The traditional architecture in Sicily: the rural area around the volcano Etna

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ABSTRACT: This is an overview of Sicilian rural vernacular architecture. The numerous dominations present in the island, over the centuries, have influenced Sicilian language, art, kitchen and all its various cultural aspects. Its territory can be distinguished in different parts according to the peculiar cultural and economical elements acquired during the centuries and to the natural aspects that make each place unique. In this paper, the area surrounding the volcano Etna is analysed, with the aim to present the most important elements of the local rural traditional architecture which is currently living a slow process of neglect.
The knowledge of materials, building traditions and morphological elements related to these examples of architecture is, therefore, important because it is the first step to capture people's interest and to underline the great value of this part of the local culture. The renewed attention to these old rural buildings together with the introduction of incentives aimed to restore them, for example in the framework of sustainable tourism measures, could contribute to stop this process of abandon.

Keywords: Sicily, vernacular architecture, bioclimatic elements, local materials

1. INTRODUCTION

Sicily is a proud Italian island rich of history and beautiful natural elements, but at the same time, it is a land of neglect and compromise with a weak consciousness of the high value of the building knowledge handed on for ages and with not much attention for the existing constructions.

Among the other peculiar elements of Sicily, one of the most important is the presence in the island of Etna, Europe's highest active volcano. The presence of the *Mungideddu* (as Sicilians call Etna) characterizes all the natural aspect of the surrounded area and also influences the way to build, especially in the rural context.

Figure 1: Landscape around Etna

I would like to speak about the rural architecture built in the lands around Etna between the XVII and the XIX century with the aim to present typological and technological aspects of it, conceived to solve practical needs of the people who lived there.

Only few of these buildings are nowadays inhabited, the majority of them, in fact, is neglected and abandoned and all around them concrete has become more and more present in the thousands of holiday's house built in the last century.

Figure 2: Abandoned buiding in the countryside

This paper aims to give a view of this peculiar part of the Sicilian traditional domestic architecture, in order to permit to know some interesting and characteristic elements of it and to look at it as an important lesson to guide the present planning processes.

A special attention is given to the sustainable elements of these buildings from the use of local materials to the study of the relationship between traditional buildings and local climate.

2. RURAL EATNEAN ARCHITECTURE

The whole of Sicily is characterized by rural houses scattered along the countryside. Most of them were built as the house of the owner of the property or to take in productive activities linked to the cultivations.

In the central area of the island, for ages, the political and economic power was divided among few rich families organized in *latifundia* where wheat was cultivated. All around Etna, several families owned the land that was used to produce grapes, citrus, olives and almonds.

In each of these properties, there was a house of different form and size where the owner of the land with his family and the *massaro* (the man who took care, with his family, of the cultivation and of the property) lived.

The most common production in the Etnean area was the grape one because the request of wine constantly increased and the land gave a product of good quality.

Figure 3: A rural house

To permit the grapes' production, the steep territory was organized in lava stone terracing and the landscape was characterised by this cultivation. Also the construction of the buildings was influenced by the wine production because it needed the creation of wine millstones and cellars (the first for the wine production, the second to save it).

In these rural houses there were few decorative elements, generally of an austere simplicity, and the only thing that marked the difference between the house and the productive part of the building was the number and the characteristics of the frame of the doors and windows.

In this area, the landscape was dominated by lava stones, that were used to set up the dry-stone walls which divided the different properties but also to build the houses.

3. BUIDING TYPOLOGIES

The land's characteristics, the richness of its owner and the kind of productive activity carried out defined the dimension and the typology of the building inside the property.

The common element was the simplicity of the structures and the absence of ornaments.

In many cases, the buildings had a compact form with geometrical decorations given by the different colours of the materials or of the plaster.

In each house, there was at least one cistern which was absolutely necessary to guarantee water all around the year. Water was collected from the roofs and the terraces of the houses through tile tubes.

The productive parts of the buildings could be organized for specific productions, like for wine and oil, and simple empty rooms were used in different ways according with the needs of the moment: deposit of tools, animals' shelter or production space.

In the studied area there were different typologies according to the owners needs and the local site characteristics. In the follow paragraphs are described the most common.

Figure 4: Schema of the three typologies

3.1 One level building

The simplest type of house was on one level with a rectangular form. Generally, on the front side, there were the entrances of the house of the owner, of the rooms given to the *massaro* and his family and of the productive part of the building.

The difference among the use of the rooms was defined by the shape and the frame of the windows and the doors made with different materials and trimmings.

Figure 5: One level building

Both the outside and partition walls were realised in lava stones sometimes with mortar. On this heavy structure a wooden roof covered by tiles rested.

Sometimes, a longitudinal wall shared the depth of the house creating rooms on the front and back side of it. Generally, there wasn't any kind of corridor and the rooms were connected each other with internal doors.

3.2 House on an embankment

In the second typology the main house of the building was realised on an embankment that used the slope of the land to contain the wine cellar and to improve the accessibility to the wine millstone during the vintage.

This kind of building, which was used in hilly lands, had a compact form (more or less square) and a pavilion roof.

Figure 6: House on an embankment

Along two or three sides of the building, in the border of the embankment, there was a terrace that permitted the entrance to the house and became a good way to give independent access to the rooms.

3.3 Two levels building

This kind of construction was built since the middle of the VIII century to overlook on the property and the landscape. It was realised in two levels; the house was on the first floor and it had a balcony all around it.

Figure 7: A two levels building

The ground level was divided in the little house inhabited by the *massaro*'s family, the cellar and the wine millstone.

Some arcades closed the ground level external walls and they were used to hold the balcony of the first floor.

