Knowing in order to preserve and enhance historic architectures: the case study of Berat

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1 ABSTRACT

This paper analyzes the traditional vernacular architecture heritage in Albania, particularly in Berat. This city has a well-preserved historic center made up of traditional dwellings of 15th century and reaching their maximum development during the 17th century with highly articulated forms dating back to the beginning of 19th century.

The research addresses the totality of the architectural organism of the house through an integrated study of its spatial composition, construction techniques, construction materials, and landscape where it is located, all equal components that contribute to its identity.

The objective of this study is the preservation of heritage, through the deep historical knowledge of architectural typologies and sustainability of the intervention. The typology of intervention includes both conservative restoration and reconstruction with change of destination.

The adopted method has as operational tools - on one hand the census and classification of assets, and on the other, the direct survey of significant areas of operation. Furthermore will be implemented an innovative approach of "integrated architectural design". This approach involves: the fields of restoration, re-use in the relationship between old and new, the structural consolidation and requalification of energy and environmental.

As a conclusion, we believe that the old forms and technologies of vernacular architecture can be the basis to generate the new autochthonous architecture of the country.

2 THE TRADITIONAL VERNACULAR ARCHITECTURE HERITAGE IN ALBANIA

2.1 The “Albanian house”

The Albanian vernacular heritage consists mainly of domestic architecture. The "Albanian house" is present in all regions of the country with different typologies. The differences are based on territorial, climatic conditions, and on cultural influence coming from neighboring countries (Greece, Macedonia, Serbia and the Adriatic Sea). The homogenizing factors are related to socio-economic structure similar now and in the past throughout the country. Local economies were all based on the feudal system and agriculture. (present in Albania since the fifteenth century to the nineteenth century). The social structure was dominated by the institution of the patriarchal family, gathered under one roof. Finally, the strongest element of homologating for the "Albanian house" at the national level was the military and cultural domination of the Ottoman Empire, lasted five centuries and carries trends and technological upgrading.

Currently the examples of "Albanian house" preserved date back to the nineteenth century. The origin of these buildings dates from the fifteenth century, but during the eighteenth century they reach full typological definition (crystallization) and until the early nineteenth century continued their construction (Riza, 2009). The intertwining of the urban economy with the rural one, the lack of public places and the lack of social life provided for the rooms in the house to have a multifunctional nature. This trend was common on a national level. Nevertheless, the distribution pattern and the repertoire of rooms, looks the same in each regional typologies. The service rooms are always placed on the ground floor for agricultural processes or farm animals. This plan is not inhabited and is built on a massive scale (stone masonry) with strong characteristics of introversion. The first floor contains the rooms closed for residence of the family (“shtëpia e zjarrit”, “oda”, etc.,) and semi-open for the summer stay (çardak, qoshkë, etc.). The first floor is characterized by

elements of extroversion with a mixed construction in stone and wood. Where wood is used as the main material in the timber walls and secondary in the mixed one.

The "Albanian house" has a number of typologies, which are distinguished by the functional and distribution prevalence of a room on the other, both in plan and elevation. Moreover researchers (Riza&other, 1988) taking into consideration the distinct houses in urban and rural areas, have noted that the urban house is the evolution of the rural one and advance the following classification (Fig.1):

- Type with "çardak" (in Berat, Scutari);
- Type with "hajat" (in Kavaja, Elbasan, Scutari);
- Type "tiranese", with "shtëpia e zjarrit" (in Tirana);
- Type with "qoshke" (in Korca);
- Type "urban kulla"(Scutari, Berat, Kruje)

