

PROTOHISTORIC LANDSCAPES IN SARDINIA (ITALY): TERRITORIAL CONTROL AND EXPLOITATION OF NATURAL RESOURCES IN THE MIDDLE AND LATE BRONZE AGES

Paisajes protohistóricos en Cerdeña (Italia): Control territorial y explotación de recursos naturales en las edades del Bronce Pleno y Tardío

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ABSTRACT During the Bronze Age, in many Western Mediterranean areas (Spain, France, Italian peninsula, islands), we can observe the development of a series of fortified centers and structures, often on high places, aimed to the defense of strategic locations and resources. These fortifications, which began to be built from the Copper Age, are the answer to a need for possession and control of the territory linked to a greater degree of social complexity, with an ever-increasing hierarchy and the rise to power of persons or groups who very often show the possession of weapons and, consequently, can be related to warlike activities. In Sardinia, Nuragic phenomenon developed during Protohistory: an extraordinary culture ranging from the Middle to Late Bronze Age (XVIII-XII centuries BC), some of whose features could last from Final Bronze Age until the beginnings of Iron Age (XI-VIII centuries BC), characterized by the building of great monuments, especially nuraghi, cyclopean-type constructions similar to towers. These great buildings have multiple functions, but in particular were used to surveil the whole island territory. We have mainly carried out different GIS analyzes on different sample areas with the aim to reading the visual-perceptive aspects and to try to research about the relationship between settlements and territory and the mobility systems across different territories through the applying of the least-cost path analysis. Reconstruction of certain characteristics of Sardinian Protohistoric

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Landscape in these areas is achieved. GIS-based analysis show how these territorial control systems, consisting of several nuraghi and settlements, were intended to control the most important natural and economic resources and transit routes.

Keywords: Bronze Age, Sardinia, Nuragic Civilisation, GIS Analysis, Landscape.

RESUMEN Durante la Edad del Bronce, en muchas áreas del Mediterráneo occidental (España, Francia, península italiana, islas), podemos observar el desarrollo de una serie de centros y estructuras fortificadas, a menudo en lugares altos, destinados a la defensa de ubicaciones estratégicas y recursos. Estas fortificaciones, que comenzaron a construirse a partir de la Edad del Cobre, son la respuesta a la necesidad de apropiación y control del territorio vinculada a un mayor grado de complejidad social, con una jerarquía cada vez mayor y el ascenso al poder de personas o grupos, que a menudo muestran la posesión de armas y, en consecuencia, pueden estar relacionados con actividades bélicas. En Cerdeña, el fenómeno nurágico se desarrolló durante la Prehistoria Reciente: una cultura extraordinaria que abarca desde la Edad del Bronce Media hasta la Tardía (siglos XVIII-XII a.C.), algunas de cuyas características podrían perdurar desde la Edad del Bronce Final hasta el comienzo de la Edad del Hierro (siglos XI-VIII a.C.), que se caracteriza por la construcción de grandes monumentos, especialmente nuraghi, construcciones de tipo ciclópeo similares a las torres. Estos grandes edificios tienen múltiples funciones, pero en particular se destinaron a vigilar todo el territorio de la isla. Principalmente hemos llevado a cabo diferentes análisis de SIG en distintas áreas de muestra con el objetivo de leer los aspectos relacionados con la percepción visual y tratar de investigar la relación entre los asentamientos y el territorio así como los sistemas de movilidad en diferentes territorios mediante la aplicación de herramientas destinadas a calcular las rutas óptimas. De esta forma, se logra la reconstrucción de ciertas características del paisaje protohistórico sardo en estas áreas. El análisis basado en SIG muestra que estos sistemas de control territorial, que consisten en varios nuraghi y asentamientos, tenían la intención de controlar los recursos naturales y económicos más importantes y las rutas de tránsito.

Palabras clave: Edad de Bronce, Cerdeña, Civilización nurágica, Análisis de SIG, Paisaje.

INTRODUCTION

In Sardinia Island (Italy), situated in the western Mediterranean area, during the Protohistoric period, as is well known, the Nuragic phenomenon developed; an extraordinary culture, characterized by the building of great monuments (Lilliu, 1982, 1988). It was a long-lasting culture that, despite the obvious differences in their various cultural phases can be dated between the Middle and Late Bronze Ages (1750-1200 BC), with certain features remaining into to Early Iron Age (until the 6th century BC), managed to retain its characteristics and habits over centuries to such an extent that it can be considered as a unitary and homogeneous whole (Ugas, 2014; Depalmas, 2015; Moravetti, 2015; Usai, 2015) (fig. 1).

