

Rovine urbane nei centri storici. Una metodologia integrata per un intervento sostenibile a Cagliari

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Il presente contributo si inserisce nel complesso dibattito internazionale relativo al ruolo che le architetture allo stato di rudere hanno avuto e che continuano ad avere nelle dinamiche di salvaguardia e valorizzazione dei centri urbani in termini di significati, testimonianze, valori ed opportunità. Come si vince dallo stato dell'arte, seppure si tratti di un tema ampiamente investigato, sia sotto il profilo teorico che pratico, esso pone ancora parecchie problematiche anche nel campo del restauro urbano e architettonico.

Dopo aver delineato il profilo storico e contemporaneo inerente gli approcci teorici e pratici sulle rovine, mettendo peraltro a confronto il mondo anglosassone e quello italiano, l'obiettivo del presente studio è stato delineare una metodologia olistica e transdisciplinare che consenta di indagare i valori strategici di tali manufatti e il loro potenziale contributo per la riqualificazione sostenibile dei centri storici. Tale protocollo è stato testato sulle rovine del centro storico di Cagliari, ancora fortemente segnato dagli eventi bellici della Seconda guerra mondiale. In tale contesto, i ruderi segnano con una forte accezione negativa il tessuto edilizio creando spazi incompiuti, assenze, punti nevralgici ancor oggi non risolti. Una valutazione comparativa dei quadri culturali e giuridici internazionali è stata la base per identificare possibili strategie e le linee guida per la salvaguardia delle rovine urbane storiche di Cagliari.



Urban ruins in historical centres. An integrated methodology for sustainable interventions in Cagliari, Sardinia

Elisa Pilia

«Why are we fascinated by ruins?
They recall the glory of dead civilizations
And the certain end of our own.
They stand as monuments to historic disasters,
but also provoke dreams
about futures born from destruction and decay.
Ruins are bleak but alluring reminders
of our vulnerable place in time and space»

Ruin Lust (B. Dillon 2014)

This research¹, carried out on the international level, stems from the awareness that ruins, while widely investigated on the theoretical and practical levels, still raise complex issues and debate that deserve further scientific investigation in the field of urban and architectural conservation.

The survey of the state-of-the-art of these studies shows how ruined structures are considered to be some of the «most complex and permanent symbols in Western culture»². This interest is clarified by the fact that they have been widely investigated over centuries during which they transformed and developed different nuances and meanings. Nevertheless, from the Second World War on, and

1. The present contribute is the summary of a wider research carried out by the author during her PhD in Civil Engineering and Architecture at the University of Cagliari, XXIX cycle, in collaboration with the University of Edinburgh, College of Art, at the Scottish Centre for Conservation Studies research, Edinburgh School of Architecture and Landscape Architecture (ESALA). Scientific supervisors: Donatella Rita Fiorino, Caterina Giannattasio, Silvana Mara Grillo, Ruxandra-Iulia Stoica. The study was financially supported by Sardinian Regional Government within P.O.R. Sardegna F.S.E. Operational Programme of the Autonomous Region of Sardinia, European Social Fund 2007-2013 - Axis IV Human Resources, Objective I.3, Line of Activity I.3.1.

2. DESILVEY, EDENSOR 2012, p. 465.

especially in the last decade, approaches to ruins have changed, bringing new emphasis and interest to the academic field and among the broader public: the vast literature confirms this tendency regarding both rural and urban contexts, arising an intensification of interest called “contemporary Ruinenlust”³, a sort of obsession with ruination and decay.

In general, scholars throughout the world have studied the role of ruins and their values⁴ in different fields of the human sciences, archaeology, human geography, literary studies, arts and history, urban and landscape studies, tourism studies, symbolism, relationship between ruins, nature and culture, aesthetic studies, architectural conservation and preservation⁵.

In general, if the extensive literature focuses on ruins in the architectural field, offering broad attention to theoretical – aesthetic, philosophical – and design issues, this scenario has provided stimulus to rethink these misunderstood architectural objects that have been often restored with controversial interventions. From the exam of these contradictions stemmed the necessity to codify a trans-disciplinary approach that, starting from in-depth exploration, understanding and knowledge of ruins, might offer a solid basis for the assessment and enhancement of their values as well as subsequent sensitive intervention respectful of their history, form, stratifications, materials, and context. Furthermore, this approach considers all the issues: urban, architectural, economic, aesthetic, and social, and the possible and compatible reuse of ruins geared toward processes of rehabilitation and enhancement of urban contexts.

In this sense, after a global overview without neglecting other European methodologies and practices, the study focuses on two approaches: the Anglo-Saxon and the Italian ones, chosen for their long traditions in conservation and the sensitivity to ruined heritage which developed into two different ways.

On the one hand, the Anglo-Saxon conservation field has several interesting contemporary interventions for the enhancement and promotion of its ruined cultural heritage. These are designed

3. *Ivi*, p. 465.

4. STEAD 2003; FEATHERSTONE 2005.

5. For the role of ruins in human sciences see AUGÉ 2004; STOLER 2008; DAWLY 2010; in relation to archaeology see GORDON 2010; GERMANÀ, RUGGIERI TRICOLI 2013; for ruins and human geography see EDENSOR 2005; EDENSOR 2007; HATHERLEY 2010; DESILVEY, EDENSOR 2012; in relation to literary studies HELL, SCHÖNLE 2010; for ruins in arts and history see ASTON 1973; WOODWARD 2002; MAKARIUS 2004; DILLON 2006, 2011; FERRI 2015; in relation to ruins in urban and landscape studies see MATTEINI 2009; CAPUANO 2014; GÖBEL 2015; for ruins in tourism studies PÁLSSON 2013; the relationship between ruins, nature and culture is analysed in SIMMEL 1911; ROTH *et al.* 1997; WOODWARD 2002; for ruins in aesthetic studies see ZUCKER 1961; GINSBERG 2004; finally, in the field of architectural conservation see GAZZOLA 1967; THOMPSON 1981; MARINO 1989; DESROCHERS 2000; MARINO 2002; DE MARTINO 2004; BILLECI *et al.* 2006; THOMPSON 2006; ASHURST 2007; FIORANI 2009; OTERI 2009; UGOLINI 2010; *Confronti* 2012; PICONE 2012.

on a value-based approach that bases its process of conservation or transformation on the assessment of the tangible and intangible values of the building or urban fabric. On the other hand, the Italian approach, focused on more detailed analysis, has become characterized by obsessive research into the preservation of history, memory and identity which has led to practices of non-intervention or extremely slow processes of rehabilitation.

These reflections led to think that cross-pollination between the Anglo-Saxon value-based approach and the Italian conservation tradition might lead to the definition of a new experimental methodology to be tested in Cagliari's historical centre. Therefore, Cagliari and its ruins can be considered the experimental case of research for developing a broader study of the problem, defining and testing a new methodology based on the comparison of international experiences and issues in order to delineate practical guidelines for sustainable interventions.

The contemporary debate on ruins

The unresolved debate on how best to preserve ruins, especially after Second World War, continues among academics the world over, raising questions that merit further investigation. This is clearly evidenced by the numerous conferences, published articles and monographs addressing the issue⁶.