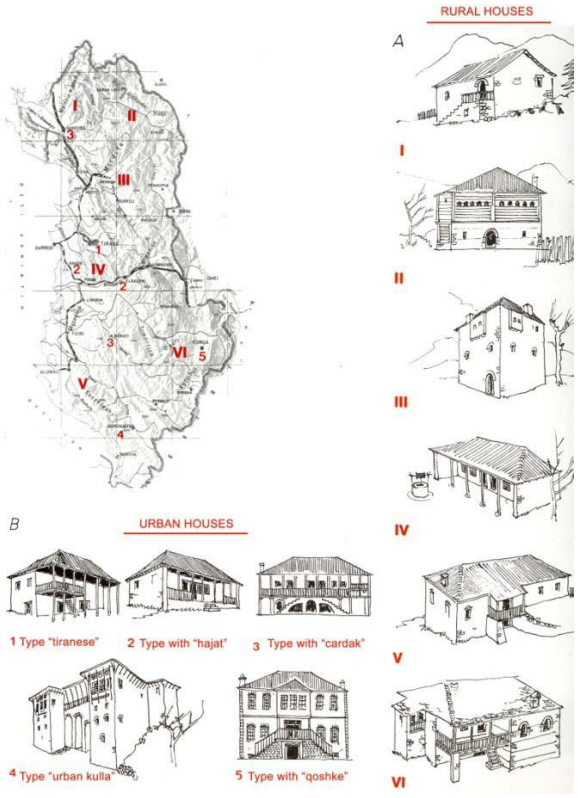

Fig. 1: Types of "Albanian house". Source: Elaboration of p. 20 of Architecture Traditionnelle des pays Balkaniques.

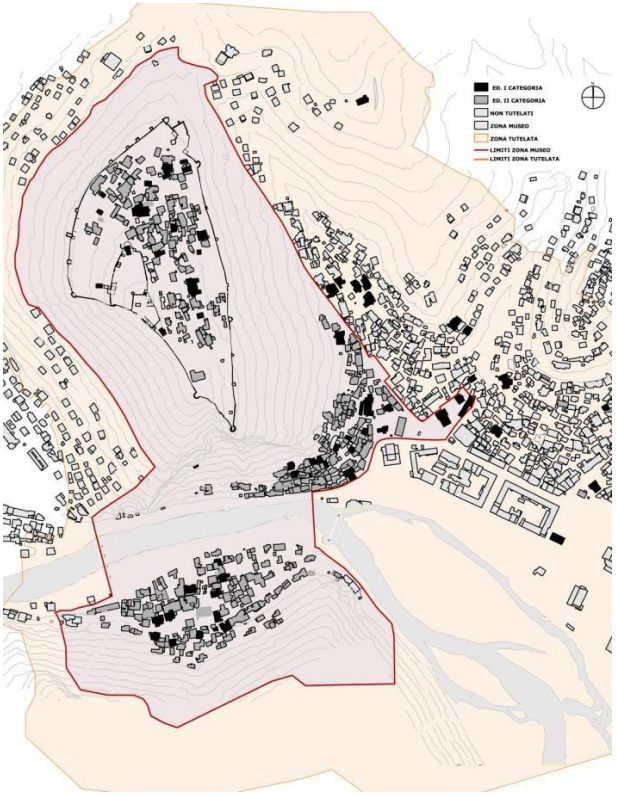

Fig. 2: Drawing on protected areas and buildings of Berat. Source: Drawing of the author.

2.2 The case study of Berat

Berat is a city in southern Albania, situated on the right side of the river Osum, boasts a beautiful location between the mountains Tomorri and Shpiragu. On name of the city there are several hypotheses, one of these claims that it derives from an Albanian variant of the name Belgrade, another hypothesis that it comes from the turkish word "Berat" which is mostly used to indicate a decree, but that can also have the sense of immunity, privilege.

The city of Berat has a large and interesting architectural heritage characterized by elements of the local tradition intertwined with those inherited from Ottoman domination lasted five centuries.

