The state of the art

Grounded on the state of the art in the field of traditional building techniques studies, this contribution aims at showing the results of the inventory and analysis of the XVIth century Terra di Lavoro tuff masonries. Structural aspects and executive modalities for their setting up are presented.

The method adopted has been already applied in several case studies. In details, this kind of approach, imported by the medieval archaeology, with the stratigraphical definition of elevation structures, has been tested in the last twenty years in Italy, producing interesting results with reference to limited territorial ambitions, concerning modern and contemporary age constructions. It represents a reliable tool for ancient edifices chronological definition, and helping in their conservation management especially for the so called «minor» architectures, whose cultural meaning is often unrecognised. This identification is very important nowadays, because of the enlargement of «monument» notion, that includes both instances of historical-artistical significance, and traditional urban fabric.

With specific reference to Campania, in the last decade many metrological-chronological studies have been carried out, pertaining to traditional building techniques used between the XVth and the XIXth century (masonries, floors, roofing, window frames, iron elements). They deal with: a) post-medieval architectures of Naples historical centre; b) d’Angiò, Aragon and modern Age manufactures in Terra di Lavoro; c) those of the late Middle Age in Amalfi Coast; d) those of the XVIIIth century in Benevento. Indeed, in spite of the efforts made up so far, in Terra di Lavoro there is no systematic catalogue of the traditional solutions applied during the XVIth century by the local builders.

The methodology adopted

On the basis of these above mentioned studies, the approach used for the chronological definition of the XVIth century masonries, applied to the homogeneous constructive area of Terra di Lavoro —now corresponding to the Campania plain area, around the Caserta district— is founded on the analysis of the relevant literature regarding building materials (geo-morphological characteristics literature; history of architecture essays; local architectural practical treaties) and of archive sources (masonries masters guilds statutes; notarial acts for the creation of noble or religious edifices, such as private and suppressed monasteries archives).

In details, the study started with the inspection of the sources held in National archives of all the region, never systematically investigated till now, regarding the edifices put up between Middle Ages and Renaissance. From this consultation emerged a copious number of documents referring to the relevant period, so it was necessary to limit the study-area. The choice...
fell back on Terra di Lavoro area, not studied at that time, selecting some centres, interesting in terms of documents, and of the persistence of ancient architectures. Among them, Sessa Aurunca is very remarkable, characterised by a XVth-XVIth century architectural heritage, with many examples of «minor» buildings. Hence, the study consisted in the consultation of notarial acts conserved in the State Archive of Caserta, including sell contracts, marriage contracts, etc., in which often there is the description of the properties, of the typological scheme, and, rarely, of constructive techniques.

By this way, it has been possible to date and to individuate, in Sessa’s historical centre, the manufactures mentioned in those acts, and to analyse their technological characteristics, relating them to the age in which they were used.

A systematic sampling has allowed to identify the peculiarities of XVIth century Terra di Lavoro walls. In this sense, the drawing has been very useful, illustrating metrological and morphological characters of investigated vertical septa.

In short, the research has gone on with:

- the individuation of architectural elements philologically dated;
- the check of documentary information consistency, through the stratigraphical analysis of material local context;
- the editing of catalogue files, completed with architectural, metrical, materical and photographic surveys.

The metrological classification of elements has been accompanied by the geo-lithological and metrological characterisation of stones, the manufacturing, the basic components of mortar, the type of masonry faces. By this way, chronological series of traditional building structural and finishing solutions have been defined.

THE MASONRY TECHNIQUE

Referring to the given chronological range, the studies carried out some years ago in relation to Napoli have been extremely useful. These demonstrate that during the XVIth century masonry with the «cantieri» technique were very diffused, both in tuff or in limestone. This practice consisted in the preparation of two or three courses of rubbles, rough-hewed just in the external and support faces. The result was an irregular, coarse opus, with horizontal linings generally distanced 30–60 cm, characterised by thick joints between one another, with poor mortar, sometimes signed by not slaked lime nodules. Very often the setting up of rubble stony elements took place without paying attention to the stagger of vertical joints.