This complex theoretical discussion does not find its application in the practical field where numerous projects regarding ruins have shown how these incomplete architectures are still increasingly rejected

6. Several important talks and papers have been published in the theoretical field regarding ruins. Considering international conferences, it can be mentioned: *Ruins of Modernity* (2005) organised by the University of Michigan in Ann Arbor; *L'Imaginaire des ruines* (2006) organised by the Université du Québec in Montréal; *La ruine et le geste architectural* (2007) organised by the Société française des Architectes in Paris; *Relitti Riletti. Reread Wreckage. Transformation of ruins and cultural Identity* (2007) organised by Marcello Barbanera at the University La Sapienza in Rome; *Rovine e macerie. Obliare, rimembrare, riedificare* (2005) edited by Giuseppe Tortora at the Centro per la Filosofia italiana in Pompeii. Articles regarding theoretical questions and specific case studies were published in other proceedings of international conferences and journal: DESROCHERS 2000; AVENT 2011; RODWELL 2014; STANFORD 2014; «Performance Research. A Journal of the Performing Arts», an entire volume entitled *On ruins and Ruination* (2015). In Sardinia, two conferences demonstrated that the issues relating to abandoned and neglected architectures are still controversial even on the local scale: *Il rudere tra conservazione e reintegrazione* (2003) (BILLECI *et al.* 2006) organised by Bruno Billeci, Stefano Gizzi, and Stefano Scudino in Sassari and *Antiche ferite e nuovi significati. Cagliari e la città storica* (2007), organised by Caterina Giannattasio at the University of Cagliari (GIANNATTASIO 2009). Other significant monographs on the topic, not already mentioned, are numerous principally in the Anglo-Saxon context: MACAULAY 1953; VERGARA 1999; DILLON 2011; MUSSON 2011; and not only: AUGÈ 2004. Regarding wartime ruins, several authors provided contributions in Italy and Europe: RICHARDS 1942; LAMBOURNE 2001; TRECCANI 2008; CASIELLO 2011; DE MARTINO 2011; DE STEFANI, COCCOLI 2011; PRETELLI 2011; RUSSO 2011; FIORINO 2016; TRECCANI 2016.

due to their complex underlying issues⁷. Architecturally speaking, ruins are complex structures that necessitate re-consideration and/or design for their conservation or reuse. In contrast, ruins take on different meanings when approaching the question from the philosophical or anthropological points of view. They cannot accept human intervention but only distance as a sign of respect. Again, these two opposing observations have shown how, from different perspectives, the concept of ruins can be controversial and complex in today's debate.

Overall, the international literature can be divided into theoretical and practical explorations.

Theoretically speaking, this debate has stimulated discussion also regarding some key concepts. «Ruins are simultaneously an absence and a presence [...]. They are an intersection of the visible and the invisible»⁸. This presence-absence duality speaks of the tensions between that which has been preserved and that which has been lost, between that which can be immediately used and that which should be interpreted. Ruins are metaphors of absence and, at the same time, of reflection, productive metaphor of modernity's self-awareness and reflexivity. This is because it represents vacuity and loss as constituents of modern identity⁹.

These anthropological aspects also evoke the psychological implications of memory, identity, and place attachment as well as political and economic issues¹⁰. In light of these considerations, ruins can become opportunities with great creative potential, key ingredients in the regeneration of places and in the consolidation of place identity¹¹.

From all these theoretical premises, a commonly accepted framework for practical approaches to urban ruins cannot be found; this is due to the fact that such approaches are deeply related to the historical development of the concept of ruin, cultural events and current values system in each country. In fact, considering the ample international debate regarding contemporary interventions on ruined buildings¹², Europe, the Americas, Eastern countries and Australia all deploy different approaches and degrees of intervention in solving the complex issues associated with ruins, strongly related to the interpretation of the notion of ruin, its origin, typology, localisation as well as aesthetic and all the psycho-social and economic implications related to them. It can be asserted that the two

7. FIORANI 2009, p. 342.

8. ROTH *et al.* 1997, p. VII.

9. HELL, SHÖNLE 2010, p. 6.

10. HELL, SHÖNLE 2010; EDENSOR 2011.

11. EDENSOR 2011, p. 474.

12. THIÈBAUT 2007; FERLENGA *et al.* 2008; FIORANI 2009b; KLANTEN, FEIREISS 2009; GIANNATTASIO 2009; OTERI 2009; UGOLINI 2010; BALZANI 2011; CARBONARA 2011; BLOSZIES 2012; GIANNATTASIO, COCCO 2017.

main approaches can be summarised in conservation and integration, both consisted of different levels of interventions.

Within this panorama, the current study has considered the two countries that have significantly contributed to the discourse concerning ruins theoretically and practically: the United Kingdom and Italy. Both have been, and are still, characterised by strong conservation approaches, albeit in different ways. There is no doubt that in Britain ruins are much more highly considered and preserved than in the rest of the world. The birth and formation of a “modern cult”¹³ of ruins is related to the high presence of structures in state of ruins and its consequent early planning protection for this kind of heritage in 19th century¹⁴. The origins of these ruins can be traced to the historical events that unfolded due to the power the State and the Church, both of which played important roles in the development of buildings in the state of ruins as well as in the process of reuse or conservation of this heritage.

In particular, the Reformation in the 16th and 17th centuries, more especially the Dissolution of the Monasteries and the Civil War¹⁵ created a tremendous quantity of ruins from the medieval period. In fact, with the Acts of 1536 and 1539, monasteries were dissolved, and monastic life ended, leading to the formation of most of the ruins in the history of Great Britain. A modest number of modern ruins, instead, came from the wartime bombings during World War II. As a consequence of this elevated number of ruins and awareness of their cultural importance, the UK became the cradle of the International Conservation Movement.

In the late 19th century, the ideas of art critic and theorist John Ruskin and artist and social critic William Morris spawned generations of architectural heritage protection activists who deeply marked future English policy. It was in this period of the romantic and picturesque traditions that the British sensibility for heritage grew, and the concept of Conservation, a key word in UK policy and key contemporary component in architectural and planning practices, developed.

Since this time, the UK has been a global leader in both architectural and urban conservation and is currently a model to which many countries lacking strong governmental support for heritage aspire. The widespread heritage of ruins in Great Britain is carefully enhanced and managed by the two main national institutions, Historical England and Scotland (figg. 1a-b). Here, the long tradition of

13. PANE 2011, p. 53.

14. This protection started with the Ancient Monuments Protection Act of 1882. It consisted of the guardianship of prehistoric monuments but successively become an act to safeguard all unoccupied structures. Ruined structures were also included. This law was regularly amended and extended in the early 20th century so that from 1908 on, an inventory of monuments was initiated. Current legislation is still based on the Ancient Monuments and Archaeological Areas Act of 1979 and the Listed Building and Conservation Areas Act of 1990.

15. THOMPSON 1981, p. 13.

the protection of ruins and urban conservation areas has brought special attention to well-codified conservation planning policies. This conservation approach, called “value-based”, has then found application in all the Anglo-Saxon area offering several best practices.

The situation is different in Italy, a country that because strongly influenced by the “weight” of its history has been characterised by more technical investigations that led to slower and less widespread transformation processes than in other European countries¹⁶. Since the 19th century, with the first important restoration projects of the Colosseum by Raffaele Stern and Giuseppe Camporesi (1806-1807), and Giuseppe Valadier’s work at the Arch of Titus (1818-1822), Italy demonstrated great sensitivity to and respect for ruins, widespread distributed in all its territory. Indeed, a «first comprehensive law on architectural conservation»¹⁷, the Monument Act, established in 1920, and the political unification of the Kingdom of Italy influenced Italian heritage conservation. Then, the post-war debate deeply influenced and signed the Italian thinking on ruins. In fact, here, wartime bombing caused destruction in strategically placed cities where, for many years, reconstruction was driven by urgency¹⁸. This period saw the development of new ideas with the contributions of important personalities such as Benedetto Croce, Giulio Carlo Argan, Cesare Brandi and Roberto Pane arriving at the definition of a philological approach who introduced the three *istanze* or features – historical, aesthetic and psychological – to stress the value of history, artistic and aesthetic enjoyment, and memory. Nevertheless, Italy is nowadays characterised by an “immobility”, more common in the smaller Italian cities, and has changed the image of the historical centres with inertia and lack of intervention leading to processes of ruination and abandonment. This uncertainty, characterised by a complex bureaucracy and legislation¹⁹ and, as consequence by insignificant interventions, have determined and increased urban fragmentation due to poor management. This is especially true if we consider Sardinia where there has been a notable lack of policy and funding for improvement, with ruins completely neglected. Only few interventions, regarding singular monuments in the past, have been undertaken (figg. 2-6), leading to widespread decay.

