Rural Landscape in Sardinia. Historical Settlement in the West Coast of Sardinia: The "Ager Bosanus"

Andrea Pirinu

Abstract The rural landscape object of this research is located in Planargia, a geographic region of north-west Sardinia. This area is characterized by a territorial system constituted by the town of Bosa, a network of very small settlements placed on the edges of the basaltic plateau and rustic villas dispersed in the country, strongly linked among them by a tight net of connections. Historic settlement and technical-productive model comes directly from the morphology of the territory, where in a limited area, volcanic plateaus and depression of Miocene marls are interlaced, where the deep canyon of the Temo river and of several tributary streams creates a landscape characterized by heavily steep slopes with mixed soil, ideal to grow olives and grapes (Le Lannou in Pâtres et paysans de la Sardaigne, Tours Arrault, Traduzione italiana (a cura di Manlio Brigaglia): Pastori e contadini di Sardegna, Cagliari, Edizioni della Torre [1]). The disperse settlement is still present in the organization of the territory, but the time of living are solely those related to agriculture activity and summer season; starting from the early Middle Ages, as confirmed by archeological surveys, a gradual renunciation of the permanent residence in the country has produced the development of the villages located on the edge of the plateau. A further testimony of the existence of this historic residential model, is the presence of isolated churches (today ruined), that confirms the existence of *villas*, aggregates of few buildings that in the Byzantine period were the centers of the country (Day in Villaggi abbandonati in Sardegna dal Trecento al Settecento, Parigi [2]).

Keywords Survey · Historical buildings · Rural landscape · Bosa · Sardinia

A. Pirinu (✉)
DICAAR, Faculty of Engineering and Architecture,
University of Cagliari, Cagliari, Italy
e-mail: apirinu@unica.it

G. Amoruso and R. Salerno (eds.), *Cultural Landscape in Practice*,
Lecture Notes in Civil Engineering 26,
https://doi.org/10.1007/978-3-030-11422-0_2

1 Rural Landscape in Sardinia

The rural architecture still strongly characterizes the landscape of Sardinia and compose a complex mosaic of constructive cultures. The existence of an historical heritage *result of immense deposit of work and planning ability of local communities gives to the territory of the Island an unique character and offers to the rural landscape a new centrality in which technologies and local materials and their reuse as design appears in consistent with an eco-design and a contemporary art of building and living* [3]. The attention and the cultural sensitivity shown by the Sardinia Regional Office of Planning has made possible the creation of seven Manuals and an Atlas of building cultures focused on the knowledge, cataloging and diffusion of historical memory and aimed to strengthen the capacities of protection and valorization of traditional building. The survey coordinated by the Department of Architecture of the University of Cagliari has interested different geographic regions and during the definition of PPR (Regional Landscape Plan) determined the selection of landscape sectors, identified through complex analysis of the interrelationships between environmental, historical and cultural framework and settlement model. In particular, the indication of PPR concerning the rural countryside of the coastal context of Planargia (Fig. 1) is: *keep the ratio of the widespread settlement system of Magomadas in the southern part of landscape patterns with his own countryside, and identify, the terraced hills, the shore line and the deep valleys as landscape matrix centres and rural centers as internal territorial emergencies, in order to ensure the identity of place.* It follows, therefore, starting from the indications of the Regional Plan, the identification of terraced hills and rural villages bordering the edge of the plateau such as landscape matrix centers and key points of the design.

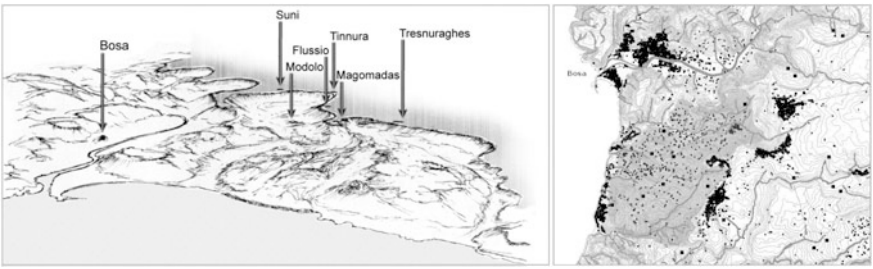

Fig. 1 The coastal context of Planargia and identification of the area (C.T.R. 1998)

1.1 The "Ager Bosanus" in the West Coast of Sardinia: Historical and Geographical Overview

The *ager bosanus*, characterized by sparse settlements located between the edge of the Planargia plateau and the trachytic ridge overlooking the sea, includes the municipalities of Bosa, Magomadas, Tresnuraghes, Flussio, Tinnura, Suni and Modolo that lies in the homonymous valley.

