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## THE KNOWLEDGE AS AN INSTRUMENT FOR RECOVERY AND VALORIZE THE RURAL ARCHITECTURE IN SICILY

The masseria Pintorna- S. Barbara in the mountain area of Madonie

Andrea D' Amore

Position: Phd student

Affiliation: Departement of Architecture ( DARCH)

City, State: Palermo, Italy

Mail address: andrea.damore@unipa.it

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### Abstract

The masseria Pintorna S. Barbara located in the territory of Geraci Siculo (PA), a small rural village in the Madonie area, represents a relevant example of rural architecture for his constructive and typological aspects, but also for the potential that it offers in a project of compatible recover. In the same way of other farms that marks the sicilian territory, this one at the moment is in an abandonment state because of the absence of maintenance during the last year so that it risks to be ruined.

The study wants to evidence the principal materic constructive, functional and typological aspects which are important characteristics to give the right direction to the recover project aimed to the conservation, valorization of the farms and of his productive and architectural history.

With the help of software useful to the analysis of the actual state, to the redrawing and the three - dimensional modeling, had been possible to obtain a higher knowledge and also a clear idea of refunctionalization.

The submitted proposal of valorization wants to define useful protocols for the valorization of sicilian rural architecture outlining possible scenarios for actions that respects the original characters of pre-existence, bringing back a new and contemporary function ( also for the structural and installations adopted solutions) able to adapt flexibly at the use requested by contemporaneity and by the policies of territorial promotion especially based on a cultural and rural tourism where this farm could be inserted, and in touristic routes composed also by other masserie of that area.

**Keywords:** Masseria, rural, analysis, Knowledge, refunctionalization

### 1. Introduction

The tecnological developement identifiable in new materials and construction tecnicques, innovative techniques of architectural relief, digital design and new architectural typology, could be considered as a transition moment, a radical change in the way making project. That developement in a sense help, improve and speed up the control and the realization of an architecture, but on the other side it risks to lose an acient knowledge acquired over the past centuries and expression of a local culture. The risk to lose ancient testimonies that let us to recognize specificity and occurrences force us to carry on a process of knwoledge of an area and her principal signs of human settlement. With the aim of protecting and valorize important traces of collective identity is important to know the principal cultural component of the landscape as villages, old masserie and water mills, in the case of Madonie. The mountain area of the Madonie is an homogeneous territory for history, art, architecture and culture; a homonegeneity facilitated by the morfological complexity of an area that reasonably is considered as a sub – region of

23 villages and a huge widespread rural architectural heritage constantly related to the surrounding nature.

This article is focused on a specific case of an old masseria of Madonie area. At the same time it wants to identify a method, a process of knowledge that start with an hystoric research, to get to a propose of valorization, passing by an accurate analysis of materials, construction techniques and the cracking pattern. That process could be an useful method to identify the appropriate interventions to protect the building and the landscape.

The masseria Pintorna Santa Barbara synthesize the principal aspect and the facets of that architectural typology dotted in all the Madonie area and that can't be considered casual or sponataneus but is the result of an old knowledge of the territory and reflects precise needs of everyday working life, the control of the territory and in some case the celebration of the power of the baronial family.

In the Madonie district the masserie are the principal rural architectural heritage which are placed in the landscape in an armonic way and that in the past had an important role for the management of power and territory. That architectural typology today cover a secondary role comparing with the villages or the new architecture more functional to the new need of agricultural world. Only by a careful process of knowledge of the area is possible to understand how the masserie are part of a thick secondary connection whose recovery could let to introduce the masserie in a new life cycle compatible with the preexistence and with the landscape.

In the case of masseria Pintorna Santa Barbara with the pupose of restoring the right relationship beetwen architecture and nature, had been useful to understand the location of the building related to the villages, but also the function of each room related to the housing and the productive needs.

Through an accurate dimensional relief was possible to gain a deep knowledge of the technical elements and to do a careful analysis of the structural instability that had already compromise the building.



*Fig. 2: View of the masseria from the access road*

What we have exposed until now had been useful to understand the real state of conservation and to draw up useful protocols for recovering and protecting the typological constant and spatial specificity using new tecnologies especially for the structural and the plant engineering implementation.