16. LEVI MONTALCINI 2002, p. x.

17. STUBBS *et al.* 2011, p. 14.

18. BELLINI 2011, p. 11.

19. Today, in Italy all interventions are regulated by the administrative law called the Codex for Cultural and Landscape Heritage (art. 10 of the law 137, 6th July 2002).



Figures 1a-b. Scotland. Two cases of preserved and reused ruined heritage. On the top, a. The industrial village of New Lanark. It was completely abandoned before to be restored and listed as a World Heritage site. On the bottom, b. The ruins of Melrose originated by the Reformation are preserved and conserved (photos by E. Pilia).



In this page, on the top, figure 2. Cagliari, Italy. The reconstructed church of San Domenico in the historical quarter of Villanova. aerial view. Between 1952-1954, a new church in contemporary materials and forms was built on the ruins of the medieval monument, bombed during the WWII. The project was designed by the architect Raffaello Fagnoni. On the bottom, figure 3. A detail of the intervention of reconstruction where a concrete ceiling has been added to the historical limestone structures (photos by E. Pilia).



In the next page, figures 4-6. Cagliari, Italy. The military ruins of Sant'Ignazio Forth. Here, a restorative approach was used between the eighties and nineties by the Council. It mainly consisted in the consolidation of the existing structures and in their reintegration with materials found in the area. These integrations were designed 10 cm behind the original wall in accordance with the building's aesthetic value (photos by E. Pilia).



An experimental Anglo-Italian transdisciplinary methodology for ruined structures

From these premises, the methodology designed here stems mainly from the union of Italian culture of critical restoration and models deployed in Anglo-Saxon countries: the UK, the USA, Australia, New Zealand and Canada which share the same British legal tradition. All the differences, in terms of practical interventions, in protection policy as well as methods and techniques of investigation between these two cultures led to the design of a common 'Anglo-Italian methodology' to test on the local context. Furthermore, through their analyses, positive practical case studies suggested different themes for further reflection in order to understand and resolve some difficult issues in Cagliari.

This experimental methodology seeks to transcend the weaknesses of these two approaches deeply examined, considering the tangible qualities and characteristics of urban heritage in state of ruins, emphasising the role of the intangible aspects that cannot be quantified, as well as considering the entire urban context and its far-ranging issues. For these reasons, the method proposes a "transdisciplinary approach", intended not only as the integration of knowledge of a specific research topic but also as the assimilation of reciprocal bodies of knowledge, overcoming the concepts of multidisciplinary and interdisciplinary work²⁰. In such an approach, there are no boundaries between sectorial disciplines, but exhaustive and complete comprehension of the ruin.

The methodology is conceived in four steps (fig. 7).

The first macro level considers the ruin as an 'urban tile' that metaphorically composes the city's whole puzzle. It is focused on the knowledge of the historic integrity and cohesion of the neighbourhood contexts identifying the characteristics of the spaces in which the ruins are located, including physical and functional dimensions. This means studying the morphology and history of the area, investigating planning legislation, strategic plans and conducting urban surveys and analyses also based on digital design techniques.

The second micro level considers the ruin as a 'stone document' according to Hugo's definition of the city as "book of stone". It analyses the architectural, material, chronological, and structural aspects and is strictly related to the investigation of the building fabric in its historic, morphological, material, and technological aspects through an archaeometric approach that seems to be the most suitable for the anatomical knowledge of the structures. This line of inquiry, consisting of traditional and innovative tools, considers ruins as educational and benchmarking instruments that, through their study, can bear important information both for understanding how a structure is made, and consequently for defining a correct conservation and design project. Moreover, this approach identifies possible typological and

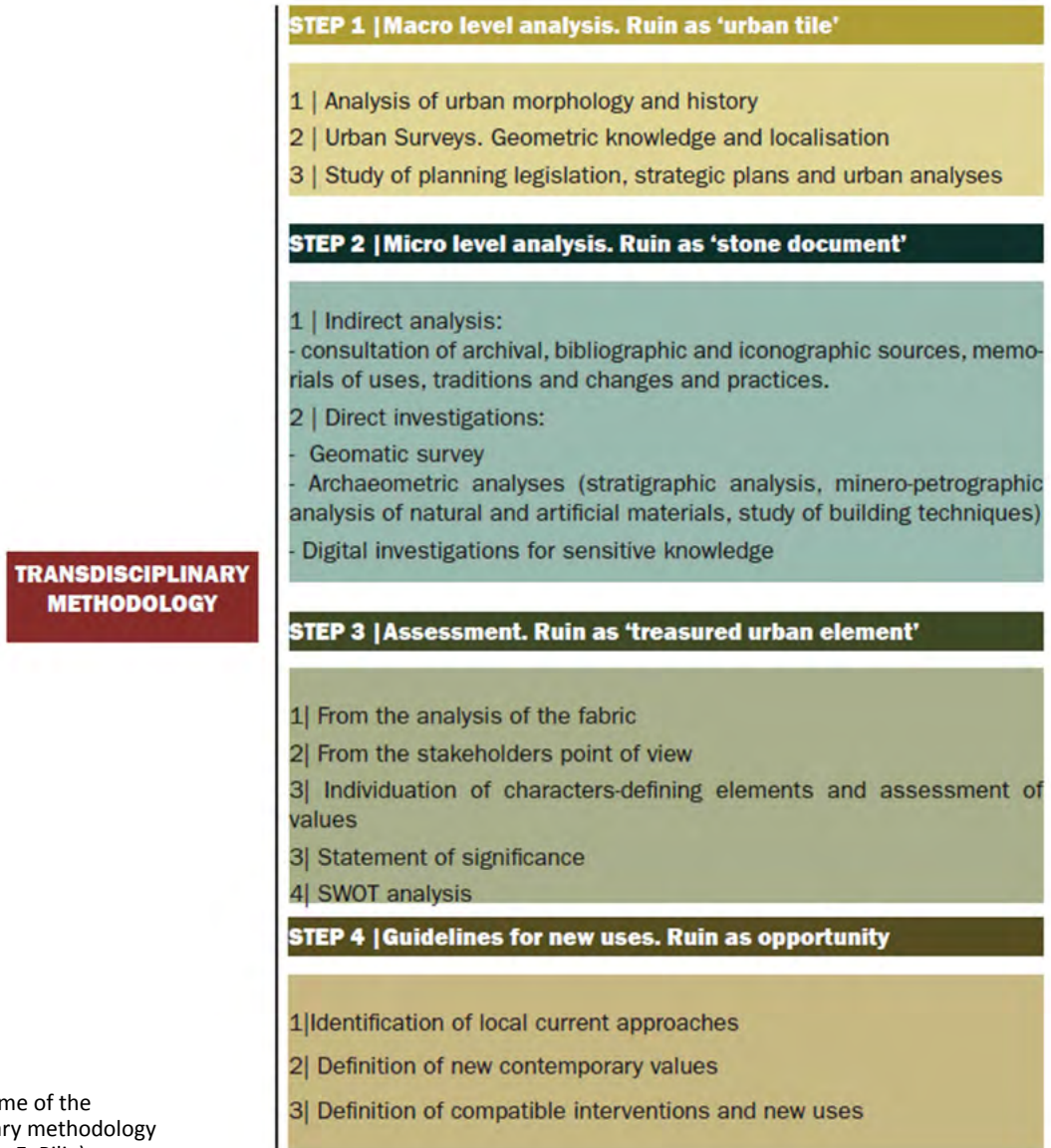


Figure 7. Scheme of the transdisciplinary methodology (elaboration by E. Pilia).

dimensional constants referring to a specific geological context and period. Thus, these constants might also be useful tools for comparing and dating coeval structures, such as other “minor works of architecture” that are difficult to date²¹. This is relevant to the case of Cagliari where all urban ruins are stratified sites dating from before the 19th century and built with local materials and traditional building techniques.

