOLOGY

Based on the post-emergency phase damage forms, the initial survey revealed a significant issue: the data collected was non-homogeneous and incomplete. Significant qualitative information, such as the geometric-spatial conformation, the construction and structural system, the mechanical and kinematic characteristics of the materials used, the architectural stratifications, the urban context, and the seismic history of the buildings, was not adequately recorded. This highlighted the need for a systematic and comprehensive data collection and analysis approach, particularly for the various complex architectural typologies, including historic theatres.
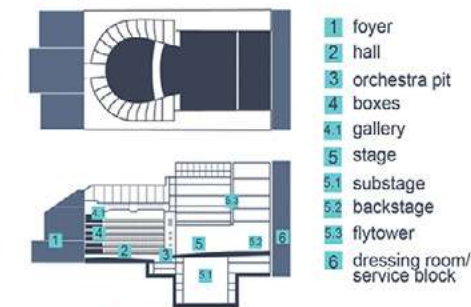
The research also involved a meticulous and comprehensive analysis of existing international, national, and regional databases and cataloguing and classification criteria for assets and risks. No stone was left unturned in the search for a suitable solution, with the project examining current integrated digital survey methods used for heritage documentation, extensive data management (Matrone et al., 2020), and the typological characteristics of historic theatres. This thorough review ensured that the research was built on a solid foundation of existing knowledge and best practices, providing a robust framework for developing the new workflow

The integrated digital flow was developed following the morpho-typological [Fig. 02.] study of historical Italian theatres, which allowed the knowledge and documentation of theatres' most significant grammatical-architectural characteristics: morphological, geometrical-dimensional, spatial, volumetric and structural features. The typological analysis sets the methodological framework [Fig. 03.] proportionally structured on the critical-comparative analysis and modulated according to two overlapping levels of investigation. The first level examined the damage macro sample of theatres in Emilia, analysing the data and information in the Mic form. On the other hand, the second level was analysed based on an inspection sample of 11 theatres selected by the Agency, the investigation criteria, digital survey methods, specialist investigations, and representation supports through which the multidisciplinary teams of professionals responsible for the respective sites analysed the seismic damage. Crossing the analysed data, it emerges that the Mic presents some criticalities due to a) the subjectivity of the surveyor, b) the expeditious nature of the model, and c) the application of a module adapted and not specific to the analysed architectural typology.

Critical issues prevented the regional administration and the team of professionals from accessing the information collected to evaluate the interventions and related reconstruction

02.
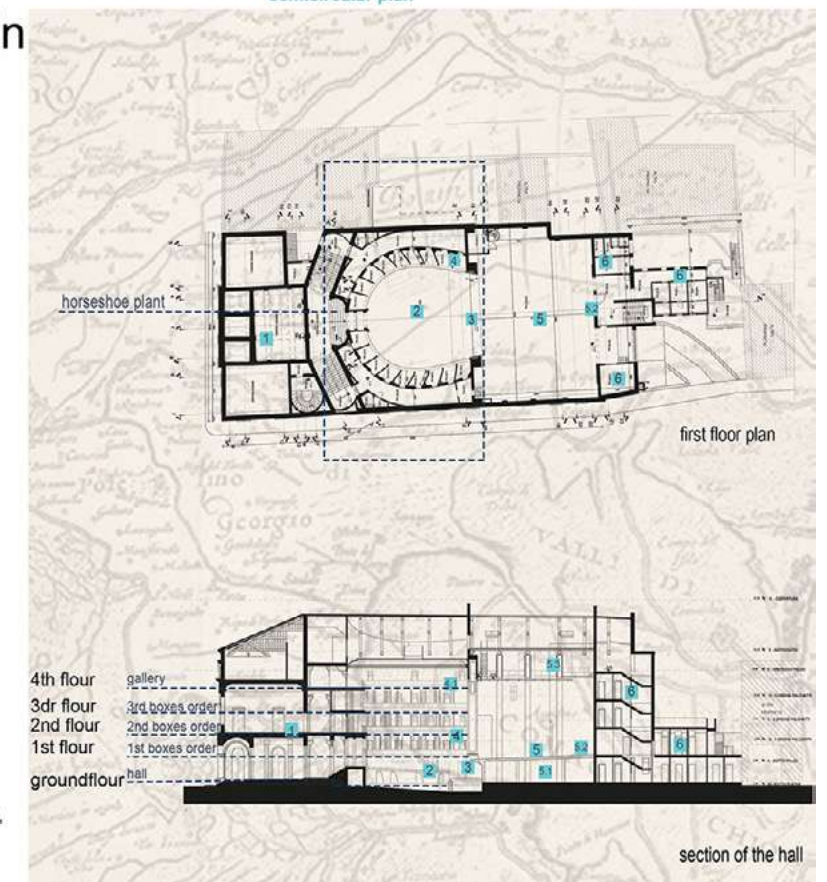
Morpho-typological sheet of the Giuseppe Borgatti Theater - Cento (F.E.) characterised by a horseshoe plan with boxes. The morpho-typological sheets are released at the intersection of the urban context, the stalls' shape, and the construct date.

costs. The critical-comparative approach highlighted the need for a substantial methodological-procedural update to interlink the forms with current digital survey tools and methodologies.

The research to structure an integrated workflow for the survey of seismic damage, applicable to the theatre-specific typology and other complex types of architecture, established a multi-criteria and multi-scalar matrix that responds to international and national standards and protocols[02].

The integrated procedural flow consists of three levels of investigation.

Screening Level (L1): This level involves L1 (Screening Level), a digitised implementation of the MIC damage models used in 2012—models A-DC and B-PD—set on the theatre typology.

The digital tool, SD T (Seismic Damage—Theatres), is the matrix of a single digital database relating to the 106 regional historic theatres.

The SD T is structured into 13 main [Fig. 04.] categories and has been organised using the Central Institute for Cataloging and Documentation (MIC) ICCD forms. All known information and data related to each theatre are collected and digitised within the SD T. The DS T aims to provide a digital database of each theatre to optimise the phases of data retrieval and survey the state of damage during emergency operations.
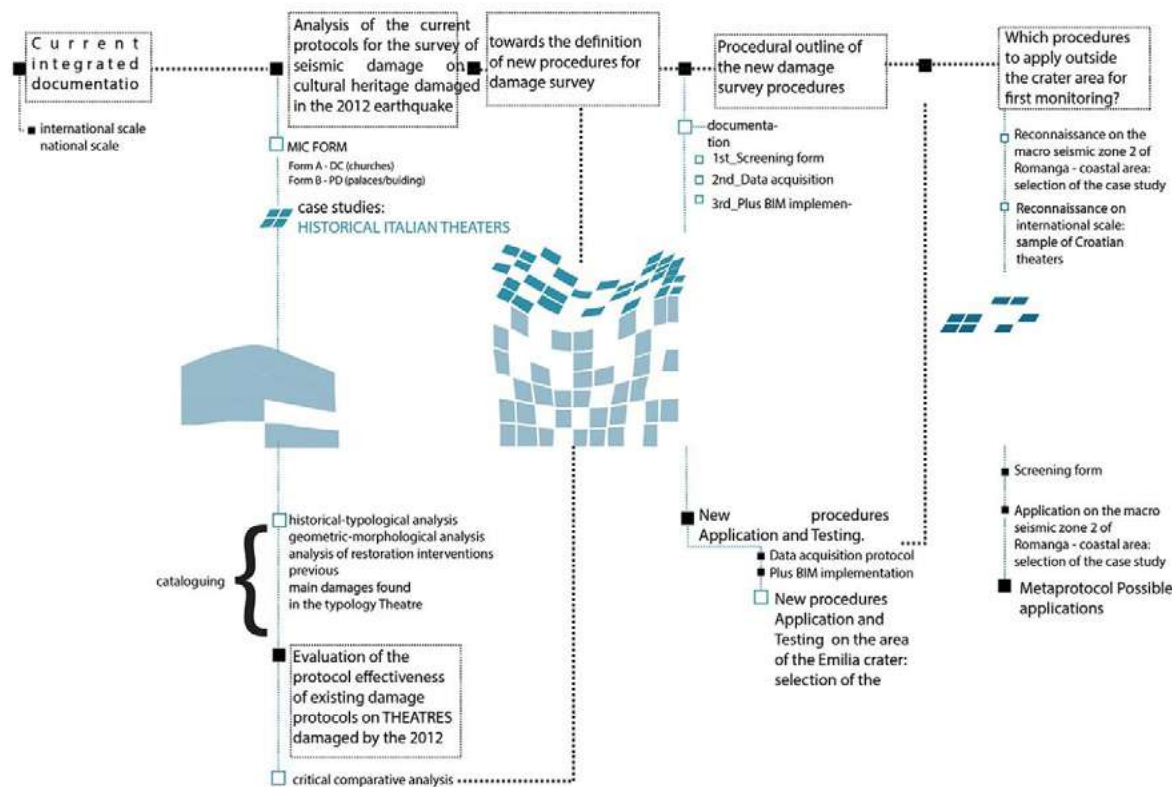
03.

Extensive methodology diagram: The chart schematically shows the integrated documentation methodology applied to theatres damaged by the 2012 earthquake.

SD T (SCREENING LEVEL)

SEISMIC HISTORY ▶T08	T08 -STSD-Data Degli Eventi Sismici Pregressi	Date Of Previous Seismic Events
	T08 - ZONS- Zonizzazione Sismica	Seismic Zoning
	T08 -RIFUST-Riferito All'UST	UST
	T08 -DESRIF-Descrizione Del Danno Relativo All'UST	UST Damage Description
	T08 -INTV-Descrizione Dell'intervento	Intervention Description
	T08 -INTAU-Autore Dell'intervento	Intervention Author
EXTERNAL HAZARDS ▶T09	T07 - OGTNRE-Presenza Rischi Esterni	Presence of External Risks
	Irischio idrogeologico - frane	Hydrogeological risk - landslides
	rischio idrogeologico - alluvioni	hydrogeological risk - floods
	rischio di tipo industriale	industrial risk
	altre minacce naturali	other natural threats
	minacce antropiche	anthropic threats
DAMAGED SURVEY ▶T09	T09 -MuE_ MURATURA PORTANTE ESTERNA	Bearing Masonry
	T09 -MCMCRE_ Analisi dei meccanismi	Analysis of mechanisms
	T09 -MuE-N -prospetto NORD	NORTH Front
	T09 -MuEMC-N_meccanismi di collasso	collapse mechanisms
	T09 -MuE-S -prospetto SUD	SOUTH Front
	T09 -MuEMC-S_meccanismi di collasso	collapse mechanisms
	T09 -MuE-W -prospetto OVEST	WEST Front
	T09 -MuEMC-W_meccanismi di collasso	collapse mechanisms
	T09 -MuE-E -prospetto EST	EAST Front
	T09 -MuEMC-E_meccanismi di collasso	collapse mechanisms
	T09 -QUOTDs - Quota livello danno	amage level elevation
	T09 -USTMLDA_LIVELLO DI ATTIVAZIONE DEL DANNO	USTMLDA_LEVEL OF DAMAGE ACTIVATION
	T09 -IDSP_INDICE DEL DANNO PARZIALE	INDEX OF PARTIAL DAMAGE
	T09 -OGTINEFI_FINITURE ESTERNE	EXTERNAL FINISHES

T09 -USTM_1/4/5	USTM1_1/4/5
T09 -MuI_MURATURA PORTANTE INTERNA	NTERIOR Bearing Masonry
T09 -MuIRA-Riferimento altimetrico	ALTITUDE REFERENCE
T09 -MuIA-codice ambiente	-environment code
T09 -MuI_np_ numero della parte interna rilavata	number of the reworked internal part
T09 -MuIMC_meccanismi di collasso della muratura portante interna	collapse mechanisms of the internal load-bearing masonry
T09 -USTMPa - PARETI DIVISORIE	DIVISION WALLS
T09 -PaRA-Riferimento altimetrico	Altimetric reference
T09 -PaA-codice ambiente	environmental code
T09 -Pa_np_ numero della parete divisoria	partition number
T09 -PaMCO_meccanismi di collasso della parete interna	collapse mechanisms of the internal wall SLAB/VAULT
T09 -USTMO- STRUTTURE DI ORIZZONTAMENTO	typology
T09 -OT- tipologia	affected environment code
T09 -OMC-codice ambiente interessato	collapse mechanisms horizon structures
T09 -OMC_meccanisimi di collasso strutture di orizzontamneto	ROOF
T09 -Co-COPERTURA	roofing sector
T09 -CoSET_ settore copertua	roofing collapse mechanisms
T09 -CoMC-meccanismi di collasso copertua	T09 -USTMLDA_LEVEL OF DAMAGE

UST 1- 4-5

Tab.1 the theatre UST
UST 1 -forepart/foyer [it language: avancorpo]
UST 2 -hall/cavea [it anguage: cavea]
UST 3 -proscenium arch/scenic arch [it anguage: arco scenico]
UST 4 -stage and backstage [it language: palco e retroplaco]
UST 5- utility space [it language: blocco servizi]
UST 6-foundations [it language: fondazioni]

04.

Structure and organisation of subsections of the digital meta-form categories for seismic damage assessment of theatres - SD T. The picture shows the session related to the seismic damage survey.
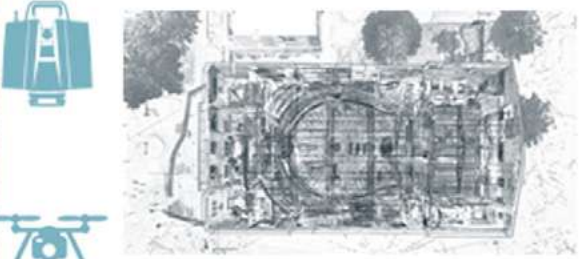
05.
The integrated documentation workflow.

– Investigation Level (L2): This level entails an integrated digital investigation that follows a protocol designed to produce 3D models that can be consulted and updated over time. The protocol was developed within the framework of Inception (Di Giulio et al., 2017) and has been specifically adapted for seismic damage surveys. This level is organised into eight main phases of workflow:
1. Scanning plan;
2. Health and safety;
3. Termination requirements;
4. How to register;
5. Control network;
6. Quality control;
7. Control and verification of data;
8. Data storage and archiving.

tecnology	outdoor			indoor	
	area	surface	roof	spazius area (foyer/hall/stage)	narrow area (boxes - serive body)
close range terrestrial photogrammetry	●●	●●	‡	●●●	●
close range arial photogrammetry	●●●	●●	●●●	●	‡
static Laser scanner	●●	●●●	‡	●●●	●●

06.
The integrated documentation workflow application on the pilot case
Social Theatre of Novi in Modena.

The second workflow level provides guidelines for coding, interpreting, and representing data acquired by the 2011 directive.
– HBIM Plus level (L3): is the collector of the first and second levels. The information collected and the data acquired and processed are the basis of the HBIM model, connected to semantic platforms (Iadanza et al., 2020). The levels of information (LOI) that parametric models can include to represent damage directly on geometries have been included (Brusaporci et al., 2018). The choice of adopting HBIM models is aimed at overcoming the limits of the MIC.
Tools and directly and punctually relating the survey of the damage to the data of the shape of the cultural asset. This last level, set on HBIM modelling, provides access to uploading and, therefore, sharing data and information on semantic web platforms to promote and support the management and monitoring of the asset in a more efficient way [Fig. 05.].
HBIM environment is a valid support for documenting, classifying and archiving essential information for understanding the theatres, updating metric and geometric surveys, and assessing damage and the state of conservation in a collaborative environment. Through the platforms, it is possible to connect the hierarchically systematised information from higher levels of investigation to the digital model. Furthermore, it is possible to connect existing databases (Empler et al., 2021).

CONCLUSIONS

A holistic and multidisciplinary approach has been adopted to systematise information needed to record its historical architectural and technical structure. The current MIC forms A–DC and B–DP regulate the only procedures for seismic damage surveys, determining aggregated damage indices in post-emergency cases. The introduction of the integrated workflow through the digital DS T (LV1) file constitutes an implementable database of information compared to the paper forms of essential information. In addition, UST (structural sub-units) will be introduced to document the damage situation locally and globally, resulting in more efficient cost estimation in the reconstruction process.
The DAP DS (LV2) outlines an optimised method of data collection using 3D acquisition tools. It provides standardised guidelines for organising the workflow of specific survey procedures, whether fast-track emergency or detailed, through the categories provided by the initial DAP. For an accurate, reliable, and optimised detailed earthquake damage survey, categories A and A++ need to be achieved.
This supports the parametric modelling defined in the last level of Plus HBIM (L3), where data and information collected in previous levels are converged and parametrically linked by p-sets. The research emphasised the support of integrated heritage documentation to develop proactive maintenance and management strategies, aiming to develop tailored seismic damage identification modules for complex buildings. The three levels of investigation, the systematic collection of data and information, historical evolution, morpho-typological, structural, technological and geospatial data, state of conservation and previous interventions were highlighted as essential to ensure the preservation and management of cultural heritage exposed to risk contexts.
However, there are areas of investigation to be further investigated in the future, such as the specificity of the investigation related to the regional territorial scale, the relationship between subjectivity and data quality, the issues concerning the direct geometric representation of deformations on the BIM digital model, the use of standardised semantic web platforms, in the integrated workflow, maintenance and management actions, by the administrations and competent technicians.

NOTES

01| The 2011 Directive provides information on the procedure for assessing and reducing the seismic risk of the protected cultural heritage, which can be described in seven points: knowing the structure; using one or more mechanical models of the macro elements of construction; setting a reference seismic safety level; evaluate the nominal life of the asset in its present state; design the intervention action; consider the nominal life in the project state and finally " adopt appropriate detailed rules in the implementation of the interventions ". The document can be found on both the Civil Protection website, www.protezionecivile.gov.it and the Mic website, www.beniculturali.it
02| The study uses research and protocols developed by the EUCHIC project (Iceberg Protocol, www.euchic.eu). The Heri tageCare protocol systematises inspection and monitoring steps to ensure proactive asset management. These planned inspections aim to mitigate deterioration and damage processes.

BIBLIOGRAPHICAL REFERENCES

Bondoni M.S. (Ed): 1982. Teatri storici in Emilia-Romagna. Bologna, Grafis Edizioni.

Brusaporci, S., Maiezza, A. Tata, A., 2018. A Framework for Architectural Heritage HBIM Semantization and Development.

Cocchi, E., (2016). La ricostruzione post sisma 2012 in Emilia Romagna: Quale contributo alla resilienza del territorio?. In *Pianificazione strategica vulnerabilità urbana e analisi degli edifici strategici*, Santarcangelo di Romagna (RM), Maggioli Editore, pp.12–14. ISBN 9878891618245.

Colucci, E., De Ruvo, V., Lingua, A., Matrone, F., Rizzo G., HBIM-GIS Integration: From IFC to CityGML Standard for Damaged Cultural Heritage. In a Multiscale 3D GIS. Appl. Sci. 2020, 10, 1356. https://doi.org/10.3390/app10041356

A. Kioussi, K. Labropoulos, A.Karoglou, A. Moropoulou, R.Zarnic, (2011). "Recommendations and strategies for establishing a guideline for monument documentation harmonised with the existing European standards and codes", *Journal Geoinformatics FCE CTU 6*, 178 – 184.

E. Iadanza, F. Maietti, M. Medici, F. Ferrari, B.Turillazzi, Beatrice R. Di Giulio, Bridging the Gap between 3D Navigation and Semantic Search. The INCEPTION platform. In International Conference, HeriTech 2020, The Future of Heritage Science and Technologies, International Conference, *Volume 949, IOP Conference Series: Materials Science and Engineering*, Florence, 2020, DOI 10.1088/1757-899X/949/1/012079.

Di Giulio, R., Maietti, F., Piaia, E., Medici, M., Ferrari, F., and Turillazzi, B., 2017. Integrated Data Capturing Requirements for 3D Semantic Modelling of Cultural Heritage: the INCEPTION Protocol. Int. Arch. Photogramm. Remote Sens. Spatial Inf. Sci., XLII-2/W3, 251–257.

Empler, T., Caldarone, A., Rossi, M.L., 2021. BIM Survey. Critical Reflections on the Built Heritage's Survey. In C. Bolognesi & D. Villa (Eds.), From Building Information Modelling to Mixed Reality, 109–122. Springer.

Iadanza E., Maietti F., Medici M., Ferrari F., Turillazzi B., Di Giulio R. 2020. Bridging the Gap between 3D Navigation and Semantic Search. The INCEPTION platform. IOP Conf. Ser.: Mater. Sci. Eng. 949 012079.

Libro, A., 2019. Il rilievo del danno al patrimonio storico- artistico e i primi interventi di messa in sicurezza, Paesaggio Urbano, 1/2019, 147-151.

Matrone, F., Lingua, A., Pierdicca, R., Malinverni, E. S., Paolanti, M., Grilli, E., Remondino, F., Murtiyoso, A., Landes,T., 2020. A Benchmark for Large-Scale Heritage Point Cloud Semantic Segmentation. Int. Arch. Photogramm. Remote Sens. Spatial Inf. Sci., XLIII-B2-2020, 1419–1426.

Masciotta,MG., Morais, MJ., Ramos, LF., Oliveira,DV., Sánchez-Aparicio,LJ., & González-Aguilera,D. ,2021. A Digital-based Integrated Methodology for the Preventive Conservation of Cultural Heritage: The Experience of HeritageCare Project. In I*nternational Journal of Architectural Heritage Conservation, Analysis, and Restoration*, Volume 15:6, 844–863, DOI: 10.1080/15583058.2019.1668985, pp 844–863.

Ottoni, F., Coisson, E., Brignoli,A., 2014 Edifici storici in zona sismica: per una programmazione degli interventi, tra economia e sicurezza. In Atti convegno Safe Monuments , Firenze nel 28 marzo 2014,pp. 29-40.

"Miss Memory and the Colors of History". Storytelling for the youngest

"Signorina Memoria e i colori della storia". Racconto per i più piccoli

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Palazzo Imperiale in Genoa is one of the palaces of the Rolli, partly UNESCO heritage since 2006. Visitors entering the palace today find what remains of a building from the "Golden Century" of Genoa, disastrously destroyed by bombs in 1942. The abandonment by the ancient owners has allowed the palace to remain unchanged over the centuries, for better or for worse. The frescoes still visible bear the signs of fires, while a large white ceiling is a testimony to what has been lost. In 2023, after approximately three years of work, the first digital restoration of the color of one of the frescoes was completed. This process allowed for the visual allure to be recovered without physically altering the works and "gaps". Particular attention was given to public dissemination, through projections at the original site and the creation of an illustrated story for children, where the dark shades of abandonment contrast with the vibrant colors of "Miss Memory".

Palazzo Imperiale a Genova è uno dei palazzi dei Rolli, in parte patrimonio UNESCO dal 2006. I visitatori che entrano oggi a palazzo trovano ciò che rimane di un edificio del Secolo d'Oro genovese, rovinosamente caduto sotto le bombe del 1942. L'abbandono da parte degli antichi proprietari ha permesso di mantenere inalterato il palazzo nei secoli, nel bene e nel male. Gli affreschi ancora visibili portano i segni degli incendi, mentre un grande controsoffitto bianco è testimonianza di quello che è andato perduto. Nel 2023, dopo circa tre anni di lavoro, si è concluso il primo restauro digitale del colore di uno degli affreschi, lavoro che ha permesso di non alterare fisicamente opere e "mancanze", ma di recuperarne la suggestione visiva. Particolare attenzione è stata data alla divulgazione per la fruizione pubblica, attraverso la proiezione nel sito originale e la realizzazione di un racconto illustrato per bambini, in cui le tinte cupe dell'abbandono sono in contrasto con i vivaci colori della "signorina Memoria".
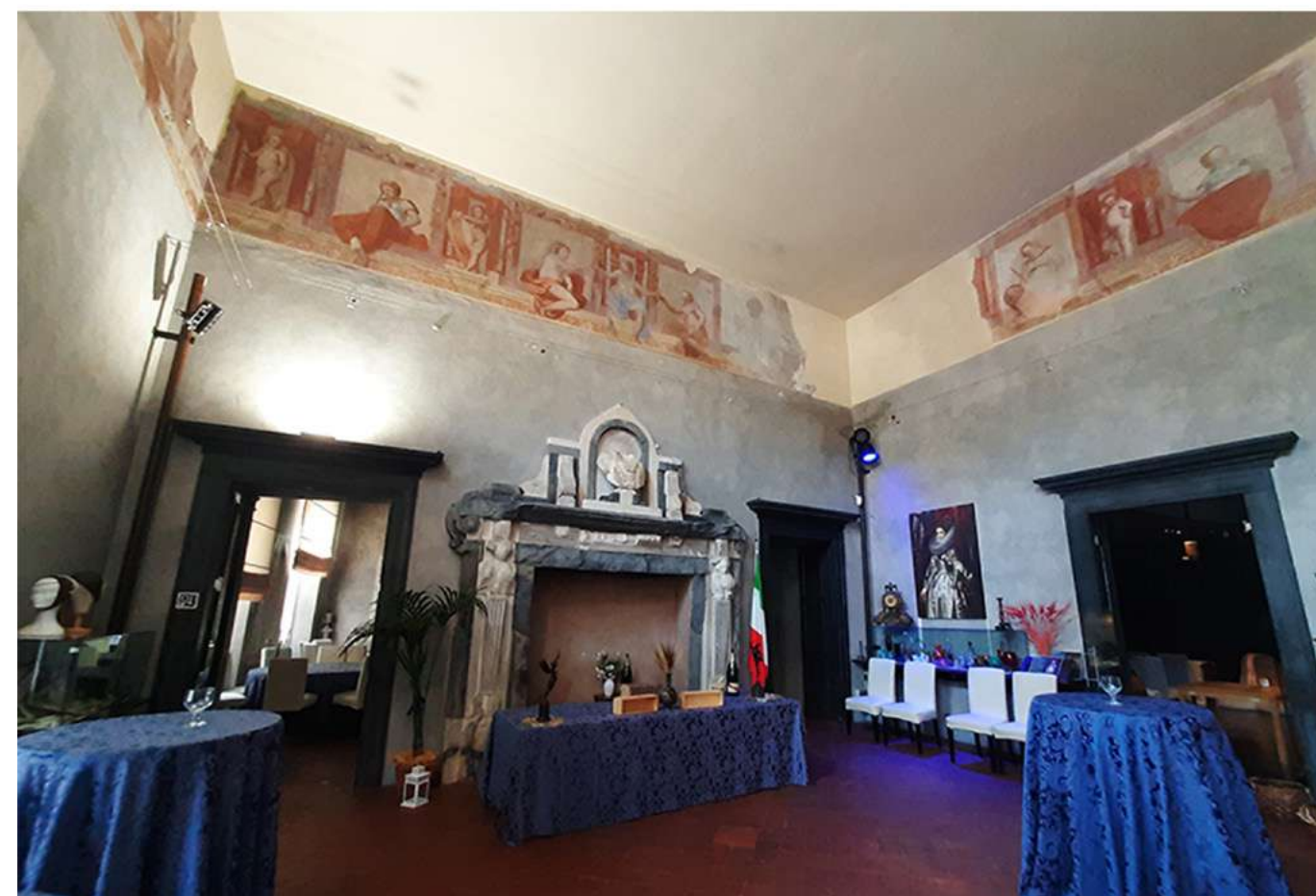
01.
The hall on the second floor of Palazzo Imperiale as it appears today.
Above, a detail of the original frieze decorated by Luca Cambiaso in 1560.
Photographs by the author

PALAZZO IMPERIALE IN GENOA AND THE REDISCOVERED FRESCO

Palazzo Gio Vincenzo Imperiale is one of the 115 Rolli palaces in Genoa. Built anew or adapted from ancient medieval structures between 1500 and 1600, these grand palaces were selected based on architectural and artistic beauty to be part of "lists", categorized according to the wealth of the property and its owners, from which they were drawn to host high-ranking personalities visiting Genoa on state visits.

Vincenzo Imperiale had the new residence built for his family in a cramped area of Genoa, surrounded by narrow alleys bustling with blacksmiths' shops, slaughterhouses, and noisy taverns [5]. However, the new palace soon became famous for the richness and originality of its decorations.

Unfortunately, in 1684 and 1942, the collapse of the ceiling on the second floor caused the definitive disappearance of the fresco cycle dedicated to the stories of Antonio and Cleopatra, works by Luca Cambiaso and Giovanni Battista Castello, two of the greatest artists of Genoese Mannerism [Figs. 01., 02.].

The large reception hall that housed these works is the first room encountered upon entering and was therefore meant to awe distinguished guests and convey a series of specific iconographic messages [4]. The choice of the theme, likely by Vincenzo himself, was quite original as no other frescoes depicting the stories of Cleopatra are known in the Ligurian territory [10].

A photograph taken by former Councilor for Fine Arts Mario Labò, just before the bombings, is today the only graphic testimony we have of one of the ceiling frescoes: Luca Cambiaso's "Morte di Cleopatra" (the Death of Cleopatra, circa 1560) [Fig. 03.].

The research work, started in 2021, was based on using this fragment of memory of Cambiaso's work to try to revive the sensation that the grand hall, which had so impressed ancient visitors, must have evoked.

The photograph, now preserved in the DocSai municipal archive, was digitized and restored, to be used as a work base for applying color.

Illustrious visitors and historians between 1600 and 1800 describe this fresco as a masterpiece of composition but do not provide details about the colors used, except that they were already damaged by time [1]. To recreate a visual suggestion of what the original colors might have been, Cambiaso's style was studied, and a photographic campaign was conducted on other contemporary frescoes he executed [9]. This way, a palette of dozens of colors recurring in many iconographic elements was constructed. The colors, applied by hand using Photoshop CC 2023 software and a Wacom graphic tablet, were layered over a thousand transparent layers, respecting the lights and shadows of the original photograph [Fig. 04.] [6].

Subsequently, for the reconstruction of the decorations that according to chronicles surrounded the fresco, stucco, grotesques, and other decorations found on the ground floor ceiling, in what was the ancient entrance hall of the palace, were photographically sampled. Today, this area is still preserved and used as an antique shop [Figs. 05., 06.] [8].

Finally, tests with the projector – a Panasonic PT-MZ16K 16,000 lumens – allowed the dimensions and particularly the brightness and color to be calibrated. To harmonize the projected part with the painted frieze present in the room, whites were softened and red tones were highlighted, with brightness not exceeding 60% [Fig. 07.].

The resulting projection thus occupies the entire surface of the room, fully covering the false ceiling, without appearing overly bright and thus "artificial" despite the bright colors typical of Cambiaso's style [7].

02.

Photograph taken shortly after the collapse of the vault and the upper floors.

Photographic Archive of the Royal Superintendence of Monuments, No. 244–B, 1942.

ROLLI DAYS 2024: VISUAL HISTORIC COMMUNICATION TO THE GENERAL PUBLIC

On May 17, 18, and 19, 2024, the spring edition of the Rolli Days took place. It is one of the two annual occasions when it is possible to visit, accompanied by municipal guides, the 16th-century Genoese palaces, which are still mostly used as private residences today.

The public that flocks to the Rolli Days every year is diverse and numerous. The visits are designed to last no longer than 45 minutes, with entries every 30 minutes for a total of over two thousand visitors in one weekend. The short duration of the tour and the various "barriers" created with such a heterogeneous audience – such as language, age differences, and historical-artistic knowledge – made the projection the ideal tool for this type of event [2].

This part of the visit, addressed in previous Rolli Days editions, was sometimes omitted precisely because of the difficulty in communicating only verbally about a work for which visitors had no visual reference, making it hard to understand and less engaging.

For this latest edition, visitors were invited to sit in the hall and, comfortably leaning against the high backrests, had time to admire the reconstruction of the fresco while the guides' narrating voice explained the fresco's recovery process [Fig. 08.].

The turning on and off of the projector allowed the entire narrative to be appreciated, from the disaster of the war to the potential of technology that restored a visual memory that seemed lost forever. The contrast certainly created a moment of reflection on a topic rarely addressed so concretely: how much of our heritage disappears or is at risk of disappearing due to conflicts or neglect, leading to dangerous historical forgetfulness and depriving future generations of important testimonies of human genius, relevant not only to local culture but to civilization as a whole.

The feedback from the public was positive, to the point of proposing the expansion of the work to other Rolli palaces in similar conditions.

"MISS MEMORY AND THE COLORS OF HISTORY". STORYTELLING FOR THE YOUNGEST

Despite the large number of visitors over the three days, a problem encountered in many recent editions is the lack of participation from younger audiences. Very few teenagers aged 12-15 attend, and even fewer children under 10. For this reason, with the aim of increasingly inclusive dissemination and educating about local heritage from a young age, a project dedicated to children and young people was conceived. The idea behind the educational content, which was created in the form of an illustrated book, is to inform about the historical events, the artistic features of the palace, and the protagonists of its history, but above all, to raise awareness about the theme of memory. The narrative is built around the game of thematic and chromatic contrast between "misfortune" – symbolizing war, forgetfulness, and abandonment – and "Miss Memory", who can magically restore the palace's colors, erased by the shadows of time [Fig. 09.]. The turning point is a little girl who notices a fragment of a collapsed fresco. Her attention to an apparently insignificant object brings Miss Memory back to the palace, saving it from the grip of misfortune and once again giving the pleasure of its works to anyone who visits and thus keeps it alive.

The book includes many references to what is still visible today outside and inside the rooms. In this way, it becomes a sort of "map" inviting young people to explore the place, both during visits and in workshops designed for schools, where games and quizzes will be created to make the experience as interactive as possible [Fig. 10.].

03.
Morte di Cleopatra, Mario Labò, 1942, DocSAI Archive, Genova.

DETTAGLIO 1

Tono di riferimento | Tono più chiaro | Tono medio | Tono più scuro

CARNE
VERDI
GIALLI
GRIGI
BIANCHI

04.

Above, one of the photographic samples of the "Ratto delle Sabine" (1560 ca.) from which the colors were digitally extracted. Below, the recolored photograph based on the samples.

Images by the author

05.

Photographs of stuccos and decorations executed by Luca Cambiaso and Gian Battista Castello on the ground floor of Palazzo Imperiale.

Photographs by the author

MEMORY BETWEEN PAST, PRESENT, AND FUTURE

The widespread use of technology and its application in the world of cultural heritage gave rise in 2006 to the London Charter, followed by other documents in which the principles for the proper use of digital representation in the archaeological field are formulated [3]. In recent decades, there has been an increasingly growing experimentation that combines digital and technology with cultural experience not only to create digital models and immersive visits but also to virtually recover what has been lost [11], allowing to overcome the boundaries of missing material and keeping historical memory alive for future generations.

Since 2000, when the second noble floor was taken over by the current director, numerous consolidation, restoration, and recovery works of the original structures and decorative apparatuses have been initiated. In this case, the choice of a restoration entirely entrusted to technological means, both for the recovery process and for the final fruition through projection, was not only dictated by the lack of a material base to work on and the constraints imposed by the Superintendency of Fine Arts, but was also a conscious choice of what can become a good practice in preserving historical traces and visual memory.

The restoration sector in Italy is no stranger to the use of projections as a means of reconstructing pictorial elements lost over the centuries. In some cases, these are hypothetical graphic reconstructions based on written accounts or a few surviving traces; in others, they involve the relocation of elements that were removed or have fallen over time [12,13]. In the case of the Palazzo Imperiale, the surviving photograph has become the key to historical memory. This has not only allowed the work to be reproduced in its entirety but also limited hypotheses to color alone, leaving the decorative apparatus visually unaltered over time.

It is also important to emphasize that digital recovery allows not to affect the original artifact, avoiding creating historical "fakes" and, above all, to also show the signs of the voids and gaps. What has been lost over time is now part of history, and any new expression of it in the present time risks being reduced to a copy. In this perspective, the white false ceiling that replaced the decorated vault is no longer just a silent ceiling but also bears the materiality of its absence and tells of tragic events, written in the history of the palace.
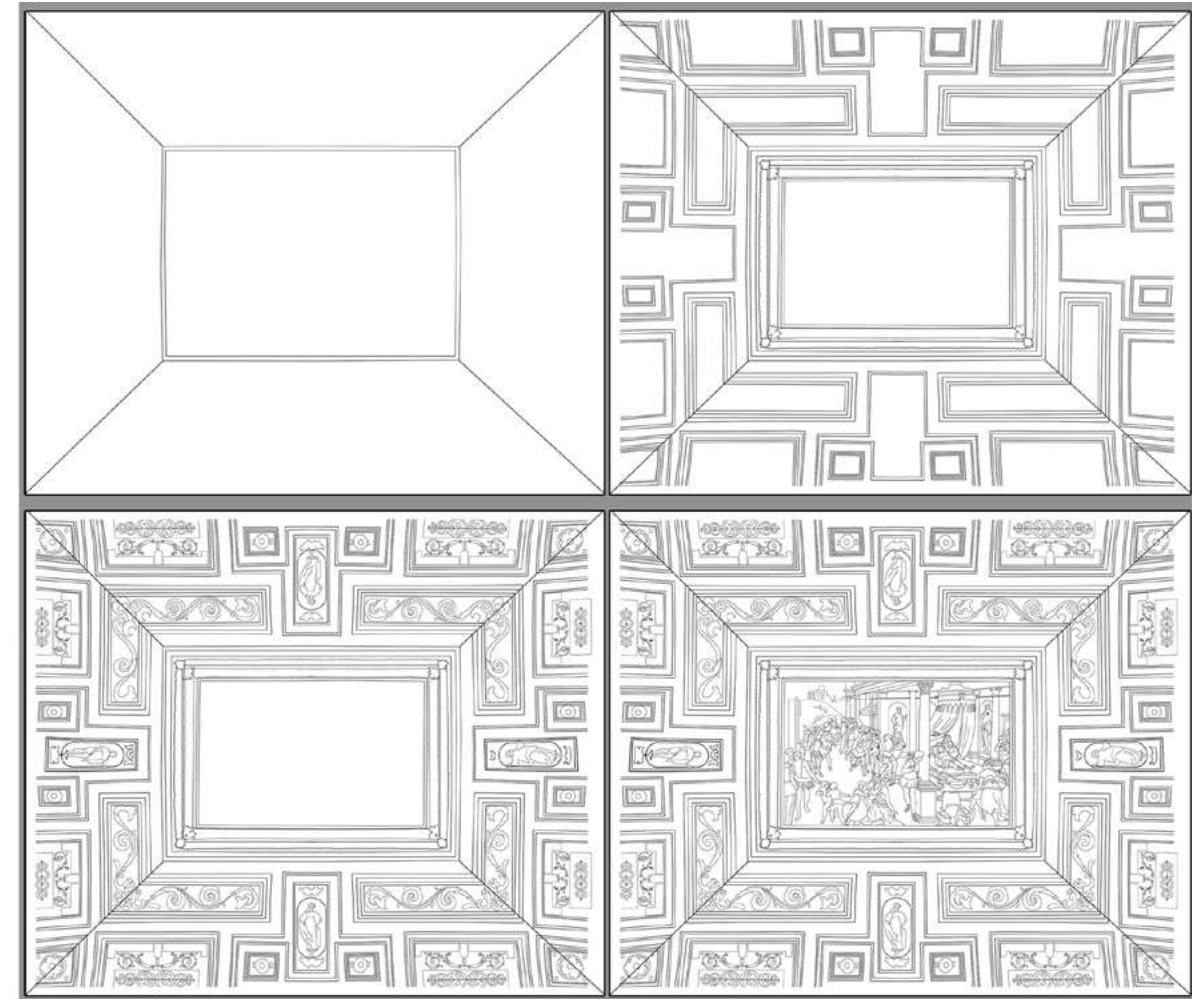
07.
Digital mapping of the ceiling and projection test before the Rolli Days.
Photographs by the author

08.
Audience and guides at the May 2024 Rolli Days,
the first public presentation of the work.
Photographs by the author

BIBLIOGRAPHICAL REFERENCES

[1] Alizeri, F. (1847). *Guida artistica per la Città di Genova*, II, parte I. Editore Grondona.

[2] Barrado-Timón, D.A., & Hidalgo-Giralt, C. (2019). The Historic City, Its Transmission and Perception via Augmented Reality and Virtual Reality and the Use of the Past as a Resource for the Present: A New Era for Urban Cultural Heritage and Tourism? *Sustainability*, 11, 2835.

[3] Clini, P., Angeloni, R., D'Alessio, M., Perna, R., & Sforzini, D. (2022). La digitalizzazione per la documentazione, lo studio e la fruizione di un sito archeologico. La VRexperience del teatro di Ricina. Archeologia e Calcolatori 33.1, 279-296.

[4] Gavazza, E. (2004). Apparati decorativi e tematiche iconografiche nelle dimore dell'aristocrazia genovese dei secoli XVII e XVIII. In *Arte Lombarda, atti del convegno: Atlante tematico del Barocco in Italia settentrionale. Le residenze della nobiltà e dei ceti emergenti: il sistema dei palazzi e delle ville*, 141, 2, pp. 88-96.

[5] Grossi Bianchi, L., & Poleggi, E. (1980). *Una città portuale del medioevo, Genova nei secoli X-XVI*. Sagep Editrice.

[6] Leandri, G. (2023). The "Morte di Cleopatra" by Luca Cambiaso in Genova: the digital image of a lost fresco. In Balzani, M., Bertocci, S., Maietti, F., & Rossato, L. (Cur.), *Research innovation and internationalisation. National and international experiences in Cultural Heritage digitisation* (pp. 75-85). Maggioli Editore.

[7] Magnani, L. (1995). Luca Cambiaso. Da Genova all'Escorial. Sagep Editrice.

[8] Parma, E. (1999). Palazzo di Vincenzo Imperiale. In Parma, E. (Cur.), *La pittura in Liguria. Il Cinquecento* (pp. 211-214). Banca Carige.

[9] Suida, W., & Suida Manning, B. (1958). *Luca Cambiaso, la vita e le opere*. Casa editrice Ceschina.

[10] Urbini, S. (1993). Il mito di Cleopatra. Motivi ed esiti della sua rinnovata fortuna fra Rinascimento e Barocco. *Xenia Antiqua*, 2, 181-222.