Notwithstanding the above mentioned characteristics, this typology was the outcome of an ingenious device, conditioned by economical reasons, i.e. by the aim of making the most of stones of every size, accurately dressing external angles and using horizontal elements with stabilizing function, warranting this way, structural solidity.

As a matter of facts, after the D’Angiò and the Aragona period, marked by accurate and strict works, in the Southern Italy this kind of practice spread. It reproposed the roman opus incertum, and it has been used till the XVIIth century, specifically 1688, when the consequences of a strong earthquake imposed the employment of regular courses. In fact already in 1564 the viceroy Perafan de Ribera pressed for abandoning the use of «cantieri», establishing the stonemaster to respect fixed measure to cut stretchers. Nevertheless, the practice has lasted further in time.

The studies concerning the Parthenopean context demonstrated that in Terra di Lavoro the manufacturing followed the common practice in the region.

THE CASE STUDIES

The historical centres investigated for the individuation of significant cases dated to the XVIth century are: Aversa, Falchiano di Caserta, Capua, Parete, San Cipriano, San Marcellino, Teverola, Orta di Atella, San Nicola la Strada, Casapesenna, Nocelleto, Formicolca, Maddaloni, Marcanise, Sessa Aurunca, Teano, Frignano.

All the examples regard yellow or grey tuff, local material directly extracted from the subsoil or taken from neighbouring quarries. They show the use of diversified size stones and of various manufacturing process, i.e., as said before, rubble pieces or regular ashlars. It is also frequent the employ of lengthened elements, called «spaccatoni», that arrive to an extension of about 50–55 cm and to an height of 35 cm. They are especially placed in stressed points or bet-
ween two courses with connection function. Another kind of component are the «asche», little pieces corresponding to manufacture discarding, applied to fill empty spaces.

Between two courses one can find tiny squaring materials, together with a double mortar layer, highlighting the passing from one another, i.e. the closing of a module of the masonry and the following restarting of the new one.

A relevant sample, synthesizing the characteristics of XVIth century masonries, is that of S. Nicola La Strada Lazaretto. It is characterized by a rubble stones wall, with evident horizontal planes indicating the passage between two «cantiere». They are high 50–55 cm, prevalent dimension registered in the investigated cases (fig. 1).

Besides, it was noticed that between the first years and the end of the XVIth century, some characteristics changed: specifically, at the beginning there was a certain continuity with the practice diffused in the XVth century, when walls had a more regular composition, that got lost during the years, and appeared back, sometimes, after the edict of 1564.

Significant in this sense is the ex bishop’s palace of Falciano di Caserta,6 erected at the end of the XVIth century on pre-existent constructions, and interested by extension works during the XVIIth century.

The explanatory masonry samples for the illustration of this variation are four. They belong respectively to the XVth, the XVIth, the end of the XVIth, the beginning of the XVIIth and the half of the XVIIth century. Even if the difference among them is subtle, it is possible to appreciate, especially in the first case, a more accurate composition, with very thin horizontal and vertical joints, and ashlars of similar size, quite regularly disposed. The situation changed in the following century, when masonry was characterised by more unequal elements, as well as by not staggered and thick joints. Finally, in the XVIIth century quite uniform and lengthened pieces were diffused (fig. 2).

The irregularity of the XVIth century masonry is demonstrated by other several exemplars, as S. Marcellino Doge’s Palace (figs. 3–4).

It is realized with rubble stones of different size, never rough-hewed, that define a «cantiere» of about 50 cm, generally composed by two courses, sometimes three, when they present little elements (10 × 10, 5 × 12, 14 × 10 cm). The prevailing pieces have a squared shape (20 × 20, 27 × 24). Here there are also planking holes, distanced both horizontally and vertically about 1.70 m. For practical reasons, they are always aligned with the superior limit of the «cantiere», as frequently it has been verified. Interstices are filled with plentiful gross mortar, abundant of not slaked lime nodules; very often vertical joints are aligned.