Then, a third step, called “assessment”, conceives the ruin as treasured urban element. After the analyses of the context and the structures, the method proposes the identification and the understanding of embodied values, also considering the intangible components of ruins.

They are conceived according to the cultural values model²². In that method, heritage values divided in tangible and intangible, derive from the analysis of three features: form, practice and relationships that are continually changing in the urban landscape. While form represents the tangible and material features that can be directly investigated, relationships and practice are the two features that embody intangible aspects considering history, traditions and past uses of ruins. From these features, connoted by functional, evidentiary, sensory, associative aspects, the analysis of leads towards the identification character-defining elements. These elements represent the features of values that are embodied in the structures and can be considered key features to protect and preserve for the enhancement of the building’s significance and that should be transmitted to the future.

Values, assessed in a hierarchy through a transdisciplinary process also take into consideration the participation of stakeholders that contribute to sustainable conservation planning and management within a holistic process (fig. 8). A SWOT analysis and comparison of local proposals and international experiences grant objectivity to constructive discussions for reaching a definition of balanced guidelines. In this fourth step ruins have been considered as opportunities for the historical core. Starting from the identification of local current approaches, all the previously investigations allow not only at the definition of compatible interventions for the case study considered but also at the definition of a range of new contemporary values for this kind of structures.

Generally, the approach, based on tools and methods used in technical and value-based approaches, follows a rigorous procedure in which sectorial methods produce a wide range of data from different sources that can be triangulated, allowing a holistic, comprehensive and transdisciplinary analysis that explores all aspects.

21. FIORINO, PILIA 2015; FIORINO *et al.* 2016; PILIA, PIRISINO 2016.

22. STEPHENSON 2008.

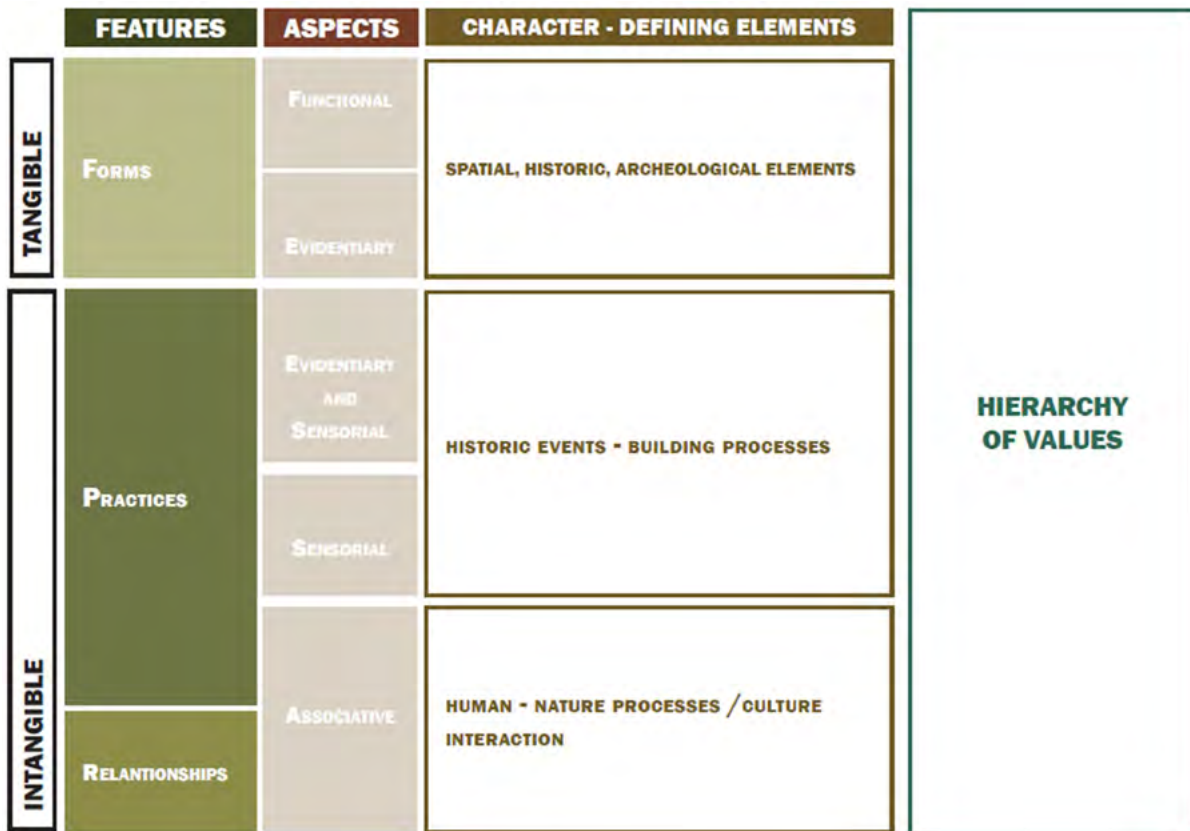


Figure 8. Matrix of cultural significance (elaboration by E. Pilia).

A case study: the historical centre of Cagliari and the ruined convent of Santa Chiara

This protocol, defined for its application to urban ruins in different historic contexts, found its premises in some observations relating to the historical centre of Cagliari, the regional capital of Sardinia, characterised by a great presence of ruins and consequently chosen as case study for testing the methodology. In this urban context, monumental, archaeological, residential and public spaces from different historic periods are objects of ruination. Their origins can be mainly identified in the destructive wave of the WWII and in continuing processes of obsolescence that have led, year by year, to the formation of true fragmented structures and empty spaces or, in other terms, place of waste. In particular, the medieval ruins mainly, originated by the WWII, were seen as an opportunity to reconsider these problems on a local scale. In fact, this city lies at the centre of a vigorous debate on how best to make use of such abandoned and neglected heritage causing so much urban decay. Cagliari still manifests the visible scars of war, which have contributed (and continue to contribute) to the gradual, on-going decay of its historic neighbourhoods, which today are experienced as and considered the mere wreckage of history.

The careful analysis of Cagliari's historical urban landscape through the macro level analyses, has consisted on the study of its form, history and urban planning. The analysis of its ruins has started from documents of the end of the 19th century, when Cagliari was a growing city that had to face the unhealthy slums of its historical centre and was also characterised by numerous ruins. Several authors began to represent these local memories surrounded by the natural landscapes in pictures²³ (figg. 6-7). But, these ruins were not the only ones which characterised the city of Cagliari. In fact, the WWII and its devastation marked the cityscape deeply (figg. 8-11). For these reasons, in this first step of analysis, the study has been also focused on the understanding of this war destruction, its percentage of damage (fig. 12), the post war interventions arriving at identifying and cataloguing the current ruined structures (figg. 13-15) according to their origins and typologies (figg. 16-17). These urban investigations have been supported by innovative design technologies and techniques that have allowed the study of the accessibility around urban ruins and their connection by means of paths, for emphasising collective interaction and revealing latent spatial connections between ruins within the local historical context. This was also an experimental way through which to reorganise, reframe and

23. Panoramic views showed the ruinous conditions of the Phoenician-Punic archaeological remains like the Tuvixeddu necropolis as well as the Roman amphitheatre and the medieval defensive walls and towers. Eduard Delessert and the English Dominican priest, Peter Paul Mackey, were only two of the several authors of these picturesque and poetic views that joined aesthetic melancholy contemplation of ruins with condemnation of their state of abandonment.