[11] Zerbi, A., & Mikolajewska, S. (2021). Digital technologies for the virtual reconstruction and projection of lost decorations: the case of the proscenium of the Farnese Theatre in Parma. *Disegnarecon* vol. 14/ n. 27, 5.

[12] D'Acunto, G. (2019). Imago Rerum: dal rilievo alla ricostruzione digitale degli affreschi del Frigidarium di Pompei. *Firenze Architettura*, 1, Anno XXIII, 90-97.

[13] Incerti, M., Giannetti, S., Lodovisi, A., & Sardo, A. (2020). From the Survey to Projection Mapping. The Recomposition of the Frescoes of the Church of Santa Caterina Martire in Ferrara. In Arena A., Arena M., Brandolino R.G., Colistra D., Ginex G., Mediati D., Nucifora S., Raffa P. (a cura di). *Connettere. Un disegno per annodare e tessere. Atti del 42° Convegno Internazionale dei Docenti delle Discipline della Rappresentazione/Connecting*. Milano: FrancoAngeli, pp. 3365-3382.

10.

Strategies for the Preservation of 20th Century War Landscapes. Memory, Knowledge, and Intervention

Strategie per la conservazione dei paesaggi delle guerre del XX secolo. Memoria, conoscenza e intervento

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Le difese del XX secolo, abbandonate, sono architetture moderne? Queste rovine ostinate costituiscono patrimonio? Consolidato nel tempo, l'architettura militare si rivela un segno distintivo delle aree geografiche e delle società che le ospitano. L'indagine multidisciplinare che coinvolge da oltre un decennio le Università di Cagliari e di Alicante collega due regioni del mare Nostrum, mettendo in parallelo i territori della Sardegna e della Comunitat Valenciana, che presentano somiglianze e condividono la storia, attraverso i bunker e le batterie eretti tra le due guerre mondiali e disseminati lungo la linea di costa. Questi oggetti di ingegneria sono, contemporaneamente, architettura moderna per l'uso della geometria regolare che definisce tipi e modelli, per la sua distribuzione tattica basata sui principi di osservazione e controllo, e per l'utilizzo, con funzione protettiva, del cemento armato, un materiale resistente e malleabile.
La ricerca ricolloca queste difese, stigmatizzate dalla vicinanza dei conflitti, in base alle loro caratteristiche, spaziali, tecniche e materiali, acquisite mediante rilievi digitali, per proporre la loro risignificazione, come il 'Muro del Mediterraneo', lontano dalle ideologie e come testimoni della cultura materiale, con una proposta di registrazione, tutela e intervento.

Are the 20th-century defences, now abandoned, modern architecture? Do these stubborn ruins constitute heritage? Consolidated over time, military architecture proves to be a distinctive mark of the geographical areas and societies that host them. A multidisciplinary investigation, involving the University of Cagliari and the University of Alicante for over a decade, connects two regions of the Mediterranean, drawing a parallel between the territories of Sardinia and the Valencian Community, which share similarities and a common history, through the bunkers and batteries built between the two World Wars and scattered along the coastline. These engineering objects are, at the same time, modern architecture due to their use of regular geometry that defines types and models, their tactical distribution based on principles of observation and control, and the use of reinforced concrete, a resistant and malleable material, in their protective function. The research repositions these defences, stigmatized by the proximity to conflicts, based on their spatial, technical, and material characteristics, acquired through digital surveys, proposing their re-signification as the 'Wall of the Mediterranean,' removed from ideology and viewed as witnesses of material culture, with a proposal for registration, protection, and intervention.

01.
View of a 1940s concrete bunker in the Campo de Gibraltar, Spain.
(A. Atanasio Guisado, 2016)
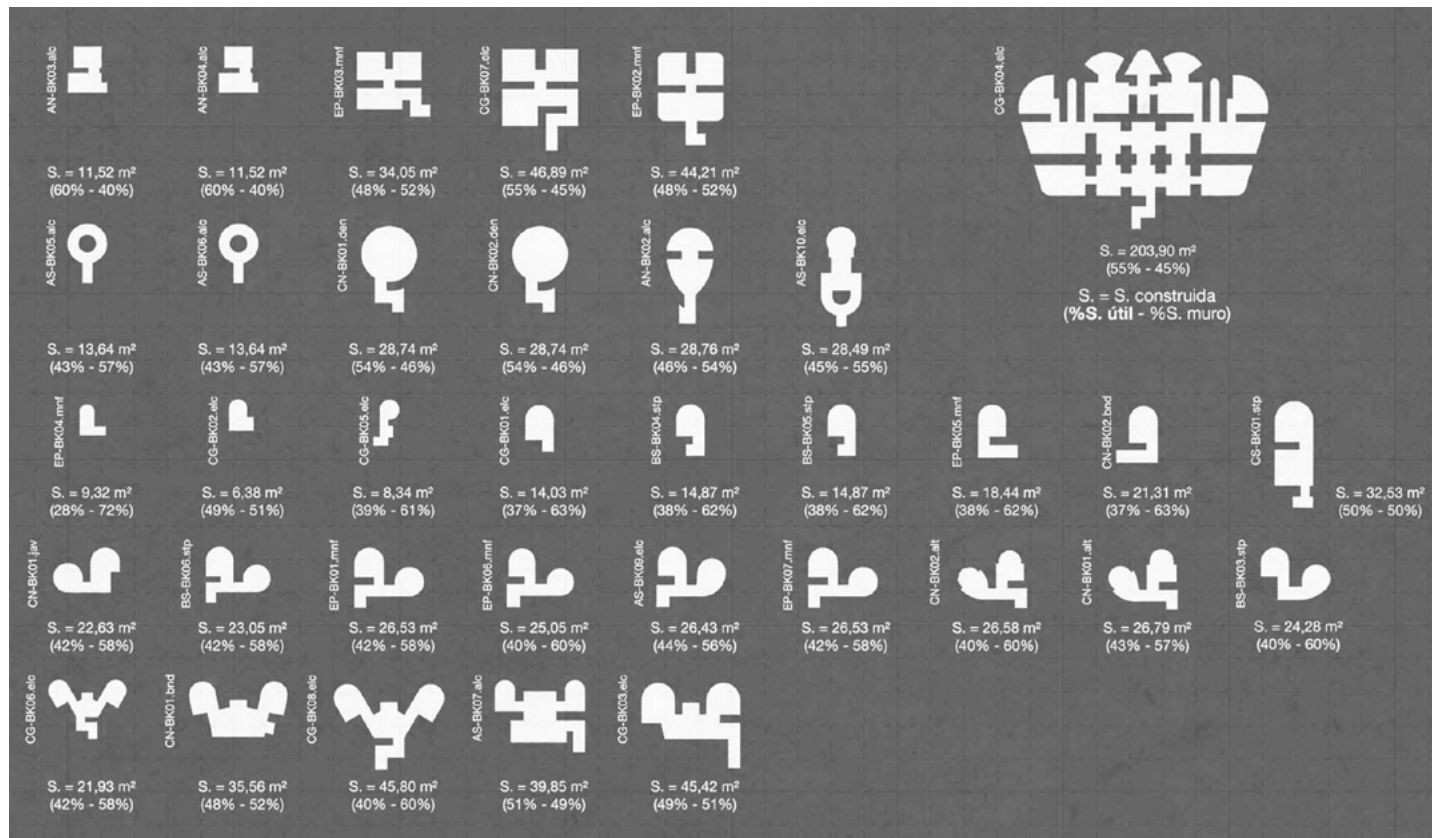
02.
Types of bunkers from 1936-1939 on the Alicante coast (Spain): available internal space.
A. Martínez-Medina, 2016
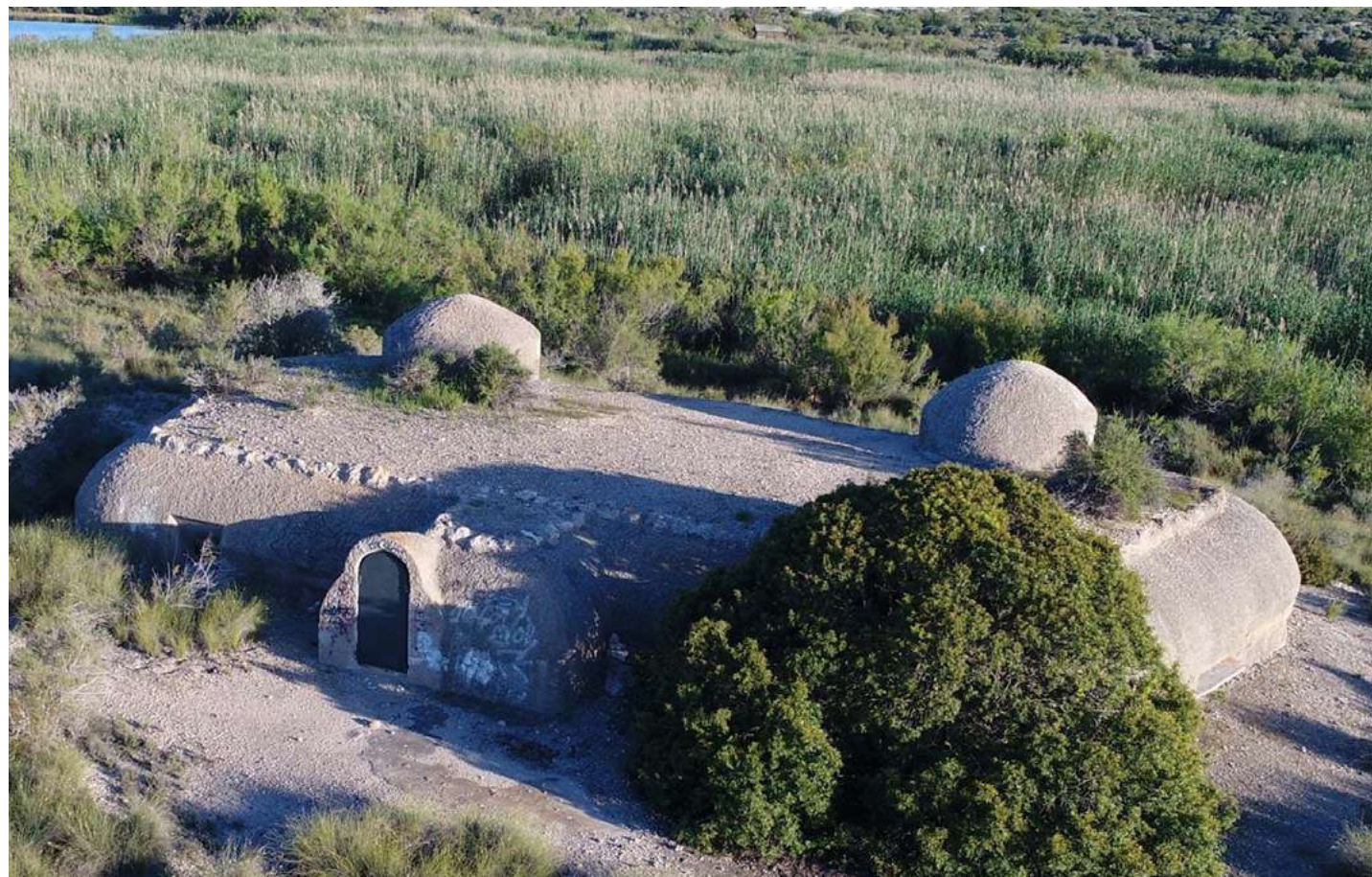
03.
Bunker built between 1936 and 1939, developed on two levels in the centre of the Clot de Galvany lagoon, Spain.
A. Martínez-Medina e P.J. Juan Gutiérrez, 2019

"My objective was solely archaeological. I would hunt these gray forms until they would transmit to me a part if their mystery…"

Paul Virilio, 1975

INTRODUCTION:
THE WALL OF THE MEDITERRANEAN AS MEMORY CARVED IN CONCRETE

The Wall of the Mediterranean, constructed with bunkers along the coasts of the Mediterranean Sea [Fig. 01.], can be read and interpreted as a reflection of the Atlantic Wall, which has been analysed on three distinct levels. In the 1970s, Paul Virilio contemplated these abandoned ruins on the beaches as the remains of a shipwreck and, using black-and-white photographs, he exalted them through a romantic vision (Virilio 1994). In the 1980s and 1990s, Rudi Rolf inventoried and precisely drafted these sophisticated defences, delving into the close relationship between form and function in these military architectures (Rolf 1985). Finally, in the 21st century, Michela Bassanelli and Gennaro Postiglione recognized that this system of architecture, mostly scattered along the Atlantic front, could not constitute a unified monumental complex. Therefore, they proposed, based on the adopted planimetric solution, the category of discontinuous cultural landscape (Bassanelli, Postiglione 2011). These three visions—aesthetic, technical, and landscape—of this stigmatized heritage, based on three different graphic techniques—the photograph, the dihedral system, and topographic mapping—are hybridized as the starting point of our study.

Unlike the Atlantic Wall, the Wall of the Mediterranean, a concept established a decade ago (Martínez-Medina, Sanjust, 2013), does not respond to a unified project and was built over a longer period, roughly from 1925 to 1975, because each country—Italy, Spain, France, Albania, Greece, Libya—implemented its own defences as needed. These coastal fortifications display a wide variety of bunker types [Fig. 02.], yet each follows a custom design, as if it were an industrial object, typical of the machine age. The bunkers necessarily establish a dialogue with the avant-garde architecture of the interwar period, even anticipating the Brutalism that would peak in Europe between the 1960s and 1980s. Perhaps they are the first reinforced concrete ruins of modern architecture.

Among the most distinctive features of these bunkers—apart from spatial, functional, technical, and material aspects—are the strategies related to their positioning: the panoramic control of the territory achieved by hiding and often blending into the terrain using cladding materials, to safeguard the lives of the soldiers. These are armoured architectures: not offensive, but defensive, even shelters. They are memories of wars carved in concrete.

RESEARCH METHODOLOGY:
ARCHIVAL WORK, FIELDWORK, AND SURVEYING

A research project covering such a vast territory—all the coasts of the Mediterranean Sea—cannot be considered in its entirety from the outset but requires geographical delimitations. As a first step, the regions of Sardinia (Italy) and the Valencian Community (Spain) will be addressed (Martínez-Medina 2016) [Fig. 03.], which will allow for the establishment of cross-referenced relationships. The methodology begins with the creation of an inventory of defences: from archives, military maps, and through the survey of all the structures, especially when plans are lacking, using both traditional and digital methods for surveying and representing the results. The study will proceed with the creation of a database that

05.
Bunker located along the coastline of Cagliari.
Andrea Pirinu, 2018

06.
Bunker controlling the SS129bis highway leading to Bosa
on the western coast of Sardinia.
Andrea Pirinu, 2019

includes the different typological genealogies, their state of preservation, their camouflage with the landscape, and their landscape component. Following a certain logic, to obtain more comprehensive studies, by limiting the geographical areas and focusing on more specific and sectorial aspects, the development of doctoral theses will be encouraged. Finally, the collected data will serve to open two new paths for the future: the creation of heritage itineraries and the possibilities for its restoration.

ANALYSIS:
ORIGIN AND DISSEMINATION OF 20TH CENTURY WAR HERITAGE
An anticipated imminent Allied landing along the coasts of Sardinia led, in the early 1940s, during World War II, to intense reconnaissance, design, and implementation activities of a defence system by the Italian military engineers. This activity was carried out in a very short time and along the entire perimeter of the island. The results of this transformation of the landscape, however, are characterized by a modest landscape impact, also due to the small size of the bunkers that constitute most of the structures built. These bunkers are part of an anti-invasion defensive system implemented in 1942-1943 in Sicily, Sardinia, Elba, Pantelleria, and Lampedusa. After the war, the structures built on the mainland were demolished; however, in Sicily and Sardinia, a series of factors allowed their survival, eventually reaching a level of protection established by national and regional regulations, but in a general way, without a detailed inventory or in-depth studies of each individual case and military outpost of this architectural and landscape heritage, which remains somewhat stigmatized.

Often grouped into small settlements, these structures were positioned to defend infrastructures, communication routes, landing points, and access to cities [Figs. 04.—06.]

BUNKER 01
BUNKER 02
BUNKER 03

Andrés Martínez-Medina | Andrea Pirinu | Emanuela Chiavoni
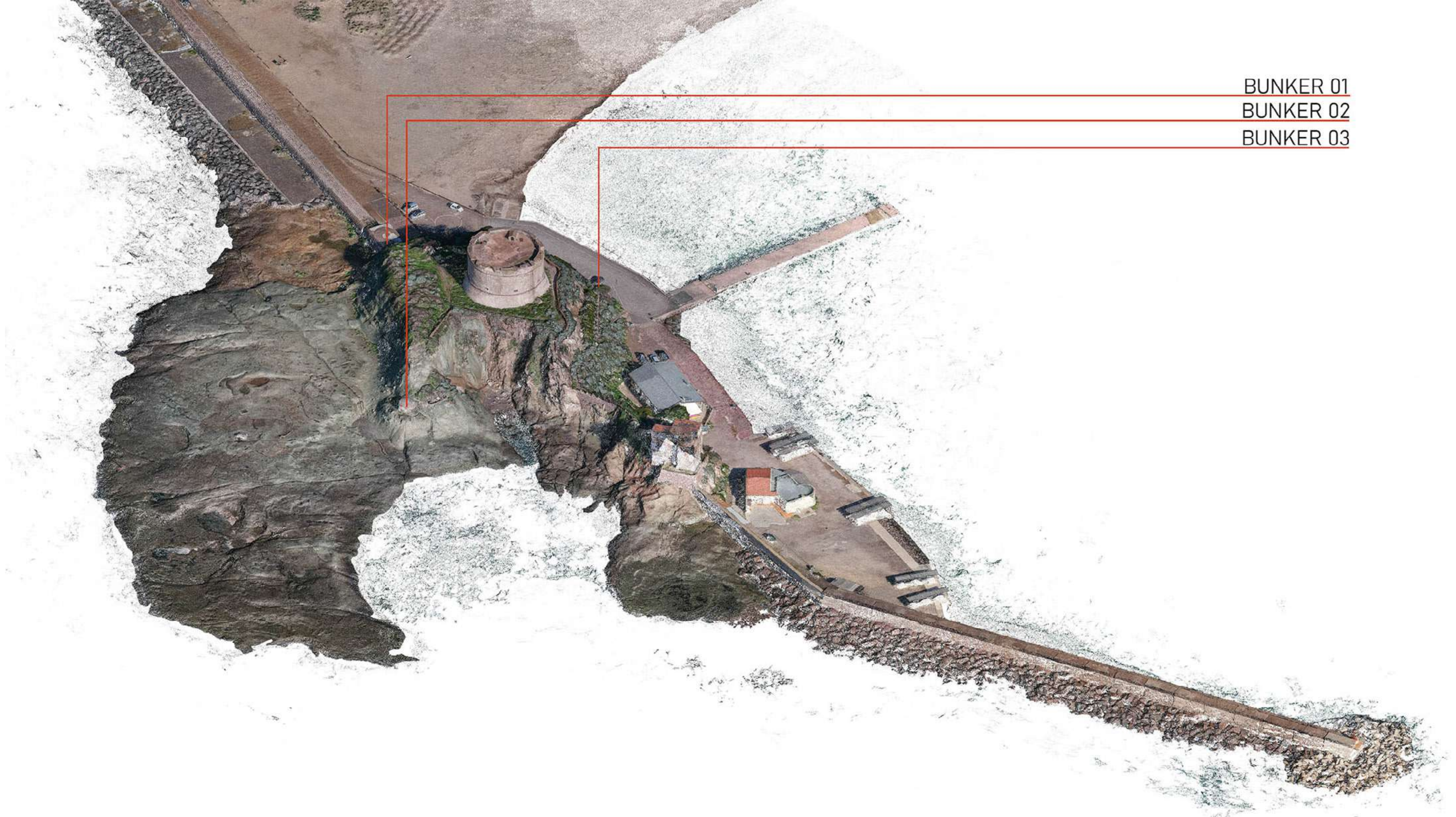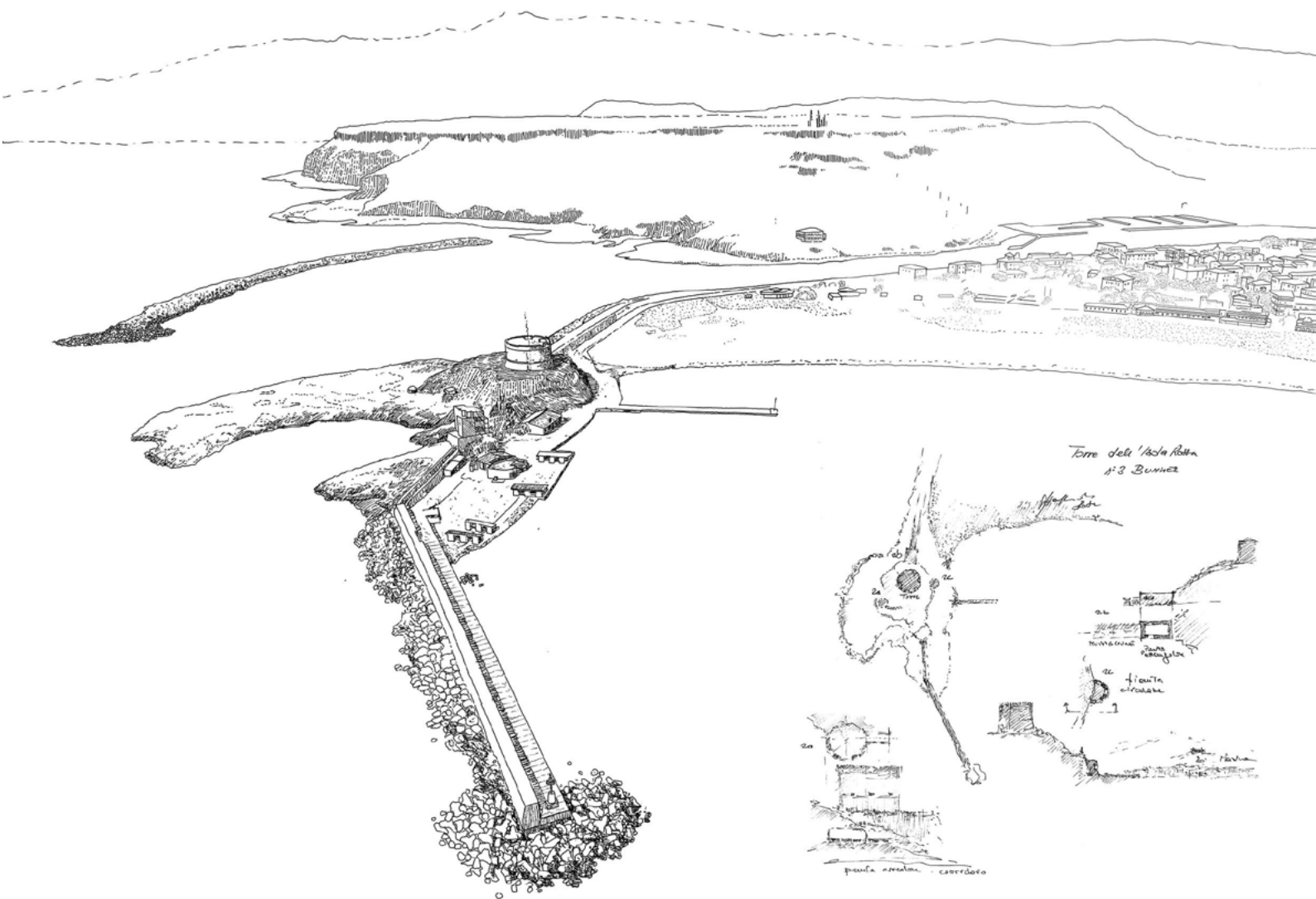
08.
Graphic analysis of the difensive system of Isola Rossa in Bosa.
Giancarlo Sanna, 2023 ed Andrea Pirinu 2018

according to military strategies described in archival documents stored at the Documentary Archive of the 14th Department of Army Infrastructure in Cagliari and the Historical Office of the Army General Staff (AUSSME) in Rome. These documents illustrate their distribution across the territory based on IGM (Military Geographic Institute) maps and describe the planned design models, as well as the armament provided to each bunker based on the task assigned. Partial studies on Sardinia have already been conducted (Carro, Grioni 2014; Pirinu, Martínez-Medina 2019; Pirinu, Argiolas, Paba 2021; Rassu 2022). Based on these sources, it has been possible to start the process of cataloguing the existing structures, also with the aim of relating Sardinia's heritage to that of Spain, which, during the Spanish Civil War (1936–1939),

implemented a similar system, continued by Franco in the 1940s. In the case of Spain, the lack of many projects prevents a reconnaissance guided by maps, and thus adds further value to field research, aimed at surveying the existing structures and creating a knowledge database.

DISCUSSION:
CHROMATIC RECOGNITION OF MILITARY LANDSCAPES

The knowledge of this significant cultural heritage deserves a preliminary reflection concerning the memory to which all industrial artifacts refer. These are primarily ruins that testify to various wartime activities, and the relationship with their context should never be underestimated. In fact, the place where the artifacts are situated often helps to understand the strategic reasons for their location and can also reveal the motivations behind the design choices, both in terms of placement within the territory and in relation to the morphological features of the landscape (Docci, Chiavoni 2017). It is always essential to conduct a thorough analysis of this uncomfortable, unique, sometimes sad heritage, through a careful examination of the material aspects, with the primary goal of recognizing its state of preservation.

This temporal graphic monitoring can be carried out through life drawing, which helps to investigate both the objective and concrete aspects, related to the structures, spatiality, forms, and different types, as well as the more intangible values, sometimes underlying, that the military sites and architecture convey. The key role is played by light, which, during the day, illuminates the structures, envelops them, and allows the colour of the material to be appreciated in its continuous variability. It is precisely an emotional and sensitive representation that helps to develop an awareness of the particularities of each artifact and can provide a conscious graphic foundation for future maintenance, regeneration, and restoration projects. These fieldworks complement the use of digital surveying, representation, and awareness methods. Life drawing and direct surveying have completed and integrated the instrumental and photogrammetric surveys with UAVs [Fig. 07.], with the aim of contributing to the creation of interoperable models of the highest precision and communicative capacity [Fig. 08.], which are an integral part of a stylistic, constructive, and landscape inventory of 20th-century war heritage.

In fact, the scientific method used is that of sighted surveying, which is carried out through life drawing, starting with perspective sketches to approach the site to understand its integration into the broader context, and then proceeding with the creation of proportionate field sketches for various parts of the architecture, ultimately reaching the detailed elements, such as openings, roofs, and walls. This efficient and direct approach, aimed at gaining a deep understanding of cultural heritage, leverages the spatial suggestions and emotions that the atmosphere of the site evokes. Given its multisensory involvement, it actively and dynamically expands the critical interpretations of each scholar (Hernández 2018).

Mutability is always a characteristic of these landscapes and structures; time reshapes them and continuously alters their state of preservation (Chiavoni 2017). The analogue graphic representation, made using watercolour or coloured pencils, allows for the nearly "objective" recording of this dimension: the corroded material, gaps or damage in the structures, patinas, and vegetation. The series of drawings that results is a graphic collection of information that, together, helps express the image of the site: from large to small scale, from the whole to the detail, making the characteristics of the place recognizable and unique [Figs. 09.—10.]. These critical readings, both material and immaterial, combined with the graphic surveying work derived from the acquisition of numerous data through digital technologies, form an integrated body of knowledge, an indispensable foundation for any project.

RESULTS:
THE RECOVERY OF MODERN WAR ARCHITECTURAL HERITAGE

These stubborn ruins, which withstand the test of time, the first in history made of reinforced concrete, can therefore be included in a recovery project, even within itineraries that, inevitably, expand due to the richness of the layered historical heritage, including numerous other examples of military architecture. The potential valorisation work requires, in addition to a significant deepening of knowledge, the dissemination of results in such a way as to increase the sharing of the values of both material and immaterial heritage.

However, the issue now is not only the vast fieldwork, surveying, and inventory process, but also calibrating the possibilities for the reuse of this uncomfortable heritage, which may not evoke the same mystical feelings that motivated Paul Virilio. Today, we see the remnants of the Mediterranean Wall as components of a new layer superimposed on the landscape, inseparable from it. Among the various options, depending on the urban or rural context, it is worth highlighting their role as points of information (museums and cultural centres), their re-signification through artistic interventions, and their transformation into environmental observers for public use. A new life will allow these architectures, regardless of ideologies and political regimes, to be recognized as witnesses of the technical culture of the mid-20th century.

Note 1| Although the text is the result of a joint effort by the authors, sections 1. Introduction, 2. Research Methodology, and 5. Results are attributed to Andres Martinez-Medina, sections 3. Analysis and 5. Results are attributed to Andrea Pirinu, and section 4. Discussion is attributed to Emanuela Chiavoni.
Note 2| The research group also includes the architects Nicola Paba, Giancarlo Sanna, and Raffaele Argiolas from the DICAAR of the University of Cagliari, and Professor Pablo Jeremías Juan Gutiérrez from the DEGCP of the University of Alicante.

BIBLIOGRAPHICAL REFERENCES

Bassanelli, M., Postiglioni, G. (Eds.). (2011). The Atlantikwall as Military Archeological Landscape. L'atlantikwall come Paesaggio di Archeologia Militare. Syracuse (Italy): Lettera Ventidue

Carro G., Grioni, D. (2014). Fortini di Sardegna, 1940-1943. Storia di un patrimonio da salvaguardare e valorizzare. Cagliari (Italy): Edizioni Grafica del Parteolla

Chiavoni E. (2017). Drawing as a guide. Observing the Roman seashore. In: G. Amoruso (Ed.). Putting Tradition into Practice: Heritage, Place and Design (vol. 3). Cham (Switzerland): Springer International Publishing AG, pp. 342-349. https://link.springer.com/book/10.1007/978-3-319-57937-5

Docci, M., Chiavoni, E. (2017). Saper leggere l'architettura. Roma (Italy): Laterza

Hernández Martínez, A. (2018). Perdidos en el tiempo: la fascinación contemporánea por las ruinas bélicas. In: C. Lomba Serrano, C. (Ed.). El tiempo y el arte. Reflexiones sobre el gusto IV. Zaragoza (Spain): Institución Fernando el Católico, pp. 483-494

Martínez-Medina, A. (Ed.). (2016). Arquitecturas para la defensa de la costa Mediterránea, 1936-1939. (Exhibition Catalogue). Alicante: Universidad de Alicante. http://hdl.handle.net/10045/81287

Martínez-Medina, A., Sanjust, P. (2013). Muro Mediterráneo versus movimiento moderno. I2, (01), pp. 1-20. doi: https://doi.org/10.14198/i2.2013.1

Pirinu, A., Argiolas, R., Paba, N. (2021). Digital tools for the knowledge and enhancement of WWII heritage. The case study of Bosa in the west coast of Sardinia (Italy). ISPRS, XLVI-M-1-2021, pp. 547-554. https://doi.org/10.5194/isprs-archives-XLVI-M-1-2021-547-2021

Pirinu, A., Martínez-Medina, A. (2019). Entre la tierra y el cielo. Arquitectura de las guerras en Cerdeña: un paisaje a conservar. ArcHistoR 6(1), pp: 88-125. https://rua.ua.es/dspace/handle/10045/95887?locale=ca

Rassu, M. (2022). Cantine, caverne, bunker. La protezione antiaerea a Cagliari durante la Seconda Guerra Mondiale. Oristano (Italy): NOR

Rolf, R. (1985). Het Duitse Fortificatie-ontwerp 1935-1945. Amsterdam (Nederlands): Beettsterwaag.

Virilio, P. (2012, orig. 1975). Bunker Archeology. New York, NY (United States): Princenton Architectural Press

09.
Bunker controlling the channels within the Molentargius lagoon in Cagliari.
Emanuela Chiavoni, 2024

10.
Bunker camouflaged as a tank for controlling the channels and roadways within the Molentargius lagoon in Cagliari.
Emanuela Chiavoni, 2024

Guidelines for the Restoration of ALER (Azienda Lombarda Edilizia Residenziale) Building Heritage in the Context of HBIM

Linee guida per il recupero del patrimonio edilizio ALER (Azienda Lombarda Edilizia Residenziale) alla luce dell'HBIM

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Roberta Marchisio
ALER

L'Istituto ALER (Azienda Lombarda per l'Edilizia Residenziale), fondato nei primi anni del 1900 per ovviare al problema dell'immigrazione significativa dovuta all'industrializzazione di Milano, ha svolto un ruolo cruciale nel soddisfare le esigenze abitative pubbliche della città. ALER Milano ha sviluppato un patrimonio edilizio pubblico senza pari in Europa, con circa 70.000 abitazioni di proprietà e un numero equivalente di alloggi alienati nel tempo. Guidato dalla missione "fornire abitazioni igieniche e accessibili per le classi meno abbienti," ALER ha avuto un impatto significativo sul paesaggio socio-urbano di Milano. Per migliorare l'efficienza energetica e la sostenibilità, nel 2017 sono stati introdotti i Criteri Ambientali Minimi per l'Edilizia (CAM). Anche per questo motivo la collaborazione tra ALER, il Politecnico di Milano e la Soprintendenza ai Beni Architettonici ha portato alla creazione di linee guida per interventi sugli edifici storici con più di settant'anni. Radicate nella metodologia BIM, queste linee guida offrono un approccio strutturato per la gestione o l'aggiornamento del patrimonio, considerando le opportunità di finanziamento e l'urgenza degli interventi. Esse indirizzano la progettazione e le attività preliminari verso l'ottenimento delle autorizzazioni senza sostituire le procedure esistenti. Le linee guida affrontano il degrado materiale e la dispersione termica per gli edifici storici e la vulnerabilità strutturale per quelli meno pregiati proponendo analisi e simulazioni pre intervento basate sul modello BIM.
L'innovazione risiede nei processi condivisi tra autorità e appaltatori, utilizzando procedure digitali HBIM. Casi studio, come l'edificio a blocco di Via Lulli e il quartiere Pirelli, dimostrano l'applicabilità di queste metodologie. Il processo promuove una gestione sostenibile e strutturata, con l'obiettivo di essere replicato in altre regioni ed enti.

The ALER Institute (Azienda Lombarda per l'Edilizia Residenziale), founded in the early 1900s due to significant immigration driven by Milan's industrialization, has played a crucial role in addressing housing needs. ALER Milan developed a public housing stock unmatched in Europe, with approximately 70,000 owned dwellings, and an equal number alienated over time. Guided by the mission "to provide hygienic and affordable housing for the less affluent classes," ALER has significantly impacted Milan's socio-urban landscape.
To improve energy efficiency and sustainability, the Minimum Environmental Criteria for Building (CAM) were introduced in 2017. The collaboration between ALER, the Politecnico di Milano, and the Soprintendenza ai Beni Architettonici led to guidelines for interventions on historic buildings over seventy years old.
Rooted in BIM methodology, these guidelines offer a structured approach for managing or upgrading assets, considering funding opportunities and intervention urgency. They direct design and preliminary activities toward achieving clearance without replacing existing procedures. The guidelines address material degradation and thermal dispersion for historic buildings and structural vulnerability for less valuable ones proposing pre-intervention analyses and simulations based on the BIM model.
Innovation lies in shared processes between authorities and contractors, utilizing digital HBIM procedures. Case studies, like the block building on Via Lulli and the Pirelli neighborhood, demonstrate the applicability of these methodologies. The process promotes sustainable and structured management, aiming for replication in other regions and entities.

01.
Historical typological classification of ALER buildings in the city of Milan.

02.
Analysis of the Borgo Pirelli case study with identification of the buildings surveyed and simulation.

The ALER Institute (Azienda Lombarda per l'Edilizia Residenziale) was founded in the early 1900s, driven by the substantial immigration resulting from the city's industrialization. As new families moved from the countryside to Milan, there was a strong need for new housing solutions. Over several decades of construction activity since its establishment, ALER Milan has developed a public housing stock unmatched by other European companies in the sector, with approximately 70,000 owned dwellings, and an equal number alienated at various stages of the company's history, guided by the mission "to provide hygienic and affordable housing for the less affluent classes." This mission has allowed ALER to rewrite the socio-urban history of much of Milan and its hinterland, experimenting with the creation of low-income housing through public funding.

In its early years (still known as IACP Istituto Autonomo Case Popolari), ALER constructed significant buildings such as Lulli, Spaventa, Lombardia, Cialdini, and Niguarda. The initial projects were closed courtyard building blocks, arranged on four sides. The establishment of an internal technical office marked a period of high productivity; typical single-story cottage villages were built, such as the Baravalle, Campo dei Fiori, Gran Sasso, and Tiepolo neighborhoods, whose aesthetic-architectural layout was inspired by the English garden city. The intense construction activity reached its peak in the design of new residential complexes: Vittoria, Genova, Magenta, Tiepolo, Pascoli, Botticelli, Friuli, Andrea del Sarto, and Monza. The new type of social housing was characterized by internal courtyards and small gardens, with decorative elements on the facades like bow-windows, brackets, cornices, and pediments, typical of bourgeois houses of the time. The last initiative undertaken by the Institute (then still known as IACP) before the Fascist era was a partnership with Pirelli and Breda for the construction of the Borgo Pirelli village (1922) and the Borgo Breda village in Sesto San Giovanni (completed in 1926).

During the Fascist era, twenty public housing neighborhoods were built: Piola, Vanvitelli, Stadera, Solari, Villapizzone, Bibbiena, Bellinzaghi, Romagna, Forlanini, Aselli, Anzani, Mazzini, Polesine, Calvairate, Giambologna, Plinio, Lipari, and Piolti-De Bianchi, which responded to three different types: houses for redemption for the urban bourgeoisie, common social housing for heterogeneous social groups, and ultra-popular houses for the poorest classes. During the Rationalist era, experimentation fueled debate among professionals, and competitions led

to the growth of neighborhoods like San Siro, Baracca, Bossi, and Filzi. The 60s/70s saw the emergence of other new types such as tower neighborhoods, with buildings between 30 and 60 meters tall.

Considering the typological variety of all buildings produced by the public agency and their significant presence within the urban context of Milan, the hypothesis of a restoration aimed at preserving their architectural peculiarities, combined with the need for energy efficiency and, in some cases, structural improvements, necessitates a coordinated design-phase action jointly undertaken by the property owner and the Superintendence. This collaborative approach constitutes the innovation of the process.

ENVIRONMENTAL CRITERIA AND ENERGY EFFICIENCY

To reduce the environmental impact of public administration's real estate sector, the Minimum Environmental Criteria for Building (CAM) were introduced in 2017, a regulatory obligation for the design and execution of works affecting the entirety of a building project. From the Minimum Environmental Criteria, rewarding criteria can be derived useful for defining scores for the application of the most economically advantageous offer (OEPV). Maintenance needs are complemented by the need for better energy efficiency and sustainability throughout the process; in this context, the innovative experimentation conducted by the collaboration between ALER and the Politecnico di Milano, supported by the Soprintendenza ai Beni Architettonici, in developped for creating guidelines for interventions on historic buildings with the intent to provide operational indications for extraordinary maintenance interventions on buildings over seventy years old.

The institution's interventions must follow a complex policy that considers both funding opportunities and the urgency of recovering some buildings over others. All operations are consistent with the evolution of the procurement code, which prominently introduces BIM methodology in the national landscape, especially in the public sector; the BIM requirement will fully enter into force for public projects over one million euros starting from 2025. The new code (D. Lgs. 36/2023) confirms the previous code's setup and D.M. 312/2021. Art. 10 of d.lgs 42/2004, combined with Article 217 of d.lgs 50/2016, set the threshold age of a public immovable property to be considered bound at 70 years, and thus subject to obtaining clearance from the Soprintendenze Archeologica, Belle Arti e Paesaggio in case of building intervention (Article 21, paragraph 4 of D.Lgs. 42/2004). At present there are several changes currently under approval by the governing bodies, including: increasing the threshold for the mandatory use of BIM from €1 million to €2 million; raising the threshold from €1 million to €5.5 million for the design and implementation of interventions for cultural heritage, with calculations based on the parametric estimate of the project's value; and the obligation to estimate the project value as indicated in the Feasibility Document of Design Alternatives. All these elements further emphasize the need for a guiding document that structures potential interventions on existing cultural heritage during the design phase.

METHODOLOGY GUIDELINES

The guidelines do not replace the procedure aimed at obtaining a building permit but direct the design and all preliminary activities to achieve a methodology for obtaining it. While the BIM methodology offers an already structured path, the varied nature of the buildings requires careful pursuit of recovery works depending on the artifact subject to intervention. For historic buildings, the recovery hypothesis confronts a detailed phase of material degradation and thermal dispersion analysis; for less valuable buildings, possibly larger, structural vulnerability will determine the dominant procedure. In these cases, the guidelines significantly contribute
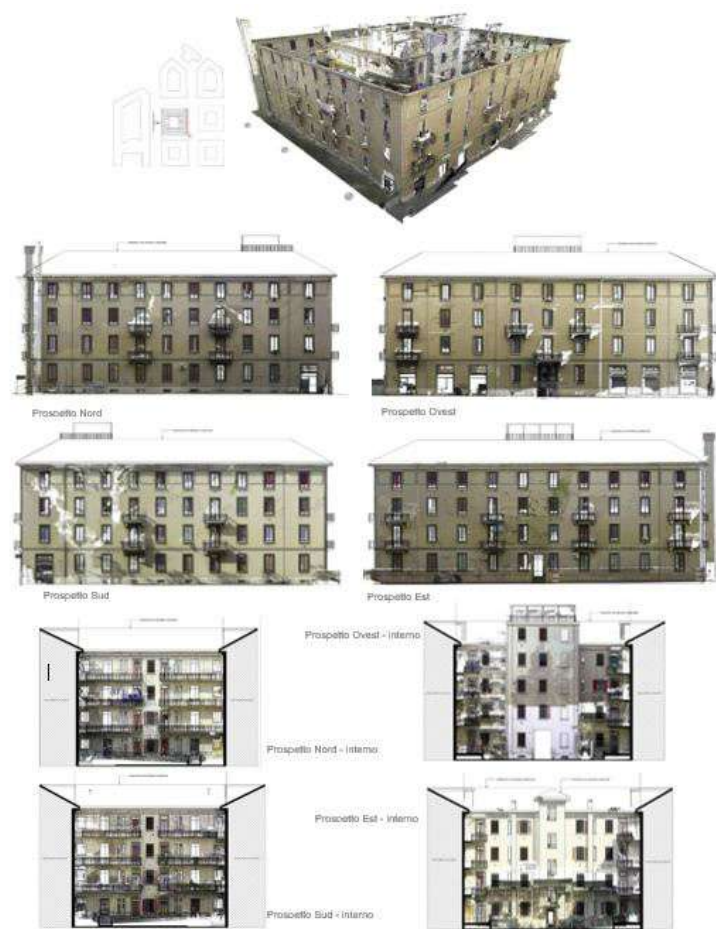
03.