Since the Neolithic period human activity is documented in the entire area when a number of sites are located along the routes of obsidian that from *Monte Arci* was exported along the coasts of northern and central Italy and France. The *Domus de Janas* (Neolithic period tombs), the high number of *nuraghe* placed along the coastline and the plateau, the archaeological finds and place-names that bring us back to a Phoenician-Punic presence in the whole region, allows to define an almost uninterrupted human presence. Phoenician domination is followed by the Roman presence that, in the Time of Augustus, defines an organization of a territory articulated on the center of Bosa, small settlements and rural rustic villas, located on the slopes of hills and in few narrow valleys.

The area, in Roman period, was crossed by the coastal road "*a Tibulas Sulcos*" [4] that connected *Karales* (Cagliari) to *Turris Libissonys* (Porto Torres) and characterized by a dense network of roads between the centers of the area and the hinterland; the confirmation of the commercial activity that took place is suggested by the place name of Magomadas that derives from the Punic word *mqm hds* that means *the place where market, or trade, is held.*

In Planargia, as in general in Sardinia (with the possible exception in the plain of Campidano) in the Roman period, there isn't a real rural landscape based on the system of the farm, as it happens in the Italian peninsula, and that model is directly adapted on the regional reality based on the Nuraghic period settlement.

To confirm this trend, there is a reoccupation of nuragical sites left in the Punic period, mainly related to the agricultural exploitation of the surrounding area.

Recent archaeological investigations [5] in the whole territory of Magomadas led to the identification of a medieval settlement in the area of *San Giovanni/Santu Maltine*, and showed an almost uninterrupted frequentation in the Republican period (I–II century BC) until the beginning of the fifteenth century.

In fact the area, between the edge of the plateau and the coast line, corresponds with the agro of ancient Roman town of *Bosa Vetus* that was located on the right bank of the Temo river and not far from the current modern settlement; since the beginning of the twelfth century, the family of Malaspina (arrived in Sardinia to give help to the Judges involved in the fight against the Moors) began the construction of a castle on the hill of Serravalle and the territory of the Planargia becomes his fief.

In this time the *curatoria* of *Frussia*, that included in the Judicial period the settlements of the district, become the hinterland of the Malaspina's castle, and therefore his name becomes *curatoria* of *Serravalle*. As we know, in Sardinia, since the thirteenth century are reported some example of "organized city" that will

interest a limited number of settlements; for most of cases there is a system of villages included in *curatorie*, which achieves a sort of widespread settlement in the territory. This organization is disrupted in the second half of the fifteenth century at the end of the war between the Judge of Arborea and the Crown of Aragon and as a result of the subsequent epidemics that cause a population decline of one-third of the population and a general impoverishment of the centers that partially disappear.

The birth or rebirth of urban centers take place after the middle of the fifteenth century and their development continues throughout the sixteenth century reaching the shape and dimension that retain, for most of them, until the early twentieth century, with the exception of those that assumed a certain economic and political significance in the seventeenth century or in the nineteenth century. Some of these will rise again with the same name in other sites than the previous, the rural life will be centralized in more compact nucleus, emphasizing the rural depopulation and originating, in the studies area, the development of centers on the edge of the plateau.

Today, with the exception of the city of Bosa, who has had a considerable expansion, the other centers have maintained approximately the extension shown in the Cadastral maps of the nineteenth century, preserving a land use strongly related to rural activity [6] (Figs. 2 and 3).

