A Scientific Approach, Involving the Use of Computer Graphics, to Reconstruct the Potential Original Architectural Unity of Archaeological Remains

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Abstract

When only a few traces of ancient buildings remain, a survey of the existing structures complemented by graphics and by the representation of what no longer exists may well be the only possible way to reconstruct their original architectural unity. Such procedures, known as graphic or ideal reconstruction, are fundamental to analyze a monument of the past. The methodology starts from direct building analysis, then it continues with philological and comparative studies, and it ends with the representation of the architecture in its original form. The survey and the representation not only provide one of the possible keys to the reading of the object, but they also work as tools to test, control and assess the hypothesis put forward at the very beginning. The research was extended beyond the limits of the morphology of the object as it currently appears to look for more correct and better-grounded solutions to identify the formal and typological characteristics it had in the different epochs.
If the reconstructive model is based on such a methodology and resulted from choices meticulously assessed, the ideal reconstruction proposals can be considered as a valid formal resumptive model and of great help for new researches. The graphic reconstruction is useful to illustrate a thesis and to clarify and communicate the hypothesis. Thanks to it we have the opportunity to rapidly "pre-figure" what is supposed to be no longer existing and to summarize and show all the collected data and achievements. The survey and the ideal reconstruction represent different "paragraphs" of a coherent and easily understandable "tale", and thanks to it the epoch to which the building dates back is related to the present. The trend to carry out more and more realistic graphic reconstructions is meant to erase the temporal dimension which keeps us distant from the past, in the effort to reproduce a physical more than perceptive experience which could be also projected into the future. According to us, it should be taken into account that what is proposed exists only in the researcher's mind, since, however it is based on a rigorous anamnesis, it will never succeed in erasing the cultural and temporal distance separating us from the past. That is the reason why the achieved results cannot be considered as definite and conclusive. They can be updated and developed as the research progresses. Over the last years, graphic reconstruction has been used above all in trade journals or to complement written texts. In such cases, more than the geometrical precision, the figurative value of the picture is what really remains engraved in memory acquiring iconographic autonomy. Computer graphics is useful to expose non-experts to themes which would be otherwise incomprehensible to them, but it cannot prescind from a methodological rigour which is fundamental to achieve knowledge and to transfer and popularize it.

***Key words**: Computer Graphics, Representation, Ideal Reconstruction*

The fragments which make up the ruins of ancient monuments would not have "any specific aesthetic pre-emption"[1] themselves if they were not connected with the work of art to which they belong. The term "fragment" derives from the Latin word *frangere*, meaning "to break". The action of breaking therefore presupposes the separation of one part from a whole which still exists today, even if it is "*in assentia*"[2], with the fragments as evidence. Cesare Brandi, in his "Theory of Restoration", invites us to reflect on the organic unity of a work of art which "… physically

[1] Cesare Brandi, "La teoria del restauro," (Torino: Einaudi, 1977).

[2] Omar Calabrese, "L'età neobarocca," (Bari-Roma: Editori Laterza, 1989), 73-95.

fractured, must continue to exist as a whole in each of its fragments; this potential can be seen in a proposition directly connecting formal surviving traces, in their every fragment, to the disintegration of the material"[3].

When only a few traces of ancient buildings remain, a survey of the existing structures complemented by graphics and by the representation of what no longer exists may well be the only possible way to reconstruct their original architectural unity. Graphic or ideal reconstruction is fundamental in analyzing monuments from the past[4].

When surveys of architectural remains are carried out and transferred onto paper, inevitably – if not apparently –, one is also surveying and drawing the connections which bind them. Inevitably, a portion of wall structure suggests the original idea for a wall and inevitably, the reciprocal position of traces of masonry suggests the spatial planning of the building. In his "*Dictionnaire historique d'architecture*", Quatremere de Quincy believes that the work of an architect "consists of finding, using scraps or descriptions of monuments, their ancient whole and the accomplishment of their proportions and details"[5].

Returning to Brandi, he advises us to "develop the potential original unity which each fragment contains in proportion to the formal survival which can still be found within them"[6]. Longhi suggested the mental completion or integration of single fragments of a ruin without physically working with the building materials, allowing only the use of the eyes to provide the ideal connection between surviving parts[7]. Such visionary experience is confirmed, without risk of error, by means of drawing; this allows us to experiment with the potential original unity which the fragments contain, thus identifying parts within the overall formal organization and connecting these virtually on paper or in digital form.

It is therefore clear that the surviving pieces themselves already have a representative value – drawings further highlight how they depend upon each other – and as a result the ruins that they form part of are the remains of evidence that reflects another, different entity, the "whole". Consequently, a reconstruction can be carried out from the graphic restoration of the surveyed data and we can "pre-figure"[8], using what remains, that which was believed to have been lost.