Point cloud modelling of the residential block in Via Lulli.
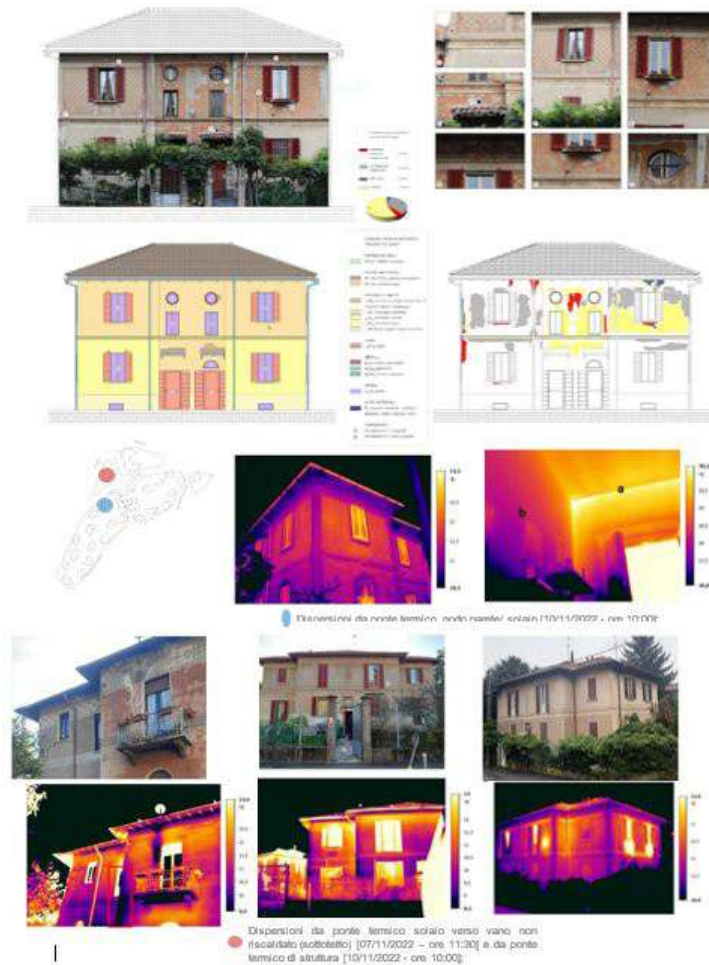
04.

Degradation analysis and thermographic capture of a building in Borgo Pirelli.

to all operators still lacking a measured method for maintaining artifacts, guiding them towards choices already shared with the Soprintendenze. The innovation lies in the proposal: a method shared between entities under the banner of updated regulations considering HBIM. To analyze the full HBIM methodology, both in its peculiarities as a representation tool and as a predictive tool within the BIM environment, two antithetical case studies were taken as examples. The first is a previous training project conducted by the Politecnico with the company's technicians to learn how to organize a BIM model: the block building on Via Lulli. The second is a new case study: the Pirelli neighborhood , both considered protected heritage where the first is also an issue on the agenda due to public safety concerns (a large building forming part of a conspicuous settlement inhabited by socially weak groups). For both, a procedure primarily of understanding the asset was hypothesized. Lulli is one of four-story block buildings with a large inner courtyard equipped with a common garden where Broglio had already designed common spaces, "the neighborhood is the home of a large family that has its separate rooms but also its meeting places, its common studies...". The lodgings were intended for the new working class immigrating to Milan as the workforce for the new factories. This first case study was used for a Scan to BIM experiment to develop the basis for the structural and consolidation design of the building. Subsequently, an actual structural recovery project was developed by a specialised firm focusing on a consolidation hypothesis that could be developed in the building even if it is inhabited. This is a frequent condition for

06a.

06b.
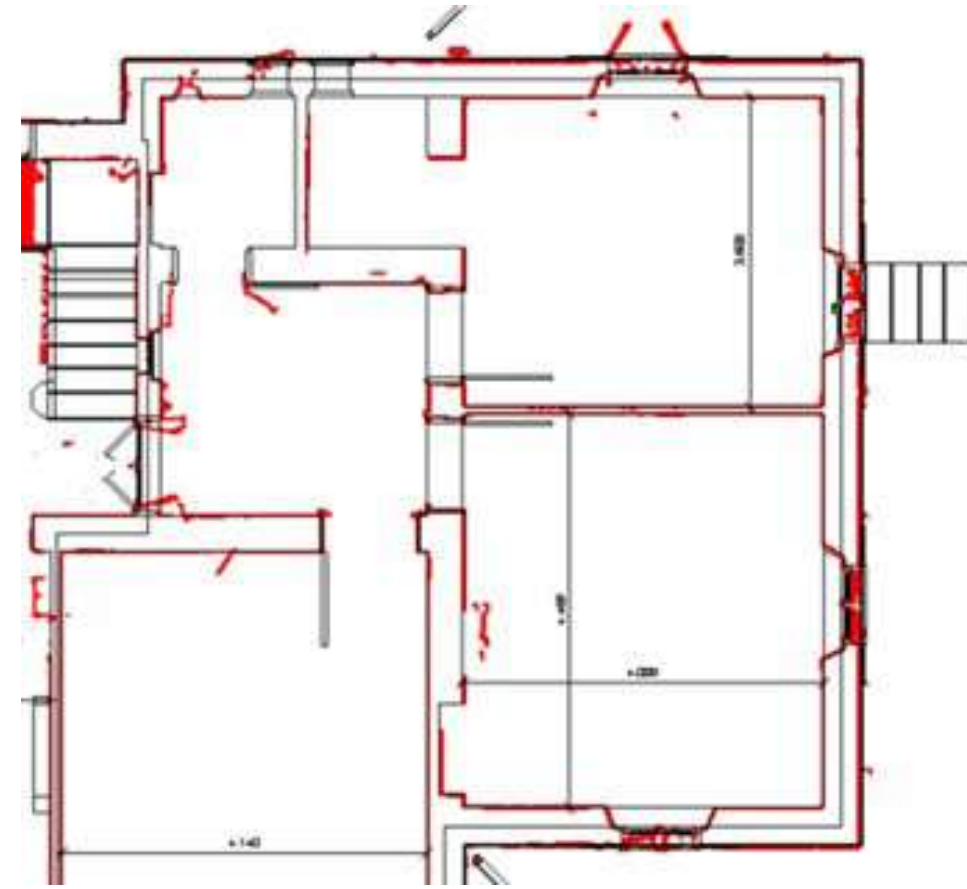
06a., 06b., 06c.

Point cloud orthophoto of the vertical
connections in a building in Borgo Pirelli,
point cloud modelling of section and interior
of one of the flats.

06c.

the authority's buildings for which only the hypothesis of partial and temporary relocation of the inhabitants is to be considered. This condition is methodologically applicable to other similar cases. The load analyses and core drilling carried out focused on vertical connection elements, the staircase blocks present, external masonry, the floor/facade connection element easily identifiable in the stringcourses. The solutions suggested range from brackets to reconnect horizontal elements to the verticals operable from the external façade to reinforcement with reinforced mortar of vertical walls, to reinforcement with masonry elements in the basement parts. All interventions are therefore feasible while respecting the morphological and typological structure of the building.

The second case study, Borgo Pirelli is a workers' neighborhood of garden cottages, financed by the Pirelli company after World War I, as part of a series of corporate initiatives. The construction was carried out by the Istituto Case Popolari (ICP) of Milan, which also managed it. The work began in 1920 and was completed in 1923. In this case as well, an accurate digital

survey was carried out using advanced tools, including a static laser scanner (RTC 360) and a dynamic survey with BLK to Go.The survey of exteriors and interiors formed the foundation for the BIM-based modelling, which was also utilized for energy efficiency simulation. The simulations were carried out within the BIM environment by experimenting with different workflows and analysis engines. Specifically, the aim was to provide tools in the guidelines to anticipate the behavior of any building modelled in the BIM environment, focusing on actual energy consumption and optimized energy needs.

First, a BEM (Building Energy Model) was organized to initiate an energy analysis using engines capable of analyzing the digital model. An initial evaluation was conducted using Insight 360 from Green Building Studio, a plug-in for Revit, to perform a preliminary analysis of the model. Subsequently, the modeling was further refined using the Honeybee and Ladybug software, with calculations performed through Energy Plus.

As the work progressed, each structure in the energy model was adapted according to the
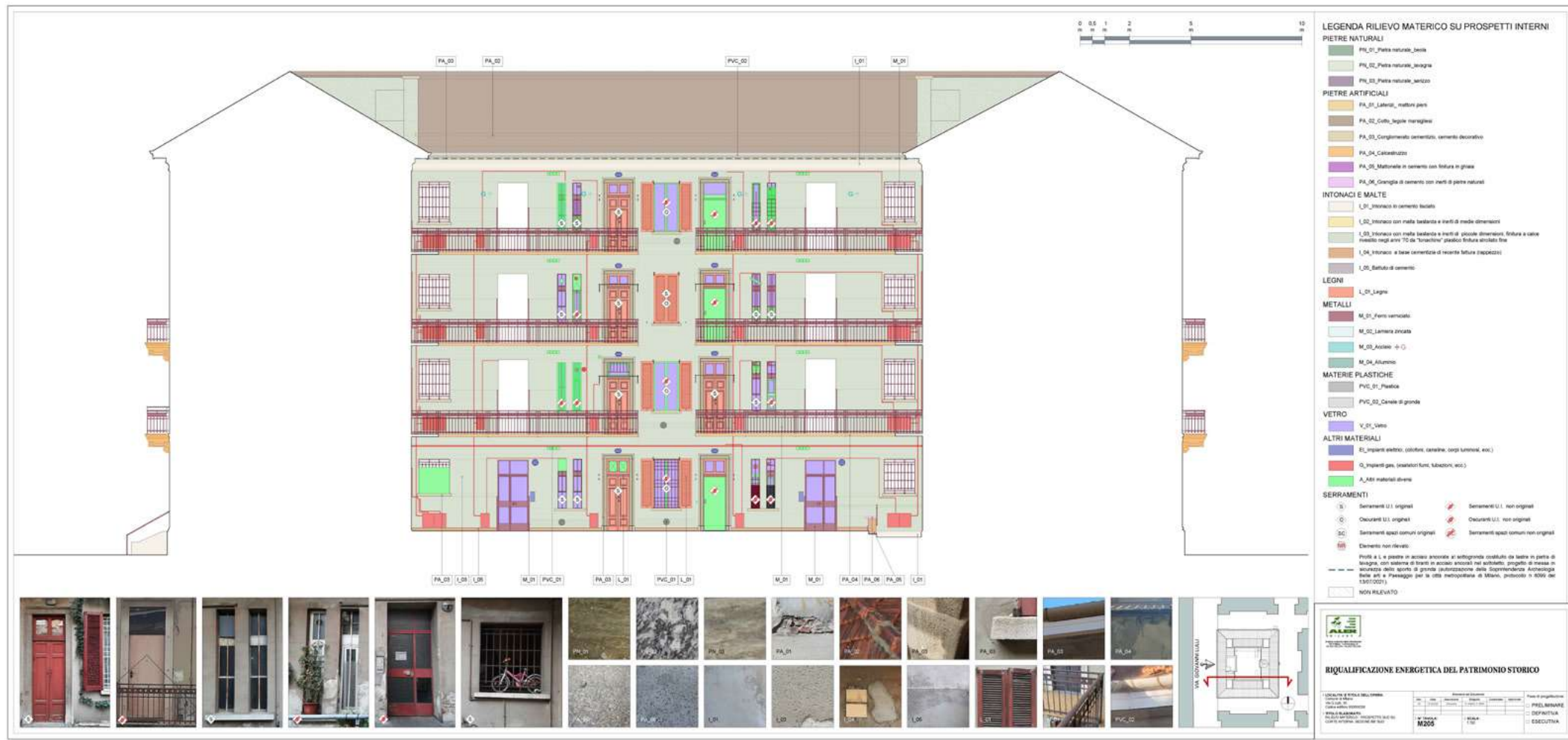
Survey of the materials of a block in the Lulli district.

Analysis of the degradation of a block in the Lulli district.

different requirements of the calculation engines, which proved to be the most labor-intensive part of the process. The thermal parameters of each individual material were exported for evaluating the EAM model. During the creation of system families, thermal parameters were directly assigned through the software. However, despite the modeling software containing preloaded material libraries, these can be modified by associating different thermal conductivity parameters.

The stratigraphies used correspond to those unaltered within the original design of the buildings, thus lacking insulation or air cavities. The BIM software can automatically calculate the thermal exchange coefficient (W/m²K) and the thermal resistance (m²K)/K for the entire package.

The workflow includes specific developments related to the structure, location, and size of spaces, which are critical for generating the energy model. This process yields the value of primary energy required for heating per unit area, expressed in kW/m²/year. This enables the planning of interventions to improve the building's energy performance in relation to stratigraphy, glazed components, or shading, applicable to any model.

METHODOLOGICAL INNOVATION

The innovation in research mainly lies in sharing processes between the contracting authority and the potential contractor and in the invitation to use not only digital procedures related to HBIM environments and models, but also but for simulative analyses with reference to both the statics of the building and the simulation of energy behaviors. At the heart of the renovation and preservation process, the guidelines establish a principle that, while not innovative, must be shared between the parties from the start: the knowledge of the asset. This knowledge is strongly encouraged not only through traditional procedures, historical analysis, visual inspection, etc., firmly based on classical survey methods but also on the concreteness of a well-structured digital and photogrammetric 3D survey and predictive modelling . The same energy diagnosis relies on different levels of survey depth that favor samplings carried out with thermal cameras to identify all connected criticalities. Designers know that methodologically they will have to face specific analysis documentation of the artifacts and provide equally detailed solutions with advanced instrumentation, placing the asset at the center. In the last chapter of the guidelines, the methodological specifics for the energy diagnosis service, geometric, architectural, degradation survey, seismic vulnerability within the projects of energy and structural requalification in a BIM environment of the assets are provided. Some themes, such as the difficulty of reproducing the real state of conservation or degradation of buildings in parametric software, the laboriousness of inserting accurate geometric surveys into the BIM model, the difficulties of reverse engineering procedures and data processing, are illustrated within the guidelines with applied examples to the two case studies here presented.

CONCLUSION

The innovation process for the energy recovery of ALER's building heritage through HBIM methodology concludes with significant results. The collaboration between ALER, the Politecnico di Milano, and the Soprintendenza ai Beni Architettonici has led to the creation of operational guidelines for interventions on historic buildings. These guidelines offer a shared and advanced method, integrating digital, photogrammetric, and thermographic surveys for precise energy diagnosis. The case studies demonstrate the applicability of HBIM methodologies, promoting the maintenance and recovery of buildings with sustainable and structured management. The hope is that this model can be replicated in more regions and entities.

BIBLIOGRAPHICAL REFERENCES

Bloch, T. (2022). Connecting research on semantic enrichment of BIM - review of approaches, methods and possible applications. Journal of Information Technology in Construction, 27, 416–440. https://doi.org/10.36680/j.itcon.2022.020

Blut, C., Becker, R., Kinnen, T., Schluetter, D., Emunds, C., Frisch, J., Heidermann, D., Wenthe, M., Rettig, T., Baranski, M., van Treeck, C., & Blankenbach, J. (2024). Optimizing building energy systems through BIM-enabled georeferenced digital twins. *The International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences, XLVIII-4/W11-2024*, 1–8. https://doi.org/10.5194/isprs-archives-XLVIII-4-W11-2024-1-2024

Carrasco., C.A, Lombillo, I.,(2023). Building information modeling (BIM 6D) and its application to thermal loads calculation in retrofitting. In: *Buildings*.

M. De Caro, (2000) I quartieri dell'(altra) città. Un secolo di architettura milanese nei progetti IACP/ALER.

Infussi, F., (2011). Quartieri al centro. *Dal recinto al territorio. Milano, esplorazioni nella città pubblica _*

Ratajczak, J. (2023). *Maximizing energy efficiency and daylight performance in office buildings in BIM through multi-objective optimization* (Master's thesis). Politecnico di Milano.

Pugliese, R., (2006). *La casa popolare in Lombardia 1903-2003*. Unicopli. Retrieved February 28, 2024, from https://www.ibs.it/casa-popolare-in-lombardia-1903-libro-vari/e/9788840010687

Grandi, M., & Pracchi, A. (1980). Milano. Zanichelli.

Prada-Hernandez, A., (2015). Interoperability of building energy modeling (BEM) with building information modeling. *SIBRAGEC ELAGEC 2015*.

Quartiere Molise complesso, Viale Molise, 5,7 Milano (MI) Architetture – Lombardia Beni Culturali. Retrieved February 28, 2024, from https://www.lombardiabeniculturali.it/architetture/schede/3m080-00074/

Serrano Lanzarote, B., Carnero Melero, P., Valero Escribano, V., & Ramírez Pareja, L. (2020). Digital energy simulation of buildings protected by municipal heritage policies in the framework of energy renovation projects. *The International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences, XLIV-M-1–2020*, 421–426. https://doi.org/10.5194/isprs-archives-XLIV-M-1-2020-421-2020

UNI. (2014a). UNI/TS 11300:2014. *Prestazioni energetiche degli edifici - Parte 1: Determinazione del fabbisogno di energia termica dell'edificio per la climatizzazione estiva ed invernale.*

UNI. (2014b). UNI/TS 11300:2014. *Prestazioni energetiche degli edifici - Parte 2: Determinazione del fabbisogno di energia primaria e dei rendimenti per la climatizzazione invernale, per la produzione di acqua calda sanitaria, per la ventilazione e per l'illuminazione.*

UNI. (2014c). UNI/TS 11300:2014. *Prestazioni energetiche degli edifici - Parte 3: Determinazione del fabbisogno di energia primaria e dei rendimenti per la climatizzazione estiva.*

Rosenfeld, M. ;, Bartik, D. C. ;, Benedikt, A. ;, Fuchs, F. ;, Müller, J. ;, Methodology, S., Lu, G., Yuan, D., Hu, H., Meng, X., Hammerschmid, M., Rosenfeld, D. C., Bartik, A., Benedikt, F., Fuchs, J., & Müller, S. (2023). Methodology for the Development of Virtual Representations within the Process Development Framework of Energy Plants: From Digital Model to Digital Predictive Twin—A Review. *Energies 2023, Vol. 16, Page 2641*, 16(6), 2641. https://doi.org/10.3390/EN16062641

Valentini, M., Battini, C., & Vecchiattini, R. (2023). HBIM to support the executive design of a restoration. Critical issues related to geometric and semantic modeling. *SCIRES-IT - SCIentific RESearch and Information Technology, 13*(2), 125–136. https://doi.org/10.2423/i22394303V13N2P125

Toward Data Integration for Representing Urban Assets: a Case Study of Ferrara, Emilia-Romagna, Italy

L'integrazione di diverse tipologie di dati sorgente per la rappresentazione dell'ambiente urbano: un caso studio a Ferrara

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The need to address the social and environmental challenges of cities has led to the growing international application of digital technologies for data management in smart cities. These efforts have been accompanied by the development of methodological approaches and modeling tools aimed at delivering concrete benefits to urban planning and management. City Information Modelling (CIM) is emerging as a promising approach for the holistic representation of urban environments, facilitating interaction between users and digital models of urban contexts. Today, the source data available for such purposes is often fragmented and heterogeneous. To ensure effective knowledge and analysis, this data must be represented in a critical and interpretative framework. This contribution, through the case study of an urban section in Ferrara, demonstrates some of the results achieved by the research group at the TekneHub Laboratory and the DIAPReM Departmental Research Centre. The study focuses on the creation of an information system that unifies and organizes data from diverse sources.

La necessità di affrontare le sfide sociali e ambientali delle città, ha determinato a livello internazionale la crescente applicazioni di tecnologie digitali per la gestione dei dati nell'ambito delle smart city e lo sviluppo di approcci metodologici e strumenti di modellazione finalizzati ad apportare benefici concreti alla pianificazione e alla gestione urbana. Il City Information Modelling (CIM) si caratterizza come un approccio promettente per la rappresentazione olistica dell'ambiente in cui avviene l'interazione tra utente e modelli digitali di contesti urbani. Il dato sorgente potenzialmente disponibile oggi, frammentato ed eterogeneo, necessita quindi di essere rappresentato ad una dimensione critica ed interpretativa per garantire livelli di conoscenza e analisi. Il presente contributo, attraverso il caso studio di una sezione urbana a Ferrara, intende mostrare alcuni dei risultati ottenuti dal gruppo di ricerca del Laboratorio TekneHub e del Centro di ricerca dipartimentale DIAPReM sulla creazione di un sistema informativo che unifica e organizza le informazione a partire da differenti tipologie di dato sorgente disponibile.

INTRODUCTION

The transition from traditional city management and planning methods to modern systems is increasingly driven by the need for efficient resource use, alongside greater attention to quality of life and urban environments [1]. Challenges related to social, financial, and environmental sustainability compel decision-makers to optimize the management of complex urban systems, which relies heavily on the availability and effective utilization of data. In recent years, there has been a growing awareness among administrations, development agencies, and municipalities about the importance of adopting innovative technologies for urban documentation and analysis. This shift highlights the need for a multidisciplinary and multi-scalar visualization of urban assets, employing a holistic perspective that integrates qualitative and quantitative approaches. Such an approach can deepen understanding and enable monitoring of urban transformations, providing the foundation for more informed management tools [2]. Urban information modeling at various levels — from city-scale models to those of individual buildings — has become a central theme in many smart city projects [3], reflecting advancements in international research across diverse fields.

To initiate meaningful digital transformation, cities must undertake significant efforts to consolidate existing building data from disparate databases. Collecting and structuring data for an entire city or district remains a challenging task, largely due to the lack of integration between databases that were initially created independently for specific purposes without consideration for broader information management goals [4].

In this context, there is growing interest in City Information Modeling (CIM). CIM is widely regarded as a digital representation of a city [5], enabling the identification of optimal strategies to enhance urban environments. It serves as a repository for extensive urban data, encompassing both static models and dynamic objects [6]. By integrating diverse data sources, technologies, and analytical tools, CIM provides a comprehensive framework for visualizing, analyzing, and managing urban environments holistically. This approach aims to empower stakeholders to make informed decisions, optimize resource allocation, and improve urban liveability and sustainability [7].

The literature suggests that a viable and cost-effective strategy involves integrating Building Information Modeling (BIM) with Geographic Information Systems (GIS) — commonly referred to as the BIM-GIS approach [8]. For creating As-Built urban models, a promising method is the Scan-to-BIM process, which ensures accurate representations of the built environment. In this process, photogrammetric models play a crucial role by enhancing the morphological accuracy of CIM. These models use photographic images to extract reliable information about the physical elements of the urban landscape.

OBJECTIVE

Given the growing importance of City Information Modeling (CIM) in urban planning and management, this contribution focuses on investigating an essential first phase in the generation of city information models. Using an urban section of the municipality of Ferrara as a case study, heterogeneous urban data were collected, organized, and modeled. The various data sources were then compared to support the identification of specific standards for defining descriptive urban models, facilitating an integrated interpretation of urban systems.

CASE STUDY AREA

The selected case study focuses on an urban section of the Municipality of Ferrara, located in the Emilia-Romagna region of Italy. This area, situated along the Po di Volano river to the south of the city, was chosen for its unique characteristics. It intersects various zones as defined in the Municipal Strategic Plan (PSC): historical fabric, consolidated fabric, and to be redeveloped fabric. The urban section is distinguished by several key features: the river embankment; residential areas along Via Argine Ducale and Via del Mulinetto; the historic center along Via Piangipane and Via Ripagrande, which houses the Italian National Museum of Judaism and the Shoah (MEIS); and a section of the historic city walls. Additionally, the area between the walls and the Burana Canal is currently undergoing urban redevelopment, aimed at enhancing its connection to the historic center.

01.

Identification of the case study area and urban section.
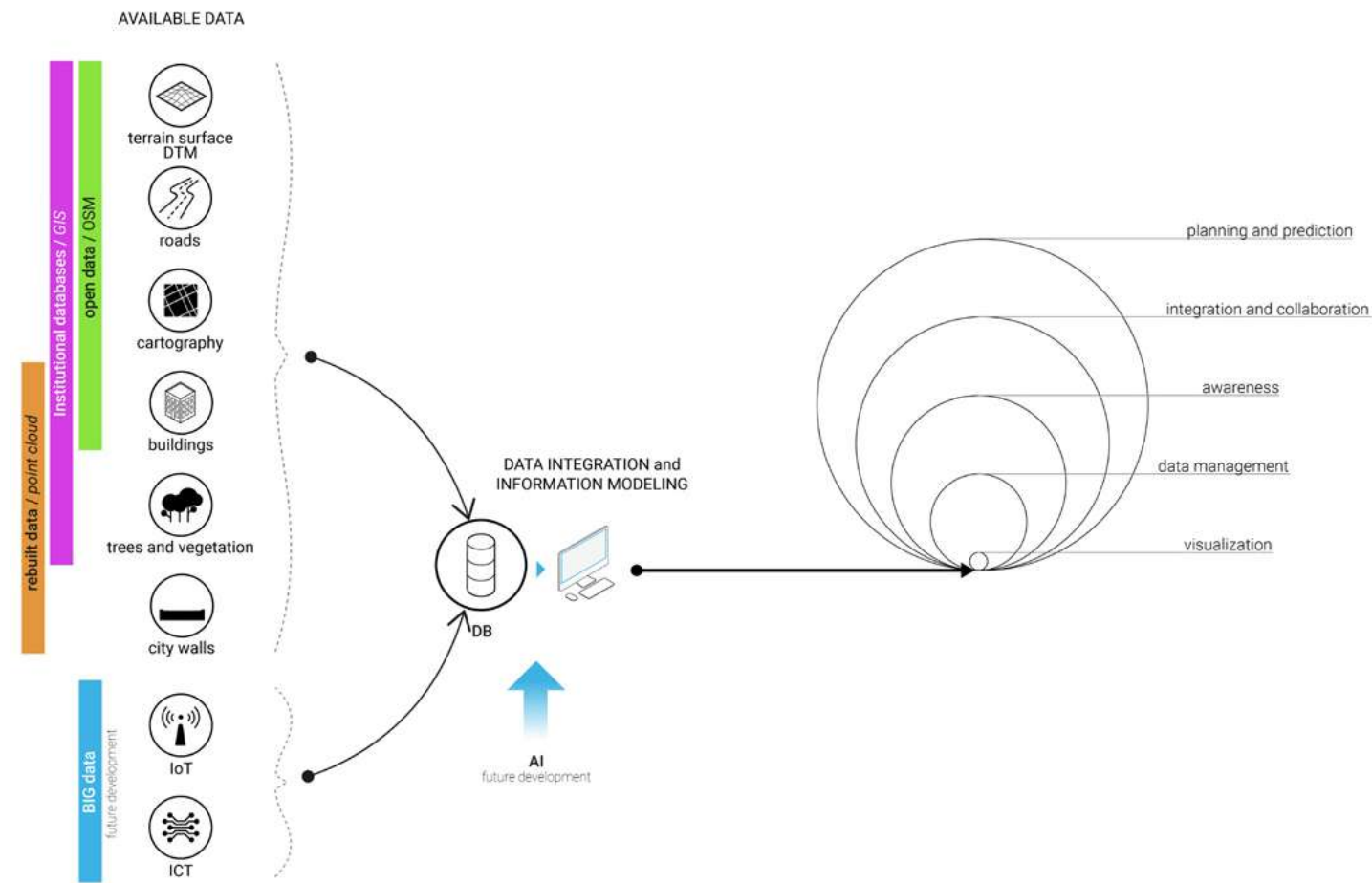
This diagram illustrates the methodology applied in developing the urban digital model for Ferrara, including the available data sources and potential future enhancements.

METHODOLOGY

03.

Point cloud derived from photogrammetric survey simulation and classification: buildings (red), roads (yellow), low vegetation (blue), high vegetation (dark green), rivers (light green), street furniture (orange), and vehicles (light blue).

For the definition and description of the urban section of Ferrara identified in the city information model, two different modelling approaches were used, depending on the type of source data: top-down and bottom-up. The top-down approach involved the use of geodata to develop primitive geometries, which were progressively refined with incremental levels of detail. The bottom-up approach relied on survey data, applying reverse modeling techniques to progressively abstract the geometries. The former process assumes the preexistence of geodata that serves as the basis for modeling, with semantic differentiation used to enrich the resulting geometries. The latter, on the other hand, builds the information database downstream by segmenting the geometries obtained through initial instrumental surveys [9]. The choice of such approaches is tied to the objectives; however, the methodology described in this paper aimed to evaluate the use of heterogeneous data sources already available without creating new ones. Consequently, both approaches were employed.

The workflow was implemented in InfraWorks, an Autodesk software designed for urban and infrastructure planning, modeling, and analysis. InfraWorks was chosen for its advanced capabilities in integrating diverse datasets into a unified model. The information was organized into layers indexed according to a typological hierarchy, enabling efficient integration and management of existing data sources.

The initial phase of the modeling involved using Model Builder, a tool within InfraWorks that generates a three-dimensional model of a specified area by collecting datasets from open-

source databases, in this case for the Darsena of Ferrara. Roads, railways, waterways, and buildings data were obtained from OpenStreetMap (OSM), a collaborative open-source project that provides urban infrastructure data under the Open Database License (ODbL).
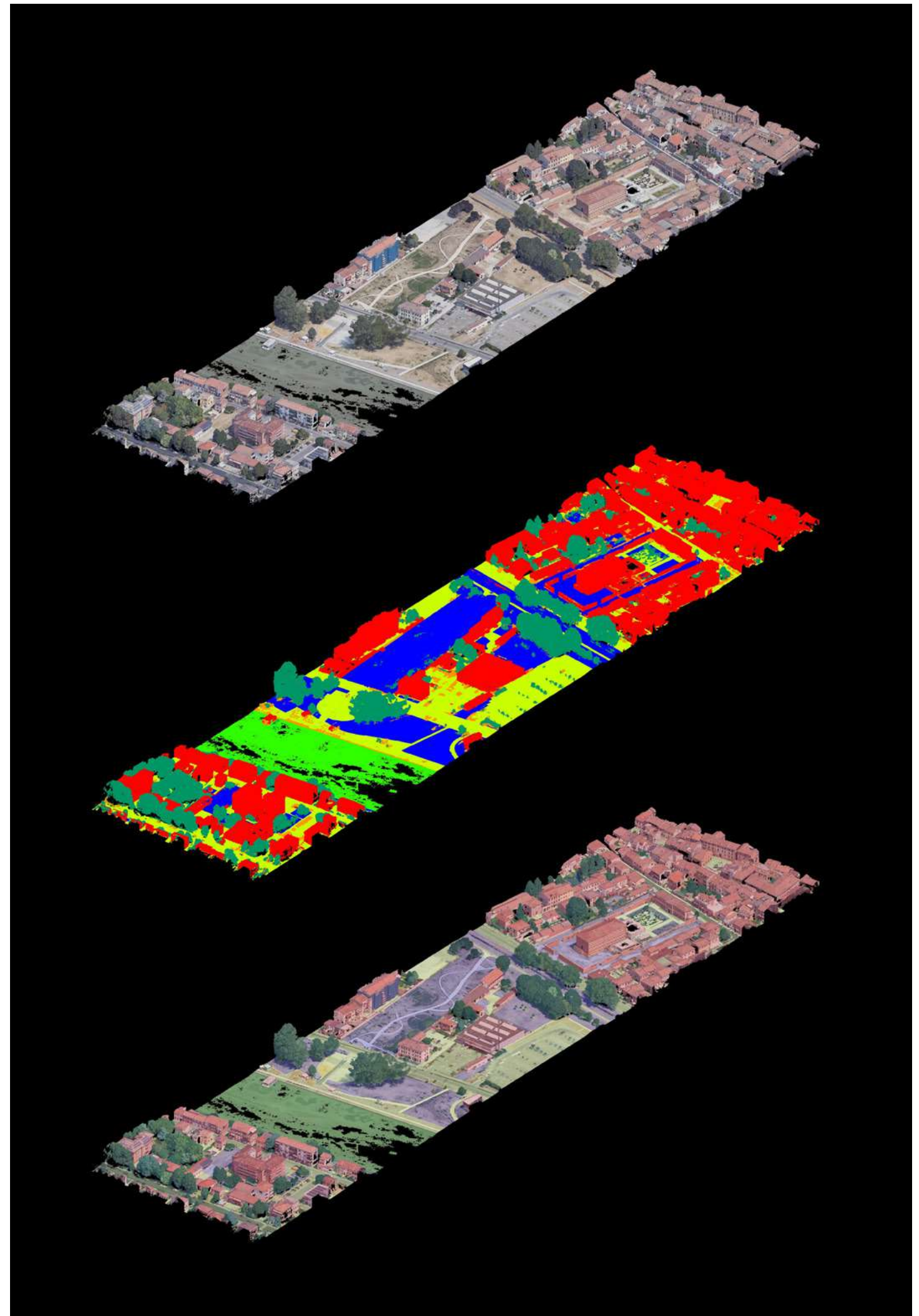
To increase the level of detail in the model, additional datasets were sourced from institutional repositories such as the geoportal of the Emilia-Romagna Region and the Municipality of Ferrara. These included the 5x5 Digital Terrain Model (DTM), derived from the Regional Technical Map, and shapefiles of buildings, roads, and tree surveys for the Darsena area. These datasets were configured to align with the study's goal of connecting existing databases to enable integrated visualization of urban systems.

A photogrammetric survey was simulated to supplement the available data. While urban-scale LIDAR or digital photogrammetry is commonly used to capture large-scale morphology [10], budget constraints prevented a full-scale survey. Instead, aerial images from Google Earth were used in a photomodeling process. Six known GPS points identified in the images enabled georeferencing and metric calibration of the model. As outlined in the literature, the resulting point cloud can be enhanced with semantic information by exploiting artificial intelligence algorithms for segmentation and classification. [11] [12]. These operations were identified as potential processes to be developed for bottom-up modeling approach optimization. The methodology, following the steps described in literature [13], included defining classes, calculating features, manually mapping portions of the dataset, training and testing a Random Forest algorithm, and applying it to predict classifications for the remaining dataset. Misclassified points were corrected manually where necessary, particularly for small objects such as cars. The final point cloud was classified into categories including buildings, roads, low and high vegetation, rivers, street furniture, and vehicles [Fig. 03.]. The classified point cloud was then integrated into InfraWorks as an additional descriptive data layer.

To simulate the bottom-up geometric modeling of buildings, the segmented point cloud was also imported into Revit. This approach facilitated the accurate representation of building morphologies, particularly complex roof structures characteristic of Italian historic centers. By isolating the building class within the point cloud, modeling efficiency was improved, and computational demands were reduced. The resulting Building Information Model (BIM) was subsequently integrated as a new layer within InfraWorks. The integration of geodata from the tree survey with the high vegetation class from the point cloud enabled the representation of tree models in InfraWorks. Similarly, combining the point cloud with the DTM allowed the precise modeling of the historic walls, which separates the city center from the Darsena.

For the correct integration of the input data, it was essential to define a common reference system, both for the sources and, consequently, in the modelling software. This aspect, which is often underestimated, must instead be taken into account right from the preliminary stages in order not to incur errors in the coordination of the models.
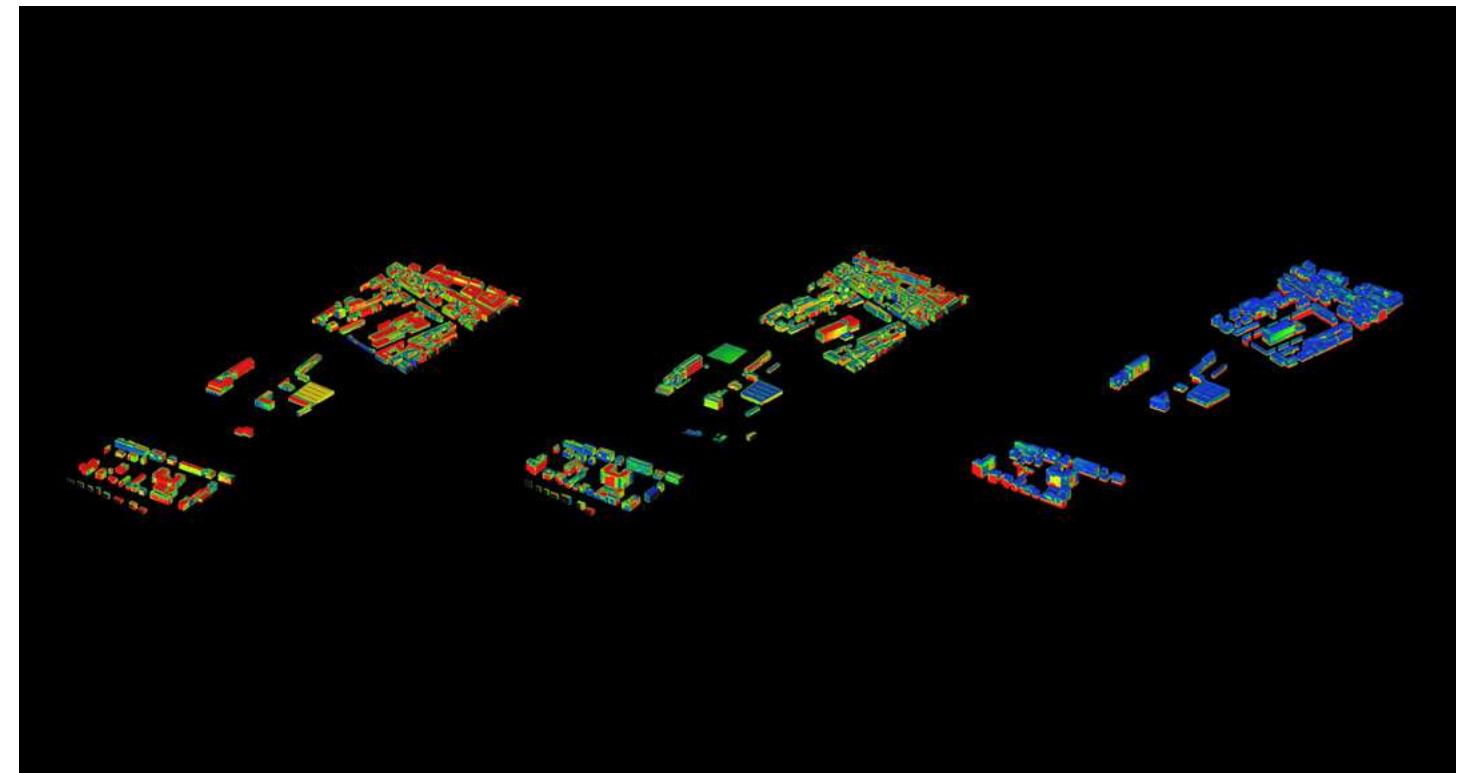

04.
Comparison between the segmented point cloud of the buildings and the volumes obtained from OSM data (left), GIS data (middle), and BIM model (right). In red are the major distances, in blue the minor ones. The scan-to-bim process model is the most consistent. The model from GIS data shows good overall consistency, but is deficient in describing roofs. The model from OSM data is the least consistent.