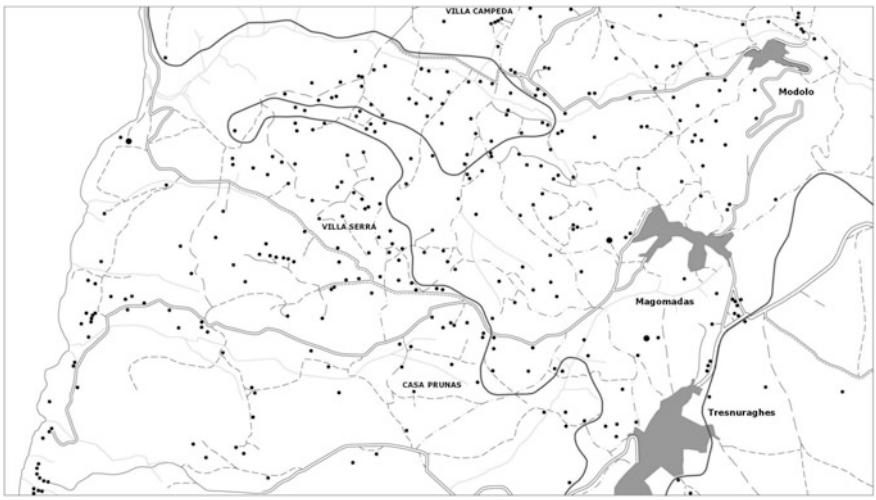

Fig. 2 The route of the nineteenth century's railway and some historical "villas" on a cartographic representation (IGM 1958)

Fig. 3 Rural landscape in Modolo's valley

1.2 The Sparse Settlement. Historic Building Heritage

The historical forms of settlement in *Planargia* are characterized by a production model set on a dense rural road network that supports a landscape of steep slopes redesigned through the use of terraces (Fig. 4) and offers a case study representative

Fig. 4 Terraced hills in the territory of Magomadas

of a constructive model realized with the use of historic building techniques and local materials. The rural house of *Planargia*—an intermediate model between the ones of Northen *Campidano*'s centers and of mountainous ones of *Meilogu* [7]—is designed in the service of agricultural activity and generates customs and practices that transform the workplace into a temporary place of residence and define a broad repertoire of building models.

The different examples of rural houses, abandoned, partially recovered and often flanked by recent building (that represent the result of the changing needs and habits of today's society) are testimony of a landscape characterized by the presence of vineyards and olive groves and sometimes orchards placed along the perimeter of the fund, inside of which, in some cases there was (until recent times) a space dedicated to the culture of grain.

The observation of the survey's data and the analysis of historical maps has shown a system of routes survived almost unchanged consisting of main roads that collect all the centers of the district and a dense network (Figs. 5 and 6) represented by mule tracks and paths bordered by dry-stone walls largely preserved. Some sections of the nineteenth century's main communication network, particularly in the section that connected Tresnuraghes to Bosa, have conserved the stone-paved and the only changes observed are an increased section of the road and a replacing of the unpaved road with a mantle of asphalt. The survey's analysis also offers the

Fig. 5 Ancient road in the territory of Magomadas (1), Magomadas/Modolo (2), Magomadas/Tresnuraghes (3) and the so called *Su caminu osincu* (the street of Bosa)

Fig. 6 Structure of territory in locality *Santa Lughia* (Magomadas)

opportunity to acquire a great number of information on traditional historical buildings and allows to identify the "minimal cell", several variants that come from it (through depth or lateral juxtaposition) and the identification of several stable residences located near the railway line realized in the second half of the nineteenth-century [8]. This "module" have generally a net size equal to (4.00 × 4.00) meters, consists in a single living space with a single access, often windowless and built with local stone, wooden roof (with inclined pitches—mostly double) covered with a mantle of tiles. Inside the building we can find furnishing accessories, including benches, shelves built-in cupboards and often a system to collect, convey and keep rainwater in underground tanks (also made of local stone). The data acquired do not allow to hypothesize an increase of minimum side produced through the repetition of the module and leads to the definition of basic variants only where the dimension of rural buildings is mainly due to the budget of the owners; we can find single-cell unit and a number of variants that, regarding the size, result in some cases the enlargement of the "minimal cell" but more frequently are, in origin, double, triple with depth or lateral development. Within this typological catalog we report some variations that shows a more refined design, dating back to the late nineteenth century, characterized by larger rooms, symmetrical main façade with central door and windows realized with decorative elements such as molded cornices and jambs realized with worked trachyte. The smallest module that we can find is represented by the wine cellar (4.00 × 4.00 m), which is the