Panoramic views of Cagliari in late 19th century. From the top, figure 6. The ruined tower of Saint Pancrazio; figure 7. The archaeological remains of the amphitheatre both in state of abandon (Photos by E. Delessert <http://www.sardegnaicultura.it/>; online December 2017).





In the previous page, figure 8. Castello quartier view from a dirigible in the 19th century with highlighted the bombed areas (elaboration by E. Pilia on the council archival photo number 0029). In this page, from the top, figures 9-11. Three current ruined spaces: Piazza Palazzo, Vivaldi-Pasqua Portico, Santa Chiara convent (photos by E. Pilia).



Figure 12. Particular portion of Castello quarter a) re-elaboration of the Genio Civile post-war cartography with the percentage of damage; b) current survey showing the presence of ruins and empty spaces from bombings; c) orthophoto with highlighted the neglected areas (elaboration by E. Pilia).



Two current wartime ruins in Via dei Genovesi: from the top, figure 13. Aymerich Palace; figure 14. A derelict façade with infesting vegetation (photos by E. Pilia).

augment the collective experience of the urban spaces²⁴. The elaborations of this analysis revealed a movement map (fig. 18) of the city with the preferential paths through which people experience the city during the day and, most importantly, has permitted to understand how (in terms of speed) and where the participants crossed the centre.

Furthermore, it has also allowed to individuate urban nodal points where ruins are placed, and to establish an architectural ruined case study for testing the second step of the experimental methodology: the medieval ruined convent of Santa Chiara (figg. 19-21), a representative monumental case that might sum up all the urban issues and potential in this context. This is a ruined monumental structure in the city's historical core, greatly damaged during the WWII but previously fallen into ruination due to disuse after the abolition of the monastic orders²⁵. The convent ruin is located in Stampace on the western side of the Castello hill in a flat area between the Santa Croce Bastions, Via Santa Margherita and Piazza Yenne, a nodal urban space connecting the three historic quarters of Stampace, Castello and Marina. It is part of a more extensive monumental complex that also included the baroque Santa Chiara church and the local Santa Chiara market built in the modern era (fig. 22).

Starting from indirect analyses, supported by archival (cartographies, documents, photos and iconographies) and bibliographic sources it has been possible to reconstruct the history of this fabric, starting from its origins to its decline, the restoration works and current state of ruination. The monument, assigned to, and occupied by, the order of Clarisse nuns, was built in the 14th century on an existing church dedicated to Santa Margherita outside the city's medieval defence walls and isolated from the urban context. During the 17th century, the baroque church was built in its current form and the convent was probably enlarged during some restoration works. Indeed, relationships changed with its surroundings as it began to play a significant role in the city's urbanisation and economy. At the end of the following century the convent was described as an unhealthy place, especially the dormitory due to its location near the humid embankment. As a consequence of its structural obsolescence, the order sharply declined in the 19th century closing definitely its activities in 1864. In the meantime, the engineer Gaetano Cima designed a new urban plan (1858) for the city in which the Santa Chiara complex became a nodal point of connection between neighbourhoods through the

24. Using a simple GPS recorder installed in smartphones: GPS Logger for Android, it has been possible to collect recording of paths from 50 walkers around the historical centre. This data was managed and processed with 3D rendering software like Rhinoceros and Grasshopper, and finally all the paths were georeferenced into a 3D model of the urban city of Cagliari.

25. In 1864, the national law for the suppression of the mendicant orders contributed to closing all the convent of the city and their consequent downfall.





In the previous page, figure 15. The ruined Vivaldi Pasqua Portico in Cagliari (photo by E. Pilia).

Figure 16. Map of part of the historical centre of Cagliari with individuated ruins according to their origin (elaboration by E. Pilia).



Figure 17. Map of part of the historical centre of Cagliari with individuated ruins according to their typology (elaboration by E. Pilia).

design of a monumental staircase on the rocky and wild uphill path to Castello from Piazza Yenne²⁶.

With the closure of the convent in the 20th century and its consequent desertion, the area lost its central role to become a neglected place. In 1943, WWII bombing destroyed part of the structures and the consequent clean-up returned a ruined shell of masonry with no roofs and floors. Then, in 1957, a temporary local market was installed inside the convent transforming the space with new roofs, floors and partitions. At the time, the area became important again, although in a different way from its previous religious role, having been a point of convergence for Castello, Stampace and Marina.

Due to this significant role, and the convent's importance, the Council moved the market close to the church access stairs where, in 1984-1985, the Superintendence carried out important archaeological excavations on the structure; it also performed some structural renovations and repairs with compatible materials. In the nineties, the decision to install a lift in the space between the church and the convent, the original location of the confessionals and oratories, raised additional issues in terms of the legibility of the structures, perceived as two different buildings. Today's disuse of the lift has intensified the abandonment of this place and, notwithstanding the recent restoration and integration work by the Superintendence (designed by architect Paolo Margaritella), nobody can access these structures.

After this historical study on the origins and transformation of the fabric, a more detailed protocol of investigation has been based on detailed geomatics surveys. The presence of different levels and macroscopic structural anomalies as well as the numerous stratigraphies discovered during the several surveys, led to the decision to support geometric knowledge with the greater accuracy provided by laser scanner techniques (TLS) and GPS survey (figg. 23-25). Starting from the restitutions of these surveys (fig. 26), archaeometric investigations were carried out with the goal of better defining forms, materials, practices, and technologies (fig. 27).

Following an archaeological approach, this phase considered a rational sampling in view of the different kinds of mortars used, where and how they were placed, also considering stratigraphic investigations. In detail, the sampling was made according to specific goals: the qualitative characterisation of the materials due to their compatible reintegration and the identification of their chrono-typology to support the building's overall chronology given by the stratigraphic analysis of the masonries. It concerned only mortars and consisted of 20 samples, investigated both with transmitted and reflected light microscope and by means of X-ray diffractometry. The stratigraphic and minero-petrographic

26. After these events, in 1866 the area was sold to the Council (Act n. 1292, 15th January 1897; notary Giuseppe Sulis). The same council then left the building to the State in 1911 for its complete demolition and new construction of offices for the fiscal police. At the time, and precisely in 1908, the first geometric survey of the building was undertaken. Nevertheless, due to its poor conditions, the site was not adequate for this new use and the property passed again into the hands of the council.