RESULTS

The result of the study is a three-dimensional model composed of a complex and heterogeneous database. All input datasets, categorized according to their type, are organized into separate layers. This organization enables an integrated reading of urban systems, allowing simultaneous visualization of their complexity or selective comparisons, such as examining buildings and greenery or streets and greenery. Moreover, depending on the construction of the datasets, information parameters can be attributed either to the entire dataset or to individual objects. These categorized datasets, represented at varying levels of geometric detail, provide a detailed visualization of the urban system within the Ferrara Darsena. The integration of data from various sources, with the objective of avoiding duplication and relying on existing datasets, revealed certain overlaps. For example, when analyzing buildings, three different sources — GIS data, OSM data, and the BIM model — produced slightly differing volumes. Consequently, it was necessary to evaluate which source was the most reliable for this category to determine the appropriate dataset for use. The evaluation method involved pairwise comparisons between the volumes obtained from each source and the point cloud derived from the photogrammetric survey simulation. Deviations were visualized using a color scale. In this case, the point cloud served as a benchmark, as it was considered the most reliable source of geometric and morphological data, despite being the result of an indirect process. The Google Earth data was regarded as the most up-to-date source. The comparison showed that, from both planimetric and volumetric perspectives, the deviations between the buildings modeled in BIM and those in the Municipality of Ferrara's GIS dataset were comparable. Excluding outliers, the degrees of accuracy were considered acceptable for urban-scale representation [Fig. 05.]. Additionally, a specific advantage of buildings modeled through the BIM process was observed: this method supports the geometric modeling of roofs, a morphological component that is fundamental for describing the urban context typical of Italian cities. This capability adds significant value to the representation of the urban environment in Ferrara.
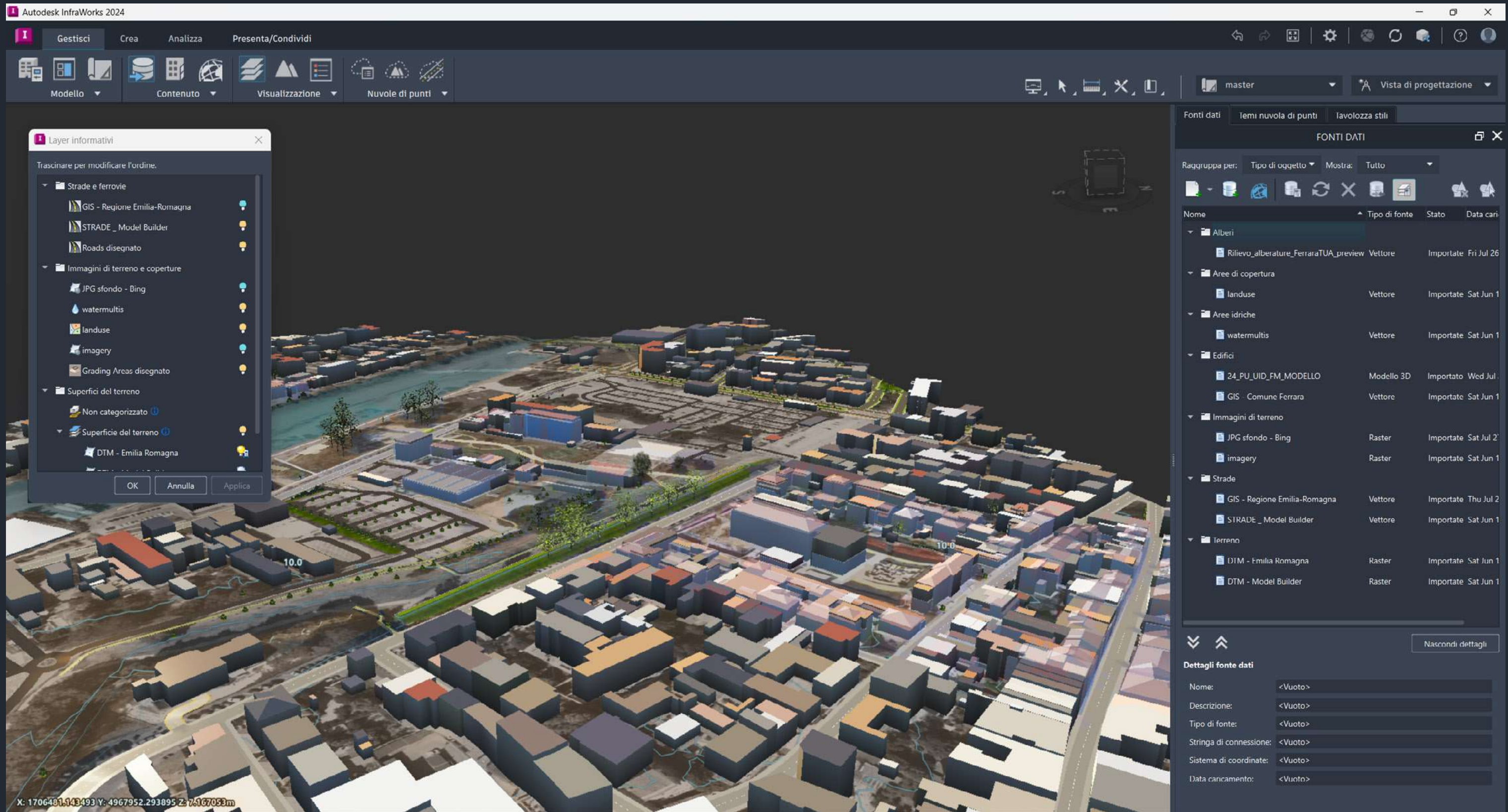
05.

InfraWorks screen showing integration of various data sources. The model combines data derived from both approaches: top-down and bottom-up.

FUTURE DEVELOPMENTS

The significance of CIM in urban planning and management lies in its ability to integrate heterogeneous data without duplication, relying instead on existing datasets to represent urban contexts effectively through information models. The approach presented in this paper contributes to identifying specific standards for defining a descriptive urban model, facilitating an integrated understanding of urban systems.

From a representational and descriptive perspective, the possibility of implementing additional, even customized, information parameters for systems and individual objects within the model, as seen in BIM, is particularly compelling. Moreover, a more detailed classification of the point cloud — potentially through a multilevel and multiscalar procedure [14] — could optimize the transfer of information from the cloud to the model.

The integration of BIM and GIS offers the combined advantages of modeling buildings alongside their surrounding environments. However, urban-scale applications remain underexplored and face challenges such as data interoperability, open standards, and visualization integration. Additionally, the GIS data available to public administrations are often outdated, requiring continuous investment to ensure relevance and accuracy. A critical area for further development involves advancing an open CIM approach, exemplified by exporting models in the CityGML format — an open standard for creating and exchanging 3D virtual city and landscape models. To transition the urban model into a simulation environment like a Digital Twin, a deeper focus on developing a data layer oriented toward Big Data collection is essential. Such a layer is increasingly recognized as a prerequisite for enabling analytics capabilities and integrating IoT functionalities [15]. There is growing interest in experimenting with and sharing best practices that can support the Smart City transition. This transition leverages digital technologies and collected data to guide urban transformations, highlighting the role of CIM in fostering innovative and data-driven urban development strategies.

BIBLIOGRAPHICAL REFERENCES

[1] Pasquinelli, A., Mastrolembo Ventura, S., Guzzetti, F., Ciribbini, A. (2016). City intelligence information modelling. Proceedings of the 3rd International Academic Conference on Places and Technologies, Belgrade, pp. 731 – 737.

[2] Parrinello, S., Picchio, F., De Marco, R. (2018). Urban modelling experiences for the representation of the historical city in Holy Land. In Disegnarecon 11/21, pp. 5.1-5.22.

[3] Del Giudice, M., Osello, A., Fonsati, A., De Luca, A., Musetti, a., Marchi, F., Patti, E., Brundu, F., Acquaviva, A. (2017). District data management, modelling and visualization via interoperability. Proceedings of the 15th IBPSA Conference, San Francisco, CA, USA, Aug. 7-9 2017, pp. 1239-1248.

[4] La Russa, F.M., Genovese, G., Santagati, C. (2021). City Information Modeling as a tool for territorial knowledge and prevention: an application in post-emergency scenarios. In Tommaso Empler, Adriana Caldarone, Alexandra Fusinetti (a cura di). 3DModeling&BIM. Data Modeling & Management for AECO Industry. Web-conference, 14th May 2020, pp. 305–321. Roma: Tipogrfia del Genio Civile.

[5] Li, M., Xue, F., Wu, Y., Yeh, A.G.O. (2022). A room with a view: automatic assessment of window views for high-rise high-density areas using City Information Models and deep transfer learning. Landsc. Urban Plan. 226.

[6] Xu, X., Ding, I., Luo, H., Ma, L (2014). From building information modeling to city information modeling. J. Inform. Technol. Constr. 19, pp. 292–307.

[7] Thompson, E. M., Greenhalgh, P., Muldoon-Smith, K., Charlton, J., Dolník, M. (2016). Planners in the Future City: Using City Information Modelling to Support Planners as Market Actors. In Urban Planning, 1(1), pp. 79-93.

[8] Zhang, X. (2024). City Information Modeling and Its Applications: A Review. In Cheshmehzangi, A., Batty, A., Allam, Z., Jones, D. City Information Modelling, Springer Singapore, pp. 63-74. DOI: 10.1007/978-981-99-9014-6_4.
Okonta, E.D., Vukovic, V. (2023). A Scientometric Analysis and Visualisation of City Information Modeling (CIM): Trends, Research Areas, and Future Directions.

[9] La Russa, F.M., Santagati, C. (2020). From OpenData to city models: an Antifragile approach for City Information Modeling. In Building Information Modeling, Data & Semantics, 7/20, pp. 83-95.

[10] Mora, O.E., Suleiman, A., Chen, J., Pluta, D., Okubo, M.H., Josenhans, R. (2019). Comparing sUAS Photogrammetrically-Derived Point Clouds with GNSS Measurements and Terrestrial Laser Scanning for Topographic Mapping. Drones, 3(3):64.

[11] Grilli, E., Menna, F., Remondino, F. (2017) A Review of Point Clouds Segmentation and Classification Algorithms. Int. Arch. Photogramm.Remote Sens. Spat. Inf. Sci., 42, 339–344.

[12] Gao, L., Liu, Y., Chen, X., Liu,3D Bench Y., Yan, S., Zhang, M. (2024). CUS3D: A New Comprehensive Urban-Scale Semantic-Segmentation mark Dataset. Remote Sens., 16, 1079. https://doi.org/10.3390/rs16061079

[13] Weinmann, M., Jutzi, B. and Mallet, C., (2017). Geometric features and their relevance for 3D point cloud classification. ISPRS Annals of the Photogrammetry, Remote Sensing and Spatial Information Sciences, 4, p.157.

[14] Teruggi, S., Grilli, E., Russo, M., Fassi, F., Remondino, F. (2020). A Hierarchical Machine Learning Approach for Multi-Level and Multi-Resolution 3D Point Cloud Classification. Remote Sens., 12, 2598; https://doi:10.3390/rs12162598

[15] Campos Fialho, B., Codinhoto, R., Márcio Minto, F. (2020). BIM and IoT for the AEC Industry: A systematic literature mapping. XXIV International Conference of the Iberoamerican Society of Digital Graphics

History, Memory, Participation:
Social media and the image of the places in the historical center of L'Aquila

Storia, Memoria, Partecipazione:
i social media e l'immagine dei luoghi nel centro storico dell'Aquila

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Il terremoto dell'Aquila del 2009 ha provocato un temporaneo, ma ancora in parte in corso, svuotamento del centro storico. Le trasformazioni dovute al sisma hanno portato ad una momentanea non fruibilità e non riconoscibilità degli spazi che sono scaturite in una perdita di senso e di identità dei luoghi della città. La percezione della città continua ad oscillare tra il ricordo di essa prima del sisma e quello che sarà alla fine dei lavori. Numerose pagine e gruppi, sui vari social network, pubblicano e creano interazione pubblicando fotografie, immagini e ricordi passati, di luoghi della città e scene di vita quotidiana. La ricerca è stata condotta analizzando le immagini postate sui social media, geolocalizzandole e correlandole attraverso una mappa online, secondo un approccio di Digital Humanities applicato alle immagini del paesaggio urbano. La mappa si propone come strumento utile per la raccolta di documentazione visiva, per l'analisi dei fenomeni in atto, per lo sviluppo di attività di educazione al patrimonio.

The 2009 L'Aquila earthquake caused a temporary, but still partially ongoing, emptying of the historic center. The transformations due to the earthquake led to a temporary non-usability and non-recognizability of the spaces which led to a loss of meaning and identity of the places of the city. The perception of the city continues to oscillate between the memory of it before the earthquake and what it will be at the end of the works. Numerous pages and groups, on various social networks, publish and create interaction by publishing photographs, images and past memories, of places in the city and scenes from everyday life. The research has been conducted by analysing the images posted on social media, geolocating and correlating them through an online map, according to a Digital Humanities approach applied to images of the urban landscape. The map offers itself as a useful tool for the collection of visual documentation, for the analysis of ongoing phenomena, for developing heritage education activities.

01.
Screenshot of a page dedicated to the collection of historical photos of the city of L'Aquila.

02.
Screenshot of the discussion about a photograph of a historic building.

2013 **2024**

03.
Comparison between two photos of Piazza IX Martiri in 2013 (left) and 2024 (right), before and after the restoration of the square and surrounding buildings.

1956 **2011** **2024**

1930s **2011** **2024**

04.
Comparison between historical photos and photos taken in 2011 and 2024 of the squares of San Pietro and San Marciano.

HISTORY AND MEMORY IN THE COLLECTIVE PERCEPTION OF CULTURAL HERITAGE

Cultural heritage is linked to a cultural and social process associated with the act of remembering. This act serves as a vehicle to define ways of understanding and engaging with our surroundings, encompassing both the past and the present [Smith, 2006]. Consequently, all heritage is initially intangible, not to deny its physical dimension, but to integrate the tangible dimension, which traditionally enjoyed privileged self-evidence, into processes of negotiating the social meaning and practices associated with defining the shared meaning of a social and cultural context, with the aim of to involve in the process all the stakeholders.

In this sense, sites, places, and artifacts have an intrinsic relevance in terms of signification, making them objects of appreciation and attention. Their physical aspect becomes the embodiment of broader and more complex cultural and social manifestations, which enlarges and expands their value and meaning [Bernardo & Casakin, 2012; Jenkins, 2009]. Cultural heritage is thus seen as the foundation for constructing and negotiating a series of identity visions, social and cultural values, and meanings in the present. This perspective conceptualizes heritage as a "discourse," involving not only debates about the concepts included in the definition and understanding of specific cultural goods but, what is more, "discourse" as an active, everyday social practice that engages the shared feelings, thoughts, and actions of individuals, particularly the identity of society itself.

In an approach where the relationship with cultural heritage revolves around discourse and participatory processes, the interplay between history and memory becomes central. On one side lies history as a system of critically and scientifically historiographical studies; on the other, the individual and collective memory of the community. The intertwining of history and memory gives rise to a sense of individuality and identity, as well as an idea of authenticity, intended as the daily practice and relationship of local inhabitants with the heritage itself [Smith, 2006, pp. 35-40]. Thus, heritage is configured as a cultural process linked to the act
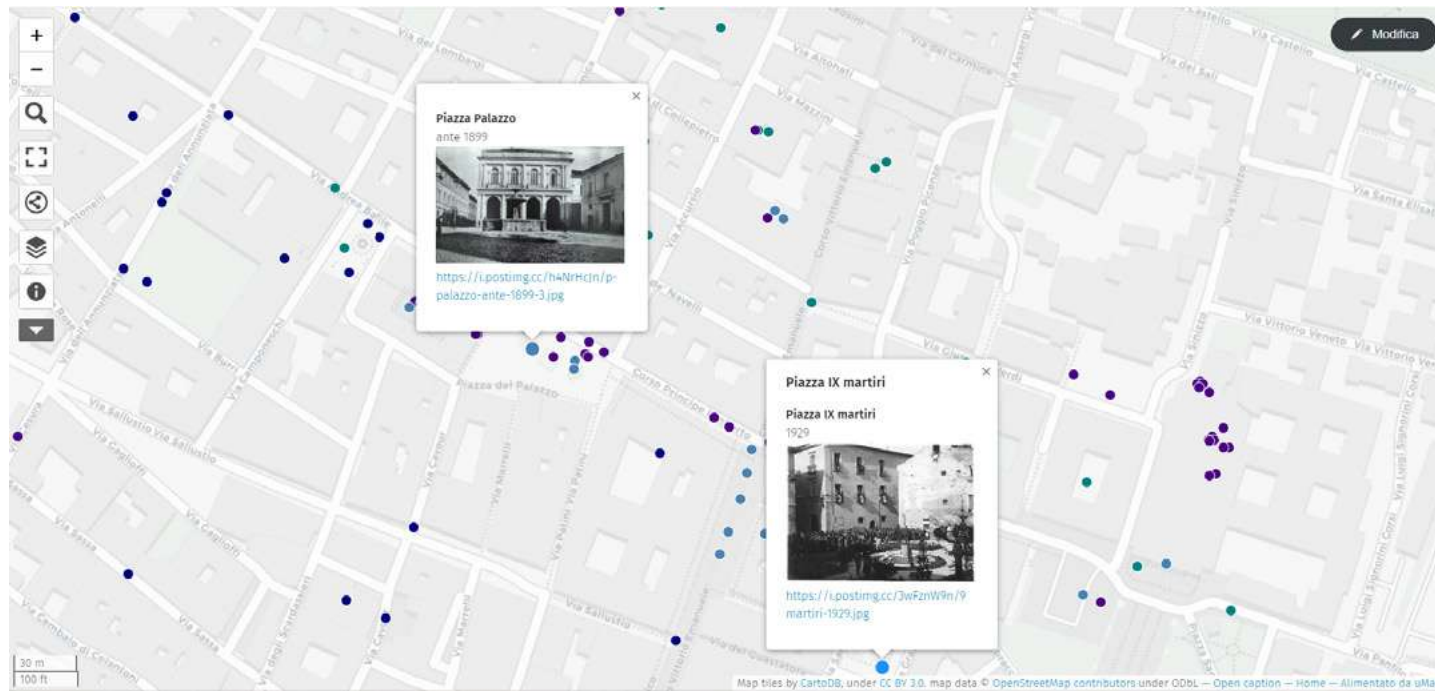
05.
Example of the pop-up image display on Umap.

06.
Georeferenced photographs presented through Umap interface.

of "remembering," which serves as a means of developing ways to engage with the present. Consequently, heritage requires an experience—it becomes an experience itself—where memory, remembrance, and performance play a central role.

Remembrance should not be intended merely as recalling the past but as an embodied and participatory act involving all stakeholders and the heritage itself, creating new memories. Memory, in particular, has an intimate relationship with the present. Collective memory, whether firsthand or transmitted, can form the foundation for a sense of identity and connection to a place or tradition. Collective memory fosters a sense of belonging rooted in predominantly social processes. This social approach, based on performance and collective memory, underscores the importance of objects, artifacts, rituals, sites, and locations. Their materiality can hold significant symbolic value for defining local values and identities. These material and physical aspects align with Smith's foundational assumption: the intangible does not exclude the tangible but includes it. The importance of place, with its ontological physical dimension, induces a sense of positioning within the intangible system of social relations, from which meanings—and thus heritage—arise. From this signification process emerges the concept of "landscape" [Smith, 2006, p. 78].

PRESERVING MEMORY: THE CASE OF L'AQUILA
The case of the historic city of L'Aquila, presents itself as an interesting field for evaluation of these dynamics. The 2009 earthquake temporarily, and still partially, emptied the city's historic center. The extensive damage caused by the earthquake, followed by significant structural reinforcements and numerous construction sites, led to a temporary inaccessibility and loss of recognizability of spaces. This resulted in a loss of meaning and identity for the city's places. Reconstruction is still ongoing, and the city's perception oscillates between memories of its pre-earthquake state and what it will become after the work is completed, inevitably creating a new reality different from the previous one.
The prolonged "temporary" state of detachment from the historic center has highlighted
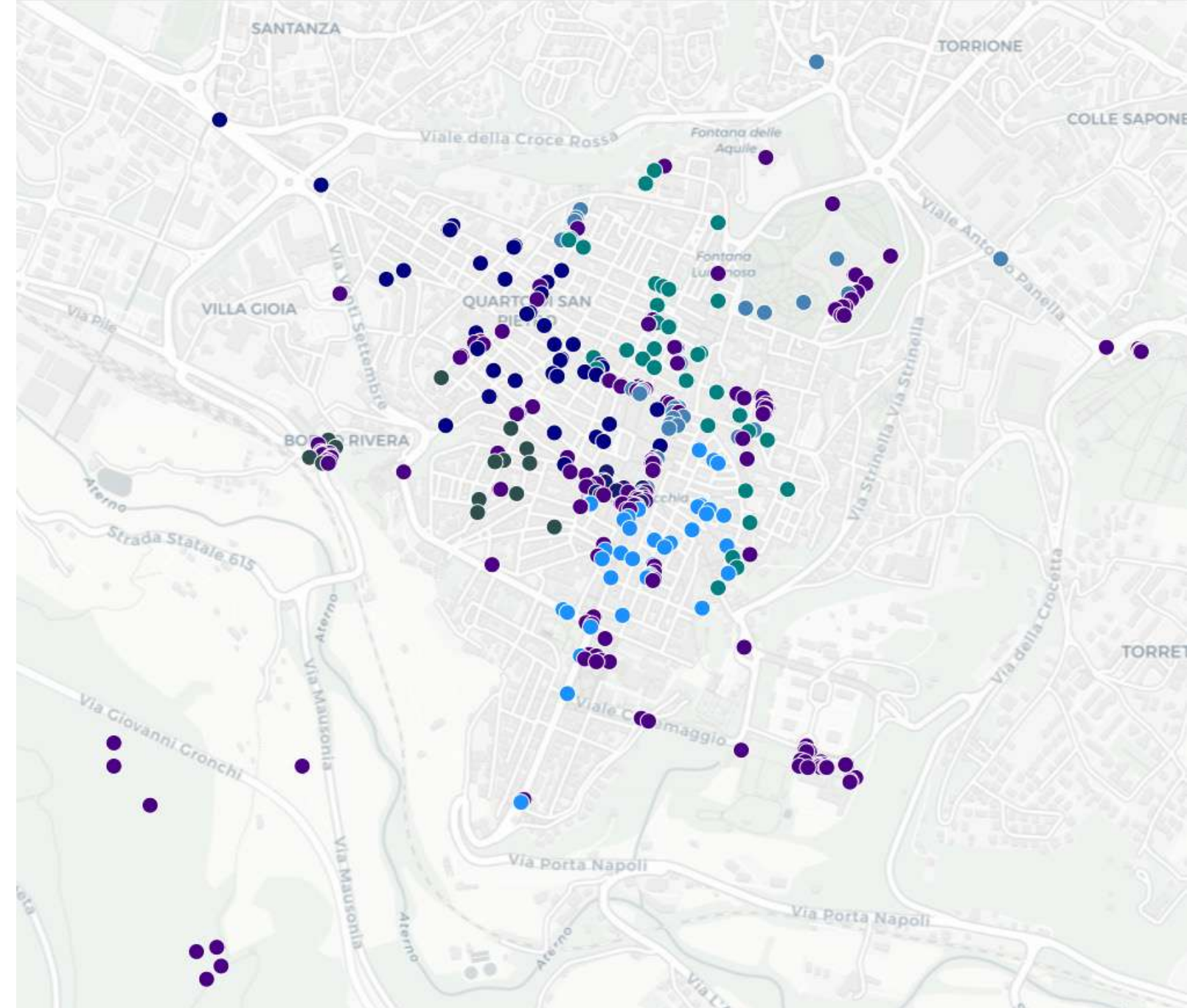
a growing desire among the population to preserve the memory of the city and its life before the earthquake, to maintain the sense of identity that once bound them to the city [Brusaporci, Centofanti & Maiezza, 2017; Brusaporci, Graziosi, Franchi, Maiezza & Vernacotola, 2018]. Over the years, numerous pages and groups have emerged on social media [Fig. 01.], where many people share and interact daily by posting photographs, images, and memories of the city and scenes from daily life [Fig. 02.]. These pages have gained significance, not only in recreating a community fragmented by the earthquake but, importantly, in transmitting memories of the past to younger generations. After sixteen years of inaccessible and empty spaces, these youths lack any direct remembrance of the historic center and its previous life [Tata, 2023].

While these social media pages provide a remarkable repository of memory, the gap between images of the past and the current state of the places is widening. This is due to the prolonged inaccessibility of locations, drastic changes caused by damage, provisional structures, and reconstruction work. It is increasingly difficult to recognize these places—not only for younger individuals without prior memories but also for adults who rarely visit the historic center [Figs. 03., 04.].

The experience carried out aims to aims to bridge this gap between historical and contemporary imagery using basic augmented reality (AR) applications. By making historical images accessible through an interactive map, the system georeferences the user's device and allows navigation through historical photographs within the physical environment [Manovich, 2023] [Figs. 05., 06.].

Operationally, a first selection of more significant photographs was made, intended as a starting point to be increased in subsequent developments. For each image, the point of capture has been reconstruct as precisely as possible, correlating it with the photograph itself. The project adopted an open research model, developing an information system based on collaborative open-source platforms. This approach enables progressive data collection, flexible management, and integration. Experiments demonstrated the effectiveness of using synergistic tools and platforms, with particular emphasis on interoperability. OpenStreetMap's Umap platform, an open-source project, proved especially useful. It supports complex spatial information systems (SIT) without significant limitations, offering customization and integration into third-party websites. Its versatility allows users to create maps within the platform or import layers from GIS software or CSV files. This last feature allows you to use as source for the presentation of the layers of spreadsheets processed with a software such as Microsoft Excel or by online tools like Google Sheets. By using cloud tools, the system can dynamically update data, ensuring it remains current even during modifications or maintenance. Future developments, in addition to the systematic implementation of additional graphic and photographic materials, may involve events such as community walks, guided tours and public meetings to build around this georeferenced photographic collection a community not only active and recognizable on social networks but also in the social reality. In this sense the synergy between virtual and physical sociality uses the physical space of the city, re-read through an application of Augmented Reality, as a disintermediation tool in a process of heritage education.

The activities carried out, considered under this light also respond to a purpose of promoting accessibility [Candito & Meloni, 2022; Sdegno & Riavis, 2023], both physical and conceptual, favoring the principles of communication and presentation of cultural heritage promoted by the Ename Charter [ICOMOS, 2008].

CONCLUSIONS

Focusing on cultural heritage reveals how the mechanisms of remembering and engagement generate an imaginary, creating meaning by connecting the physicality of experiences, places, and objects with people's memories. This process fosters new emotions, memories, and social relationships. Dallari writes: "The memories on which these processes of ethical and aesthetic reworking intervene are therefore the result of a collaboration between reality and fantasy, between reliability and reinvention, between memory and nostalgia. The imagination is not only a faculty that voluntarily put into action, but it is a constituent element of our identity, the connective tissue that articulates our lived, from outline and completeness to the interior refractions of real experiences, and models in a story that day by day constitutes us and regenerates us" [Dallari, 2023, pp. 92-93].

In this sense, the experience aims to support the development of a «social imagination [...] defined as the participation of individual imagination in a collective phenomenon» [Dallari, 2023, p.69-70], able to reconnect the tissue of memory, collectivized through social networks, to the physical warp of the city, returning to animate on a more articulated level of reality the dialogue between history and memory.

BIBLIOGRAPHICAL REFERENCES

Bernardo, F., & Casakin, H. (Eds.) (2012). The Role of Place Identity in the Perception, Understanding, and Design of Built Environments. Bentham Science Publishers.

Brusaporci, S., Centofanti, M., Maiezza, P. (2017). MUS.AQ: A Digital Museum of L'Aquila for the Smart City INCIPICT Project. In New Activities For Cultural Heritage (Cassino, 21-22 september 2017) (pp. 200-208). Cham: Springer International Publishing.

Brusaporci, S., Graziosi, F., Franchi, F., Maiezza, P., & Vernacotola, F. (2018). La memoria dell'effimero e la contingenza del precario. In F. Capano, M.I. Pascariello & M. Visone (A cura di), La Città Altra. Storia e immagine della diversità urbana (Napoli: CIRICE, Napoli, 25-27 ottobre 2018).

Candito, C. & Meloni, A. (Eds.).(2022). DAI Il disegno per l'accessibilità e l'inclusione. Alghero: Publica.

Comitato dei Ministri Consiglio d'Europa (1998). Raccomandazione R (98) 5 agli Stati Membri in tema di educazione al patrimonio.

Committee of Ministers to member states (2008). Recommendation on the guidelines for the implementation of the Council of Europe Landscape Convention.

Dallari, M. (2023). Immaginauti. Trento: Il Margine.

Directorate-General for Education, Youth, Sport and Culture (European Commission) (2018). Report on Participatory Governance of Cultural Heritage.

ICOMOS. (2008). Charter for the Interpretation and Presentation of Cultural Heritage Sites. Retrieved on December 5, 2024 from https://www.icomos.org/images/DOCUMENTS/Charters/interpretation_e.pdf

Jenkins, H. (2009). Confronting the Challenges of Participatory Culture: Media Education for the 21st Century. Cambridge, MA: MIT.

Manovich, Lev , Cultural Analytics. L'analisi computazionale della cultura. Raffaello Cortina Editore 2023

Prensky, M. (2021). Digital Natives, Digital Immigrants Part 1. On the Horizon, 9(5), 1-6.

Sdegno, A. & Riavis, V. (Eds.).(2023). DAI Il disegno per l'accessibilità e l'inclusione. Alghero: Publica.

Smith, L. (2006). Uses of Heritage. London & New York: Routledge.

Tata, A. (2023) Memoria e fotografia nell'era digitale: il caso dell'Aquila in S. Brusaporci, P. Maiezza, A. Marra, I. Trizio, F. Savini & A. Tata (Eds.) IMG23 Atti del IV Convegno Internazionale e Interdisciplinare su Immagini e Immaginazione. Alghero: Publica.

Tuan, Y-F. (1974). Space and place: humanistic perspective. Progress in Geography, 6, 211-52.

UNESCO (2003). Convention for the Safeguarding of Intangible Cultural Heritage. Disponibile in: https://ich.unesco.org/en/convention [15.05.2023].

UNESCO (2011). Recommendation on the Historic Urban Landscape. Disponibile in: https://whc.unesco.org/en/hul/ [15.05.2023].

Design for 'not-knowing'.
Visual design for social inclusion

Progettare per "not-knowing".
## Visual design per l'inclusione sociale

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Joining, as of 2022, the *School of not-knowing* a project of Civic-city directed by Ruedi and Vera Baur involved us in an international and transdisciplinary network, "*ou l'on apprend à recconaitre et à travallier*", that is, to represent what we don't know.
The research carried out by Reggio Calabria University focused interest toward territories as palimpsests whose languages express a plurality of narrative and interpretive codes, capable of initiating the building of places that are more open to differences and configure themselves as plural expressions. And how they can become places of peace through right and equitable sharing of their culture. From the conduct of the two workshops titled "How can we design peace", in which universities and the civil world engaged in an open dialogue to share new ways and forms of knowledge and its representation, some lines of research emerged in which identity communication represents one of the main scientific contexts for peace education.

L'adesione, a partire dal 2022, alla *School of not-knowing* un progetto di Civic-city diretto da Ruedi e Vera Baur ci ha coinvolti in una rete internazionale e transdisciplinare, "*ou l'on apprend à recconaitre et à travallier*", ovvero rappresentare ciò che non conosciamo.
La ricerca condotta dall'Università di Reggio Calabria ha focalizzato l'interesse verso i territori come palinsesti i cui linguaggi esprimono una pluralità di codici narrativi e interpretativi, capaci di avviare la costruzione di luoghi più aperti alle differenze e configurarsi come espressioni plurali e come possano diventare luoghi di pace attraverso la giusta ed equa condivisione della loro cultura. Dalla conduzione dei due workshop dal titolo "Come possiamo progettare la pace", in cui università e mondo civile si sono impegnati in un dialogo aperto per condividere nuovi modi e forme di conoscenza e la sua rappresentazione, sono emerse alcune linee di ricerca in cui la comunicazione identitaria rappresenta uno dei principali contesti scientifici per l'educazione alla pace.
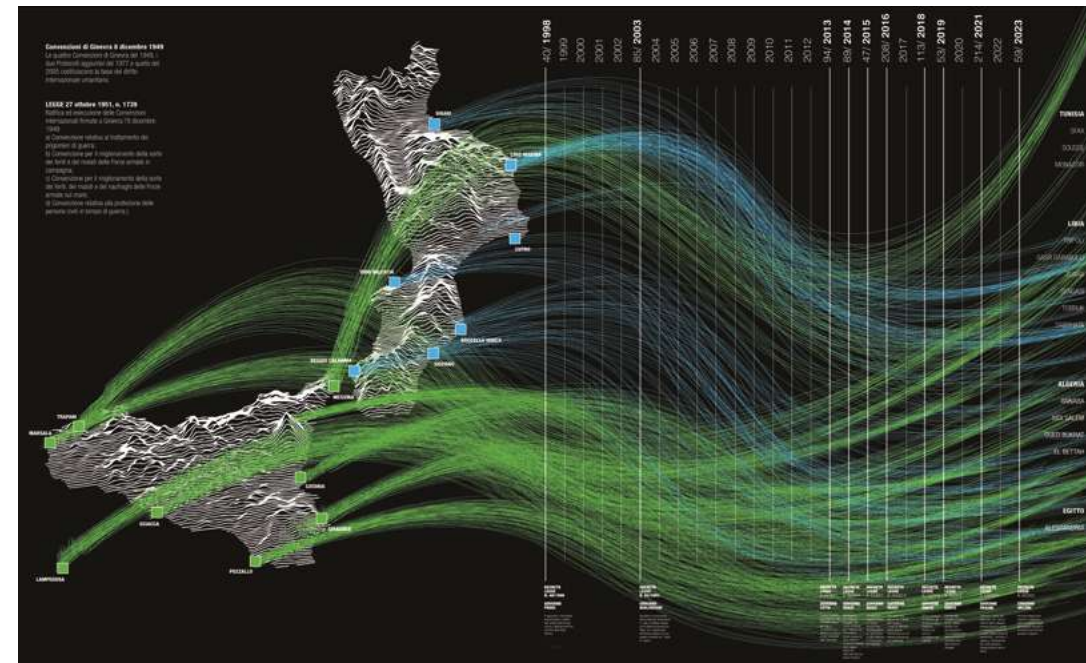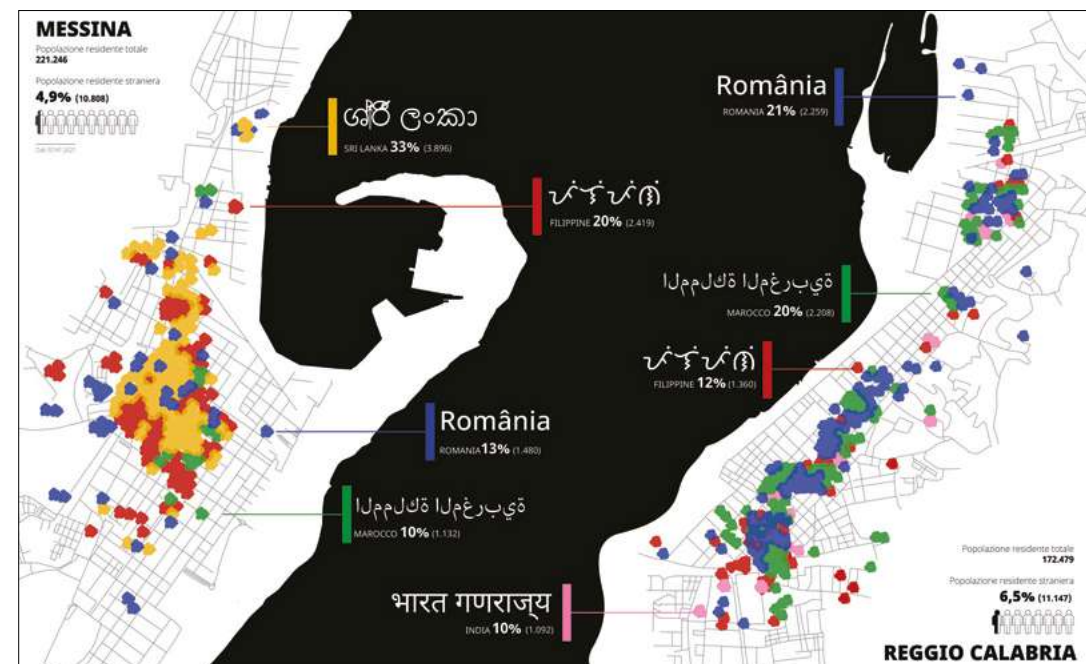
KNOWING AND NOT-KNOWING

The invite to participate in the project *School of not-knowing* by Civic-city has involved us in an international, transdisciplinary network "of people imagining and conceptualizing a better world"[01]. Urban planners, designers, graphic designers, architects, sociologists, philosophers, and artists from around the world are mobilized voluntarily on the topics of social sciences, semiotics, culture, and ecology.

Civic-city is an autonomous institute for critical design research on social field. Founded and directed by Ruedi and Vera Baur, the institute, located in Paris, develops, among others, research projects on the uses of public space in fragile urban situations where mixed communities coexist. Among urban projects include the *Laboratoire d'Ubanisme Transitoire*, which aims to understand the methodologies and potentials of visual design in the contexts of marginalized urban spaces, with the goal of asking questions and creating conditions to influence political strategies for the well-being of inhabitants and their supportive relationship with places.

The same issues are addressed by the UNESCO Chair *Mediterranean Landscape in Context of Emergency* at Mediterranean University of Reggio Calabria, which deals specifically with contemporary Mediterranean migration and how the territories of landfall are predisposed to host large numbers of men and women moving in search of places to inhabit. The study of territories in transition leads to the development of proposals for shared habitation.

In 2022 Civic-city launched the project the *School of not-knowing*, a school where we learn to rebuild thus to represent what we do not know. "What one does not want to know, what society does not want one to know, but also what one does not yet know and what society has a duty to know"[02]. The goal was to communicate to everyone "*ce que l'on affirmait savoir*". The project involved about 800 teachers, researchers and students from more than 30 university and design school around the world. Drawing and representation become the privileged tools of communication of what is obvious and what is not yet obvious.

Knowledge can be defined as "the totality of a person's or communitys knowledge acquired through study, observation, learning and/or experience"[03]. But not knowledge becomes more difficult to define, yet we can consider "non knowledge as a cognitive possibility, an opening to other forms of intelligibility". The question being asked is "how can we shift our perspective to better perceive other possibilities of learning?"[04].

To lend support to these questions Ruedi Baur is organizing Reflections around the project, a 24h open talk attended by experts from around the world who can speak at any time of the day, considering the hourly differences of the different places they come from, and make the considerations and suggestions. Others who participated included Manon Ménard, visual graphic designer, philosophers Suzanne Leblanc and Marie-José Mondzain, Christopher Dell theoretician in urban design and architecture. The summary of the talk is contained in a two-part table titled *Il est des choses que nous savons... et dautres que nous ne savons pas* in which the issues that emerged are identified and represented.

Based on these questions, workshops around the world are launched: "To work on the representation of 'non-knowledge' on the basis of the conviction that the dialogue between art, design, science and society is capable of proposing new horizons in understanding and learning about the world we know and the world yet to be discovered, to question the representations and modes of transmission of knowledge"[05].

In this context, the *School of not-knowing* offered an opportunity to experiment with visual communication languages that relate different modes of expression to communicate social phenomena that are very often steeped in misunderstanding.
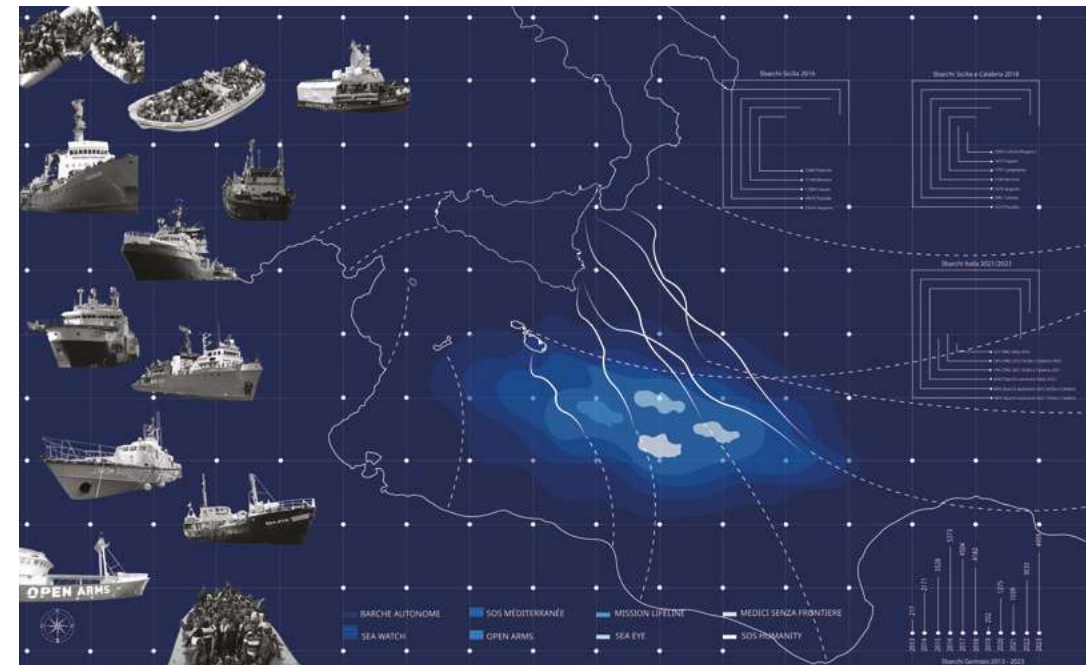
04.
J. Auddino, I. Palumo, NGOs in the Mediterranean Sea, Workshop How can we design Peace, 2023.
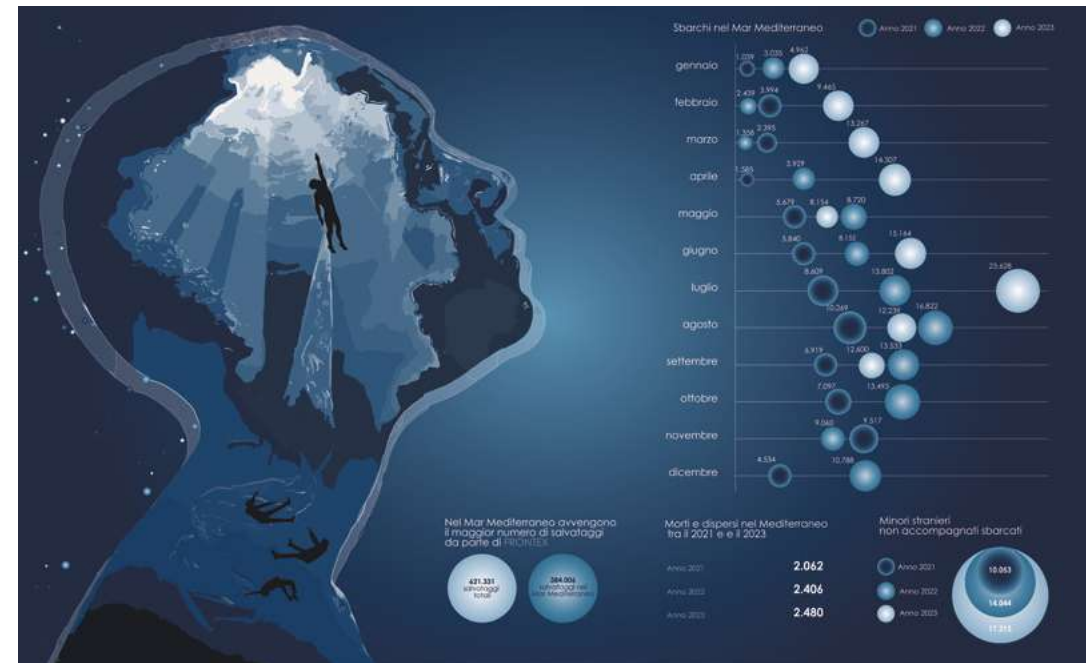
05.
G. Cartella, A. Foti, G. Torcaso, Landings of hope, Workshop How can we design Peace, 2023.