What, then, is the objective of graphic reconstruction? Above all, it performs a heuristic function. It helps to illustrate a thesis as well as to clarify and communicate hypotheses, interpretations, opinions and discoveries. It is the quickest way to demonstrate assumptions and so to establish the basis for new research activity. Graphic reconstruction aims toward synthesizing large quantities of information and the results of research and communicating these in a single operation.

If the reconstructive model is based on such a methodologically sound scientific study and is the result of choices which have undergone meticulous assessment, the proposals for optimum reconstruction may be considered a valid formal model and can contribute toward further research.

Reconstruction proposals which followed these parameters were adopted for several Apulian monuments, such as the *Calidarium* 61 in the *Herdonia* thermae[9], the medieval cloisters in the *San Benedetto* complex in *Bari*, the Augustan era judicial Basilica in the city of *Herdonia* (see fig. 1) and the medieval farmhouse of Balsignano in the city of Bari (see fig. 2).

[3] Cesare Brandi, "La teoria del restauro," (Torino: Einaudi, 1977).

[4] Valentina Castagnolo, "La basilica di Herdonia. Esperienze e riflessioni sul rilievo e la rappresentazione del monumento," in *Ordona XI. Ricerche archeologiche a Herdonia*, edited by Giuliano Volpe and Danilo Leone (Bari: Edipuglia, 2008), 393-395; Angelo Ambrosi, "Il rilievo come ricostruzione ideale," *XY dimensioni del disegno. Il rilievo tra storia e scienza* Anno V 11-12 (1998): 94-100.

[5] A.C. Quatremère de Quincy, "Dizionario storico d'architettura," (Mantova: Negretti, 1842-44).

[6] Cesare Brandi, "La teoria del restauro," (Torino: Einaudi, 1977).

[7] Roberto Longhi, "Critica d'arte e buongoverno (1938-1969)," (Firenze: Sansoni, 1985).

[8] Angelo Ambrosi, "Il rilievo come ricostruzione ideale," *XY dimensioni del disegno. Il rilievo tra storia e scienza* Anno V 11-12 (1998): 94-100.

[9] For details of *Calidarium 61* at the *Herdonia* thermae, see Valentina Castagnolo, "L'uso della fotografia per la lettura e la fotointerpretazione degli elevati. Il caso del *calidarium* 61," in *Ordona XI. Ricerche archeologiche a Herdonia*, edited by Giuliano Volpe and Danilo Leone (Bari: Edipuglia, 2008), 347-350.

Figure 1. The basilica of *Herdonia* with the judicial square in the background.

Figure 2. The *Balsignano* farmhouse: the north-east corner of the castle.

On this occasion, I would like to highlight the achievements of research carried out on two buildings located in Apulia and characterized by different problems due to their age and state of conservation.

1 THE BASILICA IN *HERDONIA*

Herdonia[10] was a Roman *municipium* in the heart of *Daunia*, an area corresponding to today's Tavoliere plain, in north-central Apulia. The ancient city had a strategic position along one of the most important roads in the Roman world, the *Via Traiana*, which from the capital ran through *Beneventum* and reached *Brundisium*, a vital port for communication and trade with the Near East. *Herdonia* was a commercial city and therefore included a forum with several monumental buildings, such as a judicial basilica. This was built along the short north-western side of the courthouse square, with the main entrances opening up in this direction. As far as spatial organization is concerned, the basilica was formed by a rectangular courtroom with an internal colonnaded peristyle and an adjoining room serving as a *tribunal* or *aedes Augusti*. Set against the eastern and the western side of the main hall were external rooms. The rectangular courtroom of 41m x 27.29 m (see fig. 3) was formerly closed on the four sides by the perimeter walls in *opus incertum quasi reticulatum* and divided by pilasters in *opus testaceum* set on stone bases. Unfortunately only a few vestiges of the building are left such as some stretches of the perimeter walls to the north-west and south-west up to a maximum height of 3.5 m (see fig. 4), the foundation bed of the north-eastern and south-eastern stretches, some capitals and column bases of the peristyle found *in situ* as well as the foundation beds of those which have since disappeared in addition to the remnants of the perimeter walls of the *tribunal* and of the other rooms adjoining the main hall.

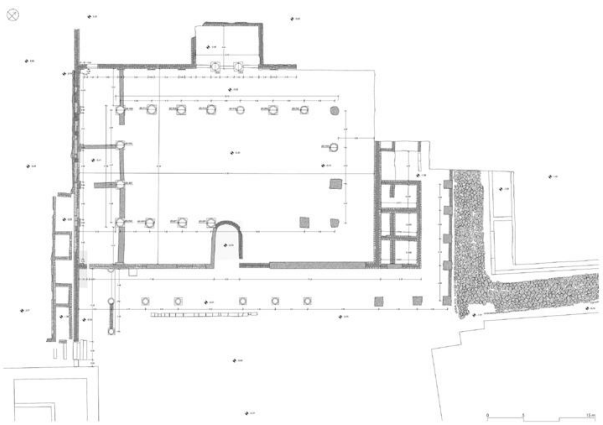


Figure 3. The basilica of *Herdonia*: survey of building plans.