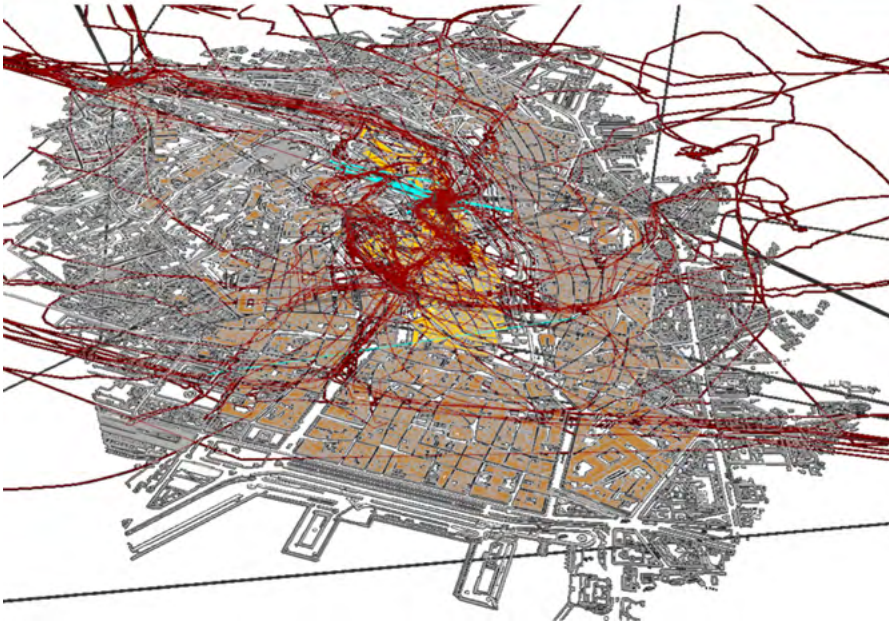
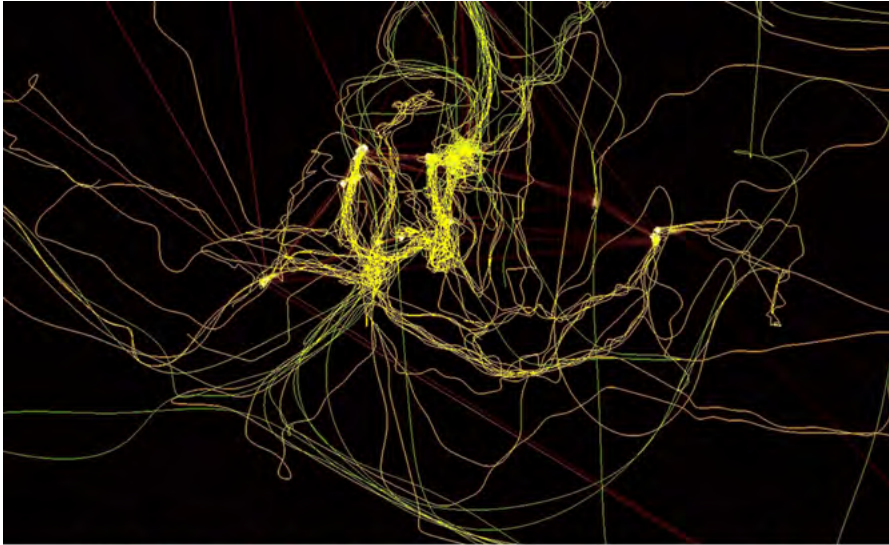


Figure 18. On the top: movement map of Cagliari. On the bottom: movement map above the 3D model of historical centre of Cagliari designed with Rhinoceros (elaboration by E. Pilia).





In the previous page, figures 19-21. Interior views of the ruined convent of Santa Chiara (photos by E. Pilia).

Figure 22. View of the S. Chiara complex area from the Elephant Tower (photo by E. Pilia).

analyses of the building ultimately led to the classification of specific masonry techniques, widely influenced not only by economic and cultural factors, but also by local geological features and native materials with their mechanical and technological properties.

All these investigations, supported by the analysis of the state of conservation, were also fundamental for defining a relative hypothetical chronology of the ruined structure, never defined before, and to find interesting comparisons and connections of this fabric with other structures of the wider historical centre in terms of materials, forms, decorative elements and building techniques (fig. 28).

Next, the third phase of assessment was based on the previous results obtained from macro and micro analyses and on the investigation of the stakeholder's point of view through semi-structured interviews with citizens, tourists and business owners, as well as a focus group with students. The opinions of local experts instead, were taken into account by analysing the strategies of intervention proposed in the recently provided local strategic urban plan concerning the protection and the possible interventions on the analysed ruined structures. Generally, stakeholders stressed the negative connotations of this ruin but with contrasting points of view. These were related to the controversial situation regarding the lift installed in the convent, non-functional since September 2015. Consequently, the impossibility for people to move easily through the city and to support the local economy, nowadays in crisis for the ongoing abandonment of the market area. Indirectly, all people recognised an economic value to this ruin asserting that they could afford a tax if the intervention could be aimed at a collective reuse and restoration of the fabric even if expressing a distorted concept of authenticity. Looking at the urban plan, the level of intervention for this ruin is classified in the class of value I for which is established the conservation and partial reconstruction recomposing the old dimensions and spaces of the area such as the memory of the nuns garden in place of the present market. At the same time, not all the parts of the ruined convent have same importance in the urban plan as, for instance, the areas of connection between church and convent are still not listed and so lacking in protection. The weaknesses and treats related to the current urban policies as well as all the potentialities mainly placed in the central position and accessibility of the site have been deeply highlighted in the SWOT analysis, leading towards a holistic understanding of the fabric and of its heritage values. These values, embodied in the fabric according to the before mentioned cultural values model, divided in tangible and intangible and organised in a hierarchy because the difficulty of interpretation and the possible quantification of the intangible aspects, mainly representative.

Overall, tangible values were identified through the analysis of the building forms, meant as all the material and measurable elements of the structures that can embody functional and evidentiary aspects. They are conceived as the material aspects of the landscape like all historical and archaeological

features and man-made architectures: stones, mortars and building techniques. This investigation highlighted how the monument, built with the same traditional techniques and materials as other nearby residential buildings as well as convents, can allow, through comparisons, possible indirect dating among coeval structures lacking archival sources.

The character-defining elements of the functional aspects can be recognised in the spatial importance of the sites, first due to the development and growth of the city, as a point of expansion of the walled Castello district; then, as element of connection between quarters, a role evidenced by the stairs and by the presence of the unused lift and finally as central market and social meeting point for Cagliari's entire historic centre. These functional aspects, founded on the geometrical extensions, forms, accessibility and location, still recognised as a preferential point of connection to the Castello hill, led to the definition of environmental values, linked to the panoramic view of the site, as well as to economic values related to the presence of market. They were considered essential and useful tools for understanding possible future benefits for the entire historic area and for planning the sustainable rehabilitation of these ruined structures. Considering the long abandonment of this complex, a potential or non-use value can be recognised as the sum of three economic values: existence, option and bequest values that emphasise the area's great potential.

Evidentiary aspects were instead based on the building's legibility as an "open book" about itself. Forms, materials, stratigraphies, and techniques evidenced the role of this monument as a document that can also be related to Cagliari's entire historic built heritage. Cultural, historical and aesthetic values can be assessed based on these character-defining elements rich in historic evidence and technological and material testimonials. Cultural values can refer to craft because they are linked to the skills and crafts of the medieval builders. Not only building techniques but also the compositions of materials such as mortars and plasters, referring to a particular way of building, are significant benchmarks for all historic structures. Strictly related to this concept of benchmark for dating buildings, forms also embody historical values expressed as educational values. The convent, in fact, provides knowledge about the past for future reuse. For instance, this could be executed through the enhancement of archaeological remains or an artist's creative interpretation of the historical record embodied in the structures. Considering intangible values, practices are determined by historic events and building processes and can express evidentiary, sensorial and associative aspects, also present in relationships.