The old center of town is the castle, the 4th century BC, which stands on a foundation of Illyrian times. On the opposite hill, Gorica, there is another castle of the same period and on the same altitude (Bace, Meksi, Riza, 1988). This double fortification in the two slopes that descend towards the river has made the city impregnable for centuries. It has continued to grow and expand in the hills that are followed on both sides of the river Osum until the seventeenth century. when it reached its maximum expansion. Later, the city has continued to grow following the late medieval urban structure, without any kind of coordinated urban intervention. This has made possible the integrated conservation of the ancient center that is presented intact.

Since 1959 the city was declared a "museum city" and became an experimental laboratory for restoration and conservation example for the whole of Albania (Strazimiri, 1971). The first acts of protection were in the old town, zoning and subdivision monuments into two categories. The zoning included three big areas: the "zone museum", the "protected area", and "free zone". The protected buildings have a total of 444. They are divided into two categories: "first class" (64), with particular historical and artistic values, and "second class" (380) distinguished only by the environmental value (Fig.2). Furthermore, the protection in the "zone museum" includes all houses and green spaces that are free, following the indications of the general plan of the city.

The conservative restorations undertaken in this area provide for buildings of "first category" preservation of the full prospectus and interiors. Only small changes to adapt the building to the needs of a current lifestyle are allowed. The buildings of "second class", which is only recognized the environmental value, are subject to all necessary internal changes, while the exterior is full preserved.

In 2008 Berat has become one of the city protected by UNESCO and has become part of the heritage of humanity as "a rare example of well-preserved Ottoman town".

3 THE KNOWLEDGE OF THE ARCHITECTURAL HERITAGE AS A PRECONDITION FOR INTERVENTION.

3.1 Study on the birth and evolution of typologies of house in Berat

The objective of this study; heritage conservation with sustainable interventions, is possible only if preceded by a deep historical survey. The historical research of the building in question is only part of the study required before the intervention. In fact, knowledge of the origin and evolution of the types present on the territory is necessary to understand the heritage and to properly intervene.

The identification of the basic types and determination of their diachronic transformations has not been easy work for researchers, due to low resources (only inscriptions on buildings belonging to half of the nineteenth century). Therefore it was not possible to reach a absolute chronological reconstruction, but only to the determination of periods it belongs. Increasingly, scientists (Riza, 2009 and Samimi, 1984)) have observed in the houses of Berat a large number of variants. The conspicuity of variations is due to the limited availability of economic middle class and the lack of soils adapted for construction. This has led to homes with compositional schemes simplified and adapted to orographical conditions.

The evolution of the house and its diachronic changes are related to socio-economic transformations. Therefore the origin of the "Albanian house" is in the fifteenth century under the influence of the feudal system prevalent in Albania until the mid-nineteenth century. Therefore the formation of the base type, and the aggregation of its rooms is connected to the agricultural economy. Later the adoption of the capitalist system leads to a series of changes that aim at adapting existing buildings to the new requirements of social life. The transformation interventions are mainly enlargements of the rooms at the expense of open or semi open spaces of the house as the "çardak". Also new spaces are created with the intent to expand and regularize the surfaces of the rooms, through the projection of the upper floors. This process of transformation has brought a new look to the architectural heritage built in earlier times. These actions take place since the mid-eighteenth century and are result of the influence of military and cultural domination and the development of construction techniques that followed. In particular, in Berat a catastrophic event like an earthquake (1851) was the occasion for a collective reconstruction of houses according to new needs and trends.

In Berat, there are three categories of houses (Bace, Meksi, Riza, 1988): the house with "çardak"; the house with "half floor"; and the houses of the nineteenth century (Fig.3). The three categories are divided into subcategories or variants. The variants of the home "çardak" are related to the position it occupies in the compositional scheme of the facade and its transformation over time.

The second category is the result of the close relationship between house and land. In fact, the definition "half floor" means a section jagged, with a greater extension of the surface of the first floor than the ground floor. The first floor has a greater surface area both in the back of the house, thanks to the excavation of the soil, that in the front with projecting wooden facades and typical bow windows, spread throughout the Ottoman and cultural area and here called "erkeri".