06.
A. Doddis, M. Rotundo, G. Repaci, Mediterranean crossing, Workshop How can we design Peace, 2023.

DONNE sbarcate anno 2021-2022
(dati ISTAT relativi alle donne richiedenti asilo, protezione umanitaria con permesso di soggiorno di lunga durata)

BAMBINI sbarcati anno 2021-2022
(dati openpolis)

UOMINI sbarcati anno 2021-2022
(dati ISTATr relativi agli uomini richiedenti asilo, protezione umanitaria con permesso di soggiorno di breve durata)

3.631
Donne / Somalia
Persecuzioni
Deportazioni
Genocidi

11.750
Donne / Guinea
Violenza politica
Tensioni etinico-nazionali
Sviluppo economico

1.320
Bambini / Pakistan
Insicurezza sanitaria
Insicurezza alimentare

47.504
Donne / Nigeria
Repressioni diritti umani
Genocidi
Siccità

1.050
Bambini / Costa d'Avorio
Instabilità economica
Insicurezza alimentare
Crisi ambientale

21.752
Uomini / Tunisia
Jiadismo
Crisi sociale

38.750
Uomini / Guinea
Guerra e persecuzioni
Esecuzioni
Torture e violenze

26.089 dipersi in mare

periodo 2014-2023
dati OIM Organizzazione internazionale per le migrazioni

Comparazione
migranti
sbarcati
negli anni
2021/2022/2023

2021	2022	2023
67.477	105.131	93.754

gennaio: 1.039 / 3.035 / 4.962
febbraio: 2.439 / 3.994 / 9.465
marzo: 1.358 / 2.395 / 13.267
aprile: 1.585 / 3.929 / 14.507
maggio: 5.679 / 8.154 / 8.720
giugno: 5.840 / 8.600 / 15.164
luglio: 10.269 / 13.802 / 23.639
al 9 agosto: 4.596 / 16.822

Fonte: Dipartimento di Pubblica Sicurezza

EMIGRANTE - AUSWANDERER - ÈMIGRANT - EMIGRANT - EMIGRANTE - TRASFERITO - UMGEZOGEN - DÈMÈNA+
NGÈ - MOVEO - MUDADO - NOMADE - MOMAO - NOMADA - NOMADE - ESULE - EXILANT - ÈXILE - EXILIADO - TINE+
RANTE - ITINÈRANT - ITINERANT - REISENDER - WANDERO - CHARO - MUSO GIALLO - MAFIOSO - LADRO -
THIEF - VOLEUR - LLADRE - DIED - KEBABBARO - NEGRO - TERRONE - ZINGARO - TERRORISTA - BARBONE -
SCIMMIA - SPORCO CANNIBALE - UNTORE - CRIMINALE - MALATO

INSULSO - PUANT - STINKY - LURIDO - SCHMUTZIG - BRUT - SALE - FILTHY - VAPIO - SPORCO - MUORI
- STERBEN - IGNORANTE - STINKED - STUPRATORE - VERGEWALTIGER - RAPIST - VIOLEUR - LIMITATO - ROZZO -
ROUGH - ASPRE - RUGUEUX - IGNORANT - SCHIAVO - SLAVE - ESCLAVE - ESCLAU - SLAVE - VANDAL - VANDALE -
ABIETTO - CANE - PELLEGRINO - RAUH - INCIVILE - UNZIVILISIERT - MONGOLO - VANDALO - VANDAL - VANDALE -
- DISLOCATO - VERTRIEBENER - DEPLACE - DISPLACED - MANGIABANANE

DESIGN FOR KNOWLEDGE

The two workshop *How can we design peace*, coordinated by Susanna Cerri and me, was held in Reggio Calabria on May and December 2023 with the presence of 80 students total. Students were able to choose a series of topics related to UNESCO Chair *Mediterranean Landscape in Context of Emergency*. Within the national and international landscape of issues concerning Mediterranean migration flows, modes of landing and welcoming, a number of topics were identified: the narrative of migration; perceptions of major shipwrecks; spoken languages, jargons and language modifications, the offensive power of words; borders and spaces of freedom; the concept of camp (humanitarian, refugee); the reception system in Italy; protections offered to migrants (asylum seekers, humanitarian protection); walls of separation; local projects involving migrants; models of inclusive cities; and Europe's role in decision-making.

Students were given freedom to choose the theme on which to work, paying particular attention to "giving visibility to what is not visible", unveiling, through the codes of visual representation, some evidence that is too often equivocally exploited. The graphic translation of information found through the web, magazines, interviews, or direct experiences, was concentrated into a summary and infographic apt to capture the user's gaze and interest.

Before the start of the workshop, a number of thematic seminars were organized in order to initiate a proper working methodology, both in data retrieval and communication methods. The first seminar held by Susanna Cerri, professor of Design for Sustainability at the University of Florence and a member of Civic-city, introduced the themes reference to the signs needed for a new geography of migrants welcoming. The second seminar held by Cristina Giudici, professor of Statistical Social Demography at Sapienza University of Rome, provided students with some guidance on the scientific treatment of statistical data, retrieval through official sources and some basic methods of interpretation and processing in order to better visualize their complexity.

After proper retrieval of data and subsequent processing, these, were translated into a system of graphic signs whose goal was unambiguous communication, without distorting the correct meaning. A major part was devoted to the analysis of data concerning recent migration flows in the Mediterranean. The visualization of numerical data highlighted some aspects largely concealed or extremely emphasized in the public debate.

Using the language of representation through the careful association of graphic signs, images and narrative codes, the posters propose the transfer of knowledge through visual communication.

The involvement of students from the Bachelor of Arts in allowed for a debate on the role of signs and images in information and how they are able to influence knowledge.

A selection of the 10 posters produced by Reggio Calabria students were exhibited at the Porto Design Biennale on October 2023 and presented at the seminar organized by the Migration Commission of the Network of Italian UNESCO Chairs, at the Primoli Foundation in Rome, on the occasion of International Migrants Day.

SIGNS AND VISUAL CODES: THE COMPOSITION OF THE IMAGE

The main goal of the research is to activate communication processes that induce the observer to reflect on themes whose data are often hidden or manipulated into inaccuracies. That of drive the observer to meditate on the powerful combination of the formation of the image[06]. The configuration of each panel derives from the search for a graphic balance of the proportions between the two dimensions of the sides (130 x 89 cm), the alignments of the lines of force and the highlighting of notable points, the alignments of writings and images, an underlying modularity of the format, the relationships between vertical and horizontal elements, the dimensions of the text, also in function of the harmonic proportions. The graphic

09.
M. Ciano Albanese, D. Loddo, Words without borders, Workshop How can we design Peace, 2023.

10.
M. Condello, L. Galletta, L. Giuliani, Do the words welcome?, Workshop How can we design Peace, 2023.

composition manifests its expressive uniqueness in the mixture of writing and geometric and figurative elements.

The map of the continents separates each country to indicate a new redefinition of physical and social borders [Fig. 01.] associated with a flood of numerical data on histograms that quantify people in movement. A map is the visual basis of the geographical location of the landing points of migratory flows that indicate not only the points of origin but the graphic trend of legislative modification and integration [Fig. 02.]. The color associated with a category of sets makes them immediately visible in their physical location determining their spatial visualization [Fig. 03.].

Conceptual maps and numerical diagrams are elaborated by the combination of elementary geometric patterns associated with a highly symbolic color that with intense shades marks the visual node of the entire composition balanced by figures that refer to the main focus [Figs. 04., 05.].

Developing dynamic balances between text and figures leads to the drafting of a comprehensive code of signs that is founded on the aesthetic component of the image and in the communication of a strong final emotional impact[07] [Figs. 06., 07.].

The visualization of the phonetic sign refers to the tracing of signs that correspond to sounds and are composed in figures that express a symbolic system of communication, "no longer a silent sign of convention but a living form among living forms, the letter can become one with the matter of representation"[08]. The characters of the writing in the dynamic composition become a vehicle of logical–visual communication in which the sign takes on the value of a signifier given by the coordination of all the elements that participate in the composition [Figs. 08., 09., 10.].

The compositions are never static even though they are built on an invisible basic grid, the perspective tensions impressed on the figures or letters, the use of spirals or radial movements, staggered and translated geometric shapes, indicate geometric directions, and the use of colour which refers to predominantly emotional symbolisms[09].

CONCLUSION

At the conclusion of the School of not-knowing project, two days of exhibition and presentation of the panels developed by all schools were organized on February 1 and 2, 2024 at the Conservatoire National des Art et Métiers (CNAM) in Paris and an exhibition at the Écoles Estienne. Finally, the outcomes are collected in Les Cahiers de Civic City – 3. Lécole du non-savoir. 245 propositions to visually explain what we don't know edited by Ruedi Braur, Vera Braur, Susanna Cerri.

From the two *How can we design peace* workshops, in which universities, experts and the civil world engaged in an open dialogue to share new ways and forms of knowledge and its representation, some lines of research emerged in which visual communication represents one of the main scientific contexts for education and learning. Especially, taking territories as palimpsests whose languages express a plurality of narrative and interpretive codes capable of initiating the building of places that are more open to differences and configure themselves as plural expressions. This research is an open, unaccomplished research. The next question is "how can we respond to the needs of our world in crisis?".

NOTES

01| See: www.civic-city.org
02| See: https://civic-city.org/nonsapere/
03| Baur R., Baur V., Cerri S. (2024). *Les Cahiers de Civic City–3. Lécole du non-savoir. 245 propositions to visually explain what we don't know*, p. 11. Lublin: Dukarnia Akapit.
04| Baur R., Baur V., Cerri S. (2024). *Les Cahiers de Civic City–3. Lécole du non-savoir. 245 propositions to visually explain what we don't know*, p. 11. Lublin: Dukarnia Akapit.
05| See: https://plevy.fr/en/projects/school-of-not-knowing/
06| Zerlenga O. (2007). *Dalla grafica all'infografica*. Foggia: Claudio Grenzi Editore.
07| Cerri S. (2022). *Segni urbani, design della comunicazione visiva e scrittura nello spazio pubblico*. Siracusa: LetteraVentidue.
08| Soffici A. (1920) *Principi di una estetica futurista*. Firenze: Vallecchi Editore 1920.
09| Rand P. (2016). *Pensieri sul design*. Milano: Postmedia.

BIBLIOGRAPHICAL REFERENCES | RIFERIMENTI BIBLIOGRAFICI |

Baur R., Baur V., Cerri S. (2024). *Les Cahiers de Civic City–3. Lécole du non-savoir. 245 propositions to visually explain what we don't know*, p. 11. Lublin: Dukarnia Akapit.

Baur R., Baur V., Cerri S. (2024). *Les Cahiers de Civic City–3. Lécole du non-savoir. 245 propositions to visually explain what we don't know*, p. 11. Lublin: Dukarnia Akapit.

See: https://plevy.fr/en/projects/school-of-not-knowing/

Zerlenga O. (2007). *Dalla grafica all'infografica*. Foggia: Claudio Grenzi Editore.

Cerri S. (2022). *Segni urbani, design della comunicazione visiva e scrittura nello spazio pubblico*. Siracusa: LetteraVentidue.

Soffici A. (1920) *Principi di una estetica futurista*. Firenze: Vallecchi Editore 1920.

Rand P. (2016). *Pensieri sul design*. Milano: Postmedia.

The IN.DA.CO. project: a new representation of a cross-border conservation

Progetto IN.DA.CO.: una nuova rappresentazione di conservazione transnazionale

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The present contribution focuses on investigations and project work managed during the last year, in order to develop a future master degree on conservation of euro-mediterranean cultural heritage. By supporting various forms of democratic engagement through an innovative and participating idea of conservation and valorisation of heritage, the project aimed to foster many kinds of democratic engagement and promote critical approaches to art education, active citizenship, and the growth of cross-cultural understanding.
Different meetings with a list of eleven international partners provided us with a new perspective of cultural heritage in the euromed area, which is difficult to explain since when we talk about heritage, we always think of diverse typology of artworks, but also different representations of identity and artifacts that remind us of different past.
This led to an intense discussion about the historical identity of Mediterranean culture, its significance for the future, methods of preservation, and how to use its products and artifacts to improve people's lives.
Also in light of the recent war affecting the Palestinian territory, it is crucial to operate in the Mediterranean region in order to raise significant awareness of cross-border history.

Il presente contributo si concentra sul lavoro di progetto sviluppato nell'ultimo anno, al fine di avviare un master sulla conservazione del patrimonio culturale euromediterraneo. Sostenendo varie forme di impegno democratico attraverso un'idea innovativa e partecipata di conservazione e valorizzazione del patrimonio, il progetto mira a favorire diverse tipologie di coinvolgimento e a promuovere approcci critici all'educazione artistica, alla cittadinanza attiva e alla crescita della comprensione interculturale.
Diversi incontri con una lista di undici partner internazionali ci hanno fornito una nuova prospettiva del patrimonio culturale nell'area euromediterranea, concetto generalmente difficile da spiegare poiché quando si fa riferimento al patrimonio si guarda a diverse tipologie di opere d'arte, ma anche a diverse rappresentazioni dell'identità e a manufatti che ci ricordano un passato diverso.
Questo ha portato a un'intensa discussione sull'identità storica della cultura mediterranea, sul suo significato per il futuro, sui metodi di conservazione e su come utilizzare i suoi prodotti e manufatti per migliorare la vita delle persone.
Anche alla luce della recente guerra che ha colpito il territorio palestinese, è fondamentale operare nella regione del Mediterraneo per sensibilizzare in modo significativo sulla storia transfrontaliera.
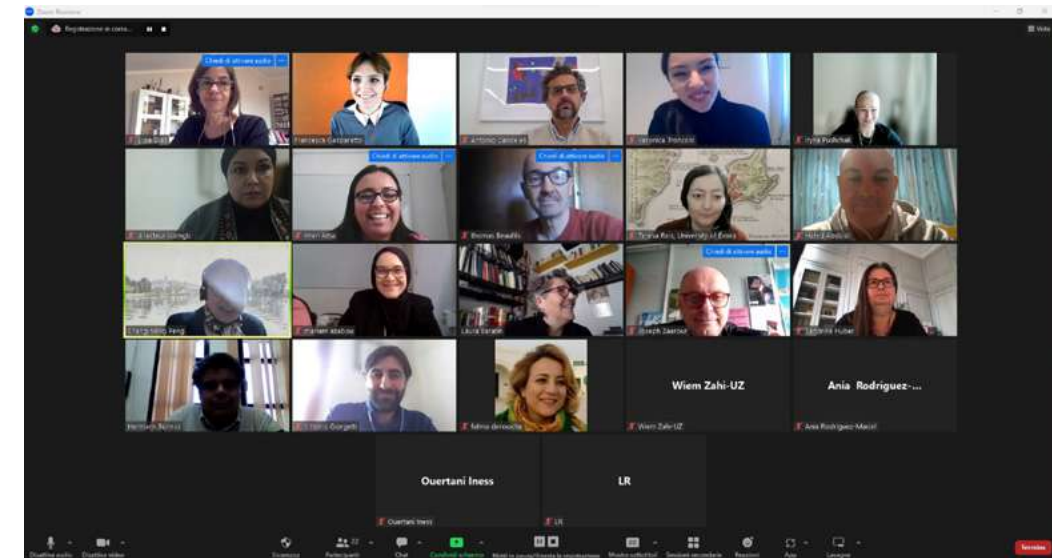
01.
Kick-off meeting of the project on March 2023.

INTRODUCTION

The IN.DA.CO project is a part of Erasmus Mundus Design Measures (EMDM), a special EU financing initiative that was started in 2001 with the goal of supporting the planning and preliminary research for high-level and master-lever programmes. In particular, in this case it has encouraged the group of partners to develop a new and innovative proposal of a future master's degree on conservation, restoration and valorisation of Euro-mediterranean cultural heritage.
The initiative was designed in 2022 with clear objectives in consideration, in order to allow

students from all over the world to enhance their employability, global competencies, and career prospects in the field of cultural heritage conservation and restoration. That might be made possible by intensive cross-cultural learning and a deeper understanding of the best technologies available in this field. Further, building on earlier experiences that were always funded by previous EU projects, one of the various goals was to strengthen the strategic partnership between non-European universities of Mediterranean area and research centres operating in the same operational field while also enhancing the educational skills of these institutions.

After approval, the project was started in 2023 with ten university partners from different countries of the Mediterranean (Spain, Portugal, France, Malta, Tunisia, Cyprus and Lebanon) and the School of Conservation and Restoration of the University of Urbino in Italy as partner coordinator. Each partner was a key part of the project, for creating relationships and cross-cultural interactions. Although each had a distinct identity, they all competed to achieve the same strategic goal: analysing the context in order to define new educational tools for protecting contemporary cultural heritage [Fig. 01.].

THE PROJECT STRUCTURE: METHODOLOGY AND CONTEXT ANALYSIS

The project was designed as an analytical procedure that may produce a suitable recommendation for innovative approaches to teaching that address the protection and enhancement of cultural assets.

The following stages constitute the organisation of the research:

Phase 1. A statistical overview of the main training choices offered in the Euro-Mediterranean region was given. Important data was obtained to characterise the features of current projects in the Euro-Mediterranean region that deal with the issue of interest through the use of targeted surveys. Additionally, we focused on the benefits and primary problems of the present course options. The second element of the poll focused on the curricula that the IN.DA.CO. project partners presently use to teach students about cultural heritage.

Phase 2. Looked into the origins of the different courses, how much they cost, and how they affected things like entrepreneurship growth and employability.

Phase 3. Looked at possible cultural heritage sector policy strategies. It might be challenging to identify possible policy reforms to be implemented in the cultural heritage sector, particularly in the intricate and expansive Euro-Mediterranean setting. Therefore, we concentrated on developing a shared understanding of cultural heritage that could have significance for the relevant geographic area in order to decide on a policy strategy for the core group of partners.

Phase 4. The fourth and final phase projected a strategy for updating university teaching practices, with a focus on the idea of a new type of memory that would involve the entire Mediterranean region.

In particular in the first step, we focused on assessing the background to see how successfully the educational courses - that IN.DA.CO. Master's proposal could be placed within - were constructed. From this initial data collection, we observed that the majority of the courses had been offered for at least five years. The departments of affiliation are diverse, humanistic and technically oriented, but without any strong attention to digital technologies applied to cultural heritage. With this information in hand, we proceeded to inquire about the partners' use of technology for the study of cultural heritage. A list of the equipment and tools utilised in the classes was given, and it was apparent that many of them had applications in chemical and diagnostic labs.

We also held a workshop during the work year, which marked an important milestone for the

02.
The Euro-Mediterranean countries' representation, with IN.DA.CO project participants.

master's programme. In the course of the debate, the parties involved in the project came to an agreement on the broad definition of Mediterranean heritage, which is founded on culture and closely related to the concepts of openness, integration, and no borders—all of which are critical in the modern, globally interconnected world.

Indeed, discussion over the identity of Europe and the Mediterranean have always been at the center of discussions of a historical, anthropological, and political nature. An historical point that is relevant in order to comprehend the significance of this argument is that the first relevant conference between the first 15 members of the European Union and the 12 nations from the southern and eastern areas of the Mediterranean Sea can be said to have introduced the first definition of Euromediterranean. In this cultural and active context of discussion, the Barcelona Process was the first meeting in which they officially launched - with a significant joint declaration – the definition of euromediterranean that aimed to stabilise a "multilateral platform of lasting relations based on a spirit of partnership, with special attention to the particular values of each of the participants." [Fig. 02.].
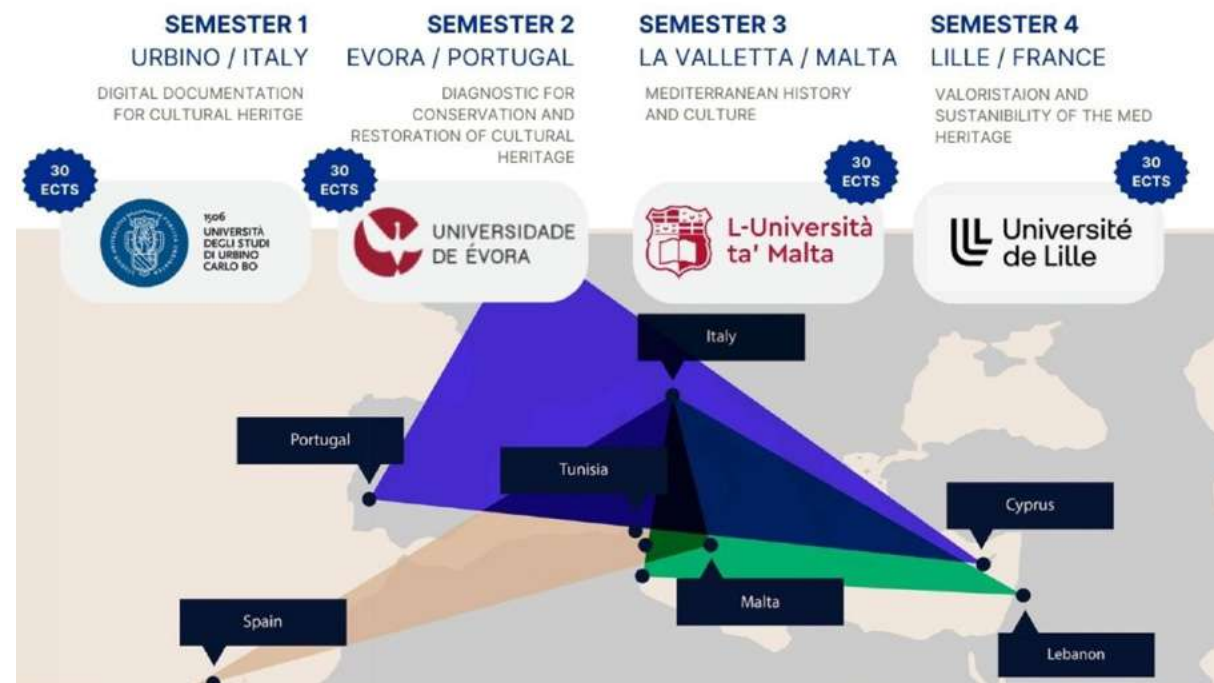
We first systematised these outcomes, which gave us a little knowledge into how to approach the idea of innovation.

A FOCUS ON DIGITAL CULTURAL HERITAGE: THE FUTURE INNOVATION

The purpose of the IN.DA.CO. course is to educate students who, in keeping with the goals of the ERASMUS+ program for an interconnected system of European and non-European universities, will become conservators of mediterranean cultural heritage. This purpose has been realised in the form of a degree programme in order to offer students an attractive master's degree in Cultural Heritage Conservation - INnovation DAns la COnservation (IN.DA.CO). Several experiences that have already been completed in the European environment were taken into consideration during the study process for the design of this new path. Specifically, the two-year-long DYCLAM+ project, that intended to teach managers in the areas of historic and cultural landscape conservation, sustainable exploitation, valuation, and numerical mediation (Fumo et al, 2021).

Laura Baratin | Francesca Gasparetto | Veronica Tronconi

IN.DA.CO JOINT MASTER DEGREE

120 ECTS, 4 EDITIONS

SEMESTER 1
URBINO / ITALY
DIGITAL DOCUMENTATION FOR CULTURAL HERITGE

SEMESTER 2
EVORA / PORTUGAL
DIAGNOSTIC FOR CONSERVATION AND RESTORATION OF CULTURAL HERITAGE

SEMESTER 3
LA VALLETTA / MALTA
MEDITERRANEAN HISTORY AND CULTURE

SEMESTER 4
LILLE / FRANCE
VALORISTAION AND SUSTANIBILITY OF THE MED HERITAGE

30 ECTS — 1506 UNIVERSITÀ DEGLI STUDI DI URBINO CARLO BO
30 ECTS — UNIVERSIDADE DE ÉVORA
30 ECTS — L-Università ta' Malta
30 ECTS — Université de Lille

03.
The proposal of master degree.

The research team created a training model that included several steps between laboratory practice and diagnostic activities. Based on the feedback from the surveys, we were aware that the university pathways in conservation required a change in both technical and cultural aspects, as well as a transformation of crucial operations. For this reason, the project proposal suggests a full semester allocated to teaching students on how to use digital technology to document historical objects.

Indeed, since that the subject of digitization always comes up when we talk about innovation and cultural heritage, especially when preserving the past is the primary objective (Tucci et al., 2023; Diaz Mendoza et al.,2023), the search for an innovative approach to modern conservators training involved a careful examination of what might be a suitable training programme that also included digitisation and heritage analysis using digital tools (Ioannides&Patias, 2023).

Based on the most moderate findings of the sector research, we better analysed current 3D digitization activities, documentation processes, and workflow schemes, which differ significantly in terms of application scenarios, retrieval technology, and parameters of heritage objects. Based on these findings, we designed an educational path that involves two key aspects: documentation (data acquisition, such as image or range data, and registration) and 3D modelling (computing into a 3D model, including point cloud generation, structuring and modelling, and texture mapping) (Munster, et al., 2024).

Following the submitted proposal, on the basis of the European Joint Master Degree model, every semester, as part of the Master's curriculum, students will study in a new place and focus on various subjects [Fig. 03.]. In particular, the third semester is the most innovative because it focuses on digital conservation technology. The student will get the opportunity to document, describe, and keep up the history using a variety of digital tools.

RESULTS AND PERSPECTIVES

Developing a training programme for the preservation of the Euro-Mediterranean legacy requires addressing a number of political issues that lead to a more creative and open future.
We worked throughout the year to better understand our definition of heritage in order to properly frame this issue. We presented our concept of Euro-Mediterranean legacy through a call for papers that was open to all researchers from partner universities. The workshop intended to investigate the extended concept of artistic and cultural heritage of the Euro-Mediterranean region through the research experiences presented by the partners involved in the INDACO project [Fig. 04.].

Starting from these results, we organised a meeting intended as a space for reflection on the concept of heritage as a form of identity and a tool for cultural integration, with the aim of exploring the state of the art in the Mediterranean area in terms of heritage conservation and enhancement. Each presentation should have been able to answer some general questions: What do we consider cultural heritage? How do we take care of our national heritage? What institutional or business network are we collaborating with to achieve our goals?
Our goal in developing this project is to successfully establish a shared vision for the future of Euro-Mediterranean heritage and expand participation to other Mediterranean nations.

BIBLIOGRAPHICAL REFERENCES

Belot, R. & Preda, D. (2022). Présentation : La Communauté européenne de défense, retour sur un échec 70 ans après. L'Europe en Formation, 395, 5–17. https://doi.org/10.3917/eufor.395.0005

Ioannides, M. & Patias, P. (ed) (2023). 3D Research Challenges in Cultural Heritage III. Springer.

Fumo, M., Gugg, G., D'Angelo G. (2021) Training the mutual glances in the international courses: the education experiments in Erasmus Mundus. EDULEARN21 Proceedings, pp. 11995–12003.

Münster, S., Apollonio F. I., Bluemel, I., Fallavollita F., Foschi, R., Grellert, M., Ioannides, M., Jahn, P. H., Kurdiovsky, R., ·Kuroczy ´nski, P., Lutteroth, J.E., Messemer , H., Schelbert, G. (2024). Handbook of Digital 3D Reconstruction of Historical Architecture. Springer.

https://ufmsecretariat.org (visit 06/06/2024)

https://ufmsecretariat.org/wp-content/uploads/2017/10/UfM-Roadmap-for-action-2017.pdf (visit 06/06/2024)

https://project.uniurb.it/indaco (visit 10/06/2024)

04.
The final meeting of the project, with some of partners involved.

Changing gaze. Vision-making processes for cross-boarder nature-based regions in EU candidate countries.

Cambiare lo sguardo. Processi di creazione di visioni per le regioni naturali transfrontaliere nei Paesi candidati all'adesione all'UE.

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**The paper aims to provide a methodological insight into the emerging dimensions of vision-making processes for cross-border areas dominated by naturalistic assets. Based on an international doctoral research experience - IDAUP - carried out in Albania in the framework of the collaboration between the University of Ferrara, Polis University of Tirana and Co-PLAN - Institute for Habitat Development.
The article describes the transition from the Plan as a snapshot of a desired future (the French Dessein) to the emerging relevance of the Vision-Making processes. In these innovative processes, the opportunity is taken to give space to democratic dynamics in the definition of territorial aspirations and to mobilize the different living intelligence that contribute to the definition of a unified and cross-border knowledge landscape.**

Il contributo, si propone di offrire un approfondimento metodologico originale circa le dimensioni emergenti del disegno di Piano nei processi di *vision-making* per aree trans-frontaliere dominate da asset naturalistici, a partire da un'esperienza di ricerca dottorale internazionale - IDAUP, condotta in Albania nel quadro della collaborazione tra l'Università di Ferrara, la Polis University di Tirana e l'agenzia Co-PLAN - Institute for Habitat Development (terza missione). In particolare, viene descritta la transizione dal progetto come istantanea di un futuro desiderato (il *Dessein* Francese), alla crescente rilevanza del processo di produzione di Visione. Nei processi innovativi di *vision-making* si coglie l'occasione per dare spazio a dinamiche democratiche nella definizione delle aspirazioni territoriali e per mobilitare, anche ricorrendo a nuovi strumenti digitali, le diverse intelligenze che concorrono alla definizione di un Paesaggio della Conoscenza unitario e transfrontaliero.

This contribution is based on a research experience carried out in Albania within the framework of the collaboration between the University of Ferrara, the Polis University of Tirana and the Co-PLAN Agency - Institute for Habitat Development. The initiative is at the interface between research, planning and third mission, as the agency Co-PLAN is involved in several Interreg programmes that invest in the study area. The aim of the research was to define a cognitive framework and perspectives for the future development of the natural areas of the Ohrid Lakes. Thinking in terms of sustainability, beyond the dictates of economic policies focused on incremental growth and the distribution of programme specialisations across the area, requires new interpretive lenses. The purpose of this article is to explore the shift from the notion of the plan - the French *Dessein* - that is, the snapshot of a desired future, to the emerging relevance of the visioning process, and to define some of the systemic research features it will need to activate when confronted with non-urbanised areas dominated by natural heritage.

THE FIELD OF STUDY

The Ohrid Lakes lie at the crossroads of three countries. Albania, North Macedonia and Greece. These countries share a past of contrasts and isolation which, paradoxically, has partly preserved the pristine nature of the area. Today, each country is at a different stage in the process of European integration and economic development. The Ohrid Lakes region is proving to be a perfect testing ground for thinking outside the box of the extractive urbanisation strategies that have dominated the last 50 years (N. Brenner, 2013). These transboundary natural areas, located not far from the major centres of three different countries, have been preserved in an exceptionally natural state precisely because of the conflicts and geopolitical tensions that characterised the Cold War in the Balkans. Today, these areas are immense reservoirs of biodiversity, unique in the world in terms of the age of the watersheds (at around 1 million years old, they are among the oldest in the world) and the richness of the lake fauna and flora they host - an estimated 1200 species are present, of which around 200 are endemic (C. Albrecht, & T. Wilke, 2008). These areas are therefore an ideal place to think about the future with the environment at its centre.

VISION MAKING: AN OPPORTUNITY TO CHANGE OUR GAZE

Resuming and expanding on the reflections of P-C. Palermo on the subject, we can say that today vision-making plays different roles in planning processes, depending on the operational context in which it is mobilised, in order to: integrate ongoing processes, produce critical revisions, compare alternative potential futures or organise rhetorical spatial translations of economic agendas (P.C. Palermo 2022). A planning process always embodies an anticipatory vision of a possible future. The way in which this vision is generated and defined is not neutral. It can be more or less participatory and open, it can appeal to a wide and interdisciplinary range of skills and intelligences or narrow and focused on specific technical aspects, it can follow a logic of generating economic surplus or favour the protection and socio-environmental sustainability of transformations (R. Poli, 2018). The process of vision production can thus be identified as a fundamental ontological step for any planning process.
Natural areas are often thought of as "other than growth", frozen within "absolute protection" measures and not protagonists of an evolutionary approach over time (A. Magniaghi 2020). However, this perspective is based on an illusion since these areas, although protected by law, are affected by global climatic phenomena generated outside the protection perimeters; they are, therefore, subject to change despite the intentions of planning systems. For this reason, they should be considered as dynamic systems and framed within an evolutionary vision. Moreover, cross-border territories are, by definition, lacking in vision, as they are located on
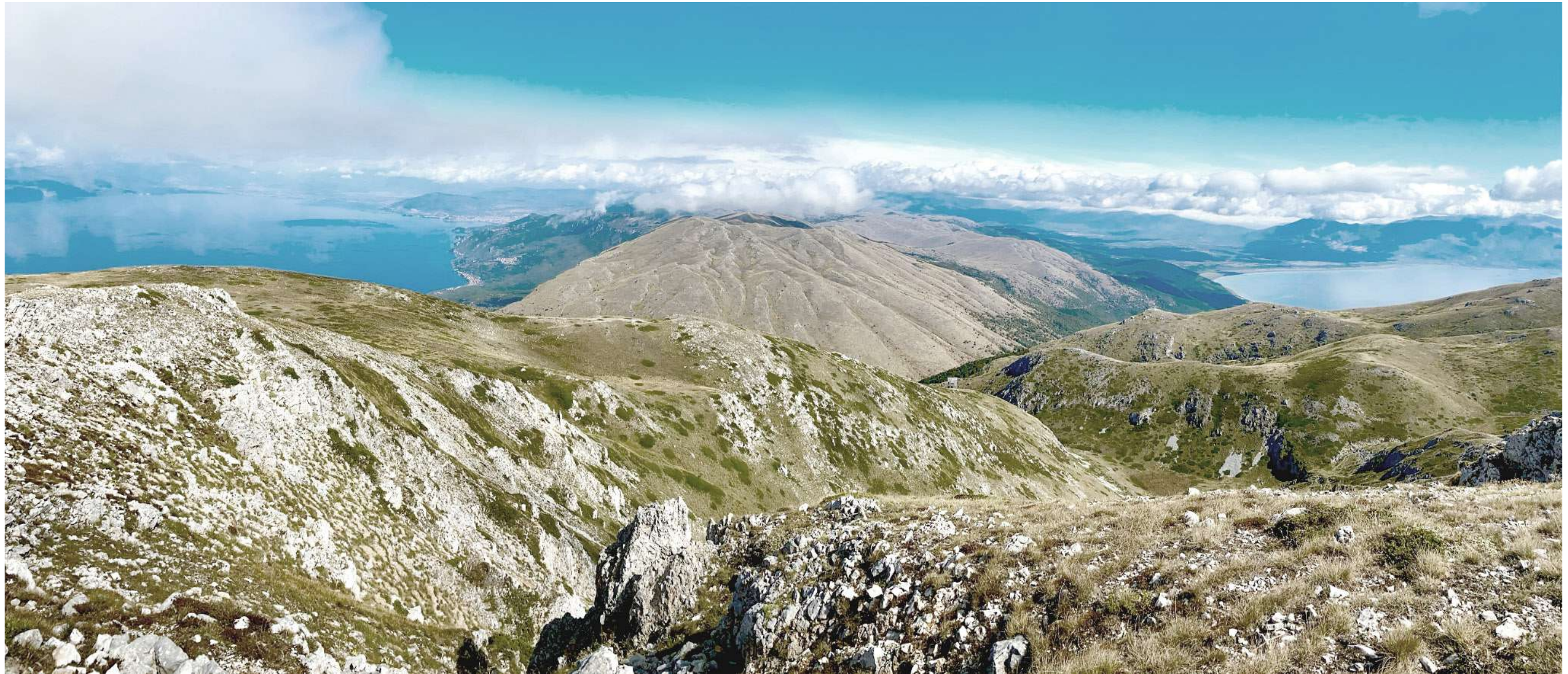
01.
Photo of the integrate system of Lakes Ohrid and Prespa – free copyright.

the periphery of different national systems. However, in the context of European integration, these areas have the potential to become the connective tissue of territorial realities that span the EU and candidate countries; they are geopolitical bridges where change will have a visible impact. The status of these areas will change from that of disconnected peripheries to connectors between neighbouring centralities. Guiding this transition through an informed vision is essential to prevent them from becoming new territories of indiscriminate speculation. Too often, planning processes take the presence of a vision for granted and do not necessarily provide for the specific timing and manner of its elaboration, which vary from context to context (L. Montedoro and M. Russo, 2022), when visions are taken for granted, it is the dynamics of economic power and influence that dictate the line (A. Alietti and R. Farinella, 2024).

The presence of a guiding Visions is, by definition, postulated in any planning process, but too often, their origins are obscure. Using visioning processes from the earliest stages of strategic thinking can open up this moment of knowledge production and ambition to the contribution of civil society and local actors. For this reason, it is important to define the epistemic specificity of visions as opposed to the final output of traditional planning processes. In contrast to the General Plan, visioning does not result in an unambiguous design for a plausible future, but rather is a compass that helps to define and guide collective action over time, keeping the path open to alternative timelines (AIGP, 2014).

Vision-making is a learning process influenced by the frameworks through which we interpret reality and defined by the intelligence mobilized in an attempt to predict possible futures and act on these assumptions. Changing the framework and the involved intelligences impacts the result. As Davoudi et al. (2018) summarise, spatial visions are collective understandings of socio-spatial relations that enable and transform collective socio-spatial practices. They are produced through political struggles over conceptions, perceptions, and lived experiences of place. Expanding the range of intelligence that contribute to visioning can make our systemic understanding of territories more robust and resilient while relegating visioning to a purely communicative role in the planning process results in a deaf endorsement of hegemonic frameworks for understanding reality, reproducing the colonizing effects of existing planning regimes and biases. Vision-making is a cultural process that can be understood through the interaction of three basic human impulses: imagination, anticipation, and aspiration (Appadurai 2013). However, to capture this potential, visioning should be solicited throughout the planning process, starting from the early stages of reflection, and being open to the diverse intelligences that inhabit the territory.

VISION MAKING IN CROSS–BORDER CONTEXTS DOMINATED BY NATURAL ASSETS – THE OHRID CASE

In the operational context of Lake Ohrid, as in many cross-border situations, borders have separated and isolated communities and slowed down normal development phenomena. This has created a situation where to different territorial sequences correspond different levels of development and complexity of socio-economic conditions. In these contexts, however, the low critical mass of infrastructure and urbanization has left space and relevance for conserving high environmental value natural systems. This contextual condition renders traditional methods of economic planning ineffective or even dangerous.

Infrastructural and expansive development policies aimed at creating an exponential circle of accessibility-growth-investment, often promoted with the contribution of international bodies, risk increasing the phenomena of polarisation and territorial contraction, encouraging the migration of entire social clusters rather than creating new ones. Moreover, infrastructure policies embedded in contexts of structural laxity also risk undermining local environmental values and encouraging speculative and uncontrolled developments with significant damage to large-scale environmental systems. In the specific context of the analysis, there is a risk of
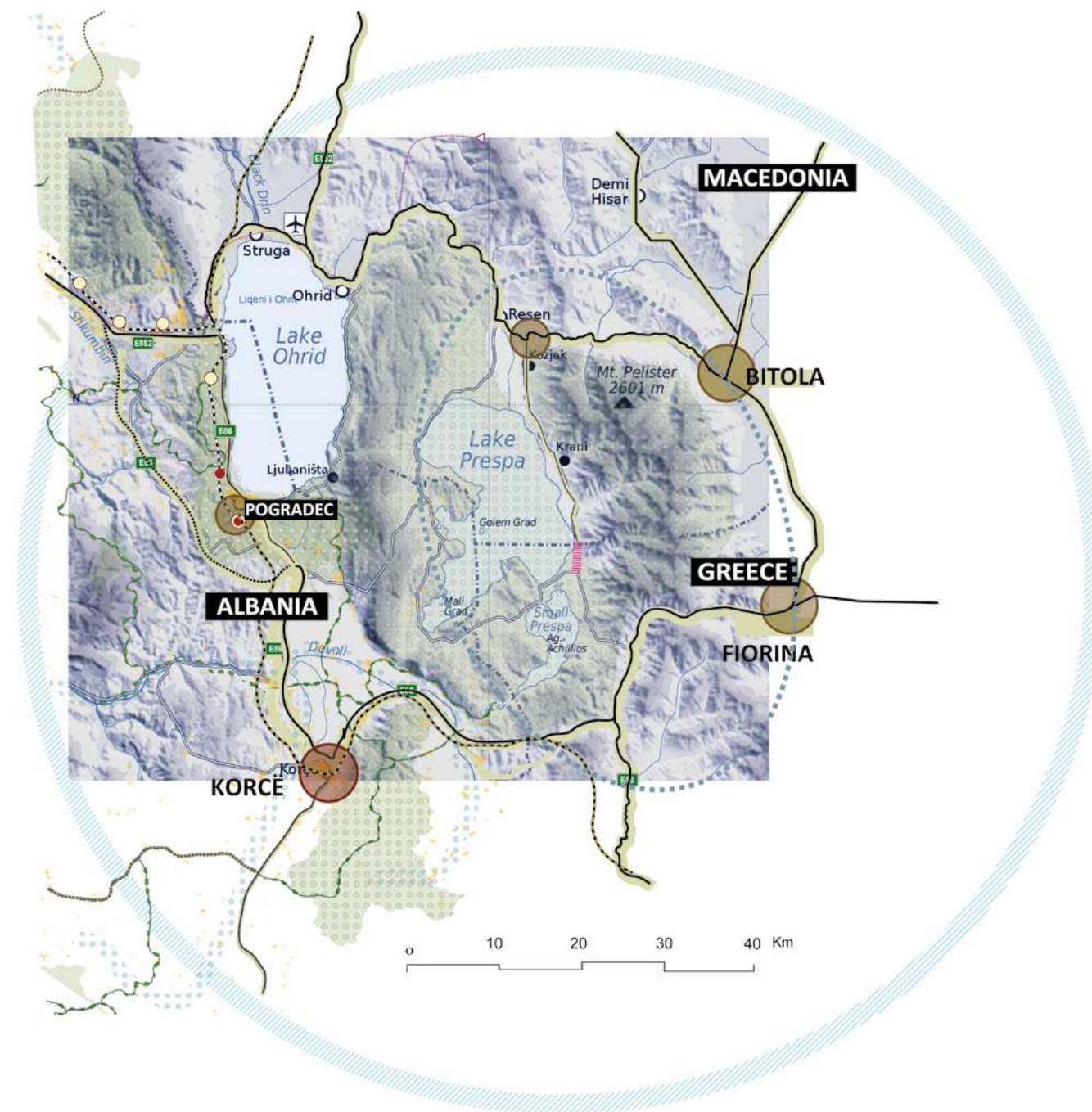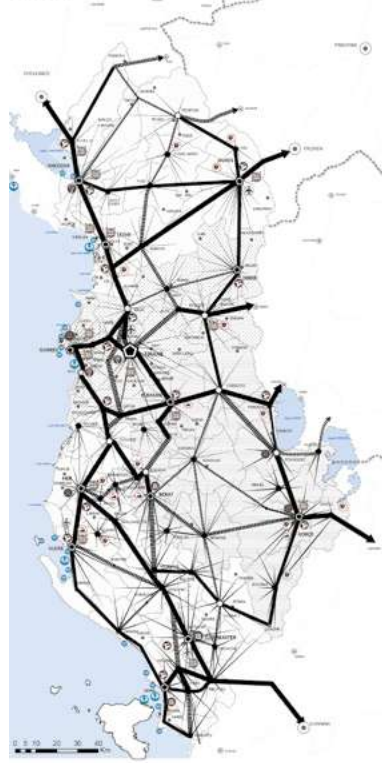

02.