## **2. Constructive analysis**

The following part of the article is about a detailed analysis of the building and of his principal technical elements; furthermore this part wants to identify the

knowledge as one of the principal instrument for recovering and valorize the rural architecture too often abandoned or denaturated by his principal identity elements.

The masseria Pintorna in the past was at the same time civil house, a production place extremely articulated for the coexistence of different cultivation typologies and silvo – pastoral activities and the coexistence of the harvest and stables for animals. Those features makes the analysis complex, like also the recognition of materials and techincal construction that characterize the building. That one stands on an area naturally degrading in the West – East direction with an inclination of 15 %, is divided in two big and separated courtyards posed on different quotas but connected by a covered vain.

The importance of that masseria is noticeable in the big baronial house that occupies almost all the highest courtyard and dominates on the surrounding territories, in the decorative elements in the interior part of the house and in the alcoves in the bedrooms. In addition at the entrance of that courtayard there is a small church, sign of the richness of the family, the importance of the masseria and her value of big center of social aggregation. In the second courtyard there are all the spaces used for the conservation of the agricultural product and for the animal stables. A single example of rural architecture where is

simple to identify the different role of the two courtyards and it is possible to understand how important was this type of architecture in the past.

The architectural complexity is accentuated both by the morphology of the area and by the different way of realization of the same technical element. That complexity needed a deep analysis of the masonry beginning from the dimensional aspects of the building to conclude with the material aspects. The phase of geometrical and dimensional relief needed the individuation of horizontal plans to set the trilateration with the aim of detect the measures of the courtyards and the interior space of the buildings.

After the geometrical and dimensional phase, the focus moved on the materials of the walls, the floor slabs, the vaulted structures, the stairs, the balconies and all the technical elements whose knowledge is necessary to understand the masseria but also to direct the compatible recovery intervention

## 2.1 The walls

The analysis of the wall represent one of the most important phase because only by a real knowledge is possible to avoid structural approximations caused by a widespread belief that the exterior part of the wall is repeated for all his depth.

With the aim of defining the quality of the masonry of the masseria and identify the types of necessary interventions to restore the appropriate security condition of the building without distorting the aesthetic aspect, the masonry had been studied with the IQM method (wall index quality) introduced in 2008 by the luav of Venice and the Politecnico di Milano.

This type of study has been possibile cause of many wall collapses that have interested the building over the time and gives a lot of information of the mechanical behavior of the walls. Is possible to find walls with a high IQM ( the values are included by 0 and 10) which offers good responses to the earthquake and their collapse arrive for rigid kinematism, buti is possible to find walls with low values and their collapse arrive also for small seismic actions. Another important result of this type of analysis is the knowledge of percentage of empty and full spaces inside a wall; this is an important information tha can be used for future interventions of structural consolidation by injections of resins.

.The definition of the IQM is based on the so – called “rule of art” considering the following parameters:

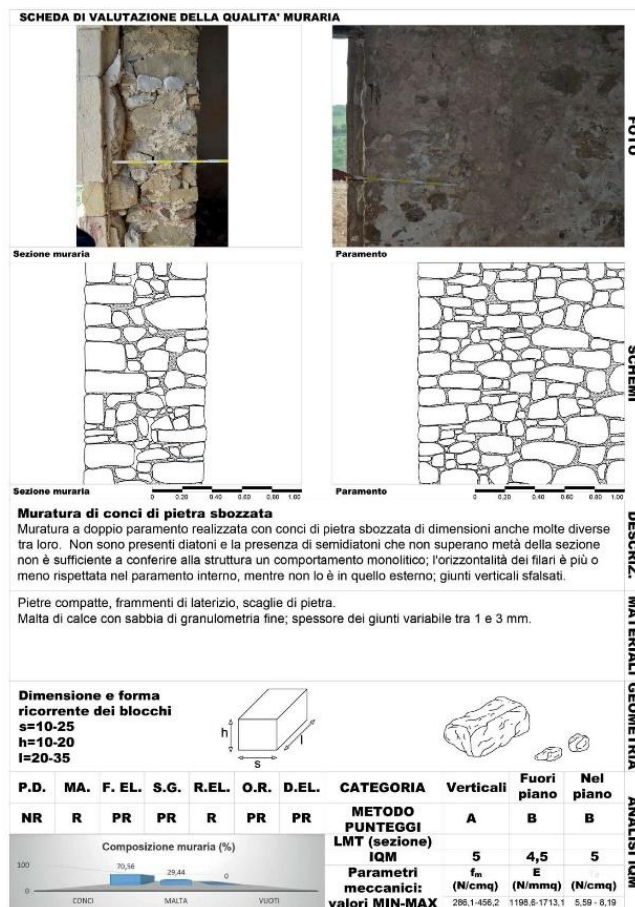


Fig. 2: Form type for IQM analysis of the masonry present in the masseria

- (MA.) Good quality of mortar / effective contacts between elements
- (P.D.) Transverse gearing / presence of diatoni
- (D.EL.) Dimension of the elements
- (S.G.) Phase displacement between vertical joints
- (OR.) Presence of horizontal rows
- (R.EL.) Adequate resistance of the elements;

For each of this parameters is assigned a judgement:

- ( R ) Parameter respected
- ( PR ) Parameter partially respected
- ( NR ) Parameter nont respected

Based on theat judgement is attributed a score and each of them are also combined to the sequent mathematic operation. The result provides the IQM.

$$IQM=RE.EL.x (OR+PD+F.EL+SG+D.EL+MA)$$

Once that the IQM value it's known is possible to apply the NTC (constructive technical standards) 2008 for the existing building in masonry, obtaining an estimate value of the mechanical parameters.

- **fm** = average compression resistance;
- **$\tau_0$**  = average shear strength;
- **E** = average value of the modulus of normal elasticity.

For each correlation between IQM - fm, IQM -  $\tau_0$ , IQM - E, has been identified a curve of minimum and maximum values, whose arithmetic average give the average value

## 2.2 The floor slabs

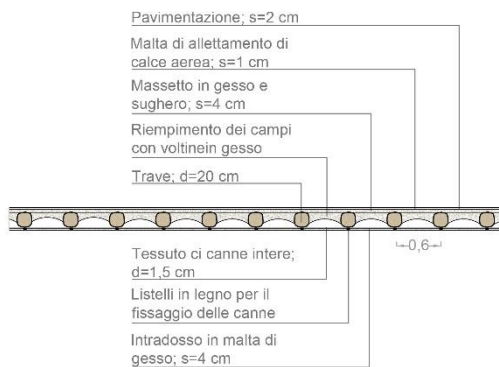


Fig. 3: Digital return of an inter-floor slab of the baronial house



Fig. 4: Digital return of an inter-floor slab of the baronial house

most common materials that is possible to find in that building and in rural architecture of western Sicily. Talking about wood it has excellent resistance to traction, compression and safety in case of fire, while plaster once that the process of setting and hardening is over, increase his volume. This increase in volume cooperate in the resistance of the floor slab causing a buckle with upward concavity of the beams; an ancient pre – stress technique

## 2.3 The vaulted structure

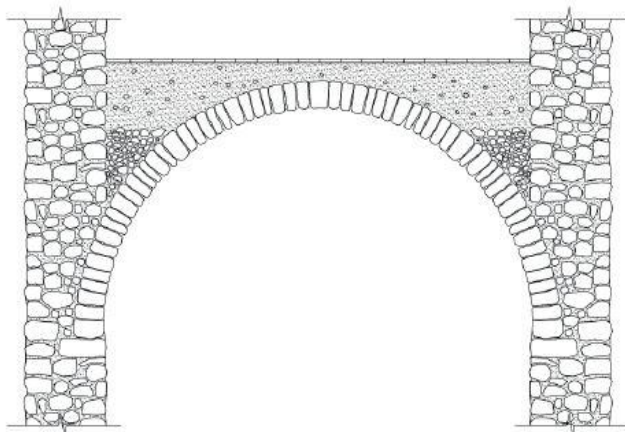


Fig. 5: Digital return of the connecting vault between the two courts

The masseria Pintorna Santa Barbara is an important example of rural architecture of the Madonie area also because the technical elements are representative of the principal values of this architectural typology.