Finally the third category includes the houses restructured or newly built during the nineteenth century with timbers, rows of large windows, and frames on the edges of the upper floors.

Fig. 3: The three types of house in Berat: "çardak" (photo by author); "half floor" (Source: Berati, historia dhe arkitektura); houses of XIX sec. (Source: Architecture Traditionnelle des pays Balkaniques)

3.1.1 The isolated and the aggregate house in Berat.

The typological classification, presented above, has very strong historical and scientific basis. However, for proceed to a concrete analyze of buildings would need a schematization of the major types with fewer variants, determinant of general condition such as topography. In fact, the construction with the excavation of the rock face in the the back of the house does not belong to only one category. It is a common practice in Berat and may belong to all categories.

Therefore we can make a further distinction in the architectural heritage of Berat linked to aggregation relationships between buildings and land. In fact, we identify 2 types: the aggregated house and the house isolated. They have a synchronous origin, as the well-known examples of the domus and the insula, the differences are related to socio-economic considerations.

The isolated house is the type with "çardak"(Fig.4). This type gets its name from the porch on the first floor called "çardak", which occupies the central part of the composition scheme and held several functions, from that of corridor, at living during the hot months to that of place for the processing of agricultural products. In fact, this type is designed to wealthy families and in particular to landlords, who lived from feudal revenues. Of this type in Berat you can count many buildings, both widely distributed on shallow soils than on steep ones.

The second type of dwelling is aggregated (Fig.5) and has a lower extension of the one with "çardak". It is destined for middle class people, employed in agriculture and handicrafts, which lacked the resources necessary to own a home with "çardak". This types follows for aggregation a scheme called "string", like a string along the dorsal of choline. In addition, more than the house "çardak", this type has undergon e transformations of the nineteenth century with a massive addition of "erkeri". The houses have a functional scheme very similar to the house with "çardak" with the ground floor for the storage (“katoi”) while the first floor is for the family life. Here the rooms are fewer and smaller than the house with "çardak".

Fig. 4: Example of isolated house with "çardak". Sourse: photoand drawing of the author.

Fig. 5: Example of aggregated house.. Sourse: photo and drawing of the author.

3.2 Analytical study of the architectural organism of Berat

The historical and typological study of heritage leads to a further investigation. In fact through a change in scale we pass from the study of the block to to the analytical study of the architectural organism. Therefore we analyze all the components that contribute to its identity. First we evaluate the relationship with the territory, including the conformation of the soil and the types of natural materials available. Later we explore building materials and construction techniques that help to give the house a unique aspect. Finally through the spatial analysis we try to understand the compositional principles of the house, looking for standardized rules of composition based on the size of a module.

3.2.1 Relationship between territory, soil and architecture

In Berat all neighborhoods (Kala, Mangalem, Gorice, etc..) arise on sloping ground and rocky. This has always influenced the process of design and composition of the house. The lack of shallow soils has led to different typology according to social classes. However, the availability of stone has led to a preference for the load-bearing masonry. In fact the owner of the house had to provide only part of the material necessary for the construction of his house because a lot was on site, as the stone earned from excavation for the foundations. Moreover, the presence of the river has provided a large reservoir of material, especially stone for the construction of precincts and exterior paving. In addition the stone in Berat is also widely available wood. It was procured in large quantities in the hills surrounded the city or upon the slopes of the mountains. Therefore, soil characteristics and resources related to the area are key components the determination of the architecture.

3.2.2 The materials and construction techniques

The creativity within traditional historical building is mainly linked to the availability of natural materials and construction techniques as well as arising from the socio-economic development. Moreover the construction materials determine some parameters like the span of the rooms, the size of the stairs, etc., influencing indirectly the types housing (Riza, 2009).
The construction of the house in Berat uses materials and techniques identical in all types (Samimi, . The ground floor (basement) is always in bearing walls. The upp er floors can be completely in load-bearing masonry with the addition of light structures such as "the erkeri" or in bearing timber wall. The large wooden roof is one of the most characteristic elements of the house and is distinguished by the numerous folds and the large overhang of the eaves.