This culture is characterized by the construction of more than 8000 nuraghi of various kinds: they are dry-masonry, cyclopean-type constructions, built with the use of large blocks arranged in approximately orderly rows. There are simple buildings, consisting of a single tower, and more complex ones, with several



Fig. 1.—The nuraghe and the village of Su Nuraxi – Barumini (photo R. Cicilloni). Figure in colour in the electronic version.

towers, linked by curtain walls. The interior rooms are covered by a “tholos”, or a false dome or vault, with a pointed section. These great buildings have multiple functions, but they mainly were aimed to surveil the whole island territory (Ugas, 2014; Depalmas, 2015; Moravetti, 2015; Usai, 2015).

Nuragic monumental emergences have always characterized the Sardinian territory, becoming fundamental elements of the nowadays landscape, making it distinctive and unique. It is therefore not surprising, how the immense whole of monumental remains, of which it was necessary to understand chronology, cultural affiliation, function, technical and constructive characteristics, has attracted the interest of scholars since the sixteenth century (Ugas, 1980).

Our research group, belonging to University of Cagliari (Italy) and Granada (Spain), within the activities of the Laboratory of Landscape Archaeology, has carried out different GIS analyzes on different sample areas aimed to read the visual-perceptive aspects and to try to research the relationship between settlements and territory and the mobility systems across different territories through the applying of the least-cost path analysis. In order to reconstruct the Protohistoric landscape, we want to propose some cases of important settlement systems pertinent to the Nuragic culture. GIS-based analysis will show how these territorial control systems, consisting of several nuraghi and settlements, were intended to control the more important natural and economic resources and transit routes as proposed in

other areas (Vanzetti *et al.*, 2013; Cicilloni *et al.*, 2015b; Perra, 2016; Castangia and Mulargia, 2017; Cabras, 2018).

These analytical approaches are borrowed from the widespread methods of landscape study through GIS applications (Van Leusen, 2002; Wheatley and Gillings, 2002; Llobera, 2003; Conolly and Lake, 2006; Fabrega and Parcero, 2007; Tripcevich, 2007; Llobera *et al.*, 2011; Wheatley, 2014).

In Sardinia, these analyses are possible, firstly, because the chronological ascription of Nuragic monuments to Middle and Late Bronze Ages is now firmly established (Depalmas, 2009a, 2009b, 2009c; Vanzetti *et al.*, 2013), and, secondly, because the Sardinian territory, with few anthropic modifications, is characterized by a marked geomorphological conservatism, for which the current forms of the territory can be used with a certain degree of accuracy.

STUDY CASES

Mogoro sample-area (central-western Sardinia)

The first area under analysis includes the region of the municipality of Mogoro, in central-western Sardinia. Particularly we have studied the ways of territorial anthropic modification and fruition in Protohistoric Age, with the objective to reconstruct, through the study of the settlements and the relationships among them, some of the economic and social aspects of Nuragic groups that occupied this area from Middle Bronze Age to Early Iron Age. Research in Mogoro municipality has been intense from the half of the past century and researches culminated with the stratigraphical excavations, beginning in 1994, carried out in Cuccurada site (Atzeni *et al.*, 2001; Cicilloni, 2015), the main centre of an articulated territorial system including a rich network of monuments related to Nuragic culture, such as nuraghi, giants' tombs and villages. We have used several research methods: geomorphological analysis, spatial analysis GIS tools (Viewshed, Cost Surface and Least-cost path analyses) and multivariate analysis performed on the previously obtained variables (cluster and principal components analysis) (Cabras, 2015; Cicilloni *et al.*, 2015b; Cicilloni *et al.*, 2016b; Cabras, 2018).

In this territory, currently we know at least 29 sites (Cicilloni *et al.*, 2015e) belonging to the Protohistoric period: 1 archaic nuraghe, 9 simple towers, 17 complex nuraghi, 1 giants' tomb, 1 sacred well (fig. 2). These monuments are located in four geomorphological units: a basaltic plateau divided by Mogoro River into two formations: one higher with steep slopes (Sa Struvina), the other of lower altitude, with more gentle slopes (Perdiana) (Unit 1); a plain of piedmont type, originated from the alluvial cone of Mogoro River and which consists of flooding deposits transported downstream (Unit 2); a plain, where small rivers flowed making alluvial deposits constituted by sand, gravel and lava related to the Quaternary (Unit 3); Miocene deposits of marl and sandstone that represent the formations underlying the basaltic plains (Unit 4). The integration of data obtained by different methodologies analysis allows us some considerations that are useful in order to understand the mode of settlement