[10] Valentina Castagnolo, "La basilica di Herdonia. Esperienze e riflessioni sul rilievo e la rappresentazione del monumento," in *Ordona XI. Ricerche archeologiche a Herdonia*, edited by Giuliano Volpe and Danilo Leone (Bari: Edipuglia, 2008), 393-443.

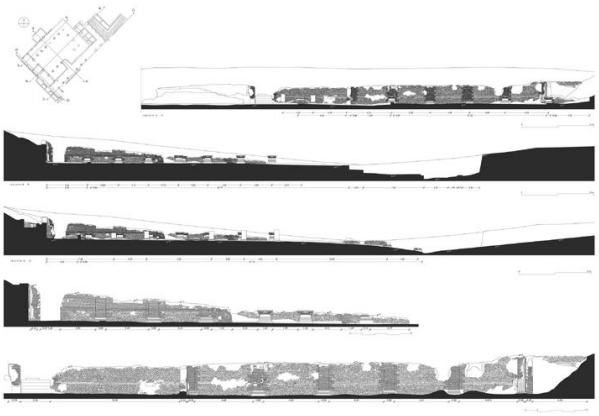


Figure 4. The basilica of *Herdonia*: survey of the curtain walls.

We carried out three parallel analyses in order to produce a philologically sound proposal for optimum building reconstruction. The first required a survey of the building organism and the examination of collected data in accordance with historical research; the second focused on a comparison with existing Roman basilicas showing modules and proportions similar to those of the basilica in *Herdonia* while the final analysis was comparative-theoretical, based on an examination of the Vitruvian proportional guidelines on the planimetric scheme and different elements of style. The considerations which emerged from these studies allowed us to hypothesize a graphic reconstruction which provided a final "resumptive-deductive" stage.

The surveys allowed us to carry out a "*minimum*" reconstruction through the study of those elements which dictate architecture such as modules, symmetries and proportional systems and thus to obtain a definition of the planimetric and spatial plan (see fig 5). The reconstruction therefore became "*maximum*" when the first hypotheses were confirmed or rejected through analogical comparisons with existing and typologically similar buildings. It was for this reason that our analysis took into consideration several late-Republican or Augustan basilicas located in the central-north part of Italy[11]. Those of *Iuvanum*, *Alba Fucens*, *Lucus Feroniae* and *Saepinum* were contemporaries of the example in *Herdonia* while those of *Cosa* and Pompeii, which date back to the second century B.C., are diachronic but nonetheless representative of the typological category (see fig. 6).

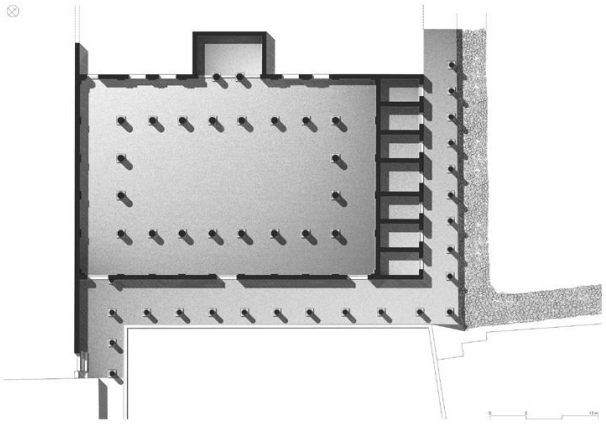


Figure 5. The basilica of *Herdonia*: reconstructive hypothesis of the planimetric scheme.

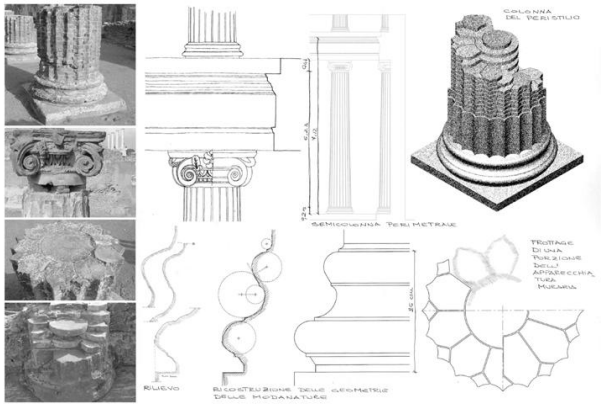


Figure 6. An example of a comparative analysis study for the basilica of *Herdonia*: construction elements and decorative layout of the basilica of *Pompei*.

Since the principal aim of our research was to understand not only the origins but also stylistic and formal characteristics and the size of the whole – and of each part – of an example of classical Roman architecture, a thorough knowledge of Vitruvius' "*De Architectura*" was essential.