Inside the masseria analyzed is possible to find wooden carpentry works that associate the typical economy of rural architecture with the structural reliability; compared to the other typology of floor slabs of hystoric architecture, in this case there aren't any original case infact the only difference found is is a different way of filling the structural fields. The normal use of wood in the rural hystoric architecture means the costant relationship between architecture and the place where it stood that, in the case of Madonie, like also other Mediterranean area is facilitated by the presence of many woods of oaks, ash trees and chestnut trees.

Analizing the specific case of masseria Pintorna was possible to identify four different case of floor slabs, but for brevity of discussion are shown here only the two most common types of the building. Also in this case

a depp knowledge has been useful to understand the specificity and eventually allow permanence and enhancement.

All the floor slabs identified in the building are made by the same materials but with a different way of assembling; especially wood, plaster and canes ora some of the

An important part of the process of knowledge has bee the relief of the vaulted structure of the baronial house. With the purpose of define the correct height of each vaulted room have been identified different point on the floor at a known distance from the wall and then from those points, by using a laser distance meter, has been measured their vertical projection to the vault. Once known the right quote of each point has been possible to returan graphically their real profile. Talking about the vaulted structure have been possible to identify different typology: a barrel vault made with a gypsum

mortar jet and another one barrel vault made by blocks of rough-hewn stone whose staticity is provided by the mutual contrast of the individual elements. Other cases are the ceilings of the baronial house infact those are characterized by fake vaulted structures made by a gypsum mortar jet or by a main frame in wood, a secondary frame made of strips, the filling of the fields made with cans and a finishing gypsum mortar jet.

## 2.4 The roofs

The typical roof of Madonie area are characterized by the presence of wood as structural material, while the use of steel or reinforced concrete curbs are synonyms of posthumous actions with the aim of improve security conditions.

To frame the technical element of the roof, is useful to remember that those depends from the geographical location of the building, from the technical construction repeated over the time also related to the weather condition. The different way of building the roofs show the human ability to adapt to the surrounding natural condition. If we consider the sicilian rural architecture, the most common typology of roofs presents a wooden structure with slight inclination, unlike others italian high altitude mountain area where the roof structures needs a greater slope to adequately respond to snowier loads.

In the specific case of masseria Pintorna Santa Barbara in the area of Geraci Siculo, have been identified two different typologies of roof, both characterised by a layer of "coppi and embrici" whose are subjected to the actions of wind, snow and rain and and different wooden structure.

### 2.4.1 Saddle roof

The saddle roof is widely used in all the Madonie area and also in the masseria Pintorna. The principal differences of this typology can be found on the support of the protection layer. Is possible to find 3 different supports:

- 3 inclined plane in reeds and plaster mortar
- 4 brick tiles and plaster mortar
- 5 wooden boards



Fig. 6: Photo and digital return of the structural elements of a common roof of the masseria

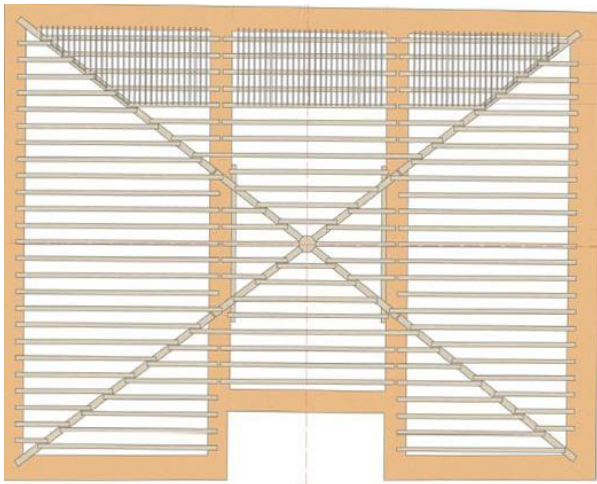


Fig. 7: Digital return of the structural elements of the baronial house roof

### 2.4.2 Roof "a padiglione" of the baronial house

This typology present a pavillon structure widely used for huge rural building especially cause it let a fast rainwater disposal along all the sides of the polygon that makes up the building. To appropriately respond to the excessive thrust exerted by the non – horizontal main structure, the two master walls *in* the middle of the house cover an important. They let the roof to have the right inclination and they solve the big distance between the external perimeter supporting walls.