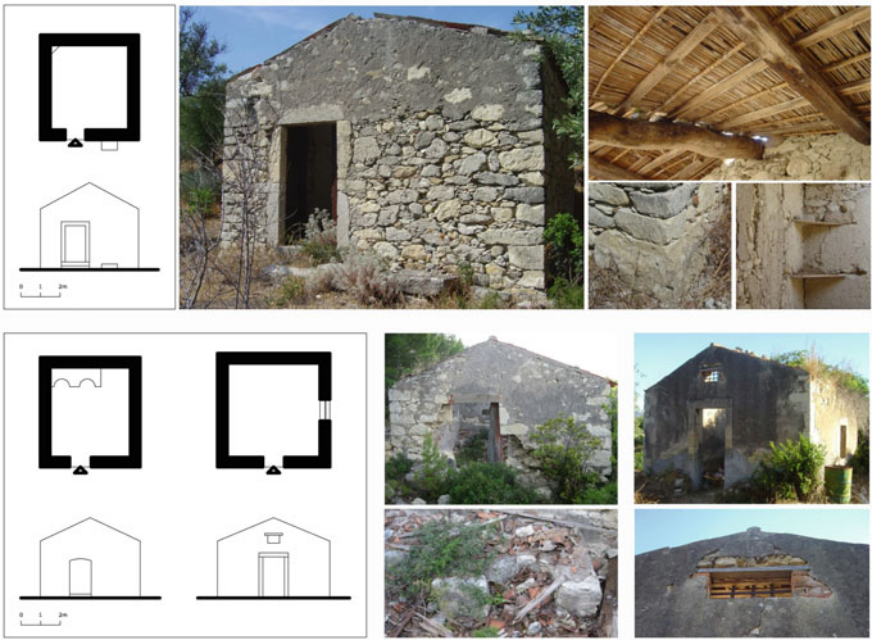

Fig. 7 Basic variant 1. Base model (1) and some variations of the basic module (2) in locality *Santa Lughia, Pischinas* (Magomadas) *and Sorrighes* (Bosa). We can observe a reuse of "ancient" materials, in this case, employed in the corner brickwork

room mainly used for grape processing and custody of working tools, where sometimes are present niches (made of stone) to store the vats. Prevails, as already mentioned, the type of building with double pitched roofs perpendicular to the façade, that we called in this catalog, basic variant 1 (Fig. 7). This model presents size variations of rooms dimensions (4.00 × 6.00 m), a window in the lateral facade and sometimes have a small opening above the front door of the house. The position of the access door is generally not in axis with the building, in order to optimize the management of the internal space; in fact, the prospect becomes symmetrical as soon the longitudinal dimension of the room increases. A second type identified is the basic variant 2 (Fig. 8), obtained by the lateral juxtaposition of two basic variant 1, with the ridge of the double pitched roof parallel to the main facade; the local access is provided with stone benches (that we can also find outside together the stone rings for tethering animals) while in the next room there is a built in wardrobe partially realized using the thickness of the wall mass.

Another case study is the basic variant 3 and 4 (Figs. 9 and 10) that presents a sloped roof, parallel or perpendicular to the main facade. The design of this models is been realized through a lateral juxtaposition of two rooms connected by an opening without infix and windows on the long side of the building.

Fig. 8 Basic variant 2 in locality *Agra* (Magomadas)

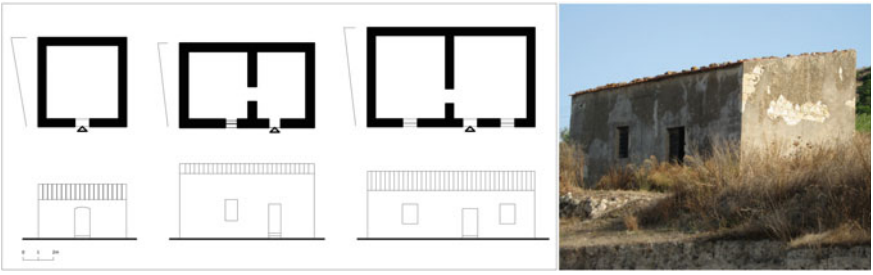

Fig. 9 Basic variant 3 in locality *Giagonia* (Magomadas)