[11] For more details, see records of the basilica in Valentina Castagnolo, "La basilica di Herdonia. Esperienze e riflessioni sul rilievo e la rappresentazione del monumento," in *Ordona XI. Ricerche archeologiche a Herdonia*, edited by Giuliano Volpe and Danilo Leone (Bari: Edipuglia, 2008), 407-424.

Therefore, using this text[12], reference was made to extracts taken from the first chapter of the fifth volume and the fifth chapter of the third volume. Following this more general line of study, architectural details could be defined. The descriptions of the Italian forum, the standard type of basilica as well as that of Fano – also attributable to Vitruvio – and of the Ionic order were graphically interpreted in order to visualize them and make them measurable (see fig. 7).

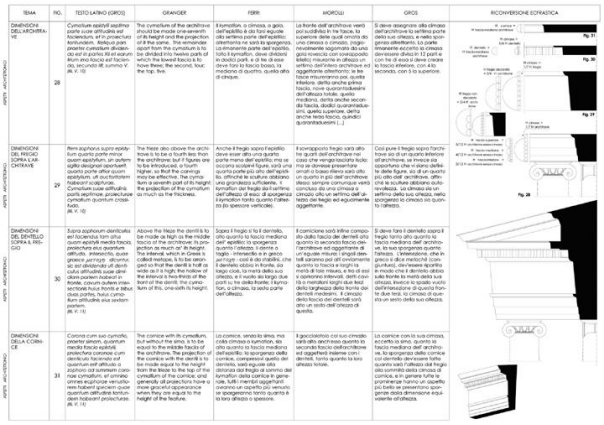


Figure 7. An example of a summary file used to gain further knowledge of the Vitruvian text: it includes the Latin text, versions from four different translators and a personal graphic interpretation of the texts.

As a result of analogical comparisons it was possible to estimate the height of the outer walls (see fig. 8), the columns of the peristyle and the architectural order including the trabeation. On the other hand, the reconstruction of its upper structures was only achieved hypothetically and supported by theoretical references due to the lack of archaeological finds *in situ* (see fig. 9). In addition, we know little of the decorative and pictorial layout. The few traces of white stucco on the pilasters and of blue and red paint on the walls are not enough to define the geometrical drawings which characterized the monument.

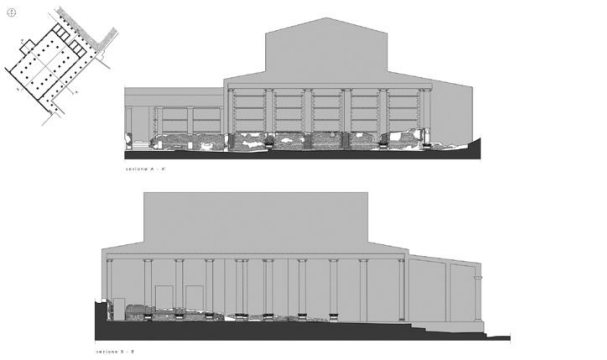


Figure 8. The basilica of *Herdonia*: comparison between archaeological remains and the graphic reconstruction of the upper structures.

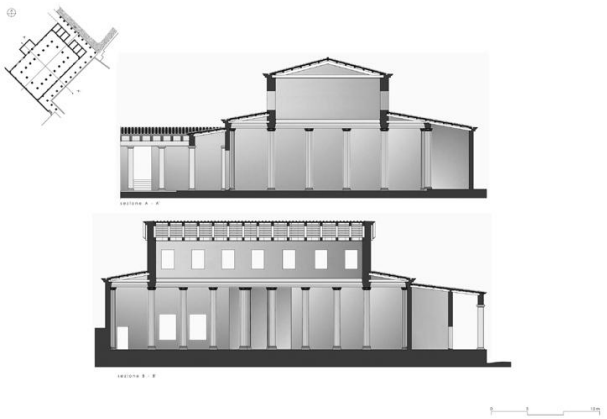


Figure 9. The basilica of *Herdonia*: a reconstructive hypothesis of the interior.

All the graphic representations needed to study the basilica of Herdonia were carried out using a computer, from the initial surveys to analogical comparisons as well as a reconstructive model with traditional methods of plans, schemes and sections. In our opinion, traditional representations supported by advanced graphical techniques were perfectly adequate to illustrate the results of our research, without having to rely on futuristic effects of three-dimensional solid modeling.
Traditional drawing methods allow us to obtain representations of the reconstructed object from which it is possible to deduce exhaustive metric, material and structural data: these are resumptive models of all the information necessary in order to understand any ideal reconstruction proposal.

[12] For more details, see records of the Vitruvian text in Valentina Castagnolo, "La basilica di Herdonia. Esperienze e riflessioni sul rilievo e la rappresentazione del monumento," in *Ordona XI. Ricerche archeologiche a Herdonia*, edited by Giuliano Volpe and Danilo Leone (Bari: Edipuglia, 2008), 424-435.