The bearing walls can be built entirely of stone, of wood or mixed in stone and wood. The wall of stone is often a dry-stone wall and ranges from a thickness of 60cm to 120cm (Fig.6). The made entirely of wood walls can be load bearing or only partition (Fig.7). In Berat this technique is called "çatema". It consists of 2 phases of construction, the first is dedicated to the construction of the wooden skeleton and the second to the filling and closing by charging the nailing strips. The "çatema" bearing has a width of 18-22 cm, while the partition walls have a thickness of 12-18 cm. The mixed masonry makes use of wooden rails inside the masonry, the function of which antiseismic and compacting is known (Fig.8). The rails are placed at a

vertical distance of 70-100cm interconnected by transverse elements. In some cases these wooden tracks are not visible on the facade, as arrears in the wall to avoid their deterioration due to humidity.

The system of '"erkeri" has spread throughout the Balkans, particularly in Albania has had its greatest spread in Berat. Here were the ideal conditions for its development, given the steep terrain and the need to increase and regularize the surfaces of living spaces in addition to the large availability of raw material. Its appearance dates back about the first decade of the nineteenth century and became a diffuse structure and consolidate throughout the second half of the nineteenth century. Constructionally it is supported by projecting beams of the first floor slab which rest on the underlying masonry and wood struts that are connected with a wooden rail inserted into the masonry.

Fig. 6: The wall of stone. Sourse: drawing of the author.

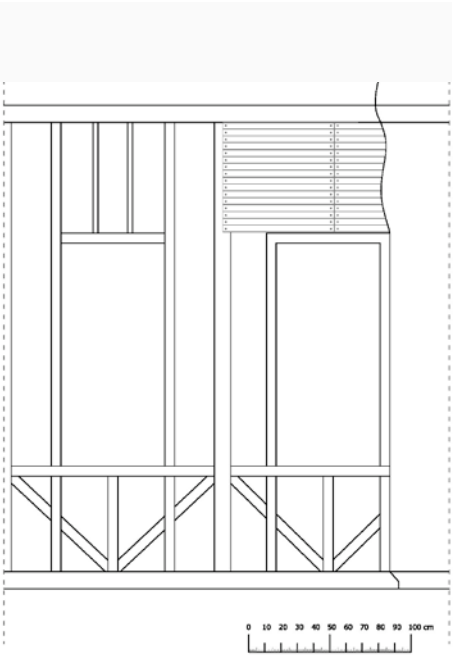

Fig. 7: The timber wall. Sourse: drawing of the author.