## 2.5 Stairs and balconies

The rural architecture in his complexity doesn't show any elements of values and quality, buti is possible to find some example where the decorations of the facades give an higher quality to all the building. An accurate analysis of the external stairs and the balconies is an useful instrument to obtain a deep knowledge with the aim to protect and valorize the main identity elements of the building.



Fig. 5: View of the access stair of the baronial house



Fig. 9: Hypothesis of reconstruction of the access stair to the baronial house

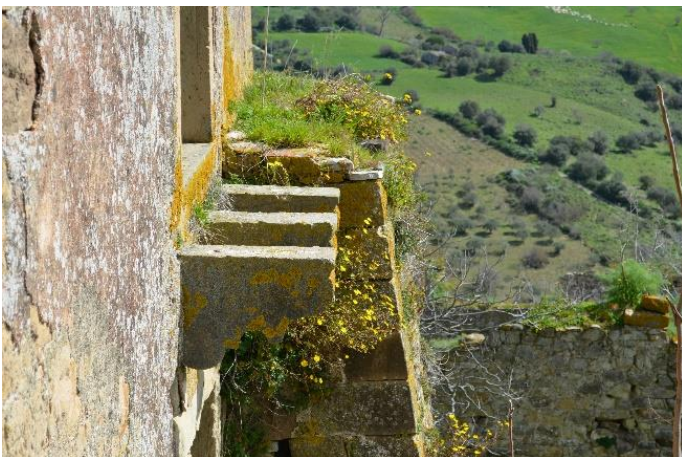


Fig. 10: View of the shelves of the balconies embedded in the wall. Above them was placed the limestone slab removed today.

Talking about the entrance stairs it presents some totally collapsed parts whose observation has been important to understand the ancient conformation of a "pincer scale". The entrance to the first floor of the masseria is marked by a polycentric vault which is also the ground of the final steps of the ramp. The balconies identified in the baronial house of masseria Pintorna are a common typology of Madonie area. Those are perfectly integrated with the building infact the balconie's floor is made by slabs of local limestones placed side by side with the support on the central shelf.

## 2.6 Analisis of the cracking pattern

The study made on the masseria Pintorna is finalized to a proposal of valorization of this example of Madonie's rural architecture, but that proposition can't prescind from the study of the form and the causes which produced the main structural problems. To identify the principal instabilities and their causes, the last moment of analysis has been the cracken pattern of the baronial house.

That moment has been extremely useful also to identify the main interventions necessary to recover the masseria. The buttresses of the principal facade of the baronial house are two important element of the overall structure, infact the walls behind them doesn't show many lesions unlike the vertical closures not connected to them. After identifying the lesions in each room a useful method was to realize photo – insertion inside the geometric section to obtain a overview of the trend of the lesions. This analysis allowed to affirm that the principal causes of the structural problems were a subsidence of the foundation plan and his slipping in direction SE and NE.

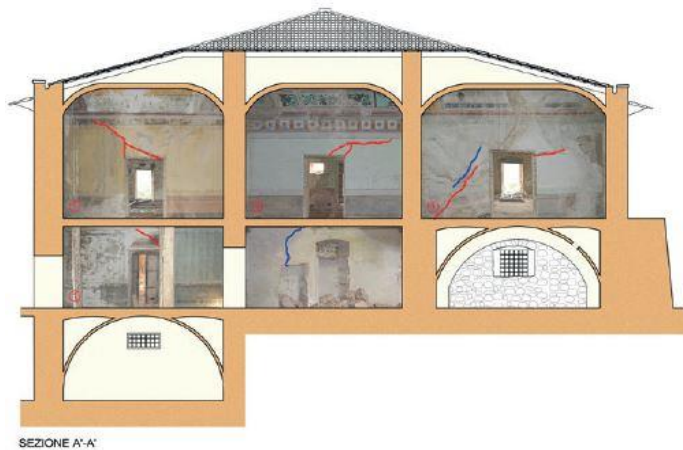


Fig. 11: Example of photo - insertion into geometric sections and indication of the injuries present: in red are shown the structural lesions and in blue the semi - structural lesions