Three-dimensional drawing, increasingly realistic through the use of computer graphics, is not the object of our research but it may be considered as an additional method in understanding the results obtained, as it allows us to see the spatiality of the object under study both quickly and directly.
To summarize, there are two fundamental issues which this research highlights for consideration: the first is the need to use a rigorous study methodology on which to base all hypotheses which are then only summarized in the final phase through the use of computer graphics. The second issue focuses on identifying the most scientifically valid representation method which can quickly convey the achieved results.

2 THE FARMHOUSE IN *BALSIGNANO*

The second case study is that of a farmhouse in *Balsignano*[13], central Apulia, in the rural area of *Modugno*, near *Bari*[14]. Referred to in a scroll dating from 962 A.D. and now kept in the archives of St. Nicola in *Bari*, it was located at the crossroads of two important roads. The first branched off the *Via Traiana* near *Bitonto* and continued southward towards *Taranto*, passing by urban centers such as *Modugno*, *Bitritto*, etc. The second road from *Bari* passed by the important medieval buildings of *San Giorgio* and *Santa Maria delle Grotte* and continued towards the high *Murgia* plains and the region of *Basilicata* (see fig. 10). Moreover, it was built on the steep edge of the *Lama Lamasinata*[15], which also served as a natural defense (see fig. 11).

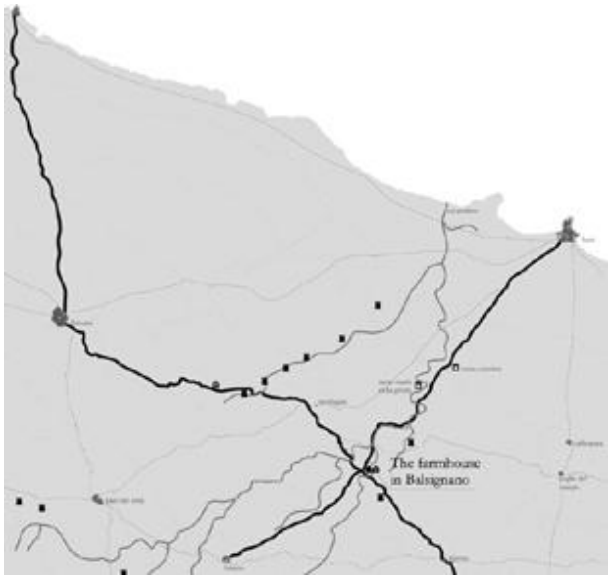


Figure 10. Settlements on the edge of the "*Lamasinata" lama* and along two important roads which intersected at the *Balsignano* farmhouse.

Figure 11. The *Balsignano* farmhouse seen from the south of the "*Lamasinata" lama*.

Unlike the basilica of *Herdonia*, the farmhouse of *Balsignano* is not a ruin since some of its

[13] The surveys were performed by Prof. Paolo Perfido (Department ICAR, Politecnico di Bari, Italy) and Valentina Castagnolo during restoration work carried out by the Apulian Supervisory Group for Architectural Treasures headed by Emilia Pellegrino and the excavations by the Apulian Supervisory Group for Archaeological Remains headed by Maria Rosaria de Palo.

[14] For further details on the Balsignano site, see Antonino Vinaccia, "L'architettura pugliese nel medioevo," *Rassegna Tecnica Pugliese* (1908): 81-89; Emilia Pellegrino and Giovanni Caliandro, "Modugno (Bari): Balsignano," *Taras* 2 (1992); Maurizio Triggiani, "La chiesa di S. felice nel casale di balsignano: indagini stratigrafiche sugli elevati," in *Paesaggi e insediamenti rurali in Italia meridionale fra Tardoantico e Altomedioevo*, edited by Giuliano Volpe and Maria Turchiano (Bari: Edipuglia, 2005), 387-403; Maurizio Triggiani, "Insediamenti rurali nel territorio a nord di Bari dalla tarda antichità al medioevo," (Bari: Edipuglia, 2008), 73-79, 137-138.

[15] A *Lama* is an eroded rut carved out by rainwater which eventually reaches the sea – with differing flow rates depending on the rainfall and season – where it forms a small bay. These unusual environmental systems are typical of the Apulia region and are important in understanding the development of local population trends.

structures are still standing. Therefore, the aim of the research was not the graphic reconstruction of the building complex but the reconstruction of the chronological sequence of the building phases. For this study, the choice of representation method was based on the need to understand spatial phenomena, comparing the frontal stratigraphy with that of internal areas and volumetrically visualizing the development and transformation of the building.