The entrance of the house was realised through a staircase in the main front of the building and sometimes there was a secondary access with another staircase in the back.

Figure 8: Arcate at the ground level

Until the XVIII century, the balcony had only a functional use as a distributive way but later its dimension grew and it was used as an open room of the house.

4. BUILDING MATERIALS

The main material used in the described building is the lava stone.

The land around the volcano Etna was full of different kinds of lava basalts and everybody could find it. This material was used for the house walls and the property limits, but also to build staircases, frames for doors and windows, floors, cisterns, seats and wash-tubs.

Figure 9: A lava wall

Another kind of stone used as framework of windows and doors was the white stone from Syracuse. This material was more expensive than lava so it was used by the richest families as a status symbol. Beautiful geometrical decorations were created with white and black stones in the facades of the buildings.

To improve the impermeability of the external walls, the facades of the house were plastered with a mix of lime and local earth. From this kind of plaster derive the peculiar colours of the rural Etnean buildings from rose to light grey.

Wood was another important material. Until the XIX century, all around Etna there were many woods and they were deforested to create room for vineyards and citrus plantations, so it was easy and cheap to use wood for the buildings.

Figure 10: Lava stone cistern and seats

There were wooden doors, windows, balconies, staircases and wood was also used with structural aims to create floors and beams.

When the price of wood grew, it was replaced for many uses by the iron that, at the same time, started to arrive from England with good prices.

Sicilian traditional iron making is very famous and, from the XIX century, it leaves interesting and beautiful examples of gates and railings. Iron was also used as structural element to reinforce walls and roofs.

Figure 11: Wooden roof structure [4]

Baked clay elements were used from the top to the bottom of the building: roof tiles and gutters for the roof and tiles for the floor. Tiling floor could be rough or decorated with geometrical drawings.

5. CONTRUCTION TECHNIQUES

It is possible to see an infinite number of ways to use lava stones, from the simple dry-stone wall with natural pieces till the perfect squared stones linked with mortar. The walls are about 500/900 centimetres thick.

To built the walls there were used wood scaffolds and the holes leaved by them are still visible in many facades.

In Sicily it was difficult and expensive to get lime so poor people used to build dry-stone walls while rich ones realized houses with cut lava stones and mortar.

In all cases, the best stones were used in the corners of the buildings.

It is important to notice that Etna's area is a earthquake zone so buildings had to resist to seismic actions. In many cases, the dry-stone houses weren't enough strong and were rebuilt after the earthquake.

Figure 12: Lava stone frame

To improve the static resistance of the structures, lava stones foundations were created with a depth of 90/100 centimetres. Another way to increase the strength of the structures was to use iron chains.

The roofs were realized with a wooden structure with tiles directly laid on it. To avoid that tiles flew away, lines of lava stones were put on them.

In the two level buildings wooden beam floors or cross vaults were used.

Wooden floors, made with chestnut or pine wood beams, were put on the external and partition walls and boards were fixed on them.

The wooden roofs and floors sometimes were visible from below, but generally they were hidden by false vaults made of wooden centrings on which were put panels of canes that were plastered in the internal part.

From the beginning of the XIX century, vaults were built with pumice stone, a very light material of volcano's origin very easy to find in the Etna's area. Wooden frames covered of canes and then plastered were used as internal, not structural, walls to organize rooms in the most comfortable way.

Figure 13: False vault and wooden roof structure

6. BUIDINGS AND CLIMATE

The buildings described were realized with local materials taking into consideration the climate of the area. In an historical period in which there wasn't the chance to use electrical equipments to improve internal comfort, builders paid attention to use climatic elements to achieve this aim.

Etnean area is characterized by hot summer and mild/cold winters (according to the height above the sea).

During the hot period, the common necessity was to avoid to have the direct sun radiation inside the buildings and to store up heating.

The big stone walls avoided the overheating of the inhabited spaces and small windows and doors were used to keep the sun radiation outside the house. Inside the rooms, high ceilings helped to maintain a good temperature allowing the hot air to free the inhabited level.

Figure 14: Facade of a rural local construction

To preserve the quality of food supplies, the wine cellar and storage rooms were built in the north facades or, when it was possible, in the basement. Sometimes, some products, like fruits, were put inside the cistern that was used as a refrigerator.

In the two levels buildings, the arcades placed all around the ground level had a static function, but, at the same time, improved the capacity of the walls to protect the internal rooms by the solar heating.

In winter time, houses were heated by the fireplaces and the heat was kept inside the rooms by the thick walls. Even if the volcano is 3.320 m. high, the buildings described were realized from the see level till 1.500 m. so it wasn't necessary to have big slopes for the roofs and their overhang was minimum.

7. CONCLUSION

Nowadays, the rural heritage in the Etna area is living a slow process of decline.

Thousands of old buildings in the countryside are abandoned and day by day the stone elements of the houses are stolen or destroyed.

Generally, through the various generations of the big families, properties have been divided among many owners and nobody takes care of the land and the house.

In the meantime, the situation of the global economy has changed and the land property doesn't guarantee richness as in the past. With the creation of the free global market, the production of wine, oil and especially of citrus are in crisis and also this element leads people far from the agriculture and from the countryside.

In this unfavourable situation, it is necessary, first of all, to be conscious of the big value of the local rural heritage and only after that it could be possible to do something to save it before it is too late.

The study of the traditional way to build and of the local materials can be also an interesting lesson for new planners that, very often, forget to pay attention to the contest in which they are building.

Moreover, it is also important to train young manual workers on the manufacturing of local materials like lava and to teach them the traditional technologies.

Finally, economic incentives must be given to restore the old rural buildings, for example through the funding of sustainable tourism in the area.

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