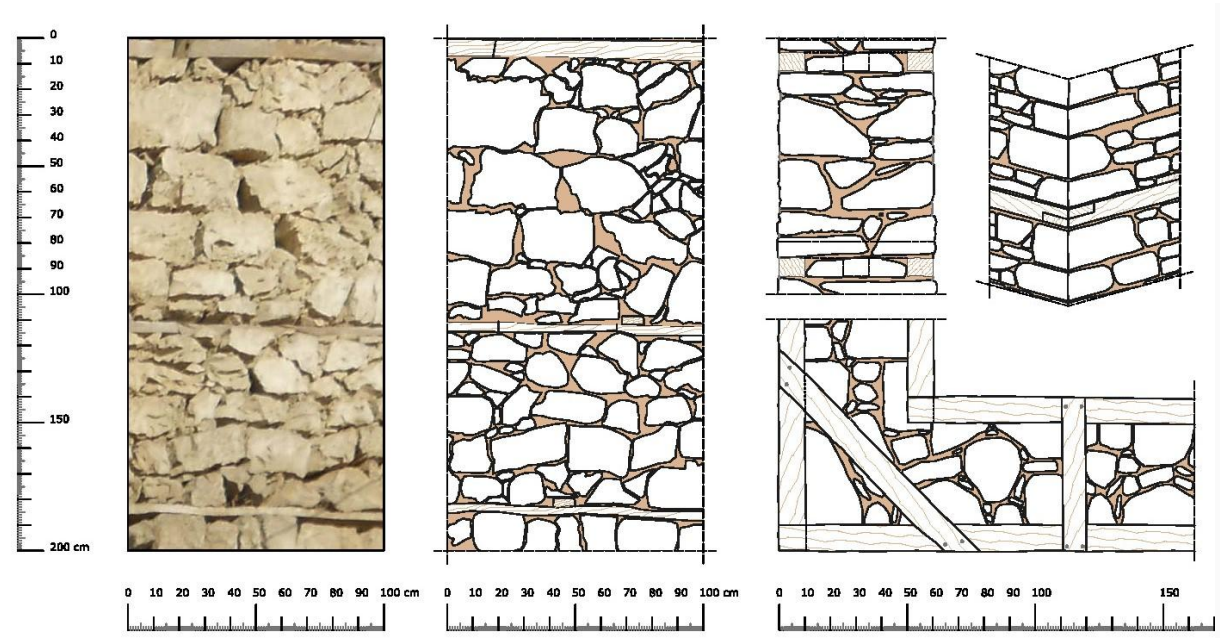

Fig. 8: Mixed masonry with stone and wood. Sourse: drawing of the author.

3.2.3 Spatial and functional analysis

The buildings better preserved and the most interesting ones typologically and compositionally were subjected to a series of analysis of a cognitive type for the determination of compositional principles at the base of the house of Berat.

At first we carried out a functional and distribution analysis which led to the understanding of compositional units and their functional evolution. The results confirmed that the diachronic transformations of type have led to the evolution and specialization of the cell bases (Fig. 9).

The subsequent analysis aimed at determining the proportions and relationships underlying the aggregation of the rooms of the house. The results seem to be original and useful for the design and restoration. In fact we have identified 3 functional areas with an interesting relationship report. The first band includes environments open or semi-open ("hajat", "çardak"), the second closed spaces ("shtëpia e zjarrit", "oda") and finally the service areas on the bottom (bathrooms, kitchens) .

Finally we tried the module of the entire building. This was possible after the observations on the basic cell ("shtëpia e zjarrit") and the identification of its sub-modules. In conclusion, the basic cell, the most characteristic room of the house, turns out to be the module of the entire building (Fig.10).

Finally we see a repetition of the compositional units, as "shtëpia e zjarrit", "oda", and connecting surfaces, such as "çardak", corridors etc. However, the seriality of the individual rooms leads to a high degree of organic whole house. W seems to be a synthesis between the plastic masonry, tradition, as evidenced by its massive base, and the elastic wooden tradition (Ottoman derived), clearly legible and in the elevation and roof structure.