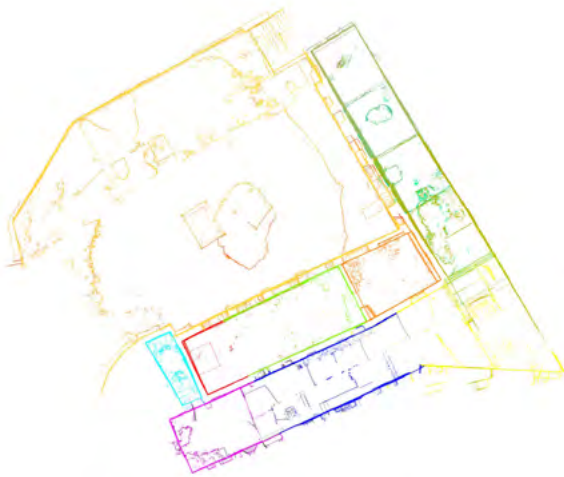
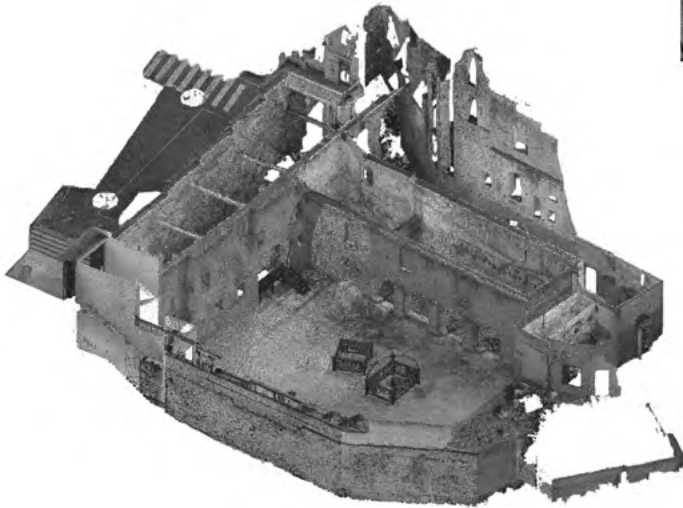
On the one hand, the convent is associated with historic events embodied in its forms. These can be identified in the establishment and goals of the Mendicant orders and their activities, in the transformation of the city in the 20th century evidenced by the construction of the monumental stairs. Furthermore, the convent was involved in a process of ruination that initiated before WWII and increased thereafter,



In this page, figures 23-25. The laser scanner Faro Focus 3D in the cloister (photos by E. Pilia).



In the next page, figure 26. Some of the results from the TLS survey: on the top-left the 3D model of the convent, on the right the plan with the position of the stations; on the bottom-left plan sections for the analysis of the fabric (sections were performed every 10 cm from the lower level of the convent in order to arrive at the restitution of the plan at 35 m above the level of the see (1.5 m above the quote 0) on the right (elaboration by E. Pilia).



- Stations
- | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|
| S01 | S02 | S04 | S06 | S08 | S09 | S11 | S12 |
| S14 | S15 | S16 | S17 | S18 | S19 | S20 | S21 |

when the structures almost totally collapsed. It has also played an important role in the urbanisation and development of the neighbourhoods. From all these evidentiary and sensorial aspects, the convent ruins embody socio-psychological values such as identity, due to the area's specific characteristics and memory, due to the historical role that this complex played in the city's history. In addition to historic values, aesthetic values can be embodied in the creativity and building processes relating to a specific period. On the other hand, building processes express achievements in terms of concepts, design, technologies (building techniques) and planning of a given period. Both come from intercultural relationships and exchanges that, on the local and European levels, developed and defined specific building characteristics and particularities in terms of technique, material and form. As a consequence, these can be considered key components that link not only the past to the present but also different cultures and territories. In fact, as already noted, several testimonials of Aragon domination can be read in the convent structures. These stylistic elements also relate to relationships throughout the entire historic centre. As already stressed, the convent not only bears witness to a war scar like other urban ruins, but it has also clear relations with other local Franciscan and Dominican convents. Human and natural interactions and relationships emphasise the established social values in terms of identity and memory, widely embodied in these structures and that define the cultural identity of places.

These concepts refer to the different roles played by the convent during history. As evidenced by the sources, it was a religious and funerary centre for the community of Stampace for a long time. Then, it became marketplace from the fifties to eighties growing in the community as symbol of religious and social life. These factors led to other cultural values: commemorative, spiritual, religious and symbolic.

In this way, a hierarchy of heritage values has been established from the deep knowledge of structures as parts of a cultural urban landscape where human and natural interactions and relationships are makers of the sense, memories, and meanings of a place and that establish their cultural identity.

Finally, this study associates to the character defining elements identified, meant as constructive elements or stratigraphic units that bears values of the fabric, a level of transformability according to the qualifiers of authenticity that strongly influence the values embodied in the ruin. Authenticity is here intended as a qualitative qualifier that drive towards the intervention. It is a character of what still intact has been preserved from the several historical layers of the ruin. As the Nara Document claimed²⁷, this concept is rooted in the different sociocultural context and it is not possible to base

27. In art. 11, Nara document, signed in 1994, reports that «All judgements about values attributed to cultural properties as well as the credibility of related information sources may differ from culture to culture, and even within the same culture. It is thus not possible to base judgements of values and authenticity within fixed criteria. On the contrary, the respect due to all cultures requires that heritage properties must be considered and judged within the cultural contexts to which they belong.



Figure 27. Example of stratigraphic analysis of a masonry of the convent and the mineral-petrographic analysis of one of the twenty sample of mortar (5A_M01). From the left: sampling localisation, macroscopic and microscopic view (2.5x), and diffractometry (elaboration by E. Pilia).



Figure 28. Other masonry-technique samples that show the same building technique M01, found in Santa Chiara. These can be found in other monumental and residential cases inside the historical centre of Cagliari (elaboration by E. Pilia).

judgements of authenticity within general fixed criteria. Nevertheless, the present research has tried to establish an approach for evaluating possible degrees of authenticity based on the knowledge of the fabric following a growing scale starting from the absence of authenticity towards the maximum level.

Authenticity is absent when an element has not relations with the original fabric. It is realised in modern shapes and modern materials incompatible with the historical one. In the convent of Santa Chiara this level of authenticity can be associated to all the new modern elements realised in materials incompatible with the historical structure. This is the case of the new stairs built in reinforced concrete. Furthermore, the lift and the supervision room are other two negative values of this fabric. Here, the new elements have been built again with incompatible materials touching the historical material and compromising the readability of the original configuration of spaces. Concrete plasters are also considered lacking in authenticity. In this case the demolition and the restoration or addition with compatible materials are possible.

A low/medium degree of authenticity can be instead assessed when masonry stratigraphies are late addition to the original fabric. They can be divided in additions realised in modern materials and techniques, or new elements added according to traditional or historical technologies. In this case can be considered also all the masonries that have been cut and repaired in the last fifty years. These two cases can be visualised in the convent in all the addition aimed to close openings: in bricks and concrete mortars or in cantone stones and lime. The comparison with the state of place in 1908 clarifies these additions and, visually they are still visible in the site. Finally, the highest level of authenticity is associated to all the character defining elements that embodied the value of the fabric, its historical configuration and uses. These elements must be preserved or conserved in their intact forms and materials. The convent of Santa Chiara is rich of these examples that remind the medieval or *Aragona* fabric. The bell towers, the stoup, the decorated openings as well as all the stratigraphies are all elements that have a high level of authenticity that consider all the phase of historical development of the fabric. At these levels of authenticity can be associated degrees of transformability that will grow as less is the authenticity of the element. Indeed, the highest level of authenticity corresponds at the maximum protection, preservation or conservation of the element. By contrast, all the disturbing and incompatible elements can be demolished and reconstructed according to some guidelines later presented. Concerning the elements with a low/medium level of authenticity these can be object of different consideration. Thinking to a reuse of the fabric, all the masonry additions in the closed opening could be removed justifying a pre-existent historical function. In the other case, they should be maintained. The concrete beams could be removed and replaced with compatible materials. The archaeological remains instead conserved for their undeniable memory.