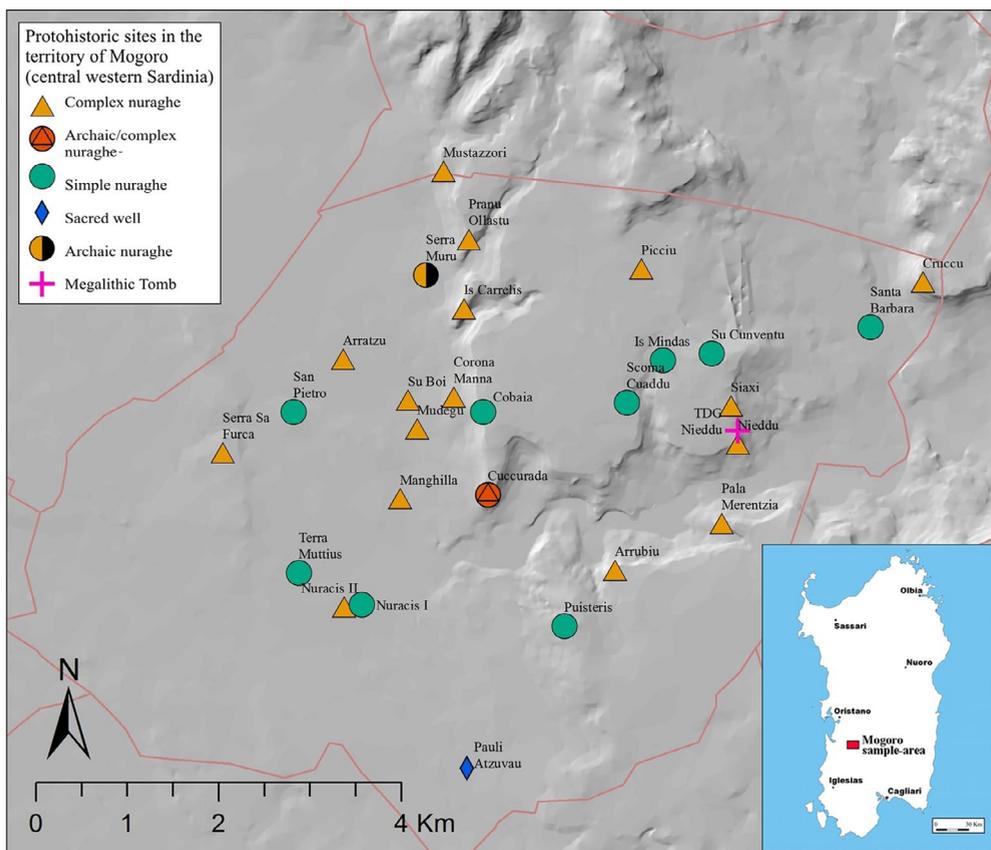


Fig. 2.—Mogoro, central-western Sardinia. Distribution map of the nuragic sites (from Cicilloni *et al.*, 2015b). Figure in colour in the electronic version.

in Mogoro municipality during Protohistory. The topographic analysis related to the geomorphology of the area clearly shows the presence of a control system on the basaltic plains, consisting of nuragic buildings located on strategic placements with visual connection among them, to defend the economic wealth of the region and to guard the access routes towards the interior. The nuraghi located at the edges of the basaltic plains also defended, in some way, highlands resources, probably pasture areas and perhaps even land that was suitable for hunting, as evidenced by the later bronze statuettes belonging to the Iron Age with hunting scenes, from the nuraghe Cuccurada (Atzeni *et al.*, 2005). As evidenced from the GIS analyses, the structures on the edge of the plains also dominated the underlying territory, in visual contact with the nuraghi of the lowlands, which are instead control centres linked to farming activities, practiced for a long time in these areas. All the nuragic monuments in the studied territory therefore seem to be part of a unified set, in which each of the sites held a special function in connection with the others (Cabras, 2015; Cicilloni *et al.*, 2015b; Cicilloni *et al.*, 2016b; Cabras, 2018) (fig. 3). Cluster analysis proves,