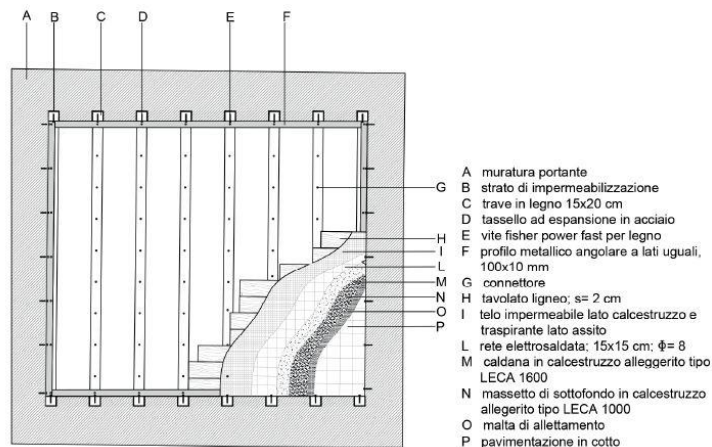


Fig. 12: Digital restitution of the interventions identified to obtain an anti-seismic behavior of inter-floor slabs



Fig. 13: Digital return of the roofing plants after the planned recovery interventions

### 3. The recovery and refunctionalization project

Certainly the architectural project is necessary to valorize an abandoned or underused building. In the specific case the main focus was to make a useful proposal for the community, the development of the area and that respect the surrounding nature. The realization of the project needs to be based on a deep knowledge of the building as a useful instrument to identify the right intervention. For this reason that part analyze firstly the principal intervention and only in a second moment the architectural and functional choices.

In the context of the masonries over the unstitch and stich intervention, the IQM analysis allowed to understand in which walls were possible to achieve consolidation by mortar or resins injections. Another proposal of intervention is the re - construction of the wall with poroton - type blocks and stone. This method bring to a thinner wall that maintain the same features of thermal acoustic insulation and to obtain a monolithic behavior of the wall. The main interventions necessary for the floor slabs are focused to obtain an anti - seismic " box behavior". For this reason, with the help of new software has been projected a concrete wood mixed floor slabs. Those type of structure includes the use of adequate connectors and a connection between the beams ant the walls realized with angular metal profiles (100x100x10 mm).Others important intervention were those on the roofs basically characterized by the introduction of an insulating and waterproofing package to block the water infiltration and improve the energy efficiency. Those interventions need a general review of the structural elements which led to a dimensional design of the structural elements of a capriata. This design was carried out maintaining the same form and using lamellar wood compatible with the hystoric architecture. Entering into the specific project proposal the main idea was to make the isolation of the masseria as a strenght. In addition a further assumption was not to modify the general plant of the building and this assumption has been useful also for the new destination of the

masseria. This has been divided in two different function but related at the same time. Tha baronial courtyard has been converted in a recovery center for drug addicted, while the second courtyard could host an hippoturism center.

The distribution of the spaces is based on a therapeutic rehabilitative path of 18 months. During the first period the guests have to do activities only in the baronail courtyard. The second courtyard will be opened also to the recovery center's guest only when they can have contact with other people and they also have the chance to be reintegrated in the world of work in the hyppoturism center.

The choice to insert a recovery center is an experimental attempt but at the same time is extremely flexible cause could easily be converted in a farmhouse at the service of the hyppoturism center.

Over the architect architectural design based on the national law, an important moment has been the plant adaptation and insertion in the lower courtyard of a solar greenhouse



*Fig. 14: Hypothesis of insertion of the solar greenhouse inside the courtyard at a lower level*

An important plant component which has been faced regards the air conditioning system. With the purpose of reducing any management costs and having at the same time a lower environmental impact has been decided to propose a geothermal system useful for heating, cooling and domestic water.

Despite this system need the contribution of electric energy it helps to reduce the management costs of the 75 % and to exploit the energy emitted from the ground where the temperature is included between the 17 C° and 20 C°. This temperature is warmer than in winter and colder than in summer.

The geothermal system is characterized by

serpentines placed at a depth of 3 meters and a geothermal heat pump located inside the building that allows the distribution of heat through the aid of a radiant floor.

In conclusion the attention has been addressed to the project of a solar greenhouse which is basically characterized by the ability to store a higher quantity of energy through the help of an energy accumulator made by simple water. The water is able to accumulate a lot of energy during the hours of sunlight and to release that energy in the night.