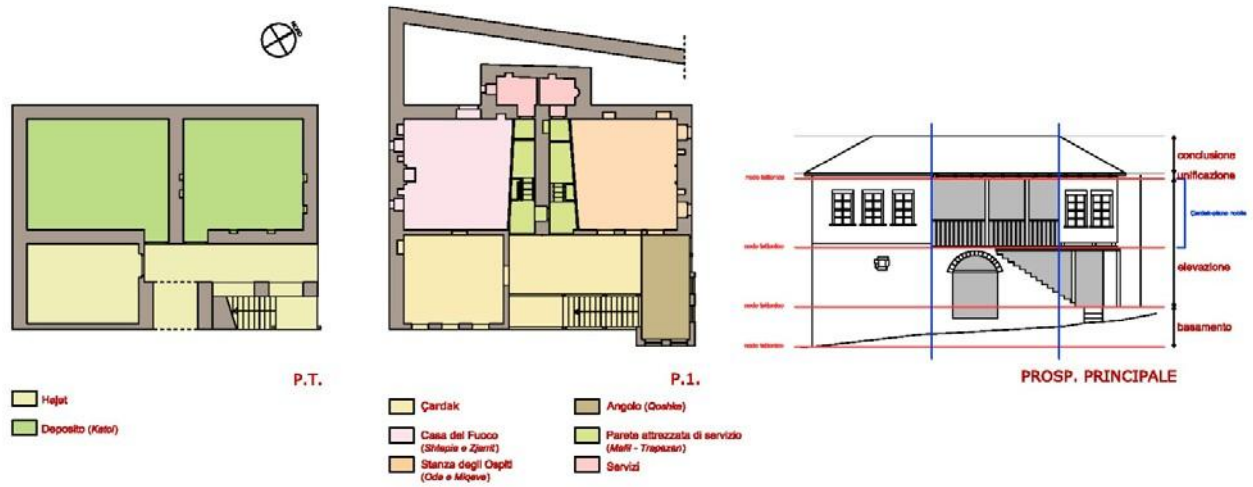

Fig. 9: Functional and distribution analysis. Sourse: drawing of the author.

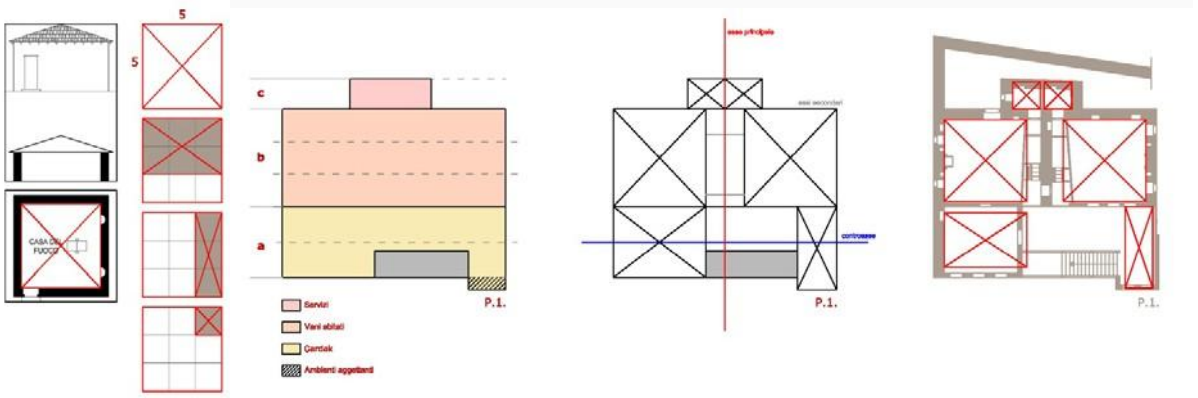

Fig. 10: Identification of compositive principles and modules. Sourse: drawing of the author.

4 CONCLUSION

The historical knowledge, the understanding of typological schemes and the analytical study of the architectural organism should ensure the success of interventions on architectural heritage. However this is not always true, errors are frequent and of a different nature. Often interventions are not coordinated and conducted by category of intervention, isolating the conservative restoration from the projects of redevelopment, revitalization and new construction. The integrated approach that links the new and the old in a system of relations between the field of restoration and the design is an important instrument that ensures the protection of all the assets. Furthermore, together with structural consolidation should be a priority also the energy and environmental requalification

In the case of the new interventions the criteria based on mimesis of the look of historic buildings risks to produce historical false. In this way the historical architectural heritage is not valued and becomes difficult to distinguish from new buildings, made with concrete and masked. However, the architecture of the traditional house demonstrates very modernist and sustainable principles in the exposition, in the construction and in rationality of internal distribution. Therefore, the revisiting of these architectures and the extrapolation of its principles may become the basis for a modern architecture autochthonous and sustainable.

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