The bio-region of Lakes Ohrid and Prespa. Strategic Scheme by A. delli Ponti for the research team A. Bejko, A. delli Ponti, F.A. Romio, Kejt Dhrami (tutor).

A critical interpretation of Albania National Strategy 2030
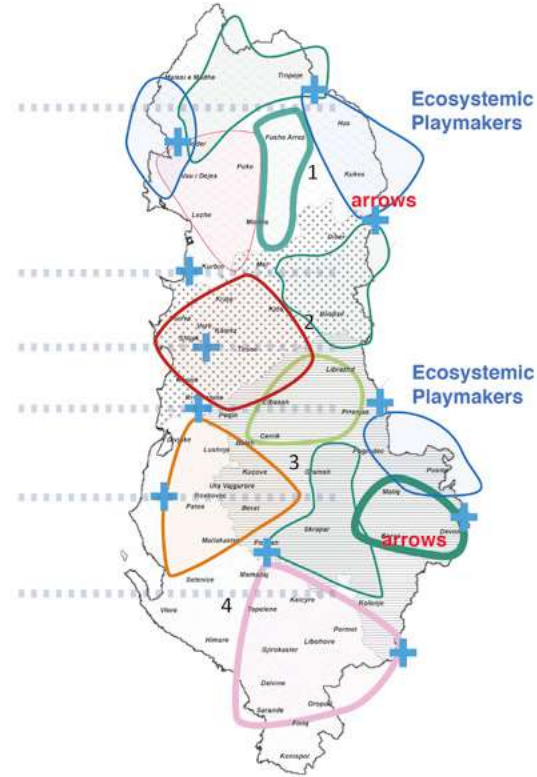
From
Polycentric Albania

today

...to landscape making structure
ecologic corridors

Towards
Regional dynamism and diversity

03.
Critical Interpretation of the National Plan Albania 2030. Strategic Schemes by A. delli Ponti, based on the schemes of the Albania 2030 Plan, for the research team: A. Bejko, A. delli Ponti, F.A. Romio, Kejt Dhrami (tutor).

transforming a complex reality in which traditions of agricultural self-sufficiency (Albanian front) coexist with initiatives of cultural protection and enhancement (Greek front) in favor of a reductionist reading characterized by mass tourism.

The key to an alternative vision for the Ohrid Lakes may then be to "reverse the view" on the context, and change our gaze. In the study area, nature does not stand as a "tabula rasa" to support a future project but should be recognized as a project in itself, already completed. The "project of nature" (MCHarg 1969), built over thousands of years and identifiable today in the organization of the ecosystems present in the area, is a key actor in the planning process - it can become a acknowledged as "legal subject" (J. Mazzuca, 2023) - establishing a constraint and a guide to our actions (M-C. Maffei), prompting us to imagine the voluntary extension of the current state of selective exclusion of human presence, reduced to the state of visitor. In the Ohrid Lakes Region, the creation of visions requires tuning into a long-term chain of causes and consequences, establishing systemic relationships between different living communities, and representing a form of "contextual intelligence" based on the long-term memory of natural systems.

Visions should therefore emerge from an understanding of the territorial co-evolution of

people and contexts, understanding transformation as an enhancement of the robustness and complexity of these systems of relationships (C. Magnaghi). What used to be identified as a project - the French Dessein, aimed at bringing about a transformation in the future - becomes a process of "care" or "territorial curatorship", focused on the careful observation of the past, the selection, the preservation of what is "already there" and the enhancement of existing assets as a condition for the habitability of the territory. Reading vision-making as a process of care enacts what the philosopher Hans Jonas called the "principle of responsibility", not just an ethical principle to be followed or not, but a practical guide to preparing a territory more resilient to future risks.

THE SYSTEMIC PREMISE – THE INTELLIGENCES THAT MAKE VISION

Within the epistemic perspective outlined above, we suggest that territorial evolution can be oriented by the joint action of three dimensions: socio-cultural systems, inter-scalar eco-systemic relations, and institutional relations for design and governance. These dimensions respond to different but related knowledge foundations and operative intelligence. They should feed into the visioning process, using data-driven and community-driven inquiry and dialogue, combining digital and analog tools to define the overall and evolutive cognitive framework. The three dimensions help to define the territorial unit as a coherent 'whole', i.e. an area not bounded by a narrow perimeter but by shared commons: a common inhabited cultural space, belonging to the same ecosystem and sharing the same political and economic arena.

DIMENSION 1 – BUILDING A KNOWLEDGE LANDSCAPE – SOCIOCULTURAL INTELLIGENCES

In defining a strategic vision for a cross-border territory, it is crucial to uncover and reconstruct its intangible history. By systematically collecting multidimensional knowledge related to cross-border contexts, we gain insights into the co-evolution and interdependence of local communities and local geographies. The combination of anthropological fieldwork and digital cataloguing of architectural and geological heritage enables this process. In the case of the Ohrid Lakes, the analysis of building traditions and materials reveals the commonalities between cross-border societies, a shared geological resource basin, resulting in the use of the same building materials and techniques in distinct architectural traditions. Similarly, traditions of holistic field cultivation and management by local communities can be analysed. This approach allows us to define the tangible and intangible commons that represent the memory of local social presence. This dimension delves into the depths of inherited memory and social intelligence and uses it as a platform to produce collective visions of the future.

DIMENSION 2 – ECOSYSTEMIC INTELLIGENCES

In order to imagine future developments of local systems, it is essential to study and understand - within the limits of our "limited rationality" (H. Simon in S. Conti, 1996) - the circular interdependence between local actions and systemic impacts on wider times and spaces. The relationality of natural systems becomes an essential tool for reading these relationships in being and in their possible developments. The water cycle is a perfect illustration of these relationships. In our case study, the Ohrid Lakes are connected to the main water lines of Albania and Macedonia (Black Drin and White Drin) and are sources of fresh water for urban areas. Checking the quality of the water after it has been used in neighbouring agricultural areas before it is discharged into the lakes is critical. In recent years, there is

evidence that industrial agriculture on the Macedonian front has had a significant impact on the water quality of the lakes, with potential downstream effects on the national system (J. Lorenshat et al, 2014).

Similarly, in order to protect the diverse ecosystems present at the Crown of the Lakes, landscape-based transformation methods can be considered that place the enhancement of buffer areas (biodiversity corridors and niches) as the first step in any spatial evolution programme. It is essential to strengthen existing ecosystems to increase the robustness and habitability of the local environment. This second dimension expands the scale of local space to its vast ramifications, making invisible communities of living species visible actors in future strategies.

DIMENSION 3 – INSTITUTIONAL INTERMEDIARIES – MOBILIZATION OF ACTOR–RELATIONAL INTELLIGENCE

Vision-making has often been used in contexts lacking a defined administrative status and in search of proper governance boundaries (e.g., Greater Paris in France, Lausitz Post-Coal Region in Germany). It is a tool suited to fostering dialogue between actors and scaling up project-oriented governance in cross-border contexts. The vision-making process shall be seen as a political agorà. Physical meeting points and digital agendas can be mobilized to create targeted arenas for gathering technical knowledge from different levels of expertise and channeling strategic policy inputs from different levels of responsibility and governance (KH STUDIO et al. 2020). In the case of the Ohrid Lakes, in particular, within the framework of EU integration programs (Interreg), visioning can enable to move into the future by preparing a policy dimension that harmonizes bottom-up and top-down initiatives. The definition of a common "event horizon" allows countries with different backgrounds to focus on a common territory and to develop a project-based governance.

CONCLUSION

Vision making in itself does not guarantee sustainable outcomes. The way a process is structured, designed, is critical in defining its ability to empower social bodies and nonhuman living communities, which are often overlooked in strategic plans based on merely economic ambitions. If designed as an open arena in which socio-cultural, environmental, and political intelligences can meet and cooperate, the vision-making process has the potential to shape a different future and bring a truly just and sustainable integration process to the EU.

BIBLIOGRAPHICAL REFERENCES

ALBRECHT, C., & WILKE, T. (2008). Ancient Lake Ohrid: biodiversity and evolution. *Hydrobiologia*, 615, Svizzera: Springer

ALIETTI, A., & FARINELLA, R. (2024). Contro la città autoritaria, Italia: Rivista online - Agenda17

APPADURAI, A. (2014). Il futuro come fatto culturale, Milano: Raffaello Cortina Editore

BALZ, V. - LINGUA, V. (2020). Dare forma al futuro regionale, Svizzera: Springer

BRENNER, N. (2013). Implosione / Esplosione - Verso uno studio dell'urbanizzazione planetaria, Berlino : Jovis.

CONTI, S. (1996). Geografia Economica. Torino: UTET

CONSIGLIO SCIENTIFICO DELL'AIGP (2014). Systèmes métropolitains du Grand Paris. Parigi : Archibooks.

FALUDI, A. (2007). Coesione territoriale e modello europeo di società. Cambridge : LIOLP.

LORENSCHAT, J., ZHANG, X., ANSELMETTI, F. S., REED, J. M., WESSELS, M., & SCHWALB, A. (2014). Recent anthropogenic impact in ancient Lake Ohrid : a palaeolimnological approach. *Journal of Paleolimnology*, 52, Svizzera: Springer

MAGNAGHI, A. (2020). Il principio territoriale. Torino : Bollati Boringhieri.

MAZZUCA, J. (2023). La natura come soggetto di diritto. Proliferazione delle soggettività e concetti giuridici in trasformazione, Italia: Federalismi.it rivista online

MONTEDORO, L. e RUSSO, M. (2022). Fare urbanistica oggi: Le culture del progetto. Donzelli Editore.

MAROT, S. (2022). Prendere le parti del Paese: Agricoltura e architettura. Ediciones Poligrafa.

MCHARG, I. L. (1969). *Design with Nature*. Garden City, NY: Published for the American Museum of Natural History by the Natural History Press.

McNEILL, J.R., ENGELKE, P., (2018). La Grande Accelerazione. Torino : Giulio Einaudi editore.

KH STUDIO, DELLI PONTI, A., NOVIELLI, I. (2020). Lausitz 2050. Una regione iper-campus come città. Eine Laborregion für den räumlichen, wirtschaftlichen und ökologischen Wandel. articolo in Raumbilder Lausitz 2050 - Nachhaltige Transformation entwerfen. p. 74-87, Dresda : Leibniz-Institut für ökologische Raumentwicklung e. V. (IÖR)

PALERMO P.C., (2022). Il Futuro dell'Urbanistica post-riformista. Roma : Carocci Editore.

POLI, R. (2019) The Handbook of Anticipation, Svizzera : Springer Nature

THRIERSTEIN, A., FORSTER, A. (2008). Rendere visibili le regioni delle megalopoli, Zurigo: Editore Lars Muller

Paradossi dell'innovazione.
Smartness, identità urbana e inclusività nella riqualificazione Green di Nizza

The Paradoxes of Innovation.
Smartness, urban identity, and inclusiveness in Nice's Green redevelopment

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Municipalities' adoption of *Smart* [1] approaches in urban evolution requires understanding not only the multiple complexities underlying these models and the innovation introduced but also relevant aspects that may be missed or underestimated. Among these, the most complex to analyze and confront through design is the relationship between urban identity and its perception, between collective memory and the places that have defined it. Employing the French city of Nice as an example, the essay attempts to briefly illustrate the steps taken over the past two decades by the actors in this urban redevelopment process by analyzing recent evolutions. In particular, its conclusions aim to critically reflect on some radical approaches used for the existing built environment. Starting with the implementation of extensive naturalization projects and the adoption of policies to preserve the historic urban landscape, some choices seem to partially diverge from this protection goal, projecting toward the near future.

L'adozione di logiche evolutive urbane di tipo *Smart* [1] da parte delle Municipalità non implica solo la comprensione delle molteplici complessità sottese da questi modelli e dall'innovazione introdotta, ma anche la comprensione di aspetti rilevanti che possono sfuggire o essere sottovalutati. Tra questi probabilmente il più complesso da analizzare e da trattare progettualmente è il rapporto tra la l'identità urbana e la sua percezione, tra memoria collettiva e i luoghi che l'hanno definita. Il saggio cerca di restituire sinteticamente, attraverso un esempio come quello della città francese di Nizza, i passi compiuti nell'ultimo ventennio dagli attori di questo processo di riqualificazione urbana analizzandone i recenti sviluppi. In particolare tenta, in conclusione, un ragionamento critico su alcuni approcci radicali operati sul costruito esistente. Partendo dalla realizzazione di estesi progetti di naturalizzazione e dall'adozione di politiche di conservazione del paesaggio urbano storico, alcune scelte infatti sembrano allontanarsi parzialmente da questa tutela pensando ad un futuro prossimo.

01.
The neo-Gothic Basilica of Notre-Dame de Nice (1864–1879) on Avenue Mèdecin. In the foreground is the electric streetcar transit of Line 1, built in 2003-2013 as a pilot project for the subsequent two other lines, which have now been realized.

Photo credit: author

01.

PREMISE

Transforming a city requires moving within a perimeter of action with strong environmental protection constraints, which we are now necessarily called upon to respect. Compounded by the relevant influences of the ongoing *Digital Transformation*, the result is an apparently very complex challenge. However, thanks to farsightedness, trust in new technological possibilities, and social involvement, some experiences have achieved attention-worthy measurable results as well as highlighting potential risks to be avoided.

THE MEDITERRANEAN CITY OF NICE AS A PERMANENT LIVING LAB

The city of Nice is the fifth largest city and, by area, the seventh largest metropolitan area in France. One of Europe's undisputed tourist capital, as of 2021, it has an area of 1,479.7km^2 and a population of 560,351 [2] (data source: INSEE as of the 2021 census on 01/01/2022[01]) within the entire aggregated metropolitan area consisting of Nice and its 49 surrounding municipalities (*Métropole Nice Côte d'Azur*). However, perhaps the most significant figure is represented by its about 5 M tourists every year. This is made possible by its very significant accommodation capacity (about 200 hotels in addition to new very short-term rental models) supported by the presence of France's second international airport (14.5 million passengers as of 2019) and an extensive touristic port (10 Ha) equipped with 7 piers, where around 480,000 passengers/year transit. This is indeed the real economic driver for the transformation [3]. In light of the above, this Mediterranean city can be considered a case to monitor - and critically analyze - to fully understand both the spiderweb of complexities underlying the aforementioned balances to be dealt with and managed and the outcomes of some of the actions taken when implementing a planned and effectively Smart evolution model. Nice - and subsequently, since 2012, the *Métropole Nice Côte d'Azur* (*MNCA*), - has chosen to evolve by merging a progressive experimentation of the possibilities offered by ICT and digital technologies. Combined with other strategies, they have been oriented toward full-fledged urban environmental sustainability with the ambition to soon become a reference as a Mediterranean *Green City* in the region. To this end, since 2017, it has been participating as one of the *main* partners in the five-year European research program IRIS - *Integrated and Replicable Solutions for CoCreation in Sustainable Cities* (funded by the Horizon 2020 EU program) [4] coordinated by the Netherlands (centering on the city of Uthecht) together with Sweden (city of Gothemburg) and developing other collaborations with Finland, Greece, Spain, and Romania to develop and test new solutions in the field. Ambitious research aimed at stimulating a joint effort between universities, research centers, innovation agencies, local administrators, and public and private *stakeholders* for planning, developing, and applying innovative programs for sustainability (energy, urban mobility, and ICT diffusion and optimization). At the same time, it actively participates in networks such as *Eurocities*[02] [5] to bring their requests and experiences to the attention of the EU, to the *Green Digital Charter*[03] [6] [7] to promote the progress achieved and/or projects in the fight against climate change through the innovative use of ICT by transferring information on projects and results achieved (*best practices*) and participates in research on Renewable Energy Communities and Energy Efficiency.

However, it is worth mentioning that what has just been described is a physiological evolution phase of other innovative digital innovation and urban redevelopment approaches implemented even before the creation of the MNCA. Administrations have been working for over twenty years to achieve their goals in Urban Mobility, *Climate Change* mitigation, safety, urban redevelopment/social programs, and Sustainability/Energy Efficiency: these multiple scopes, well-coordinated in time, were born even before 2012.

The close collaboration with IBM dates back to 2010: this led to Nice winning the IBM "*Smarter Cities Challenge*,". After several joint research efforts, this also resulted in the creation of a

02.
Top view of the three-hectare Jardin Albert 1er above the Paillon River sea outlet route.
Photo credit: author

03.
Top view photo framing the main part of the 522-hectare surface recognized as an area of interest by UNESCO with a partial view of the Promenade du Paillon on the left.
Photo credit: author

04.

The water games area (inclusive and accessible) at the entrance to the Promenade on the central Place Massena.

Photo credit: author

05.

View of the children's playground-equipped area on the Promenade du Paillon (PdP). In the center, the now-demolished Nice National Theater (TNN) site can be seen above.

Photo credit: author, 2017

digital urban control and management platform to serve the city's "*Urban Hypervision Center*" (UHC) [8] and subsequently to the *Smart City Innovation Center* (MNCA with IBM, Veolia, m2ocity, and Orange) featured in IMREDD[04] [9]. Regarding mobility, for example, the radical transformation of public transport through the creation of electric rail tramways for urban pollution mitigation started as early as March 2003, with the declaration of public utility of the project for Line 1 (implementation 2003-2013) [Fig. 01.]. It was an out-and-out pilot project, connecting the neighborhoods to the north with the city center and then to the Nice hospital hub to the east with its 9.15-kilometer route and a first-estimate movement of 100,000 travelers/day. This project was carried out with mixed Regional, State, European, and local funding. It also serves as a fine-tuning of all procedures (technological and financial) for future extensions of Lines 2 - east-west/port-airport axis (2013-2019) and 3 - airport to Eco-Vallee - along the Var River (2017-2020). The same can be said for the urban redevelopment, extension, and greening project now known as *Promenade du Paillon* (*PdP*). It involved the creation of a large multifunctional and highly inclusive urban public park of 12 Ha as an extension of the pre-existing *Jardin Albert 1er* (3 Ha) [Fig. 02.] designed by Michel Pena in the late 2000s [Fig. 03.]. This came with an equipped (and constantly under video surveillance) green promenade, running from the central *Place Massena* [Fig. 04.] towards the National Theater of Nice (TNN) [Fig. 05.] and the Museum of Modern and Contemporary Art of Nice (MAMAC). Work began in 2010 with the complete demolition of the historic Bus Station and was completed in the following two years.
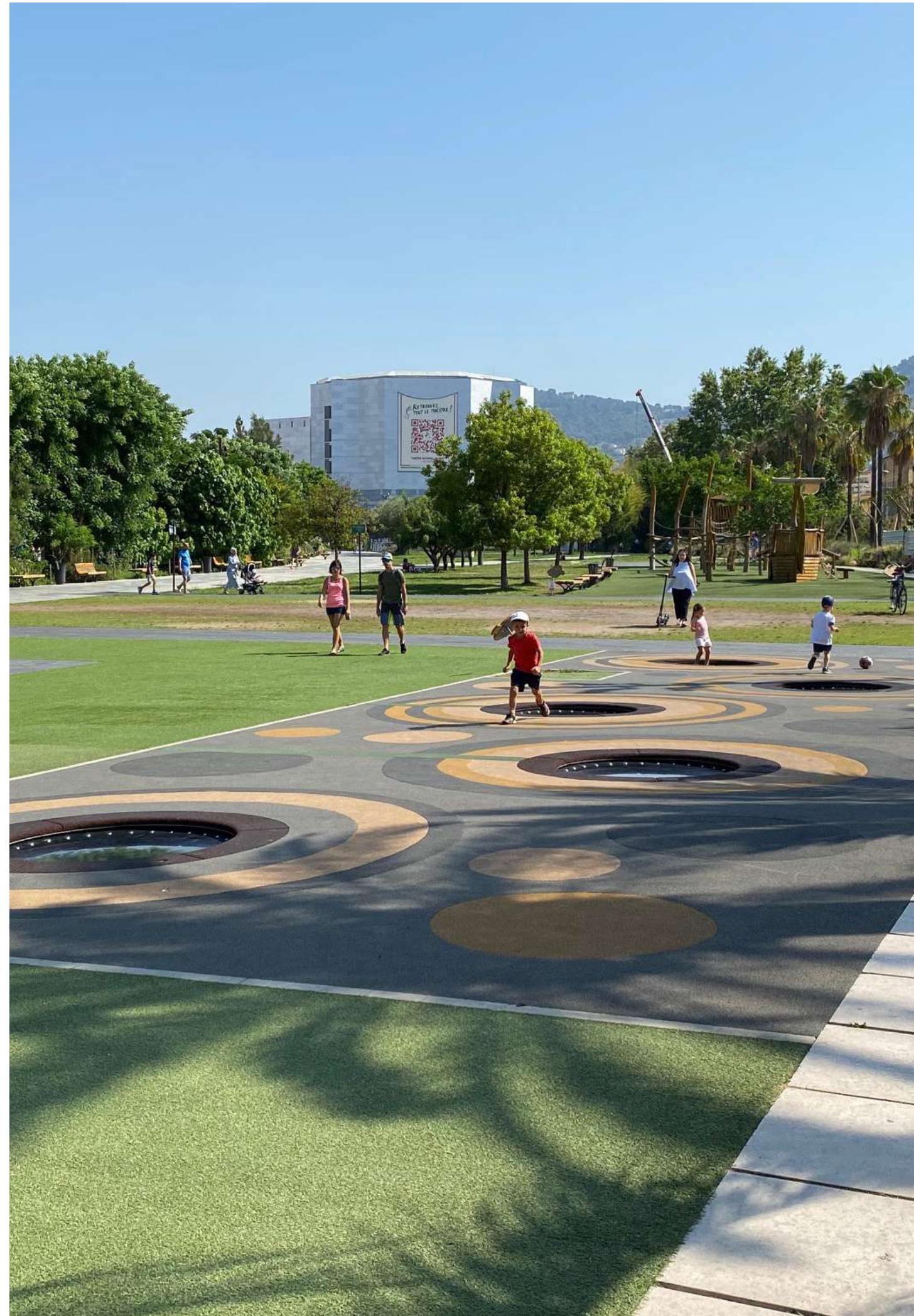
This first experience will lead to the "*Nice Verte*" Program (2019-2021). That is a plan to enhance existing urban greenery by integrating large amounts of trees, shrubs, and ornamental plants to mitigate heat and pollution and to enhance urban biodiversity, starting with major downtown streets. The program was then gradually and widely extended to other parts of the city, with the rehabilitation of pipelines and street utilities, the enlargement of sidewalks, and especially the creation of bike lanes separated from roadways for motor vehicles [Fig. 06.].

07.
The historic Villa Masséna (1898) now converted into a museum on the *Promenade des Anglais* and its fine garden. The Villa is adjacent to the world-famous Hotel Negresco.

Photo credit: author

06.
Example of the outcomes of the "*Nice Verte*" program. Inclusion of urban greenery to increase biodiversity and mitigate urban heat, new reduced vehicular roads and protected bicycle lanes. Every architectural barrier has been removed in the resurfacing and widening of sidewalks.

Photo credit: author

08.
The facade of the Nice Opera House (1882-1885) on the *Promenade des Anglais*. Realized by Arch. Françoise Aune under the supervision of Charles Garnier, it has been a historical monument of France since 1992.

Photo credit: author

ACTIONS TO PROTECT AND ENHANCE THE HISTORIC URBAN LANDSCAPE

In parallel with the described actions, the Nice administration and the mayor, Mr. Christian Estrosi, decided in 2014 to nominate Nice for inclusion on the UNESCO World Heritage List as a "City of Art and History." After the usual inquiry, the UNESCO World Heritage Committee accepted the candidacy in July 2021. Nice was recognized for its Outstanding Universal Value as the "Winter Resort Town of the Riviera" [10]. The value of its buildings, hotels, villas [Fig. 07.], places of worship [Fig. 01.], and social buildings [Fig. 08.] was also appreciated for their display of international influences from resort communities. This is associated with the remarkable quality of the landscapes, enriched by walks, parks, gardens, etc. The latter are primarily influenced by Italian and English culture. This historical architectural heritage testifies to the

09.
Image taken from the site information signs of the "*Forêt Urbain*" Project under realization (2023-2026). The curvilinear part of the green line in the upper right belongs to the original first part, while the straight section corresponds to the development of the second phase of the *Promenade du Paillon Saison 2*. The central indication in red corresponded to the head entrance of the ACROPOLIS Center.

Photo credit: author
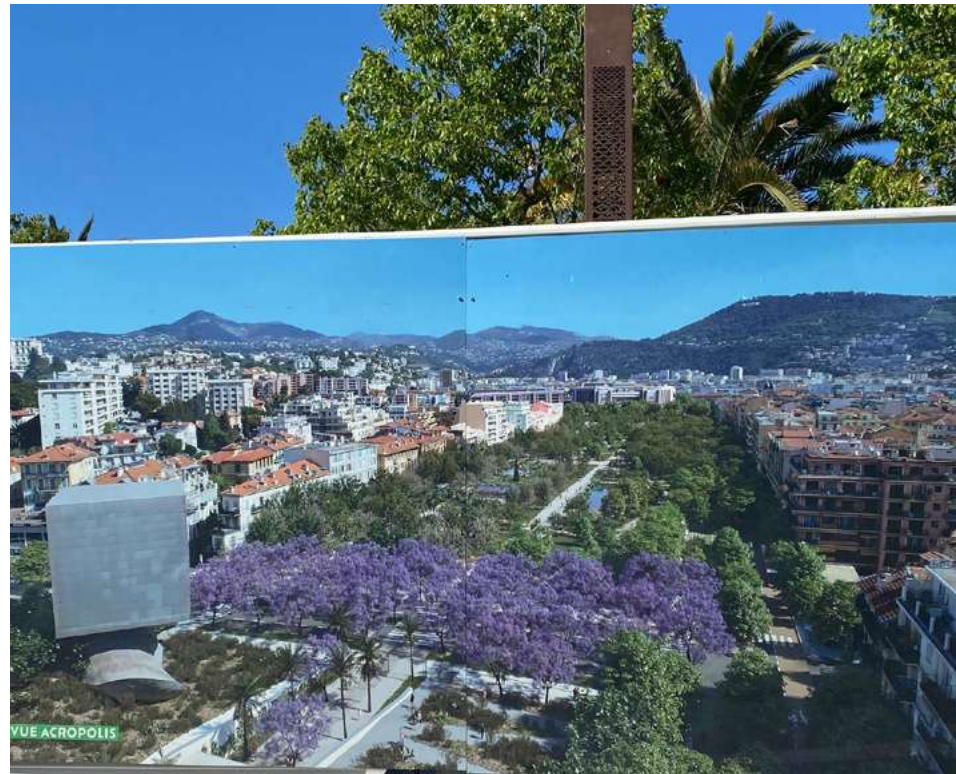
10.
The rendering of the "*Forêt Urbain*" project (by the designers and Métropole Nice Côte d'Azur) displayed on the site perimeter to highlight the transformation following the demolition of ACROPOLIS.

Photo credit: author

tourist vocation of the places (from the 18th century onward), which are rich in different styles ranging "from neoclassicism to eclecticism, from Art Nouveau to Art Deco up to early 20th-century modernism" [11] (from UNESCO report - Ville de Nice - *Nice la ville de la villégiature d'hiver de riviera*, 2022, p.22). This testimonial value perfectly aligns with UNESCO recommendations that provide for evidence of "*(...) a significant exchange of influences in a given period or within a given cultural area on the development of architecture or technology, monumental arts, urban planning or landscape design.*" (www.unesco.org)

A FOREST IN THE CITY

The public's appreciation of the *Promenade du Pallion* mentioned above recently prompted the Nice Administration to define a new and ambitious project to extend green spaces in the city's central areas. Mainly motivated by relevant desiderata in urban city heat mitigation and pollution reduction for the next decades, the "*Forêt Urbain*" or "*Promenade du Pallion Saison 2*" project [12] envisions an extension of the equipped promenade by an additional 8 hectares of permeable soil and planting 1,500 new trees [Figs. 09., 10.]. According to the designers' estimates, this will lead to a 5 °C decrease in ambient temperature, 1,700 tons CO2 less per year, the absorption of one ton/year of pollutants (nitrogen dioxide and sulfur), a 20% reduction in cardiovascular diseases and a 6 to 8-decibel reduction in urban noise.
For this purpose, the project involves demolishing two significant buildings: the *Téâtre National de Nice* (TNN) (1989-2013) by Arch. Yves Bayard south from MAMAC [Fig. 05.] and the ACROPOLIS Multipurpose Convention Center and Auditorium to the north [Fig. 11.] [13]. The latter is a monumental building from the 1980s (1981-1984), cherished and used by residents, designed by architects George Buzzi[05], Pierre Bernasconi and Pierre Baptiste; the former was one of the most enlightened, and appreciated architects in Nice [14].

11.
Top view of the ACROPOLIS Multipurpose Center.
The three-story complex had an area of about 21,000 square meters and a footprint of 338 x 60 m.
Photo credit: author, 2014
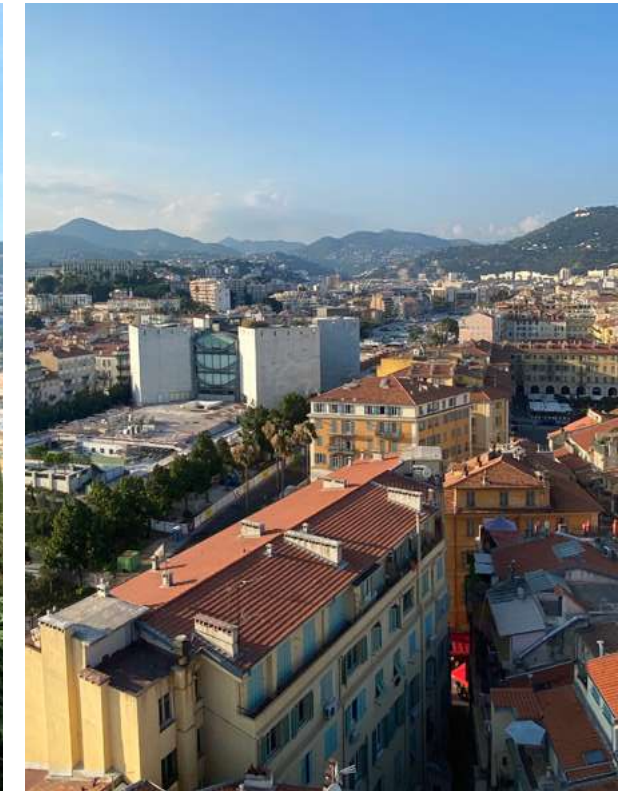
12.
View from the other side of the construction site area of the *Promenade du Paillon* extension. Highlighted in the center is the isolated MAMAC in Nice after the demolitions of TNN (first antistate) and ACROPOLIS (behind it) to the hills.
Photo credit: author, 2024

13.
The southwest facade of the Multipurpose Center designed by G. Buzzi, P. Baptiste and P.Bernasconi (1981-1984) with consultancy on acoustic design by Prof. Eng. Lothar Cremer (formerly a consultant to Hans Scharoun for the Berlin Philharmonic) for the Auditorium.
Photo credit: author, 2014
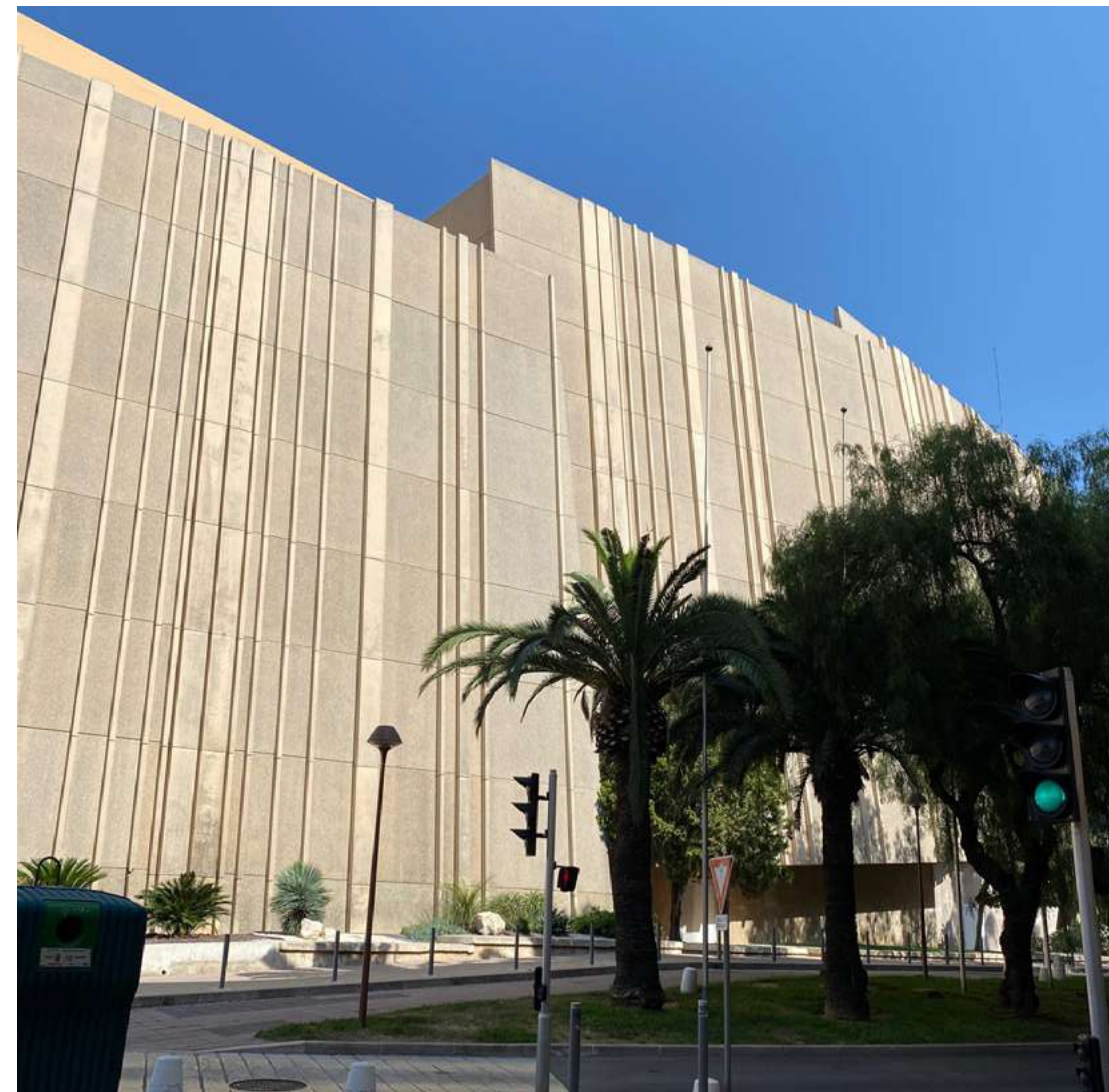
16.
Detail of the exterior facades of the Auditorium. The precast reinforced concrete facades with irregular vertical reliefs were found to be articulately sloping inward toward the building, creating a sharp discontinuity from the surroundings.
Photo credit: author, 2017

14.
ACROPOLIS. The volume of the Auditorium for 2,500 people is highlighted. The 25 m construction module chosen for the entire project corresponds to the average length of the facades of the houses opposite the Multipurpose Center.
Photo credit: author, 2017

15.
ACROPOLIS. The entrance *hall* (Agora) in the foreground. It is a single three-story open space for connecting the parts of the building and, if necessary, the two parts of the city "cut off" by the building. The 400-square-meter sunroof allowed natural internal ventilation and summer cooling in good weather.
Photo credit: author, 2017

BALANCES IN URBAN IDENTITY

Undoubtedly, the *PdP* extension, which we could qualify as a sort of Nice's "*Central Park*" by functional analogy, is a relevant and interesting transformation. It is abreast of the times and coherent with our contemporary purposes. However, the new plan's constituent logic shows some misalignment from the principles of urban identity protection that characterized the UNESCO candidacy. Indeed, if one considers *the Historic Urban Landscape* (*HUL*) "*(...) as a cultural construct, incorporating our memories and helping to give meaning to our current lives (...)*" [15] the demolitions of ACROPOLIS (2023-2024) and TNN [Fig. 12.] [16], appear to be very radical and in some ways disorienting actions. Although the ACROPOLIS Multipurpose Convention Center/Auditorium is relatively recent and probably energy-inefficient, it is rooted in the city's history and cultural life. It is an emblem of cultured architecture, rich in context awareness, and provides high cultural performance [14] [Figs. 13.—16.]. It is a trace of Mayor Jacques Médecin's vision, heir to Jean, the celebrated politician and mayor of Nice[06] who strongly influenced Nice's tourist and cultural history. This vision was later rendered into reality by the ingenuity of three accomplished designers, including Architect Georges Buzzi,

a former collaborator and student of Auguste Perret, who was influenced by L. Mies van der Rohe and W. Gropius and was in contact with other 20th-century masters such as Le Corbusier, C. Perriand, and K. Tange (among others). Since 2006, this designer's very rich professional portfolio included several works listed in the French *Inventaire Culturel du XX siécle* (*Ministèrè de la Culture*)[07] [17].

The demolition of the *Gare Routier* (Bus Station) in 2011 to make some space for the first phase of the *PdP* was an understandable decision considering the quality of the built environment and the function of the building (with a view to enhancing the electrification of public mobility) [18]. However, it is much less the case for these other buildings. TNN and ACROPOLIS were instruments of urban socialization, places of cultural, artistic and musical gatherings in the city, resulting from the imagination of sophisticated architects and technicians who could interpret and take into account the meanings of urban fabrics and the social and environmental context in their projects [14]. The significant public contestation against these significant urban "subtractions" from the community that followed the announcement of the decision to proceed with the "*Forêt Urbain*" project, heedless of the citizenry's opinion, prove the malaise caused and of an emerging criticality in the planning of Nice's transformation.

The citizenship's active participation can be easily detected through *ICT, Big Data, and IoT*. However, if one fails to capture the nuances of other types of needs expressed by users, then the goodness of the *Smart* paradigm risks being depleted, downgrading the proposed actions and unbalancing the sought harmony. In this, the justification of the actions to be conducted by administrations and planners should also suit their intensity. In this case, detractors were not convinced by the latter. For example, it does not seem relevant to bring up the need for demolition to avoid hydrogeological hazards in case of flooding of the *Paillon* bermed river, as the circumstance continued even after demolition. This is the same as planning the compensatory implementation of an anonymous facility with similar functions and efficiency elsewhere.

CONCLUSIONS

Pursuing the goals related to carbon neutrality, implementing the most virtuous policies in terms of sustainability and *Green* approaches to city redevelopment, and realizing the urban environment's sensorialization (and all the consequences in sensing different functional performance) are aspects of a picture with far more complexities to manage. Other scenarios, integrating the previous ones, appear to be much more refined and far more difficult to balance. These include the simultaneous protection of places' cultural identities, social participation and program sharing, and safeguarding inclusiveness. These aspects encompass the needs of all citizens and city users without distinction. Such complexity is also enriched by the need to address and satisfy a dual and amalgamated user composition. In addition to those who can interact fluently in the *Infosphere* where we are immersed, it is indeed also necessary to interpret the needs of those who live primarily according to beliefs cemented by the experience of places and life, i.e., those who are immersed in what philosopher Luciano Floridi calls the "*age of history*" [19]. These people are much less aware or familiar with digital aids and, therefore, are little attracted to their potential. Respect for urban perceptions, collective memory, and the recognizability of certain places [16] – particularly those with cultural significance - should be prioritized in any sought-after urban evolution, or at least be valued on a par with establishing more efficient, cost-effective, and sustainable programs.

Without all this, there is the risk of performing changes with just an apparent or partial overall *smartness*.

BIBLIOGRAPHICAL REFERENCES

[1] Yigitcanlar T. (2018), *Smart City Policies Revisited: Considerations for a Truly smart and Sustainable Urbanism Practice*, WTR 2018,7:97–112, https//doi.org/10.7165/wtr18a1121.19

[2] https://www.insee.fr/fr/statistiques/1405599?geo=EPCI-200030195+COM-06054+COM-06039 [accessed Aug 13th,2024]

[3] Vellas F. (2011), *L'impact indirect du tourisme : une analyse économique*, rapport pour la réunion des Ministres du Tourisme du T20, Université de Toulouse https://webunwto.s3.amazonaws.com/imported_images/28700/111020-rapport_vellas_en.pdf [accessed on Aug, 13th, 2024]

[4] https://irissmartcities.eu/nice-france/ [accessed Jul 27th,2024]

[5] https://eurocities.eu/cities/nice-cote-d-azur/ [accessed Jul 27th,2024]

[6] https://smart-cities-marketplace.ec.europa.eu/france/nice [accessed Aug 8th,2024]

[7] http://www.greendigitalcharter.eu/ [accessed Aug 5th,2024]

[8] Veltz M, Rutherford J. and Picon A.(2019), *Smart urbanism and the visibility and reconfiguration of infrastructure and public action in the French cities of Issy-Les_Moulineaux and Nice*, in Karvonen A., Cugurullo F. and Caprotti F.(2019) Inside Smart Cities. Place, Politics and Urban Innovation, Routledge, UK, ISBN 9780815348689 (pbk).