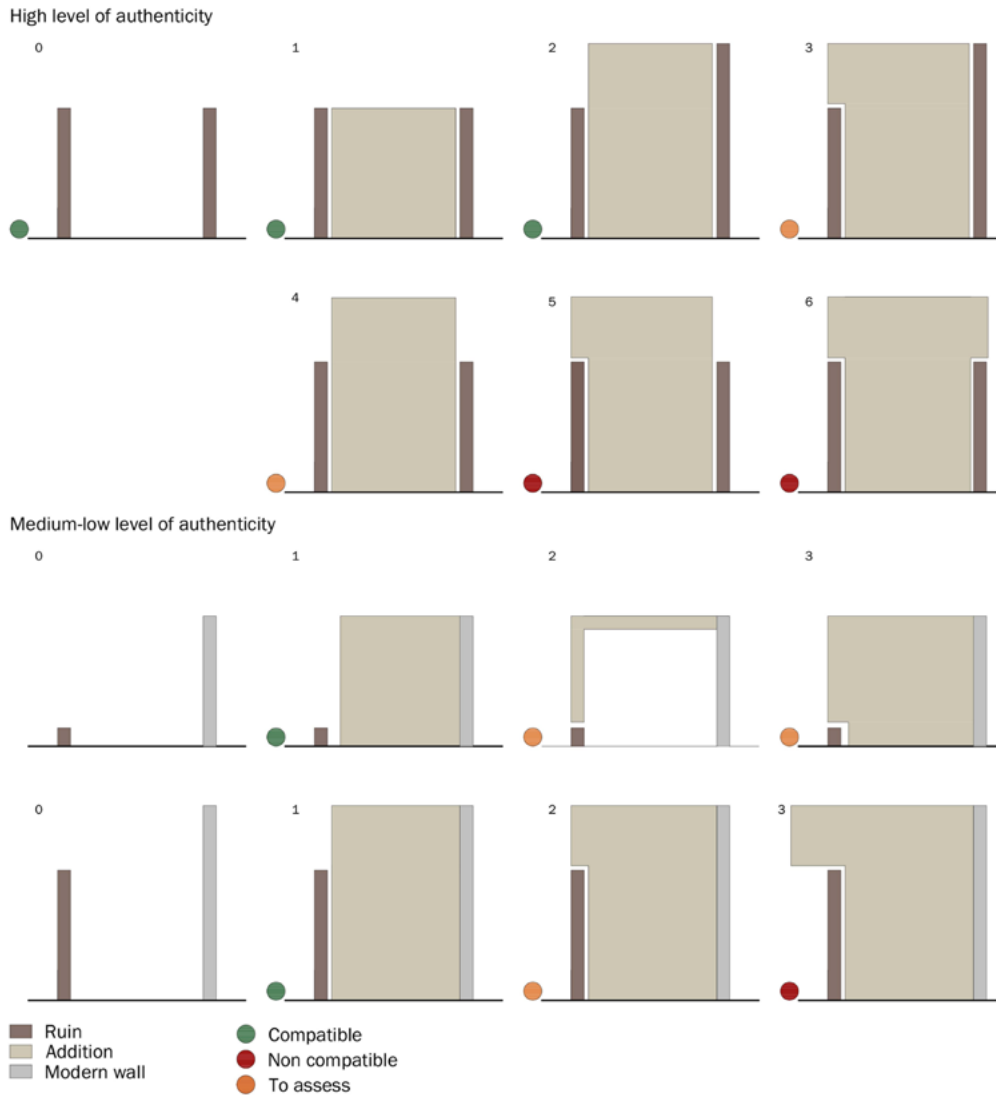


Figure 29. A scheme with guidelines for possible sustainable interventions has been defined according to the level of authenticity of the structures (elaboration by E. Pilia).

All these degrees of transformability lead to different possible interventions (fig. 29). Generally, all the authentic elements such as historical structure that remind the history and the evolution of the previous building must be conserved and enhanced in the fabric. Additions can be considered compatible if aimed at reconstructing original volumes with compatible solutions detached from historical materials. Any other new volume build on structures should be assessed and respectful of the historical boundaries, avoiding the creation of new shapes that could compromise the heritage values evaluated. All the historical masonries, as in the local case, must be protected with compatible plasters or mortars according to composition highlighted with the mineral-petrographic analysis. Indeed, for its strategic position and role in the urban context, the convent of Santa Chiara needs an intervention that could mix the tradition with the contemporaneity.

Conclusions

With an international perspective, this research has illustrated the contemporary relevance and complexity of the debate on the reuse of ruins rooted in the complex meaning and subjective interpretations of the concept of ruin according to different cultural contexts. Analysis of this debate evidenced as ruins are complex places of great creative potential, key components in regeneration and in the consolidation of place identity, spaces for experimentation, opportunities, symbols of failure or of rebirth.

In this broad context, the United Kingdom and Italy have significantly contributed to the issues surrounding the question of ruin and from the deep analysis of their approaches have led to the design of an experimental transdisciplinary and holistic integrated methodology. Cagliari was an interesting case study both due to the singular post-war debate that is still influential as well as to the high degree of tangible and intangible values embodied in the city's stratified historical urban landscape. Concerning the architectural level of investigation, the ruin of the convent of Santa Chiara offered a valid case study in light of its good accessibility and legibility, allowing the full application of the method on all levels, including its unresolved local issues. Overall, these case studies have offered general findings such as the reconsideration and codification of a set of values largely present in all ruined structures (fig. 30); such values enable the definition of a series of degrees of transformability and, consequently of possible intervention for the enhancement and protection of their tangible and intangible values. This enhancement finds its roots in the awareness that the profound comprehension of a such a complex and misunderstood artefact like a ruin is based on the deep knowledge of its features, here considered in terms of three key concepts: forms, practices and

HERITAGE VALUES

	FEATURES	ASPECTS	CHARACTER - DEFINING ELEMENTS	VALUES		
TANGIBLE	FORMS	FUNCTIONAL	SPATIAL, HISTORIC, ARCHAEOLOGICAL ELEMENTS	ANTHROPOLOGICAL	ENVIRONMENTAL - Landscape - Nature	ECONOMIC NON USE - Existence, accessibility - Option - Bequest
		EVIDENTIARY		CULTURAL - Craft/ work-related HISTORIC - Educational - Artistic		
INTANGIBLE	PRACTICES	EVIDENTIARY AND SENSORIAL	HISTORIC EVENTS - BUILDING PROCESSES	AESTHETIC - Sublime - Artless - Beauty - Creativity	- Picturesque	
		SENSORIAL		SOCIO-PSYCHOLOGICAL - Identity - Memory - Sensorial		
	RELATIONSHIPS	ASSOCIATIVE	HUMAN - NATURE PROCESSES /CULTURE INTERACTION	CULTURAL - Commemorative - Spiritual - religious - Symbolic		

Figure 30. Matrix with the summary of contemporary values assessed for ruined structures (elaboration by E. Pilia).

relationships, seen in their associative, sensory, evidentiary, and functional aspects. These features and aspects can be identified only from a series of analyses such as those proposed in the *ad-hoc* methodology planned here.

Subsequently, the case study provided interesting findings on the local urban and the architectural scale such as the reconstruction of the chronology of the site's evolution, knowledge of it in terms of dimension, form, materials, techniques and relationships within the city's entire medieval urban fabric.

Overall, these ruins, today sites of neglect and abandonment, degrading elements in the medieval urban core of the historical centre, while memories of destructive events, need to be reconsidered in a positive light. The sorrow of war that defines these architectures as wounds and absences still widely perceived negatively by the community, should be overcome and the loss of the original artefact should be accepted. These negative wreckages should instead, be seen in a positive way taking advantage of their valuable presence as historical testimonials of memorial values. In other words, they should be symbols of collective memory and especially of place-identity whose tangible and intangible values must be preserved, protected and transmitted to the future. The designed and tested transdisciplinary methodology, also applicable in other similar contexts, has proposed a way forward to achieve this goal.

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