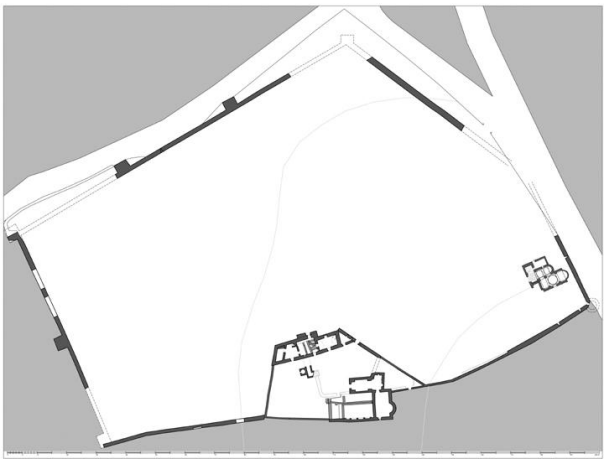


Figure 12. The *Balsignano* farmhouse: planimetry.

The farmhouse was surrounded by a bailey, about 500 m long (see fig. 12), which probably included dwellings, although no archaeological evidence exists. In addition to the external walls, a "contracted cross"-plan church topped with a dome dedicated to St. Felix (see fig. 13) and a second bailey protecting a castle and the church of St. Mary of Constantinople (see fig. 14) can still be seen.

Figure 13. The *Balsignano* farmhouse: the San Felice church.

Figure 14. The *Balsignano* farmhouse: the Santa Maria di Costantinopoli church.

Figure 15. The *Balsignano* farmhouse: one of the towers on the west section of the wall.

The external walls, of which long stretches and five towers (see fig. 15) are still standing, are set out in a trapezoidal quadrilateral. The north and the east sides follow the direction of the roads along which they were built while the south side runs along the edge of Lama Lamasinata.
Research focused on the small fortified unit set within the second boundary wall which has been subject to numerous alterations made over the centuries. A medieval style-gate with a central and crescent-shaped ferrule leads to an inner courtyard from which access is gained to the buildings (see fig. 16).
The structure of the so-called "castle" (see fig. 17) could seem organic at first glance, with two towers unified by a lower central body. But closer examination of the curtain wall highlights a series of accretions, breaks, scarf joints and slopes visible on the front of and inside the building.

Figure 16. The *Balsignano* farmhouse: the entry gate to the castle courtyard.

Figure 17. The *Balsignano* farmhouse: the castle.

In this case too, the analytical process which was used to provide a hypothesis identifying its chronological sequence began with a survey of existing structures. The survey and its details do not only provide a potential key in reading the object, but also become tools to test, verify and assess the hypotheses put forward at the outset. Research extended beyond the limits of current building morphology to search for more suitable solutions so as to identify formal and typological features over different eras.
We attempted to hypothesize the succession of chronological phases only after an accurate recording and reading of phenomena through the survey, comparisons with historical and iconographical sources and a stratigraphic analysis of the walls. The latter allowed us to break down each part of the wall structure and so show a series of anomalies on the facings between rooms, floors, and the interior and exterior.
In order to determine the topography of the entire farmhouse and to begin analyzing its individual architectural and archaeological structures, celerimetric surveys were carried out (see fig. 18), followed by a close examination of the wall structure through the use of photographic plans. Structures were compared planimetrically (see figs. 19-20) and the volumetric plan of the castle was set out and later examined in depth with direct surveys to define architectural details and locate nodes, discontinuities and breaks.

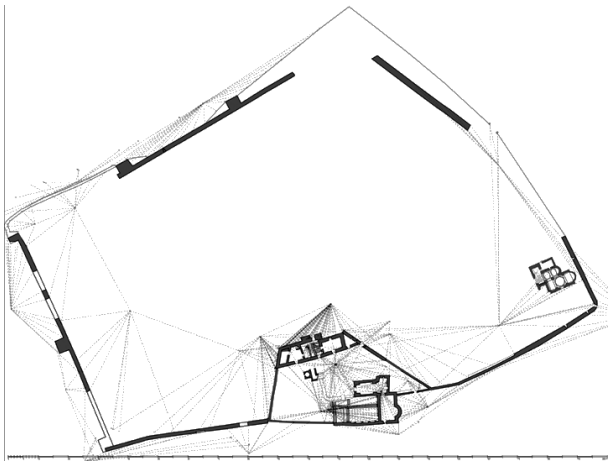


Figure 18. The *Balsignano* farmhouse: celerimetric surveys.

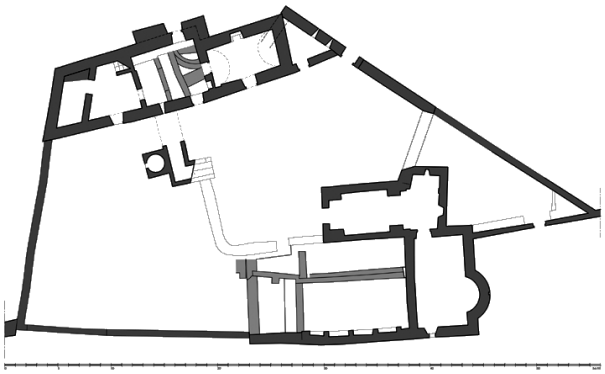


Figure 19. The *Balsignano* farmhouse: plan of the ground floor of the castle and of the Santa Maria di Costantinopoli church.