The solar green house is a way of giving the chance to the recovery center's guest to learn the discipline of botanic, but at the same time to evidence the apparent regularity of the court in which stands and to compare with the other buildings and the slope of the land. Proper that slope allowed to design the solar greenhouse partially inground with a maximum height above ground of 4 meters and a minimum of 1.80 meters and a simple parallelepiped shape.

#### **4. Conclusions**

From the last convention of European Union and from the code of cultural heritage the landscape is defined as " part of territory as it is perceived by the populations whose character comes from the actions of natural and human factor and by their relationship"

The rural architecture represents one of the principal symbols of the constant relationship between man and nature. Today this relationship is influenced by the new technologies and new materials that allows to reach architectural solutions exclusively imagined in the past.

What has been written up to now want to propose the idea of a certain method, an approach to an hystoric architecture that identify the knowledge as the principal instrument for compatible valorization. A valorization that could bring to the recover of traditional architecture of the past whose are abandoned right now or too often destroyed by the lack of awareness of the people.

To be introduced in a new destination those hystoric architecture obviously needs to be adapted functionally and technologically; for this reason is necessary to use the new technologies, but at the same time is very important to obtain a real and deep knowledge of the materials and the technical construction used to build the architectural artifact. This knowledge can take place considering the countless studies done in the past. Their main objective was to provide specific information about the constructive aspects and the correct methods of intervention aimed to a compatible valorization with the surrounding area and the hystoric pre – existence.

It is undoubted that the new materials needs a different use if we are talking about new construction or recovering project. The same statemant applies to the new technologies like the digital management of construction information processes, including the BIM, that works differently in the case of a new edification or building recovery interventions. In case of using the BIM software for recovering projects



the main risk is to realize an an excessively simplified model not considering important details that are decisive for a compatible project. For this reason is extremely important a deep knowledge that goes beyond the dimensional aspect or the management of the process of building architecture. It is important to obtain a knowledge useful to understand the importance of the interaction between repeated intentions and practices in historical architecture; a knowledge that could help to recognize and let the people recognize the principal components of a landscape like the small villages and rural architecture. In conclusion inside the concept of “ knowledge” the word “ innovation” needs to be constantly used but with prudence and awareness, especially when the focus is on architecture where also a small and apparently insignificant detail tell a part of the collective identity of a place and of the society that lives it.