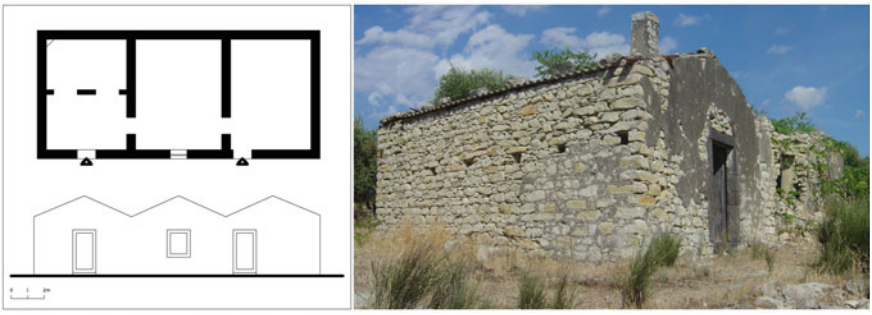

Fig. 10 Basic variant 4 in locality *Sorrighes* (Bosa)

An increase in depth is been identified and defined basic variant 5 (Fig. 11); this model—obtained by juxtaposition of two module—shows six interconnected rooms used as local work, kitchen and bedrooms.

The repertoire is completed with the variant 5.6 (Fig. 12) and 7 (Fig. 13, casa Prunas) that represent some solutions with unique characters, rooms with a biggest

Fig. 11 Basic variant 5 in locality *Crastu Ruggiu*. In this case the border line of the property follows the railway line (Magomadas/Bosa)

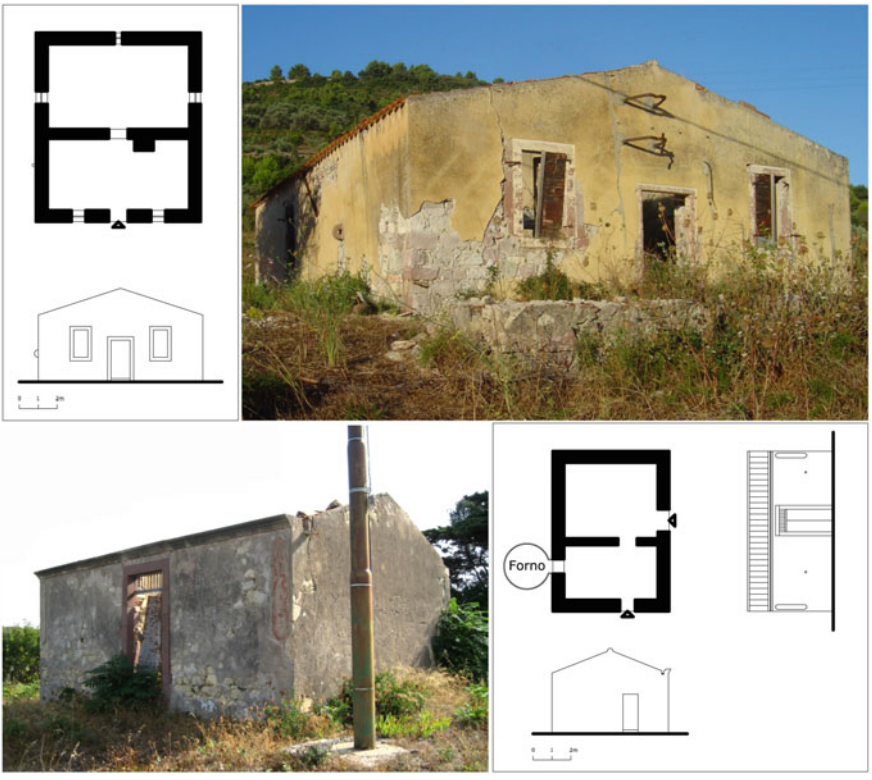

Fig. 12 Basic variant 5 in locality *Abba Mala* (Bosa). and *Santa Lughia* (Magomadas)

Fig. 13 Casa Prunas: localization of "casa Prunas" in the historical cadastral map (courtesy of Archivio di Stato di Nuoro) and view of the house in the summer of 2007

dimension than others basic variant; this models are characterized by worked stone and a symmetry that demonstrates a particular attention to architectural forms and constructive details. The materials employed are the late Miocene sedimentary lithologies or ignimbrites of the cast-alkaline cycle oligo-Miocenic (trachyte) or the Pliocene basalts [9]. The materials used for the masonry structures are—close to the plateau—marly tuff and basalt, while the structural elements of the vertical openings are realized with trachyte and basalt, often accompanied by discharge arches made with roughly cut stones or blocks of tuff. The lintels of the internal openings are generally made of wood with two elements arranged side by side.