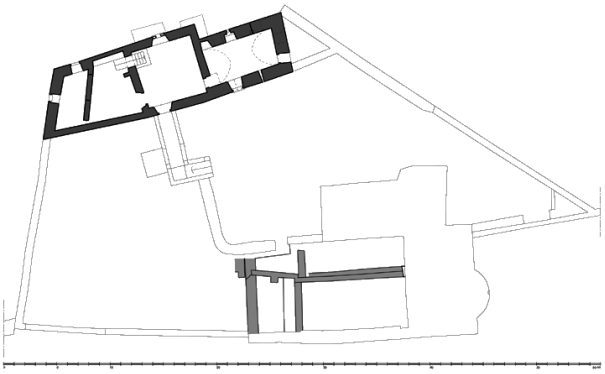


Figure 20. The *Balsignano* farmhouse: plan of the first floor of the castle.

As regards the facades, photographic plans were used which identified each wall's stratigraphic units and then compared these to the internal rooms. At the same time, a taxonomical filing study was carried out with a series of orthorectified and vectorialized photograms with the aim of providing a comparison between the different wall types found in the monumental structures (see fig. 21). The parameters compared were size, quality of cut, color, ashlar procedure and the techniques and type of mortar used to obtain surfaces, if these were legible. The numerous anomalies found on walls such as breaks, cuts, rotations and different materials unearthed give some idea of the quantity and variety of events which they underwent.

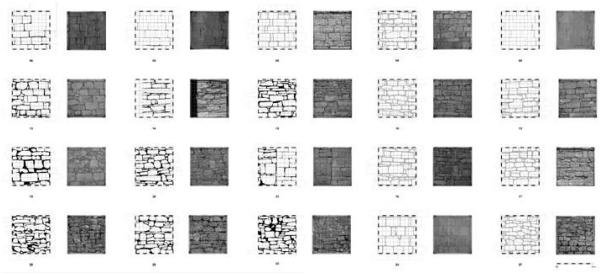


Figure 21. The *Balsignano* farmhouse: comparative abacus of the wall structures.

From an archaeological point of view, the wall structures which were brought to light behind the St. Mary of Constantinople church are difficult to interpret and studies on these are still ongoing. Consequently, hypotheses on the chronological sequence of the castle were based only on an analysis of the stratography of upper structures without taking into account their relationship with the archaeological remains which will be examined in subsequent research studies.
From an analysis of the most pronounced traces on the brickwork, it was estimated that there were eight principal phases (see fig. 22).

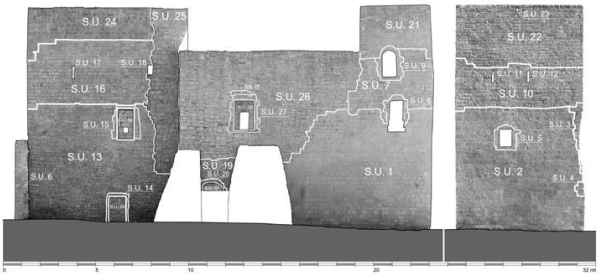
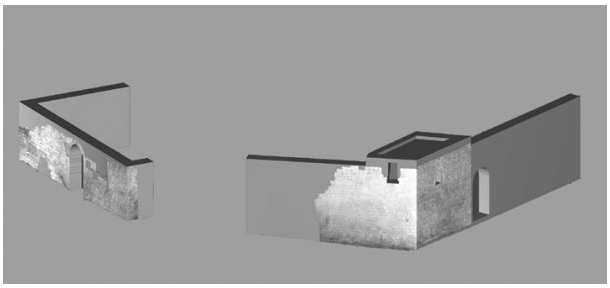
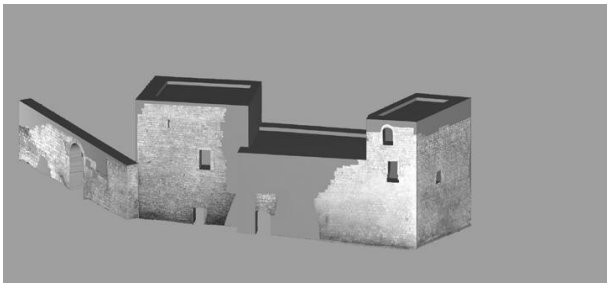


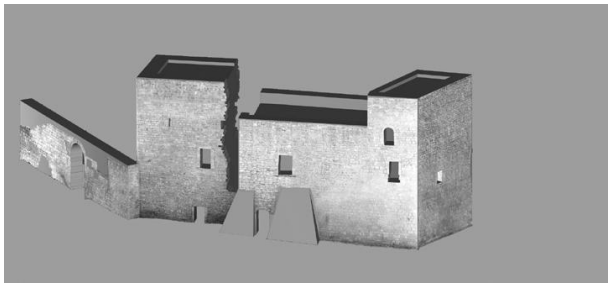
Figure 22. Hypothesis of the chronological order of phases for the castle of *Balsignano*: information on the S.U. for the north and west facades.