[9] Zaffagnini T.,(2022), *Smart Urban Upgrade in the Nice Méridia ZAC in France. A French way to urban experimentation for the Smart City 'de demain'*, in *Urban Landscape/ Urban Design* – Journal of architecture and urban planning no.3/2022, Maggioli Editore, Rimini, pp.144–163, ISSN 2964-5969.

[10] https://patrimoinemondial.nice.fr/ [accessed Jul 27th,2024]

[11] https://www.unesco.org/en/legal-affairs/recommendation-historic-urban-landscape-including-glossary-definitions [accessed Jul 27th,2024]

[12] https://promenadedupaillon2.nice.fr/wp-content/uploads/2024/04/MNCA_PAILLON_LETTRE-INFO_N6_V7_BD.pdf [accessed Aug 19th, 2024]

[13] https://www.montecarlonews.it/2022/10/15/notizie/argomenti/altre-notizie-1/articolo/nizza-demolizione-dellacropolis-il-consiglio-da-il-via-e-anche-pericolosa-se-il-paillon-f.html [accessed Aug 13th,2024]

[14] Pagliero W. (1993), *Una grande architettura polifunzionale al centro della città. L'Acropolis di Nizza*, in Casa Oggi, n.231/232 Dic-93, Editore Di Baio, Milano, pagg.110-111.

[15] Taylor, K. (2008) *Paesaggio e memoria: Paesaggi culturali, valori immateriali e alcune riflessioni sull'Asia*. In Atti della 16a Assemblea Generale e Simposio Internazionale dell'ICOMOS: Finding the Spirit of Place- between the Tangible and the Intangible, Quebec City, QC, Canada, 29 settembre-4 ottobre 2008.

[16] Hussein F., Stephens J., Tiwari R. (2020). *Towards Psychosocial Well-Being in Historic Urban Landscapes: The Contribution of Cultural Memory*, in Urban Science, 2020, 4, 59 , Editor MDPI, Basel, Switzerland. doi:10.3390/urbansci4040059

[17] Benoist A. (2017) *Georges Buzzi. The "Glorious Thirty" Spirit*, in COTE Magazine - Le magazine style de vie (online), Octobre 2017, https://www.cotemagazine.com/en/la-revue-d-azur-vivre-sa-ville/item/7620-georges-buzzi [accessed Aug 13th,2024]

[18] Potron J-P.,(2022), *Les quartiers de Nice. De 1855 à nos jours*, Éditions Gilletta, Nice (FR), ISBN 978-2-35956-173-9

[19] Floridi L.,(2014), *The Fourth Revolution. How the infosphere is reshaping human reality*, Oxford University Press, UK, p.4, ISBN978-0-19-874393-4

20th century cinematographs in Catania: memory and oblivion of a heritage to be safeguarded

I cinematografi del XX secolo a Catania: memoria e oblio di un patrimonio da salvaguardare

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01.
Urban layout of historic cinemas and the main road network.

The race to innovate, which has enabled great advances in science, cultural heritage, and other disciplines, has often been the reason behind the abandonment of practices and places that over time have shaped the history of places, traditions, and customs. The loss of the storytelling even of specific parts of our past constitutes the impoverishment and obfuscation of the identity of places that we all identify with. The digital revolution in cinema has involved not only representation in the broad sense of the term, but also the destiny of part of the dedicated historical architectural heritage. The oblivion that encompasses most of the cinemas designed in the 20th century in Catania and its province finds origin in the new sensibility and new styles of expression. The movie theatre, which in the past represented the place of social meeting and exchange, is now an invisible entity. Catania's architecture, abandoned or converted to other uses (shops, restaurants), is now a heritage to be safeguarded and designated for appropriate uses.

La corsa all'innovazione, che ha permesso grandi progressi nella scienza, nei beni culturali e in altre discipline, è stata spesso la causa dell'abbandono di pratiche e luoghi che nel tempo hanno fatto la storia di luoghi, tradizioni e costumi. La perdita della narrazione anche di parti specifiche del nostro passato costituisce un impoverimento e un offuscamento dell'identità dei luoghi in cui tutti ci identifichiamo. La rivoluzione digitale del cinema ha coinvolto non solo la rappresentazione in senso lato, ma anche il destino di parte del patrimonio storico architettonico dedicato. L'oblio che avvolge la maggior parte delle sale cinematografiche progettate nel XX secolo a Catania e provincia trova origine nella nuova sensibilità e nei nuovi stili espressivi. La sala cinematografica, che in passato rappresentava il luogo di incontro e scambio sociale, è oggi un'entità invisibile. L'architettura catanese, abbandonata o convertita ad altri usi (negozi, ristoranti), è oggi un patrimonio da salvaguardare e destinare a usi appropriati.

1. THE ARCHITECTURES OF CINEMAS, SPACES OF CONTAMINATION BETWEEN DISCIPLINES AND CULTURES

The Italian movie theatre, for a long century, had seen wide distribution across the nation and represented for generations of viewers the space of contamination where architecture welcomes other knowledge associated with technological, functional, social, and cultural aspects. The cinematographic heritage, in addition to being a testimony of past customs, traditions, and society as told through films – fragile resources that narrate the years of creative, economic, and productive fervour of the twentieth century – still preserves, albeit to an increasingly lesser extent, the memory of the architectures dedicated to projections on the big screen. The few movie theatres that have not undergone the effects of modernity and digital innovation preserve, even if often in a state of decay and oblivion, the history of the culture of the first half of the 20th century, in which theatrical representation was accompanied by a new way of enjoying content. Due to the intrinsic characteristics of being a privileged space not only architecturally but also technologically, culturally, and socially, the movie theatre is a testament to the history and socio-environmental identity of a long era, which is why it is essential to recover the memory of the built heritage of the first half of the 20th century.

Sicily, and particularly Catania, responded through the new entrepreneurial class to the demands of the vast public, represented by the middle bourgeois class, for places dedicated to leisure and entertainment. In the first half of the 20th century, a large number of cinemas were born – Eliseo (1910), Olimpia (1913), King (1926, formerly Mirone), Diana (1926), Fisichella (1927), Supercinema Vittoria (1927), Excelsior (1930, formerly Eden), Odeon (1930, formely Real theatre) – [Fig. 01.] created by the most representative designers of the period – Fr. Fichera, P. Lanzerotti, C. Aloisi, S. Mastrojanni, G. Giandinoto, L. Franco – in neoclassical, liberty, déco, and rationalist styles [Figs. 02., 03.].

02.
Above, from left to right, cinema Eliseo (1910), cinema King (1926), cinema Diana (1926); bottom, from left to right, cinema Fisichella (1927), cinema Excelsior (1930), cinema Odeon (1930).


03.
Above, from left to right, cinema King (1926), cinema Diana (1926); bottom, from left to right, cinema Odeon (1930), cinema Olimpia (1916).

These architectures constitute a heritage of high historical and cultural value for the city, often today abandoned or transformed due to technological innovation, the advent of the digital age, and the rise of streaming platforms, which have changed the public's relationship with entertainment and cinema. Many of these buildings have found new functions (restaurants, clothing stores), with reuse projects that often do not reveal their original identity.

Through the study of archival sources and digital surveying, as a tool for knowledge and critical interpretation for the protection and safeguarding of cultural heritage, as well as for virtual exploration of hidden architectures, the aim is to document the geometric-spatial and stylistic-formal characteristics that distinguish their function and spatiality, in support of any reuse projects that enhance their identity. Cinemas are architectures whose functional specificity is interpreted in various architectural forms, often coordinated with furnishings, graphics, and lighting. They constitute an artistic heritage that, with its spatial distribution in relation to urban aspects, has always marked the fate of urban places, often determining, with its abandonment or even destruction, profound alterations in the socio-environmental context.

2. KNOWLEDGE AND VALORISATION OF CINEMATOGRAPHIC ARCHITECTURAL HERITAGE. DIGITAL TECHNIQUES FOR MEMORY REVIVAL

The presence of historic cinemas in the streets of a city holds significant cultural importance for several reasons. Firstly, they represent tangible evidence of the history and social and cultural evolution of the community and the urban structure. Through their architecture and the characteristics that distinguish them, cinemas reflect the artistic trends and architectural styles of specific eras, providing valuable information on the aesthetics and construction techniques of the past. Furthermore, such architectures act as custodians of collective memory, evoking memories and experiences shared by generations of citizens. These places have often been social gathering points, where people from different backgrounds met to enjoy cinematic shows.

To disseminate knowledge of this valuable architectural heritage in the heart of the city of Catania and to increase awareness of its enhancement, our research has focused on the cinemas designed and built between the 1920s and 1930s. These buildings possess stylistic characteristics that render them iconic symbols for the city that are easily recognizable to the passerby, despite many being abandoned or repurposed for other uses, while others continue to serve their original function. The façades and interior formal solutions interpret the stylistic features of the period, from the language of neoclassicism with the design of the classical order (Eliseo, in which slender pilasters and columns vertically scanned the front, which concludes with elegant trabeation), to the plastic forms of decorative detail with flowing lines typical of Art Nouveau (Diana, King and Olimpia, in which the central spatiality of the hall is emphasised by the use of wrought iron in the railings, the friezes on the stringcourses and
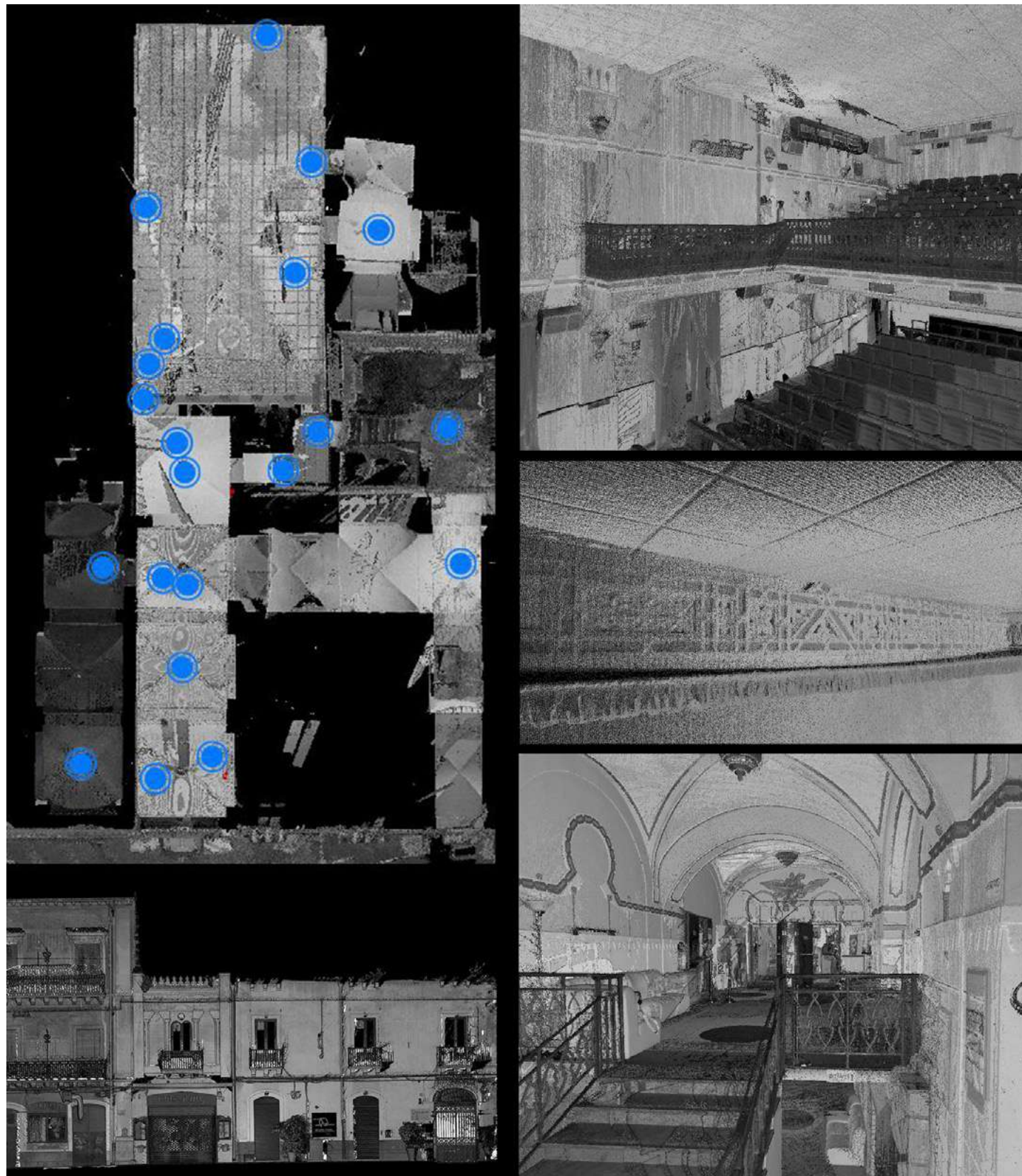
04.
Cinema King. Station points Laser Scanner survey, orthoimage and perspective views.
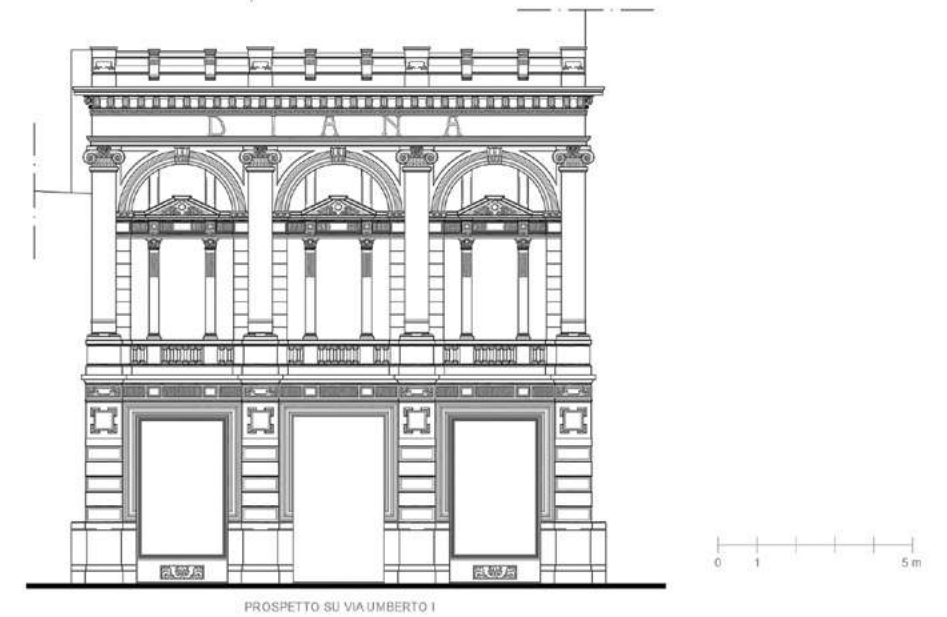

05.
Cinema Diana. Orthoimage Laser Scanner point cloud and 2D representation of façade.

the mosaic cladding, the stucco decorations and the polychrome stained-glass windows), to the more rigid forms of Art Deco language (Odeon and Excelsior, in which a geometric abstractionism reigns with rigid and angular shapes, such as arrows, zigzags, V motifs, sun rays, trapeziums). The architectural and formal characteristics, amply documented in the original projects, have also been traced through architectural drawings, building permits, historic photographs and other relevant documents. The vast and rich archive documentation is of inestimable historical and cultural value and represents an extraordinary opportunity to deepen and understand the history of the cinemas that were built in Catania during that period. For example, the architect Mastrojanni in the project for the Excelsior cinema expresses a variant of Art Deco characterised by a simplicity and minimalism approaching rationalism, particularly evident in the main façade and further accentuated in the hall and access spaces with their rectangular geometries, in evident contrast to the magnificent decoration of the façade and

the hall of the nearby, contemporary Odeon Cinema, designed by Carmelo Aloisi. Digital metric acquisition techniques, such as laser scanner surveys and multi-image photogrammetry, along with archival research of the original designs, are fundamental tools for the enhancement and deepening of knowledge of architectural cultural assets, especially when they are in a state of abandonment or have been significantly altered. An emblematic example of this phenomenon is represented by the Olimpia and Diana cinemas (designed respectively by architects Fr. Fichera and P. Lanzerotti), which, although they have undergone substantial modifications over the years, today have a different appearance to that of their opening. These changes have led to a progressive loss of their original identity, culminating in a radical change of use: the first houses a McDonald's Italia restaurant, while the second, from being a bookshop, has since changed its use to become a clothing shop. Although the spatial configuration of these rooms is substantially preserved, only an acute and knowledgeable observer is able to recognise and appreciate the historical and cultural importance of these places, to find himself inside a cinema hall or balcony, capturing the details of the period decorative apparatus still present, but often unfortunately concealed by furniture that obscures its authentic value. The research included an intensive survey campaign, obtaining accurate point clouds of the entire spatiality of the cinemas and photorealistic polygonal models to document the architectural elements characterized by ornaments and decorations typical of the period, as well as the acquisition of 360-degree photographs for virtual visualization [Figs. 04., 05.].

In addition to these digital techniques, complementary archival research through the analysis of historical documents – project reports, period photographs, graphic representations, and other sources – were fundamental in the formation of a more complete understanding of the history and evolution of the structures investigated [Figs. 06., 07.]. The collected documentary heritage allows for the reconstruction of the memory and identity of the places and the creation of virtual tours that enable the enjoyment of environments not always accessible, the navigation of interior spaces, and the visualization of the aesthetic-formal characteristics that distinguish the architectural stylistic period.

Not all the eight historic cinemas have been investigated in the same way, as some are not accessible or have been completely altered from their original layout. The Eliseo cinema, for example, is a closed and totally abandoned structure whose main facade remains unaltered, but presents clearly recognizable additional superstructure, and whose interior has been impossible thus far to access, or the case of the Super Cinema Vittoria, which has been modified internally several times, becoming a discotheque in the last decade. The currently accessible cinemas, namely Olimpia, King, Excelsior, Diana, and Odeon, have been fully surveyed, obtaining accurate point clouds that have allowed a detailed analysis of their spatiality, a thorough investigation of the transformations compared to the original configuration following reuse interventions, and the updating of graphic documentation. This, in turn, proves to be of invaluable use both for potential proposals for restoration and/or reuse, and as a basis for virtual reconstructions that allow for three-dimensional enjoyment of the spaces. Among these, the King and Odeon cinemas have manteined their original function as projection halls to this day and continue to attract audiences interested in watching films in original language or works by emerging directors, with their wide halls and entrance vestibules that still have their original geometric and decorative features. However, the Odeon cinema was unfortunately recently closed to the public. Among these, the King and Odeon cinemas have maintained their original function as projection halls to this day, although the Odeon has recently been closed to the public. Two cinemas remain active and continue to attract audiences interested in watching films in original language or works by emerging directors. A different fate has befallen the Olimpia and Diana cinemas, which have been adapted to house a fast-food restaurant and a clothing store, respectively. However, inside they retain part of the original planimetric configuration and the splendid decorative features that characterized them in the past. The Excelsior cinema, on the other hand, has been waiting for years for a buyer who can enhance its function, as remains for sale until to this day.
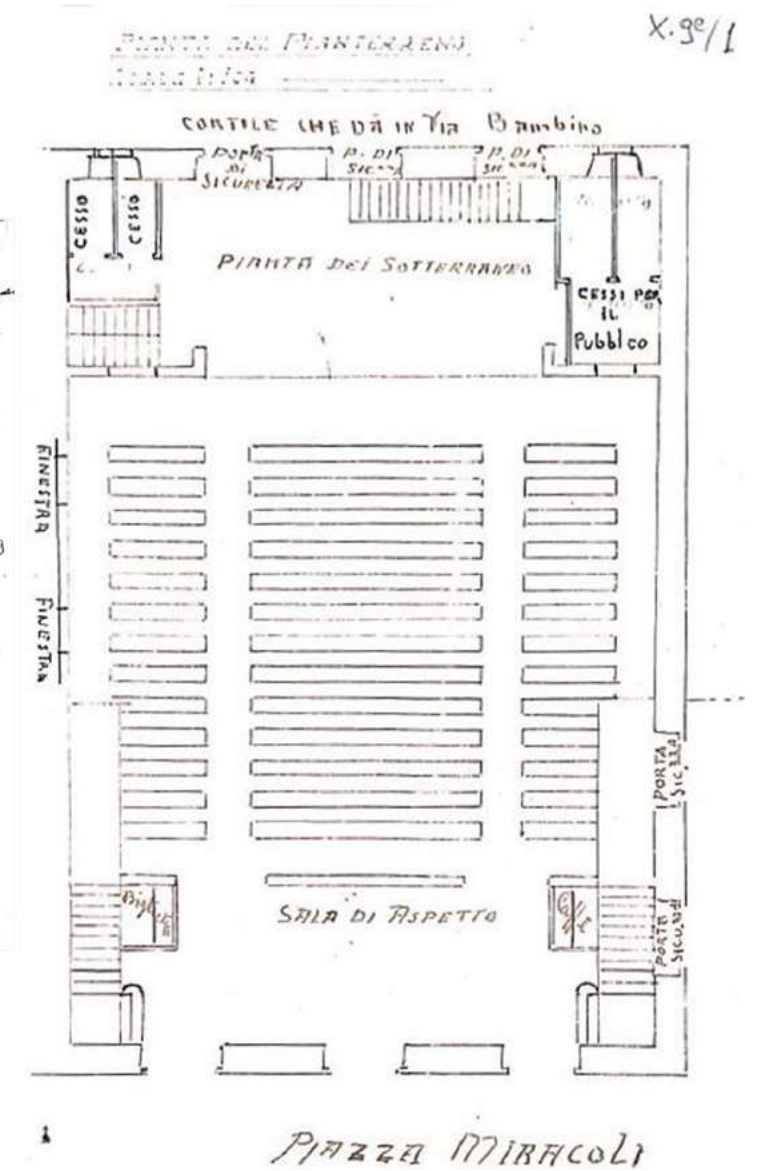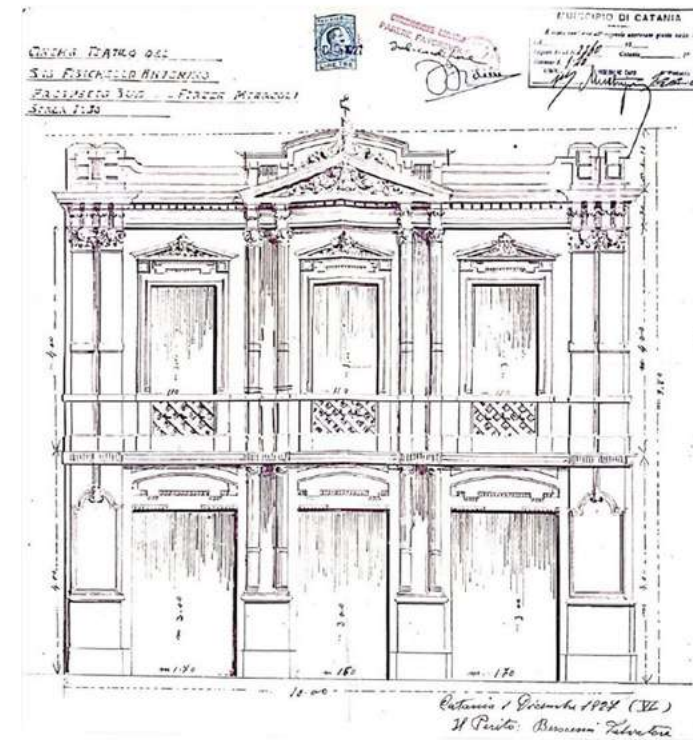
06.
Cinema Fisichella. Archive project (Approved Projects Fund, Catania Historical Archive.).
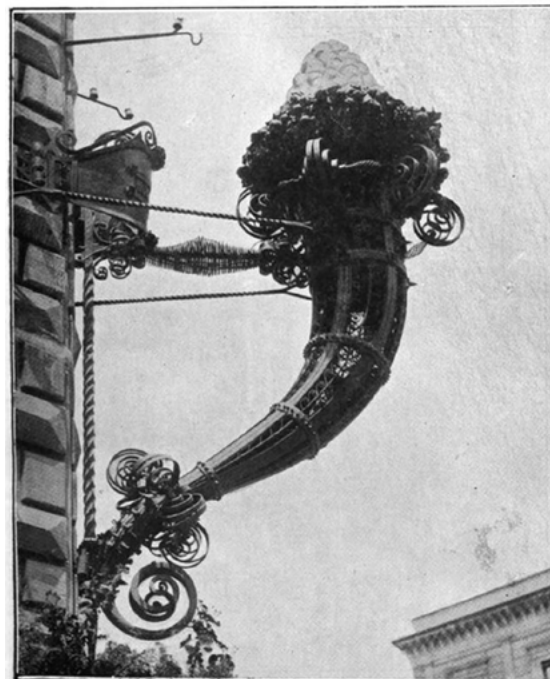
CINEMA TEATRO OLIMPIA IN CATANIA. — FARO LUMINOSO. — F. Fichera.

CINEMA TEATRO OLIMPIA IN CATANIA. - SALA. — F. Fichera.

07.
Cinema Olimpia. Historical photos.

BIBLIOGRAPHICAL REFERENCES

Galizia M. (2002). *L'ambiente urbano di Catania nel '900*. Roma: Gangemi Editore.

Godoli E., Mauro E., Ruta A. M., Sessa E., Tornatore G. (2014). *L'architettura dei cinematografi in Sicilia*. Palermo: Edizioni Arianna.

Rizzo C., Il cine-teatro Olympia a Catania: dalla ricostruzione della memoria alla fruizione virtuale, Tesi di Laurea (Relatore: Santagati C.; Correlatore: Galizia M.).

Rizzo, C., Galizia, M., Santagati, C. (2023). The Virtual Reconstruction of the Cine-teatro Olympia in Catania for the Documentation and Memory of Places. In: Trizio, I., Demetrescu, E., Ferdani, D. (eds) Digital Restoration and Virtual Reconstructions. Digital Innovations in Architecture, Engineering and Construction. Springer, Cham. https://doi.org/10.1007/978-3-031-15321-1_3

Rocca A. (1988). *L'arte del ventennio a Catania*. Catania, Magma.

Surrentino D'Afflitto A. (2006). Catania e il cinema. Dalle prime proiezioni del Sangiorgi nel 1900 alle multisale del 2000. *Agorà*, fasc. 25-26, (pp. 64-67).

ARCHIVAL SOURCE

Fondo progetti approvati, ASC Catania.
Fondo Francesco Fichera, Museo della Rappresentazione, Catania.

The importance of enhancing the structures that housed historic cinemas lies in the fact that they can continue to play an active role in contemporary cultural life, hosting events, film festivals, artistic performances, or, preferably, continuing to perform the role for which they were designed. In this way, they not only preserve the past but also enrich the present, offering spaces where culture can be experienced and appreciated in all its forms.

3. CONCLUSION

The integration of digital metric acquisition techniques and archival research offers a comprehensive approach for the enhancement and dissemination of Catania's historic cinemas. These tools allow the documentation, preservation, and sharing of cultural heritage, ensuring that future generations can continue to appreciate these important testimonies of the past. Three-dimensional digital models are essential components of this process, providing the basis for accurate analysis of the geometric-spatial configuration, stylistic features and state of preservation of places, as well as for immersive reconstructions and the assessment of responsible strategies in the relationship between new design and historical legacy, aiming for a sustainable future. It is essential, to avoid their falling into oblivion, to make these spaces alive and usable again, recovering the testimony of the past without drastically altering its DNA. Through difficult but stimulating and fascinating actions for designers, it is possible to bring forgotten and disused places to light through functional and formal solutions that can conform or harmoniously dialogue with the pre-existence, with the goal of minimizing interventions and impact on the work and the urban context. In summary, historic cinemas are valuable not only as architectural testimonies but also as symbols of the memory and cultural identity of a city, capable of promoting dialogue between past and present and contributing to the economic and social well-being of the community.

Oxy/morons: Architecture and Doctoral Studies in Italy

Ossi/mori: architettura e dottorato di ricerca in Italia

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After forty years since the introduction of doctoral studies in Italy, a reflection upon the contradictory relationships between design disciplines and higher academic education.

A quarant'anni dall'istituzione dei dottorati di ricerca in Italia, una riflessione sulle relazioni contraddittorie tra discipline del progetto e alti studi accademici.

Right at the beginning of an article about a hypothetical "ars oblivionalis", Umberto Eco (1988) singles out it as the most interesting among the impossible disciplines his friends and he invented as a joke in the 1960s. Thinking about their impracticability, they had envisaged a taxonomy that placed the anachronistic sciences, such as "history of the wheel in the pre-Columbian empires" in the department of "adynata"; "potiosection, or the art of cutting broth," and other useless topics in the one of "byzantinica"; the excess of subtlety in "tetrapiloctomia, or the art of quartering a hair"; and the incongruent approaches such as "nomadic urban studies" or "institutions of deviance" in "oxymoronica". While Eco wonders about which department can better fit his "art of forgetting", the readers who deal with academic research in architecture cannot help to recognize themselves in this "science-fiction" exercise and

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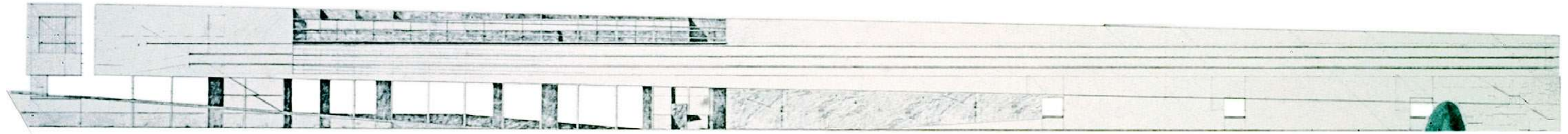
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00a., 00b.

Piotr Barbarewicz, Anna Cinelli, Juan Manuel Palerm Salazar, Sergio Perez Parrilla, Juan Luis Trillo de Leyva, with Jorge Gorostiza, Antonio Martinez, Leopoldo Tabares de Nava, Carlo Angius, Igino Gini, Reconfiguration and Reuse of the Granary Island, Gdańsk, Design Seminar, IUAV, 1989.

its facets. Ours is in fact a discipline in constant crisis (nostalgia or future? spontaneous or planned? ethics or aesthetics? ...), intrinsically out of time and quite inconclusive – also because of the unforgiving gap between its ambitions and actual capacity of action –, and, above all, contradictory, given its inclination to accept reality and at the same time criticise it (to the point that, in our field, "urban nomadic" researches or projects focussed on the formalisation of illegal practices are often proposed and financed). This structural uncertainty nurtures a methodological approach suspended in-between arts, hard sciences and humanities, which gets further intensified by a complicated relationship with the professional practice, where disciplinary innovation is usually produced. While academic research is supposed to offer competences available for everybody and generally applicable solutions, the actual practice of design develops tools for internal use with the aim to obtain competitive and commercial advantages. The truth systems we are plausibly able to put together are therefore strictly local and ephemeral, so much that we can aspire, in the best cases, to produce gazes rather than knowledge, personal attitudes rather than theoretical generalisations (Corbellini, 2018a).

The introduction in the Italian university of PhD programmes opened for such a scientifically weak discipline an unprecedented space, where an increasing number of scholars and professors could, as it where, look insistently at themselves in the mirror and try to figure out where they come from and in which direction head towards. It is an already mature initiative – schools are selecting the candidates for the 40th yearly cycle – able to raise, if not a thorough analysis, at least some reflections on the evolution of this peculiar environment and the developments it fuelled.

We will try to collect some impression on the basis of our own experience, wide enough to offer a sufficiently articulated point of view: we are and have been involved in programs of well-known Italian schools, but also in peripheral situations, crossing multiple other initiatives in different roles, as advisors, referees, invited to intermediate seminars, in selection committees and in final ones. All in all, we came across several hundred theses and research proposals. Ours is also an experience extended in time. As candidates of the 3rd cycle, we were among the first to attend a PhD course in Italy. In that moment, if we remember correctly, there were only two doctoral programmes in architectural design. The Venetian one in "architectural composition" we attended was a consortium between IUAV and the Politecnico of Milan that had brought together, after thirty years, some of Samonà and Rogers's disciples who have been part of the *Casabella continuità*'s "Centro studi". Around Guido Canella, Giorgio Grassi, Gianugo Polesello, Aldo Rossi, Luciano Semerani and Francesco Tentori had gradually gathered colleagues of the two schools, together with some others from Rome and Naples. Of course, nobody had an idea about what a doctoral thesis should be, neither we candidates, as it was quite logical, nor professors, who could not have achieved a PhD. And, of course, we did not know what doing academic research in architectural composition would mean (which, in fact, represents a rather controversial issue: many countries, for example, still prefer to entrust investigations around architecture to the greater methodological solidity of history). However, anticipating the fragmentation in scientific-disciplinary sectors that shortly thereafter invested the Italian university[1], those professors of composition took advantage of the opportunity to set up a strictly delimited experiment, of which we were excited to become the guinea pigs. On the one hand, all this has led to an unexpected freedom. As candidates of that 3rd Venetian cycle, we could tinker with formats and tools – drawing, for instance, represented for some of us a precious investigation device – and, in the absence of specific examples, the references that we considered more consistent with our researches, even the

classics, provided methods and strategies to organize their contents (to the point that one of the dissertations dared to present itself in "four books" ...). Even topics, scales, and situations the six of us dealt with were very different: from an obscure Polish artistic movement to the museum as a contemporary architectural issue, from the compositional instruments of Terragni to the great urban voids, from the urban role of the theatre to a comparison between some European "exchange cities" (Barbarewicz, 1999; Ciorra, 1991; Corbellini, 2000; Dal Fabbro, 1994). On the other hand, an aim which that quarrelsome group of friends-foes did not stop insisting on was the "disciplinary transmissibility", understood as the affirmation of a genealogy[2] whose not too hidden purpose was to give relevance and continuity to their personal story and design languages[3]. The PhD programme, therefore, represented the opportunity for the elaboration of theoretical constructs, and didactic methods, capable of supporting them. Thus, many candidates followed the interests of their masters.

It was a hard but effective school, conducted with all the cruelty that that generation of survivors of World War II was able to exert. If nothing else, we learned to support our ideas. Eventually, sooner or later, we have all become professors. Follow us, therefore, on the other side of the desk a few years later.

Almost everything has changed.

Forget, first of all, about the very elitist condition of that early PhD period. A large majority of architecture schools, meanwhile quadrupled in number, offers today doctoral programmes. Although in comparison to other countries we still graduate few doctors, a certain inflation has occurred and its effects are evident. One of the most obvious is the dilution of the authoritativeness of us professors, rather watered down compared to the charisma of our masters. The condition of the candidates has in parallel changed, both in attitudes and, above all, in perspectives (Corbellini, 2018b, 2020). Only very few of the approximately ten thousand PhDs of all the disciplines that every year come out of Italian universities have had or will have the opportunity to become tenured teachers. The academic purpose of the doctorate, as it had been conceived at the beginning, had to adapt, trying to keep together the ambitions to excellence with the demands of a "secular" job market, even less interested in theoretical subtleties or strictly disciplinary investigations. A trend that has being further bolstered by the recent injection of money from the National Recovery and Resilience Plan, precisely aimed at improving the connections between universities, institutions and companies.

Forget also about the compactness of PhD programmes, both in disciplinary terms and people's affinity. For better or worse, the cohabitation between teachers and candidates from even extremely different backgrounds and formations, even ideologically opposite such as architecture and engineering, is now widespread. However, the experiences of real discussion among history and the diverse design scales as the one of the "Villard de Honnecourt" programme of the IUAV Doctoral School, of which we are part, are extremely rare. More often, these are heterogeneous and fragmentary groupings of monads, determined by the respect of parameters, rules and academic conveniences.

Forget, therefore, about the intensity of horizontal and vertical education exchanges in the scientific communities gathered around doctoral programmes in architecture, whose members less and less share tools, themes, shibboleths, keywords. At best, subgroups follow hierarchical relationships or customary collaborations on research projects, but the most frequent condition is of a delimited dialogue between candidate and advisor. Thus, now almost always, the papers in progress or the final dissertations we must comment on or evaluate tend to deal with elusive issues that involve unknown references.

Forget then about the diversity of results of the early PhD cycles: an unexpected effect, if we think about the transition from our masters' control crave to the current fragmentation. One of the substantial changes that took place over time and that may have eased this outcome has been the introduction of mandatory writing courses and other contributions aimed at providing the candidates for basic tools to carry on their work. Although necessary and meritorious, their application may have produced a certain levelling, also fuelled by the now vast availability of


01a.

Piotr Barbarewicz | Giovanni Corbellini
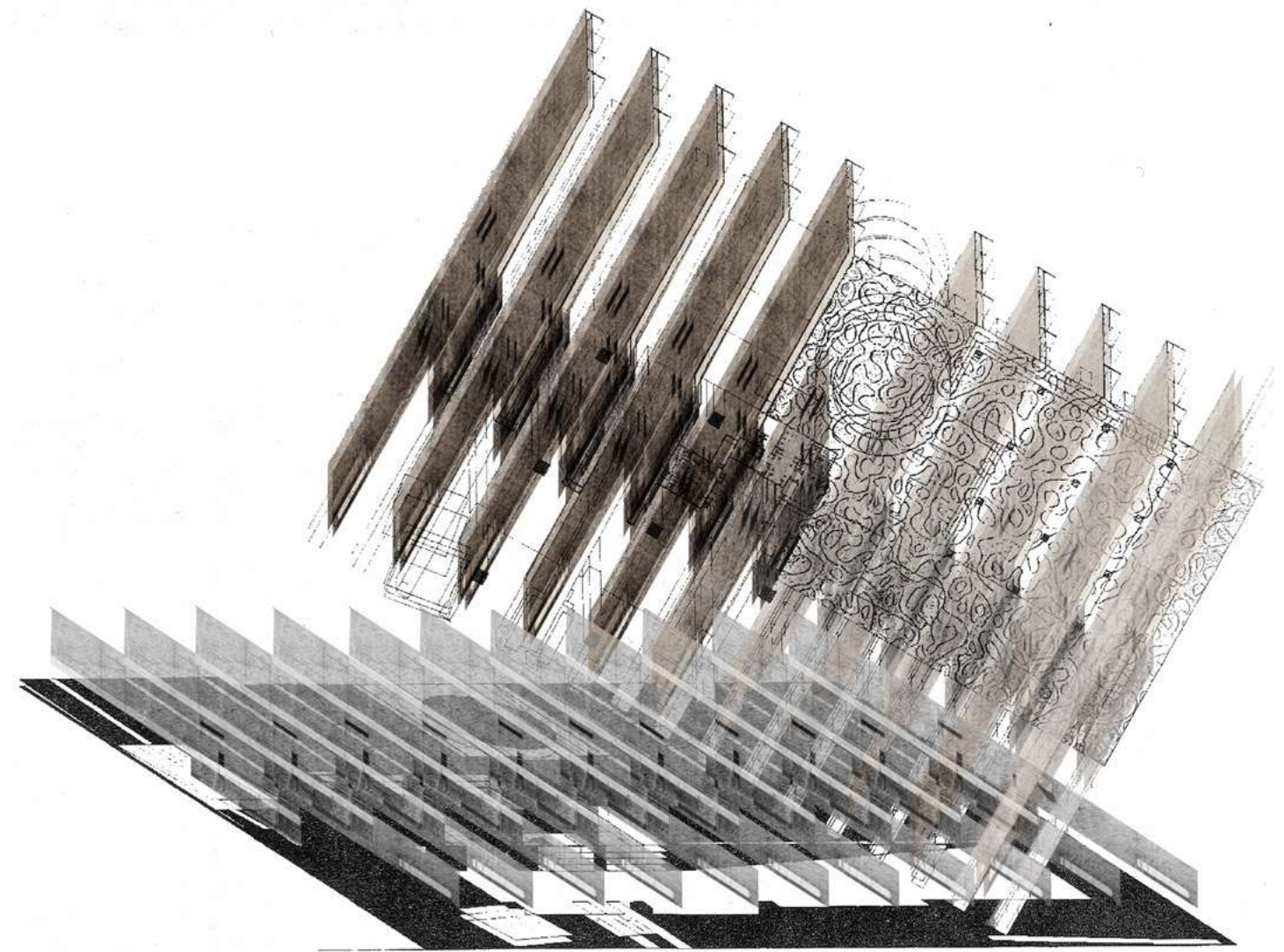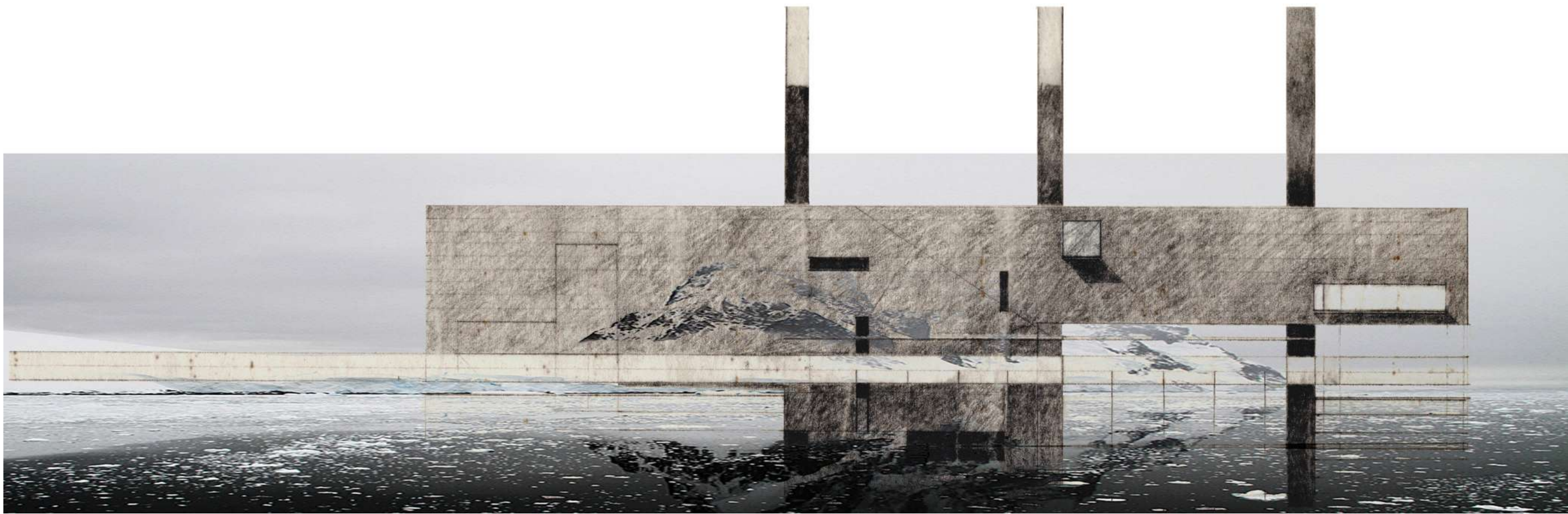
01b.