As we approach to Bosa and the coastline, and move away from basaltic plateau there is a progressive increase in the use of trachyte for elevated structures and the panels of the doors and windows, which are embellished with simple decorative elements. The walls of the house (average thickness of 50 cm) are plastered and inside the rooms we find shelves, cupboards and a fireplace located in the entrance room, that sometimes result without the wall structure and flue pipe; in this case the removal of and flue gas directly moves through the roof that usually present two inclined pitches realized with a main reinforcement of wooden beams that do not exceed 5.00 m of length; the secondary frame is made of beams (arranged in a transverse direction respect to the main reinforcement) is completed by an overlying structure that supports the external finish rods realized with a curved roof tiles. The houses are usually provided with a cistern located under the ground floor; this system collect the water from the double-pitched roof, but sometimes we can find flat roofs with collection function; this solution was used to obtain a water "cleaner" with the aim to avoid the runoff on the mantle of tiles. The rainwater, which preferably was accumulated in the winter months (because it was considered of better quality) was subject to a filtering phase that preceded the use. The windows are wood double shutters; external ones have an average size of (1.00 $\times$ 2.00) meters, the internal ones are smaller than the external and sometimes are absent, as happens in the variant model with lateral juxtaposition. The variant base 1, realized without a window opening, present at the top of the door a little frame (about 40 $\times$ 40) cm that replaces it (Fig. 7).

Inside the building are present the housings for the vats, realized in masonry as well as the benches and the ring used to bind the donkey. Regarding the spatial organization of the fund, we find the owners' house tile or adjacent to the wine cellar. When the fund was entrusted to the care of a sharecropper (*mezzadro*), he stayed in a house next to the owners, and if possible in the closest position to the entrance of the property, as well as the wine cellar, in order to facilitate working operations.

The home of the sharecropper (*mezzadro*) usually was a part of the building, in particular one of the cells; differently happened in the properties of wealthy landowners who permanently resided in the fund; in which case the home of the sharecropper is separated from the main building.

1.3 *Architectural Survey and Representation: The Case of "Casa Prunas"*

Architectural survey and landscape drawing [8] have been offered an interesting repertoire of historical building models realized in perfect harmony with materials and shapes of places. The aims of the research has required an analysis of historical maps, landscape drawing, direct and photogrammetric survey which have product a first documentation of this important "abandoned" heritage and a first catalog of plan models integrated with constructive details.

Furthermore, the state of ruins that characterize the historical buildings has made necessary a quick and no-contact procedure already employed in similar case study