The first phase saw masonry work using large square blocks – S.U. 1 and S.U. 2 – for the West Tower which leads us to hypothesize that at that time there was a single corner tower bounded by the perimeter wall (see fig. 23). A second tower was then built– S.U. 10 – along with a connecting edifice between the fortified structures, removing a section of the oldest wall, later followed by the raising of the towers, the construction of loopholes – S.U. 18, S.U. 19 and S.U. 21 – and of rooms with ogival vaulted ceilings (see fig. 24). Subsequently

there was a partial collapse of the East Tower which probably included part of the boundary wall of the central structure. As a result, during the fifth phase the tower was reconstructed – S.U. 27 – and the central edifice raised – S.U. 28 – and covered with a barrel vault, the thrust of which necessitated two buttress supports (see fig. 25). On the facades, final alterations can be seen but their date is difficult to place: the filling-in or reduction of some apertures, the construction of a triangular-shaped room between the West Tower and the perimeter wall and the replacement of the perimeter wall near the East Tower (see fig. 26).







Figures 23-25. Reconstructive hypothesis of phases of the castle of *Balsignano*.

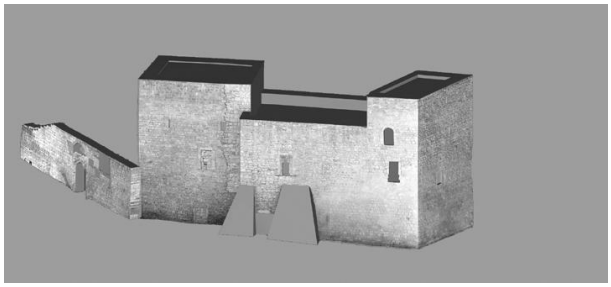


Figure 26. Three-dimensional graphical model of the castle of *Balsignano*.

In conclusion, it can be said that carrying out first a survey and then an ideal reconstruction provides a coherent and easily decipherable account where the past era from which a building dates can be compared to the present[16]. The tendency to carry out increasingly realistic graphic reconstructions actually erases the temporal dimension which separates us from the past in an attempt to reproduce a more physical than perceptive experience which can also be projected into the future[17]. However, this proposes a reality which exists only in the mind of its creator as, based as it is on extreme anamnesis, it could never succeed in erasing the cultural and temporal distances which separate us from the past. In the words of Carandini; "I do not believe that a reconstruction carried out to travel back in time can correspond perfectly to events as they took place, or that what historians write is really what happened or that the history depicted in historiographies can be identical to real history. Too much original abundance of historical events and atmosphere has vanished with the collapse of time. We persist on treating monuments with too much new consciousness and capacity to dream"[18]. It is for this reason that the results achieved can not be considered definite nor conclusive but as subject to updates and developments as research continues.

[16] Franco Purini, "Un disegno plurale," *Firenze Architettura. Il disegno come conoscenza dell'architettura* Anno VII - 1&2 (2003): 52-67.

[17] Angelo Ambrosi, "Il rilievo come ricostruzione ideale," *XY dimensioni del disegno. Il rilievo tra storia e scienza* Anno V 11-12 (1998): 94-100.

[18] Andrea Carandini, "Storie della terra," (Torino: Einaudi, 1996): 223-246.

Over recent years, graphic reconstruction has been used above all in trade journals or to complement written texts. In these cases, focus is not placed so much on geometrical precision as on the figurative value of a picture which remains engraved in the memory and so acquires a type of iconographic autonomy[19]. The use of computer graphics is helpful in introducing non-experts to themes which would otherwise be incomprehensible if expressed in technical language or traditional representations, but it can not disregard methodological rigor, a fundamental tool in the achievement, communication and spread of scientific knowledge.

[19] Angelo Ambrosi, "Il rilievo come ricostruzione ideale," *XY dimensioni del disegno. Il rilievo tra storia e scienza* Anno V 11-12 (1998): 94-100: "… ideal reconstruction, which tends to be placed within a scientific field, is also attracted to the artistic field; it is a practice which has been consolidated through its widespread adoption without ever assuming precise forms or codes"; Fulvio Cairoli Giuliani wrote in "Il rilievo dei monumenti, l'immaginario collettivo e il dato di fatto," in *Ricostruire l'Antico prima del virtuale. Italo Gismondi. Un architetto per l'archeologia (1887-1974)*, edited by Fedora Filippi (Roma: Edizioni Quasar, 2007), 63-77: "… in order to identify the original (architectural) organism … part of the building must exist which is proportional to the original expanse in volume and size, so that it allows for a practical analysis rather than simply producing a series of charming conjectures … But actually what happens is quite the opposite, as we always see. Relationships with buildings are mostly superficial and casual and too often their remains are interpreted in overly imaginative ways".

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