Very interesting examples are also a wall in S. Cipriano di Aversa, a building in Aversa, and the Carmelite monastery in Capua, whose comparison makes possible to appreciate the peculiarities of each one. In details, the first one (fig. 5) has an accurate masonry, with irregular ashlars of similar size, disposing in two courses, that define «cantiere» high 45 cm. This dimension is one of the lower discovered so far, together with that one characterising Aversa’s structure.
(fig. 6), where one can see a sort of «mini-cantiere», whose minimum height arrives at 33 cm, thanks to the use of very small stones. Further different is the sample referred to Carmelite, marked by high «cantiere» (51–57 cm) with stony elements, in some points piled, of various shape and size, that impose the making of thick joints: specifically, there are regular blocks, ashlars and rubble stones, in addition to «spaccatoni» and «asche», used for regularizing the disposition of elements, with evident static aims (fig. 7).

This type of system is used for mixed masonries too, i.e. realized with yellow and grey tuff employed simultaneously or in limestone. Those are, for example, a building situated in the historical centre of Sessa Aurunca, as well as of Riardo’s Castle. The first
one, chronologically defined also by finishes datable at the XVIth century, as the portal and the window frames, has been clearly made with meagre resources, overworking every kind of available piece, with the result of complete irregularity. Besides, there are abundant mortar parts—including not slaked lime nodules—arranged thanks to the creation of horizontal level surfaces between two different «cantieri», 50 cm high (fig. 8). This last measure comes down in Riardo fortress, reducing to 45 cm. Also in this case,
the limestone wall is composed by different size rubble stones, regularized by evident levelled planes (fig. 9).

Frequently it has been observed the existence of parts of the construction, generally used for angles, footings or donjons, that are put up using a regular masonry with squared blocks, in limestone or in Campi Flegrei volcanic tuff called «piperno» (fig. 10).

They dictate «cantieri»’s height and arrangement, as we can see in the Marcianise bell tower, as well as in the Capua town walls or in the Capua castle, where we can find the same pattern.

In the first case, dated 1574, the footing is in limestone, while the upper part shows yellow tuff «cantieri», whose composition (2 courses) and height (40 cm) is determined by perfectly cut yellow tuff «spaccatoni» (fig. 11).

Capua town walls, built in the second half of the XVIth century, has angular elements formed by «piperno» blocks, whose height, equal to about 45 cm each, defines a «cantiere» composed by two smaller elements courses. The latter, very regular, allows the definition of fine joints, with a safe static result (figs. 12–13).

Capua fortress, built during the Spanish reign by Carlo V in the first half of the XVIth century, differs
because of the presence of «cantieri» with rubble stones, implicating the creation of thick joints and the use of levelling «asche». Its height is about 65 cm, and it is composed by two or three courses, corresponding to two angular «piperno» blocks, realized with lengthened stony elements sometimes not staggered (fig. 14).

In the Capua’s castle, the angular structure shows big masses of stone, high 35 cm about and large 50–55 cm. Two blocks define a «cantiere», that consequently exhibit an height of 70 cm. It is composed by two our three courses of rubble stones, disposed following a very usual practice, consisting in the collocation of big elements at the base of «cantiere», and of little ones at its top (fig. 15).

**CONCLUSIONS**

The research results exhibit a series of different samples, referring to the XVIth century common practices, whose chronology is a very important datum for the recognition of unidentified constructions, generally consisting of the so called «minor buildings», when it has lost its formal features.

In other words, even if the study is not exhaustive, it offers a sampling that can represent an useful point of reference for recognizing historical manufacture, at disposal of insiders.

Besides, one believe that the deep knowledge of constructive characteristics, by a structural, chemical and physical point of view, is the only preliminary remark to plan a conservation project, in the respect of materical and figurative consistence of architectural heritage.

**NOTES**


6. Carafa, Giannattasio 2005; Giannattasio in course of publication.

**LISTA DE REFERENCIAS**


Esposito, D. 1996. «La tecnica muraria a blocchetti lapidei in area romana». In Storia delle tecniche costruttive...: 113–126.


Fiengo, G. 1996. «Cronologia dei paramenti murari napoletani moderni». In Storia delle tecniche costruttive...: 53–70.


Archeologia medievale, XVI: 675–82.