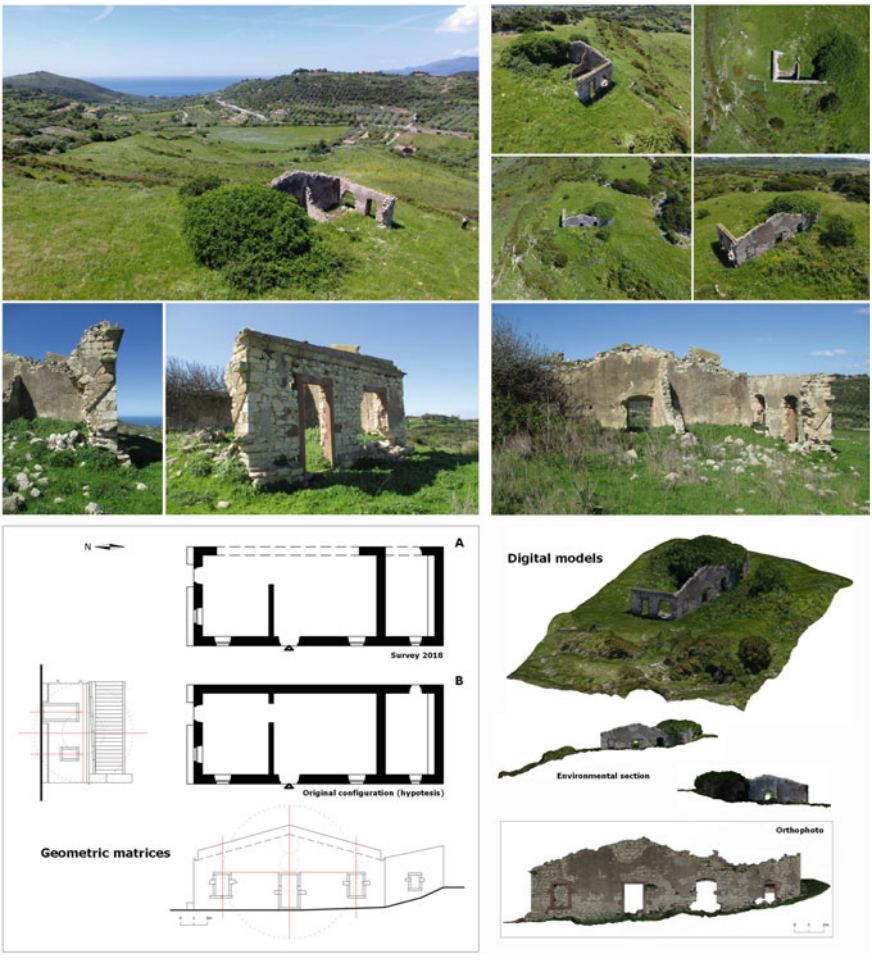

Fig. 14 Casa Prunas: survey database (spring of 2018)

[10]. The "casa Prunas", located in locality *San Giovanni* (Magomadas) has been selected to test this methodology; direct and photogrammetric survey (supported by drone flights) has defined a digital model from which obtain aerial views and orthophotos useful for different analysis; the aerial view allows an observation of the architecture and its landscape context, the orthophoto lead a rigorous analysis of geometrical matrices employed during design solutions and constructive phases (Fig. 14).

Acknowledgements The author would like to give a special thanks to Salvatore Ganga (Archetypon) for his precious and qualified help in surveys operation and in particular during photogrammetric survey with drone flights. Furthermore author wants to give a special thanks to Vincenzo Bagnolo, Giovanni Sistu and Ezio Pirinu (my father) for their participation during field operation and remember Gianni Fois (†) for his useful and passionate information about country life and traditions.

References

1. Le Lannou M (1941) Pâtres et paysans de la Sardaigne, Tours Arrault, Traduzione italiana (a cura di Manlio Brigaglia): Pastori e contadini di Sardegna. Cagliari, Edizioni della Torre 1979
2. Day J (1973) Villaggi abbandonati in Sardegna dal Trecento al Settecento. Parigi
3. Ortu GG, Sanna A (2009) Atlante delle culture costruttive della Sardegna. Le geografie dell'abitare. Department of Architecture of the University of Cagliari, Sardinia Regional Office of Planning
4. Corda A M, Mastino A (2005) Contributi all'epigrafia d'età augustea. In: Actes de la XIII rencontre franco-italienne sur l'epigraphie du monde roman, a cura di Gianfranco Paci, Macerata, pp 277–314
5. Milanese M (2006) Vita e morte dei villaggi rurali tra Medioevo ed Età Moderna in Quaderni del centro di documentazione dei villaggi abbandonati della Sardegna, Borgo San Lorenzo (FI)
6. Pirinu A, Sistu G (2015) Paesaggi imperfetti. Il DI-Segno del paesaggio della Planargia Costiera. (Sardegna Centro – Occidentale), Editore Edifir (FI), p 128
7. Atzeni C (2009) Architetture delle colline e degli altipiani centro-meridionali, I manuali del recupero dei centri storici della Sardegna. Regione Autonoma della Sardegna – Università degli Studi di Cagliari, Dipartimento di architettura – DEI Tipografia del Genio Civile
8. Pirinu A (2008) Il modello insediativo dell'ager bosanus: gli insediamenti sparsi in atti del Convegno internazionale Le case e i luoghi del lavoro: letture e confronti, tenutosi a Fisciano (SA) il 28–29 settembre 2007, pp 635–644, luglio 2007
9. Carmignani L, Oggiano G, Funedda A, Conti P, Pasci S, Barca S (2008) Carta geologica della Sardegna (geological map of Sardinia), scale 1:250000. Litografia Artistica Cartografica, Florence
10. Pirinu A (2017) Pinnettas: traditional Shepherds' Huts of Sardinia. Geometry, Shape and Materials, in putting tradition in to practice: heritage, place and design. In: Proceedings of 5th INTBAU international annual event, a cura di Giuseppe Amoruso, Editore Springer, pp 467–474