PhD theses from which to "copy" methods and general organization. It is, for instance, more and more widespread a "canonical" model (roughly tripartite into a theoretical premise, a central part dedicated to cases, and a final one with conclusions), which ends up collecting, as in a diary, the chronological development of the research work[4]. Without the necessary post-production, those works struggle to grasp any operative aspect and to organise them according to the necessary logical-narrative links. This comes out as an even less understandable attitude for designers, from which one would expect the use of the retroactive cyclicality of the project, its developing by trial and error, and, above all, its tension towards a specific, idiosyncratic form, consistent with the contents, in other words: architectural.

Forget, finally, about the epistemological reflection on the discipline. The mirror of the doctoral education has returned to too many of us a merciless image of its overt ambiguity and impotence, further unleashed by the type of narrative that thrives in the interface between the architectural project and the expectations of society. The latter is interested in substantial problem solving. Thus, the architects who want to work (as well as the professors who aspire to obtain funding) pretend to be able to deliver positive solutions of environmental transformation and management. Now, if we have understood something in these forty years of self-analysis, it is that the architectural project hardly keep pace with the increasingly dramatic questions that cross our tormented time and even less can do it in that reality in quotes represented by the academia. At most, architecture gives them representation, allows society to recognize itself in the space it lives in and to live it meaningfully. Yet, both the researches proposed by PhD candidates and the directions to which they are pushed by their advisors have long been moving on the level of performance, political action, sociological survey, regulatory control, participatory inclusion... The import of other disciplinary approaches, better equipped in reading social phenomena and in their capability of intervention on reality, is therefore inevitable, as well as a certain level of improvisation. That is not news, as generalists we have always stolen here and there, but we are doing it with increasing naivety, buying the stories we tell without critical distance. If we looked out of our disciplinary garden – an always-healthy practice – it was to step aside, to "learn from", to recognize the mechanisms of the architectural project in the test of the real, extract tools, disassemble its rhetoric, investigate the always elusive and not linear relationship between words and things, processes and results. It seems, therefore, that the long and repeated attempt fuelled by PhD programmes to transform our discipline into a more solid scientific field is eventually getting closer to produce a paradoxical forgetting machine. Again Umberto Eco notes how amnesia cannot be reached by subtraction: the more we try to eliminate something from the mind and the more we renew its memory. However, the great semiologist shows that memory can be confused by excess, repetition, overlap of meanings[5]. The entropy that distinguishes the doctoral studies in architecture therefore has its roots in the initial autonomist attitude, aimed at the infinite reproduction of the equal, and the current drifts towards heterogenous knowledge is its most logical outcome. Apparently opposite, both attitudes share a neo-illuminist root whose desire for rationalisation, rather than removing architecture from the impossible sciences imagined by Eco and his companions, ends up directing it towards the studies, rather masturbatory, of the Department of Byzantinica.

Instead, we should recognize our ambiguous duplicity and seriously join in the studies of Oxymoronica. The Greek term "*oksýmōron*, composed of oksýs, 'sharp', and *mōrós*, 'stupid, mad'" (Corno, 2011), describes us with a certain precision: reducing the madness of architecture means giving up our nature and losing all our sharpness.
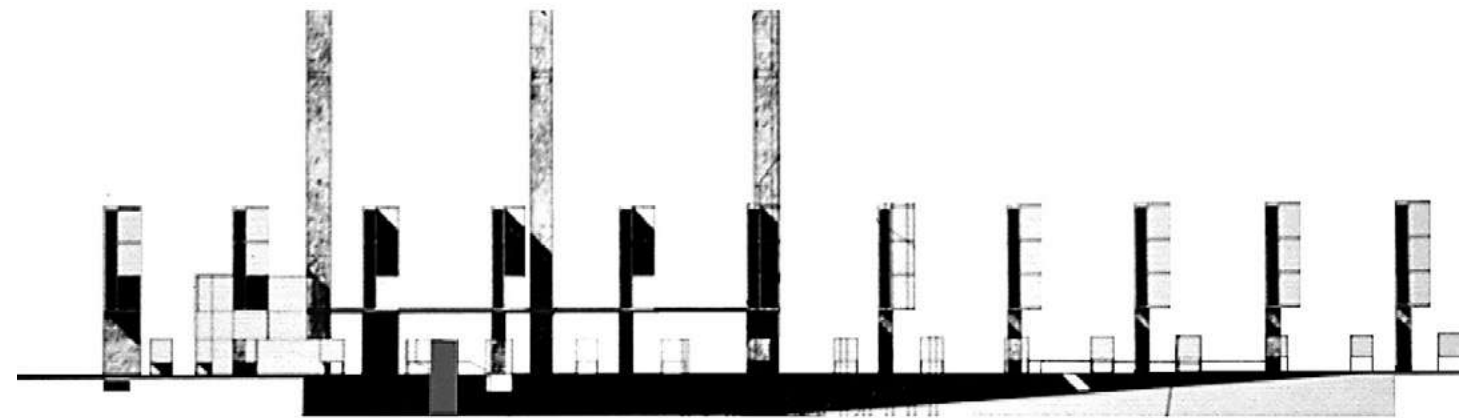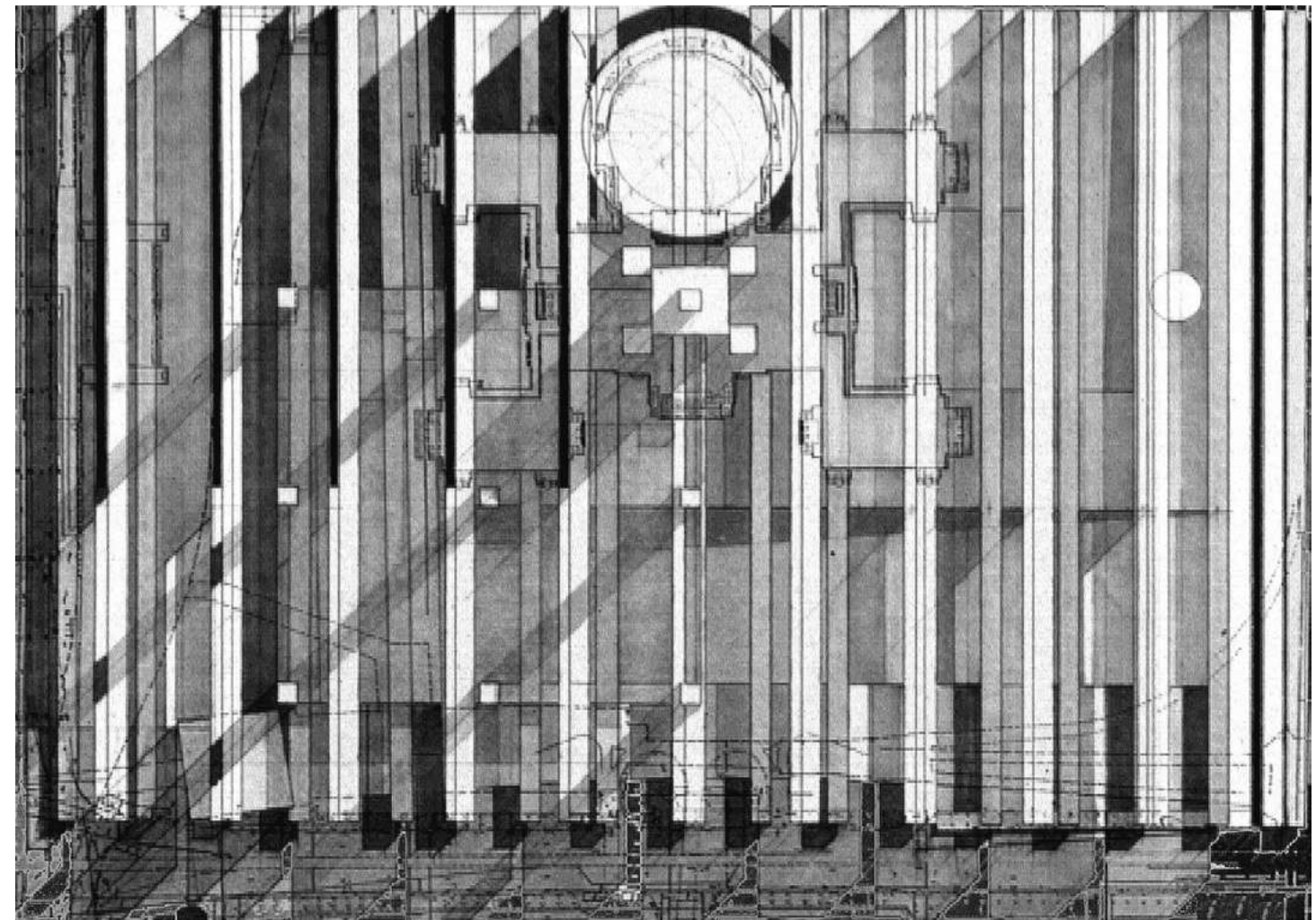

01c.

01a., 01b., 01c.

Piotr Barbarewicz, Warsaw City Core Competition, Warsaw, 1992.

NOTES

01| The "scientific-disciplinary sectors" are a peculiar feature of the Italian university that eased very specialized
approaches and their respective isolation. They have been introduced by the Law, 19 November 1990, nr. 341, and
further regulated by the Minister Decrees, 30 October 2015, nr. 855, and 2 May 2024, nr. 639.
02| The genealogic approach of the Venetian doctoral programme emerges clearly from its initial activities: a series of
lectures about its faculties' masters, given by their closest collaborators (Montuori, 1988).
03| Francesco Tentori (1999), who has been the first director of the Doctoral Programme in Architectural Composition of
the IUAV, soon understood that cultural phase.
04| The same, by the way, brilliantly exploited by the doctoral thesis of Peter Eisenman(2006), defended at Cambridge in 1963.
05| "Thus it is possible to forget on account not of defect but of excess, just as, though it is not possible to destroy the
meaning of an assertion pronounced aloud, it is possible to pronounce another assertion in the same moment, so
that the two assertions are superimposed. There are no voluntary devices for forgetting, but there are devices for
remembering badly: it is necessary to multiply the semiosis." (Eco, 1988), p. 259.

BIBLIOGRAPHICAL REFERENCES

Barbarewicz, P. (1999). Dualismi e Unismo. *Architettura intersezioni, 7.*

Ciorra, P. (1991). *Botta, Eisenman, Gregotti, Hollein. Musei.* Milano: Electa.

Corbellini, G. (2000). *Grande e veloce. Strumenti compositivi nei contesti contemporanei.* Roma: Officina.

Corbellini, G. (2018a). Design by Research. In Id. (Ed.). *Villardjournal: Investigate.* Macerata: Quodlibet.

Corbellini, G. (2018b). Autonomy by Drawing: Gianugo Polesello on Route 66. *Footprint, 22.*

Corbellini, G. (2020). Both of Stuff and Not: A Teaching Experience in the Contemporary Condition. In M. Roth-Čerina,
R. Cavallo (Eds.). *The Hidden School Paper*s (EAAE annual conference, Zagreb, 2019, proceedings). Belgium: European
Association for Architectural Education.

Corno, D. (2011). Ossimoro. *Enciclopedia dell'Italiano.*
https://www.treccani.it/enciclopedia/ossimoro_(Enciclopedia-dell%27Italiano)/.

Dal Fabbro, A. (1994). *Il progetto razionalista. Indagine sulle procedure compositive nelle grandi architetture di Terragni.*
Modena: Mucchi.

Eco, U. (1988). An Ars Oblivionalis? Forget It! (1966). *PMLA, 103.*

Eisenman, P. (2006). *The Formal Basis of Modern Architecture.* Zürich: Lars Müller.

Montuori, M. (Ed.). (1988). *10 maestri dell'architettura italiana. Lezioni di progettazione.* Milano: Electa.

Tentori, F. (1999). Nell'epoca dei linguaggi personali (1988). In Id., G. Corbellini (Eds.). *1984-1998. Una linea di ricerca Iuav*
(CD-ROM). Venezia: IUAV-DPA.
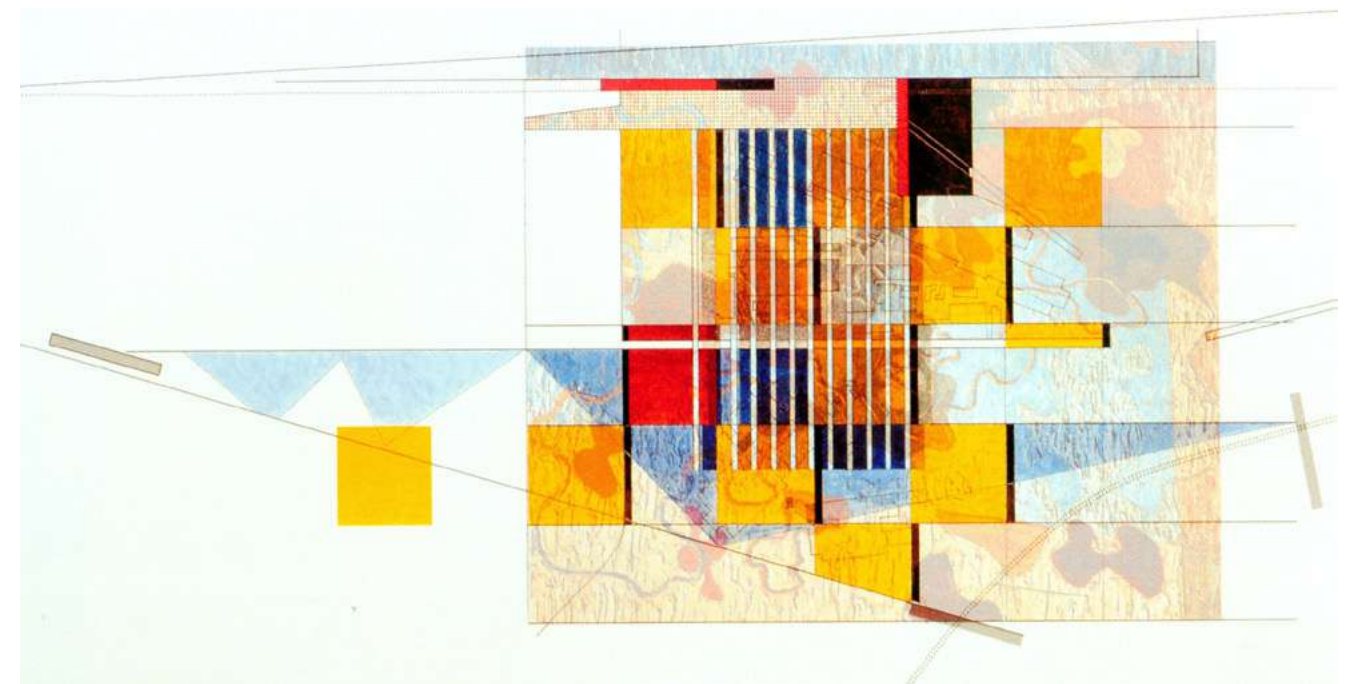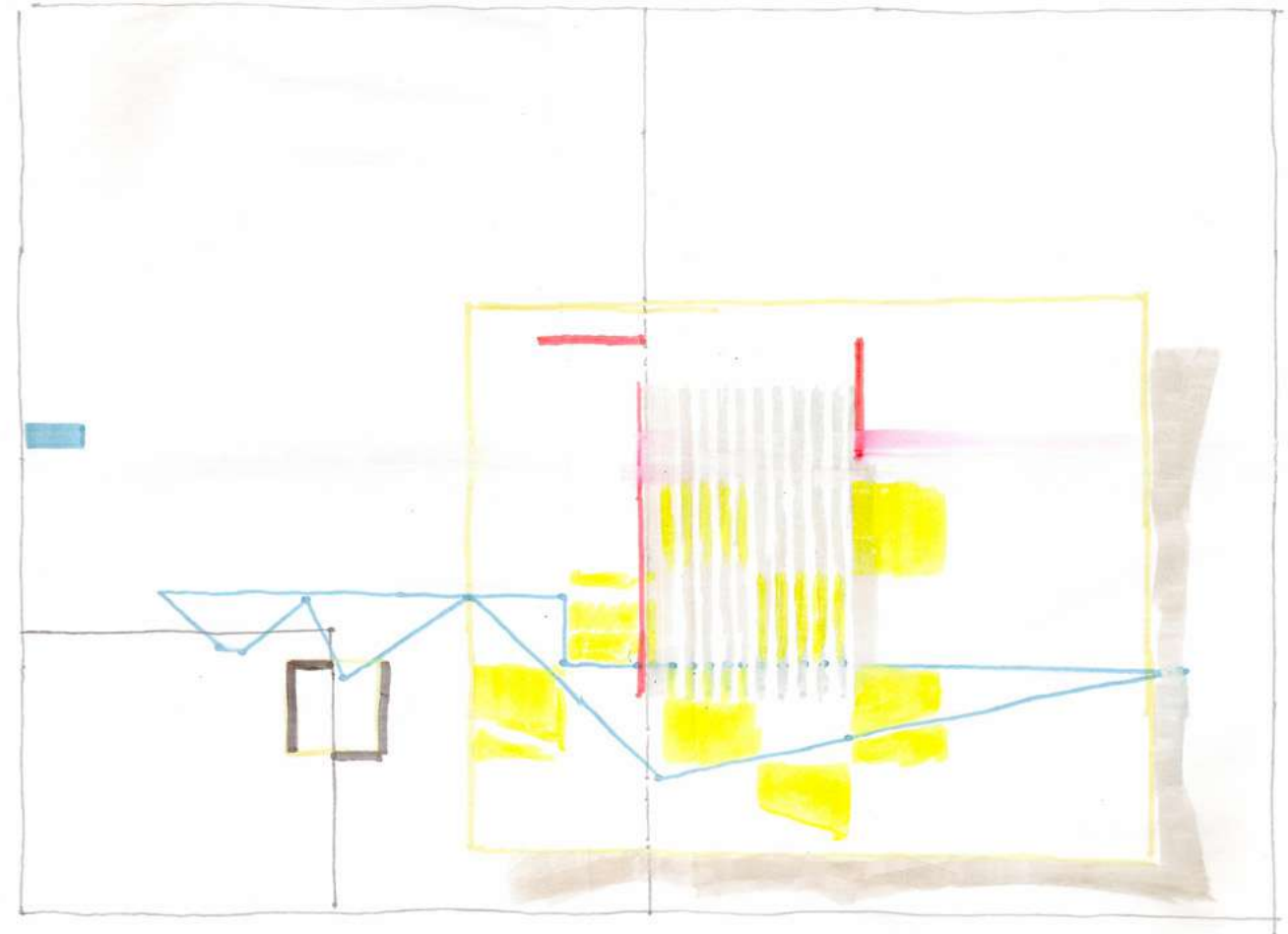
02a.

02a.

02a., 02b.

Piotr Barbarewicz, Ilario Boniello, Giovanni Corbellini, Armando Dal Fabbro, Giovanni Fraziano,
Massimo Iori, Giovanni Marras, Raffaella Neri, Project for Sesto San Giovanni, exhibition
"Progetto periferie", Triennale of Milan, 1995.

FRAU* schafft Raum
Memorial and platform against violence in Vienna

Spazio commemorativo e piattaforma contro la violenza sulle donne a Vienna

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The brutal feminicide of a young woman in Vienna marks the starting point for a memorial against gender-based violence. In 2022, after a won open call, the city of Vienna and UNIQA decided to finance the FRAU* schafft Raum project, which envisages the transformation of the small business premises, the scene of the crime, into an exhibition and meeting centre as a platform against gender violence.
The architectural project transforms the micro-environment into a flexible space in communication with the city. Light, industrial materials contrast with the heavy masonry of the historic building. A velarium reinterprets the memory of the tragedy without completely erasing its traces: a circle in the plaster lets the signs of the dark past emerge, resonating with the outside through a glass oculus. A sloping metal wall conceals service spaces and extends to the street like an invitation. The severe balance of the elements defines a new place with multiple levels of meaning, from symbolic to communicative and artistic. FRAU* schafft Raum is now an innovative space of 'active memory' and social prevention against violence against women.

Il brutale femminicidio di una giovane donna a Vienna segna il punto di partenza per un memoriale contro la violenza di genere. Nel 2022, dopo un concorso pubblico, la città di Vienna e UNIQA assicurazioni decidono di finanziare il progetto FRAU* schafft Raum che prevede la trasformazione del piccolo locale commerciale, scena del delitto, in un centro di mostre e incontri come piattaforma contro la violenza di genere.
Il progetto architettonico trasforma il piccolo ambiente in uno spazio flessibile in comunicazione con la città. Materiali industriali e leggeri entrano in rapporto con le pesanti murature dell'edificio storico. Un velario purifica la memoria del dramma senza cancellarne del tutto le tracce: un cerchio nell'intonaco lascia emergere i segni cupi del passato, entrando in risonanza con l'esterno attraverso un oculo vetrato. Una parete inclinata in metallo nasconde gli spazi di servizio e si prolunga fino alla strada come un invito. L'equilibrio severo dei segni definisce un nuovo luogo con livelli plurimi di significato, da quello simbolico a quello comunicativo e artistico. FRAU* schafft Raum è oggi uno spazio innovativo di "memoria attiva" e monumento dinamico di prevenzione sociale contro la violenza sulle donne.

00.

Entrance on
Nußdorfer Strasse 4.
©Christoph Kleinsasser

00.

A late 19th-century building overlooking one of Vienna's main thoroughfares, Nußdorfer Strasse, became a witness to a crime so heinous that it deeply shook the Austrian capital. On March 5, 2021, a 35-year-old woman was burned alive by her ex-partner inside the small tobacconist shop she owned and worked in. A femicide of such brutal savagery left its mark on the modest shop, with the charred remains bearing silent testimony to the tragedy. Almost immediately, residents of the neighborhood began leaving candles and flowers on the sidewalk, organizing protests, composing improvised poetry, and writing messages to commemorate the woman's life—a life that symbolized the suffering and plight of women everywhere.

Months later, political representatives of Vienna's 9th district, Alsergrund, made a bold decision: rather than erasing the traces of such a horrifying crime, they chose to transform the space into a public place of memory, prevention, and gathering. Their aim was to draw attention to the issue of femicides and, more broadly, to violence against women. Although Vienna is renowned for its exceptional quality of life and extensive social services, it remains, unfortunately, one of the European cities with the highest rates of violence against women.

The project FRAU* schafft Raum ("Women Create Space") emerged as an innovative initiative of "active memory," transforming the site of a murder into a space for communication and art, dedicated to and managed by women. It is part of a social platform that seeks to prevent and combat all forms of gender-based violence. This modern monument has no statues, plaques, or inscriptions. Instead, it exists as a public space directly open to the city and linked to a network that provides advice and support to women in need. The initiative has garnered the support of
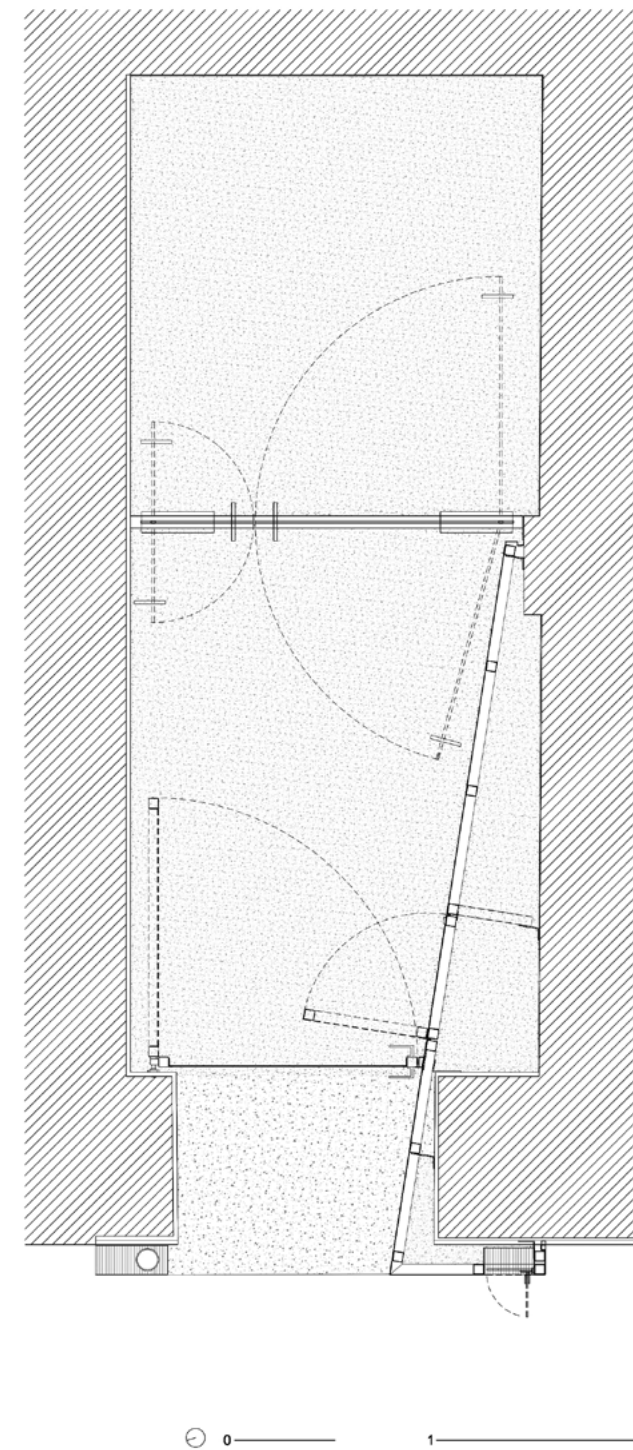
numerous organizations, associations, artists, and intellectuals, united by their determination to fight against gender-based violence. FRAU* schafft Raum is therefore a living monument, capable of transforming a space marked by unimaginable violence into one of remembrance, social support, and preventive action for women.

The project's realization was made possible thanks to critical support from UNIQA, the insurance group that owns the building. In addition to offering the space, UNIQA also provided financial assistance to create the memorial. The city of Vienna further supported the initiative by launching a public funding call, allocating additional resources to finance the cultural and exhibition program for the first three years. FRAU* schafft Raum, which won the won open call, fosters collaboration across various creative disciplines, including architecture, art, and photography. Its program includes at least four exhibitions per year, with each exhibit exploring themes related to violence against women. Changing every three months, these exhibitions make the small space a dynamic hub of urban art and collective debate, promoting dialogue and solidarity among women and with society at large. The square outside the building was also renamed "Ni-Una-Menos-Platz" in honor of the South American feminist movement, broadening the initiative's perspective to a global scale from this modest urban setting.

The architectural design blends historical elements, such as brick walls, stucco decorations, and a classical façade, with contemporary features like steel profiles, glass panels, and white fabric. The stark abstraction introduced by the modern materials aim to transfigure the tragedy of the site, shifting collective focus toward visual and symbolic expression. The simplicity of the surfaces softens the echoes of violence, offering a purified volume—a blank canvas for artistic installations and creative expression. The theme of memory was particularly challenging in the architectural design due to the harrowing nature of the events and the necessity of

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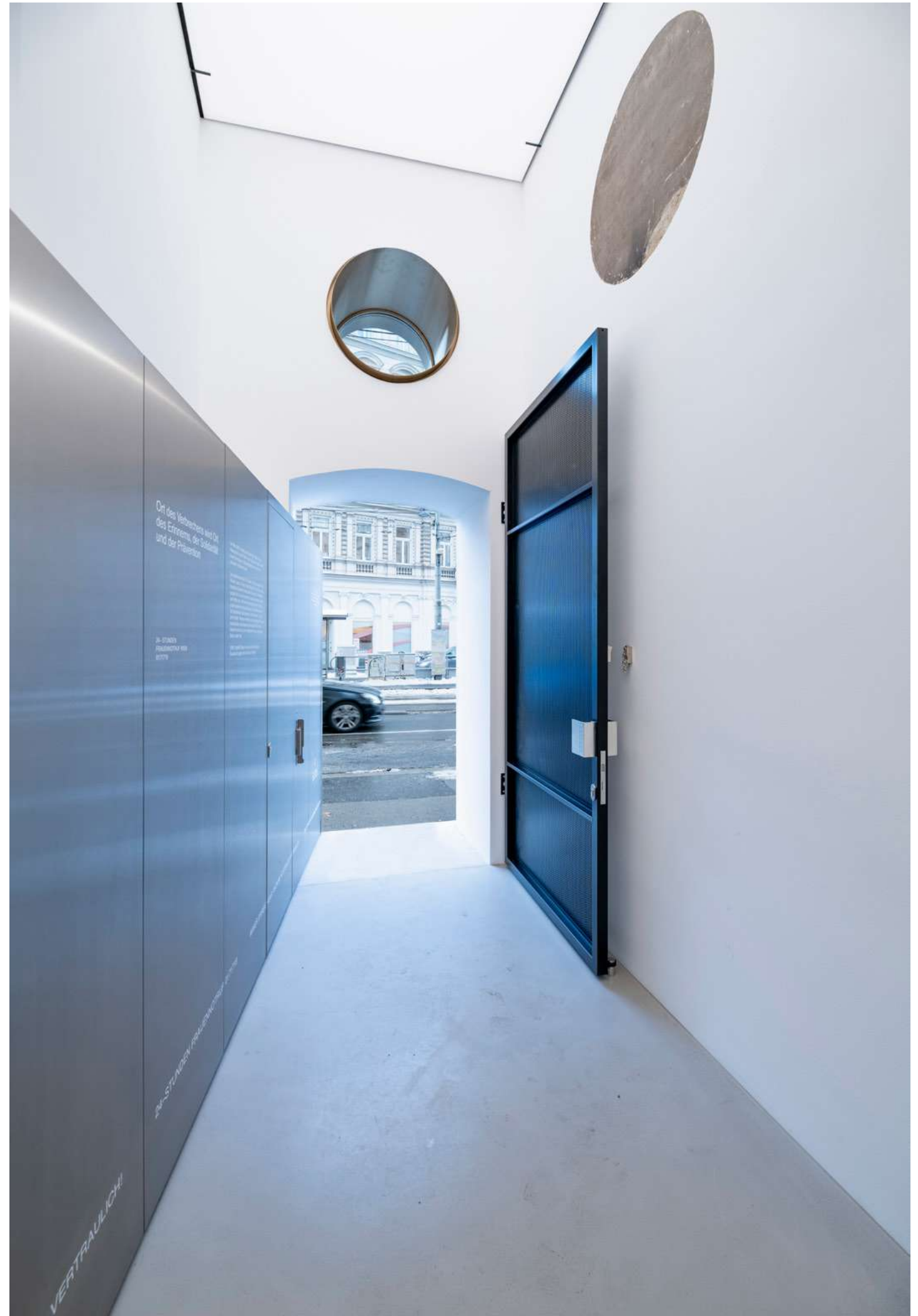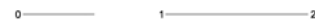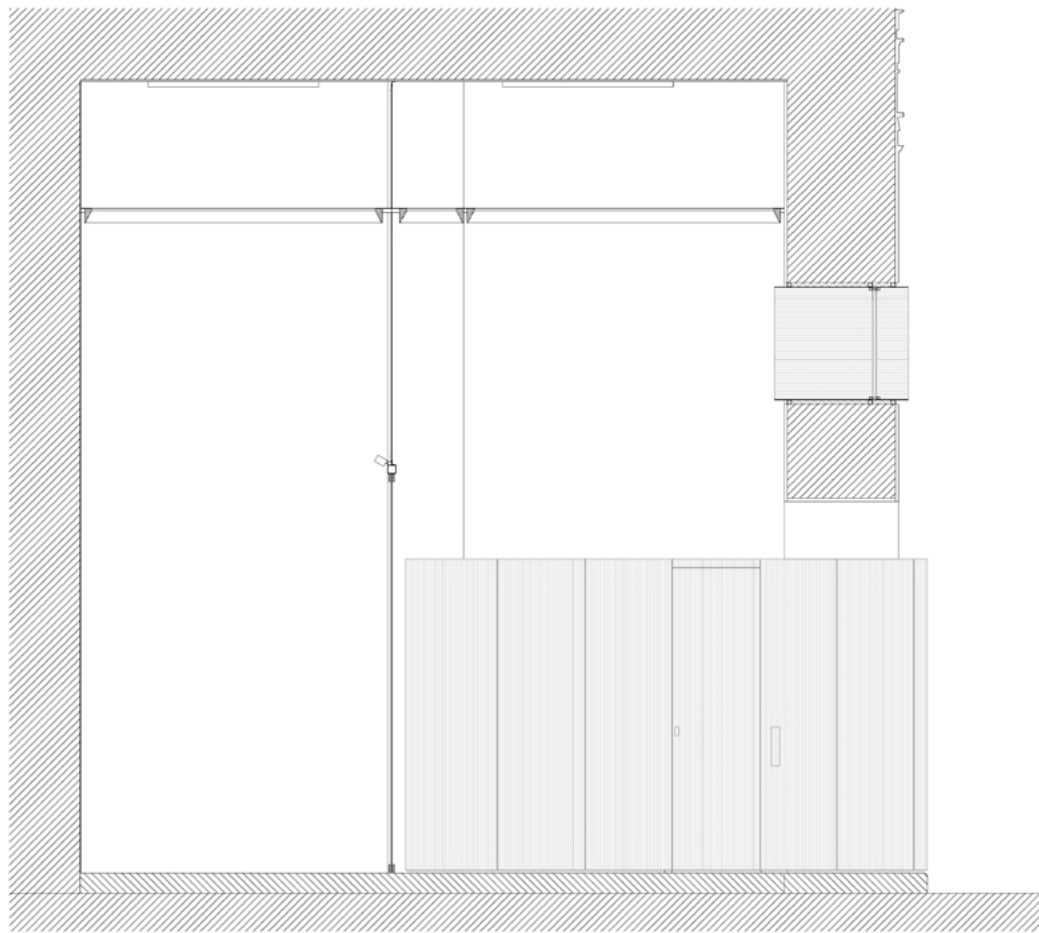
05.

West longitudinal section.
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06.

Interior.
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maintaining an appropriate emotional distance. Upon re-entering the space after the fire, the atmosphere was overwhelming. The blackened walls still carried the smell of burned gasoline and charred materials. The space felt less like a room and more like a dark, shapeless void devoid of compassion. Yet the project sought to reclaim this void, infusing it with positive value.

Most of the blackened marks left by the fire, both inside and on the façade, have now been removed. This was necessary to restore visual balance and make the space usable. However, one poignant trace of the past remains: a small circular cavity in the plaster, exposing a fragment of the original wall as it appeared immediately after the fire. This painful act of memory is confined within a perfect geometric form—a circle—both to clearly delimit the memory and to create a new resonance with the city. During renovations, the removal of the shop's exterior cladding revealed a historic oculus window hidden beneath layers of alterations. By bringing the oculus back into view and connecting it with the interior circular mark, a dialogue was created between the interior and exterior, projecting light and elements of the exhibition space outward into the city and vice versa.

Once freed of its oppressive traces, the space revealed its modest proportions: a narrow, elongated structure with an exaggerated verticality. The project focused on rebalancing this

07.

The velarium.
©Christoph Kleinsasser

fragment of space. A translucent white fabric screen, mounted on metal supports, lowers the ceiling, transforming it into a luminous canopy that diffuses light softly throughout the interior. This gentle glow serves as a gesture of reconciliation, sublimating the pain embedded in the walls. The design prioritizes expressive simplicity, foregoing embellishments or color to achieve clarity and visual serenity. A frameless glass door separates the interior from the street, while a delicate white cord mesh above prevents birds from entering. The space flows seamlessly onto the street, with a steel wall extending onto the sidewalk, signaling the space's presence while maintaining visual harmony. This steel wall, neutral in its gray texture, conceals small service compartments to preserve the overall balance of the design.

Despite its small scale, FRAU* schafft Raum carries profound collective meaning, operating on multiple levels. Socially, it offers a flexible space for testimony and dialogue. Historically, it preserves the continuity with the original building while embracing contemporary forms. Symbolically, it inscribes the memory of violence into the plaster, reframing it as a call to action. Visually, it balances the weight of 19th-century masonry with the lightness of modern interventions. And in its urban context, it reveals its presence through the steel wall that extends onto the street like an outstretched hand, inviting passersby in. The steel wall also displays a hotline number for women in distress, as well as a small showcase highlighting the work of the artist currently exhibited inside.

FRAU* schafft Raum does not close in a traditional sense; it is a pocket of resilience that expands from the street into the base of the 19th-century building—a space suspended between interior and exterior. It remains accessible even when its doors are shut. The black metal façade is micro-perforated, allowing passersby to glimpse the interior and keep the memory alive during closures. Seeing, pausing, reading, and meeting are actions the architecture invites and encourages. The black steel entrance door reuses the square aluminum plate that once served as the handle of the old tobacconist shop—a heavy, scratched plaque bearing the marks of countless hands that once touched it. These marks, left by customers and friends of the woman who ran the shop, and by strangers, remain as silent witnesses to a tragic past.
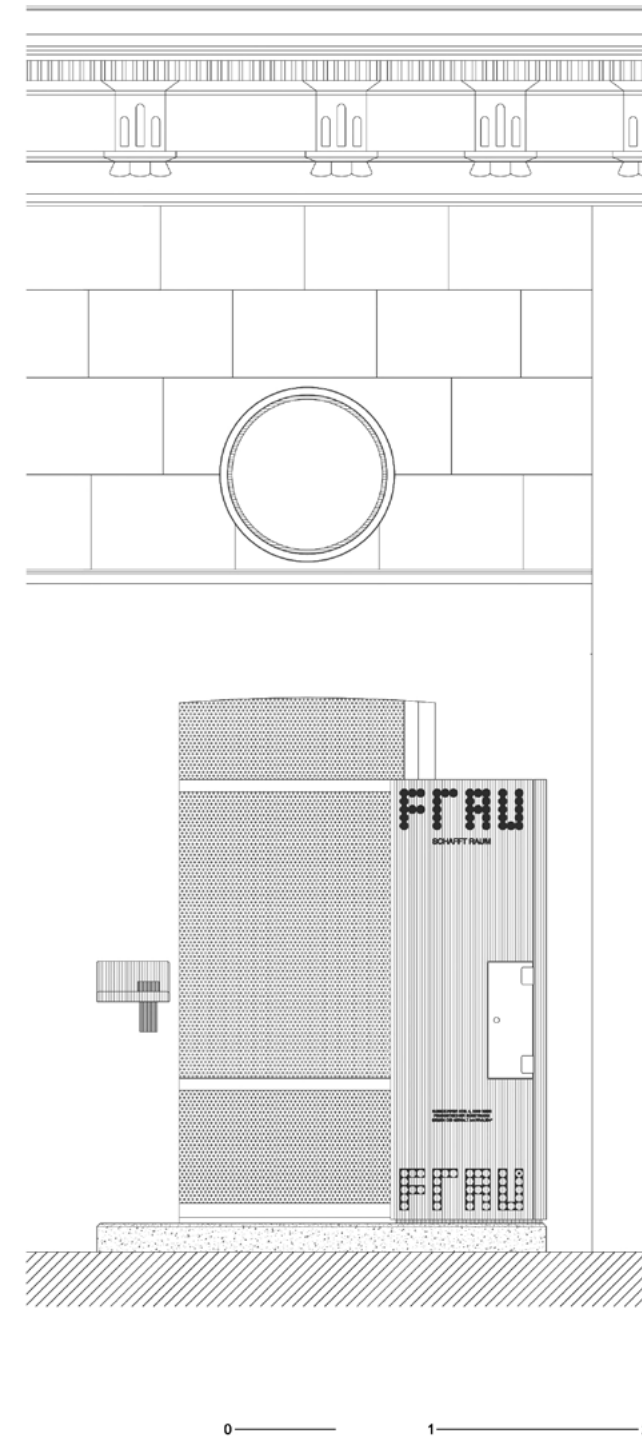
08.

Street facade.
©FREDIANA studio

On the building's exterior, opposite the glass showcase, a small steel shelf offers passersby the chance to place a candle or a flower in a printed glass vase—delicate symbols of a memory that is still very much alive in the neighborhood. Amid the bustling commercial activity of Nußdorfer Strasse, FRAU* schafft Raum stands out for its reserved facade, which, in the chaos of urban signage, becomes a striking exception. The light filtering through its layers of materials and surfaces allows everything to be seen—down to the smallest detail—even for those rushing past to catch a tram.

FRAU* schafft Raum is not only an innovative model of architectural remembrance but also a fragment of collective memory and the soul of a city. It is a testament to urban resilience and the ongoing effort to promote inclusivity and combat violence against women. Above the sidewalk, the oculus window casts light, drawing attention to the works exhibited inside or, at times, to the empty space awaiting its next story. This subtle sense of anticipation transforms FRAU* schafft Raum into more than an art gallery or a gathering place: it is the hushed echo of memory reverberating within those walls and the quiet promise of change—a change built slowly, day by day, by those who pass by and step inside this small but powerful space of active memory.

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