### **Bibliography**

- Pasta Adriano Il restauro antisismico. Palermo, D. Flaccovio, 1996
- Casamento Aldo. La Sicilia dell'ottocento. Palermo, 1986
- Del Corno Barbara. Mottura Giovanna. Serre e verande: con 9 soluzioni progettuali. Santarcangelo di Romagna, Maggioli, 2014
- De Sivo Benito. Cito Giovanni. Giordano Giuseppe. Iovino Renato. Il recupero delle coperture. Palermo, D. Flaccovio, 1992
- Furiozzi Biagio. Messina Claudio. Paolini Leonardo. Prontuario per il calcolo di elementi strutturali. Firenze, Le Monnier, 1988
- Caruso Enrico. Nobili Alessandra. Le mappe del Catasto borbonico di Sicilia: territori comunali e centri urbani nell'archivio cartografico Mortillaro di Villarena 1837-1853. Palermo, 2001
- Giovanetti Francesco. Manuale del recupero del centro storico di Palermo. Palermo, D. Flaccovio, 1997
- Righetti Gianfranco. Bari Luigi. L'edificio in muratura, la muratura portante in laterizio normale e porizzato, caratteristiche e prestazioni. Padova, Lambda, 1993
- Carbonara Giovanni. Trattato di restauro architettonico. Torino, UTET, 1996
- Palazzo G. Valadini G. Bagli e Masserie – Luoghi di Sicilia (Kalós n°5-6/1997), Palermo, 1997
- Doufur Liliane. La Sicilia disegnata: la carta di Samuel von Schmettau 1720-1721. Palermo, Società siciliana per la storia patria, 1995
- Caleca Luigi. Colajanni Benedetto. Corso di aggiornamento sul consolidamento di edifici in muratura. Agrigento, 1989
- Caleca Luigi. Architettura Tecnica. Palermo, 1991
- Docci Mario. Maestri Diego. Manuale di rilevamento architettonico e urbano. Roma, Laterza, 1994
- Siragusa Mario. Società e potere mafioso nella Gangi liberale e fascista. Progetto Gangi, 1995
- Siragusa Mario. Baroni e briganti. Progetto Gangi, 1995
- Scarzella Paolo. Zerbinatti Marco. Recupero e conservazione dell'edilizia storica: L'insieme: Le parti: interrati e fondazioni, partizioni, coperture, chiusure e aggetti, Firenze: Alinea, 2009
- Imbornone Pietro. Giuseppe Profeta. I solai in legno nel recupero. Palermo: M. Giordano, 1984
- Imbornone Pietro. Elementi costruttivi in gesso: repertorio di antichi magisteri. Palermo, D. Flaccovio, 1992
- Capomolla Rinaldo. Mornati Stefania. Vittori Cecilia. Stucchi Silvano. Solai, coperture e volte. Roma, EdilStampa, 1995
- Carratù Roberto. Serre solari bioclimatiche: progetto e verifica. Napoli, Simone, 2015
- Cedrini Rita. Anello Vincenzo. Il manuale di recupero dei siti rurali: l'esperienza della valle del Sosio. Palermo, Flaccovio, 2001
- Aymerich Carlo. Dell'Acqua Adolfo Cesare. Fatta Giovanni. Pastore Paolo. Tagliaventi Gabriele. Zordan Luigi. Architettura di Base. Firenze, Alinea, 2007
- Architettura in costruzione. Collana diretta da Saverio Mecca. 5° edizione. Architectural Heritage and Sustainable Development of Small and Medium Cities in South Mediterranean Regions. Results and strategies of research and cooperation ( 2005, Forum Unesco – University and heritage ): University of Florence Branch office, 2001
- L'architettura rurale nelle trasformazioni del territorio in Italia. Atti del convegno di Bari, 1987, edizione fratelli Laterza
- Agostini Stella. Architettura rurale e le vie del recupero. Milano, Franco Angeli, 2007
- Luav giornale dell'università. Cafazzo Michela. Grandinetti Pierluigi. Martoni Erica. Ed n° 1391. Architetture e paesaggi rurali nell'alto Adriatico: conoscere per conservare e valorizzare. Venezia, Grafiche Veneziane, 2008-2010

- Cortijos, haciendas y lagares: Arquitectura de las grandes explotaciones agrarias de Andalucía. Dirección general de Planificación, servicio de publicaciones. Provincia de Almería, 2004
- Piano territoriale della comunità della Comunità, architettura tradizionale nelle Giudicarie. Servizio tecnico comunità delle Giudicarie ufficio urbanistica e tutela del paesaggio, 2015
- Germanà Maria Luisa. L'architettura rurale tradizionale in Sicilia: conservazione e recupero. Palermo, Publicicula, 1999.
- Ministero per le Politiche Agricole, Alimentari e Forestali; Laboratorio per il Paesaggio e i Beni Culturali (CultLab), Università di Firenze. Paesaggi rurali storici: per un catalogo nazionale. Bari, Laterza & Figli Spa, 2011
- Musso Stefano. Rural architecture in Europe between tradition and innovation. Firenze, Alinea, 2005
- Fumo Marina, Castelluccio Roberto. Manuale per il recupero dell'architettura rurale, Campania Cilento e area vesuviana. Napoli, Luciendo Editore, 2015
- Piano paesaggistico territoriale regionale, linee guida per il recupero, la manutenzione e il riuso dell'edilizia e dei beni rurali. Regione Puglia – Assessorato all'assetto del Territorio, 2010 - 2013
- Trapani Viviana, Vesco M.I. Madonie, Madonie: divulgazioni sull'habitat contemporaneo / scritti di Marcella Aprile. Palermo, Caracol, 2013
- Mantino Francesco. Lo sviluppo rurale in Europa. Milano, Edagricole, 2008
- Anselmo Vincenzo. Madonie a piedi, 24 itinerari escursionistici nelle "Alpi di Sicilia". Polizzi Generosa, youcanprint.it, 2016
- Amico Vito. Dizionario topografico della Sicilia Vol 1 e 2. Palermo, tipografia di Pietro Morvillo, 1855