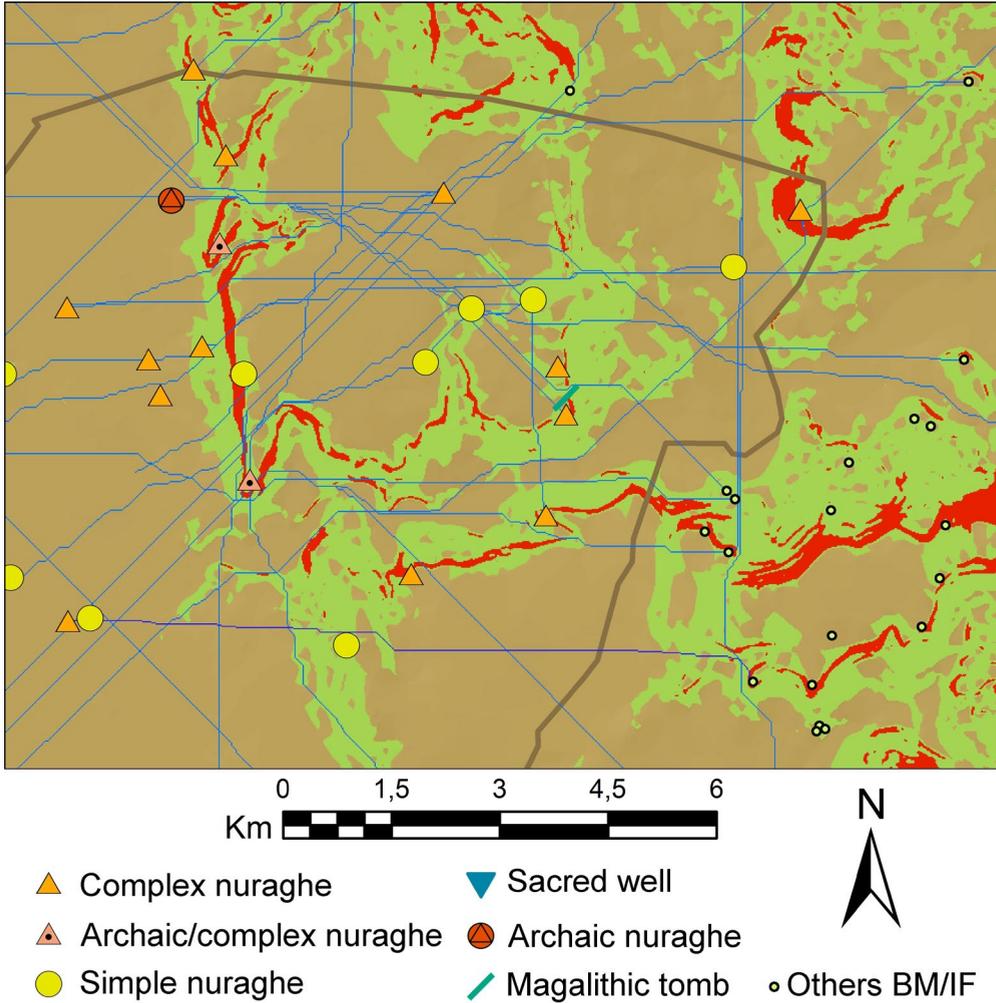


Fig. 3.—Slope analysis and Least-Cost Path analysis in Mogoro area (from Cabras, 2015). Figure in colour in the electronic version.

in an statistical way, what have been suggested from the previous observations: the data considered, in fact, clearly divided the Protohistoric sites of this area into two main groups: the first pertinent to settlements with a medium or low index of visual dominion, while the second, more numerous, which includes the nuraghi placed in an elevated position with strategic control (Cicilloni *et al.*, 2015b).

The control of natural resources and above all of the communication ways are also confirmed by GIS analysis: the two settlement types highlighted, the one on the plateaus and that in the lowlands, which are closely interrelated, together constitute a territorial control system of medium size, connected to other neighboring systems (fig. 4) (Cabras, 2015). During the phases of the Middle and Late

Bronze Age this part of Sardinia shows a widespread distribution that denotes a systematic control of the territory (Cabras, 2015; Cicilloni *et al.*, 2014; Cicilloni *et al.*, 2016a; Cabras, 2018), and the creation of a specific landscape in which visual connection and monumental buildings played a complementary role of exhibition and visual domain.

Villa Verde sample-area (central-western Sardinia)

The second example is constituted by Villa Verde municipality, in Oristano province, situated on the oriental side of Monte Arci (center-western Sardinia). The area is characterized by a hilly environment and by the presence of many streams and springs.

At the current state of research, at least 22 sites have been registered (Cicilloni and Cabras, 2014): 18 characterized by the presence of nuraghe (1 archaic nuraghe, 7 simple towers, 10 complex nuraghi), a single settlement without nuraghe, and three presumably water temples (fig. 5). Among the sites, that of Bruncu ‘e s’Omu

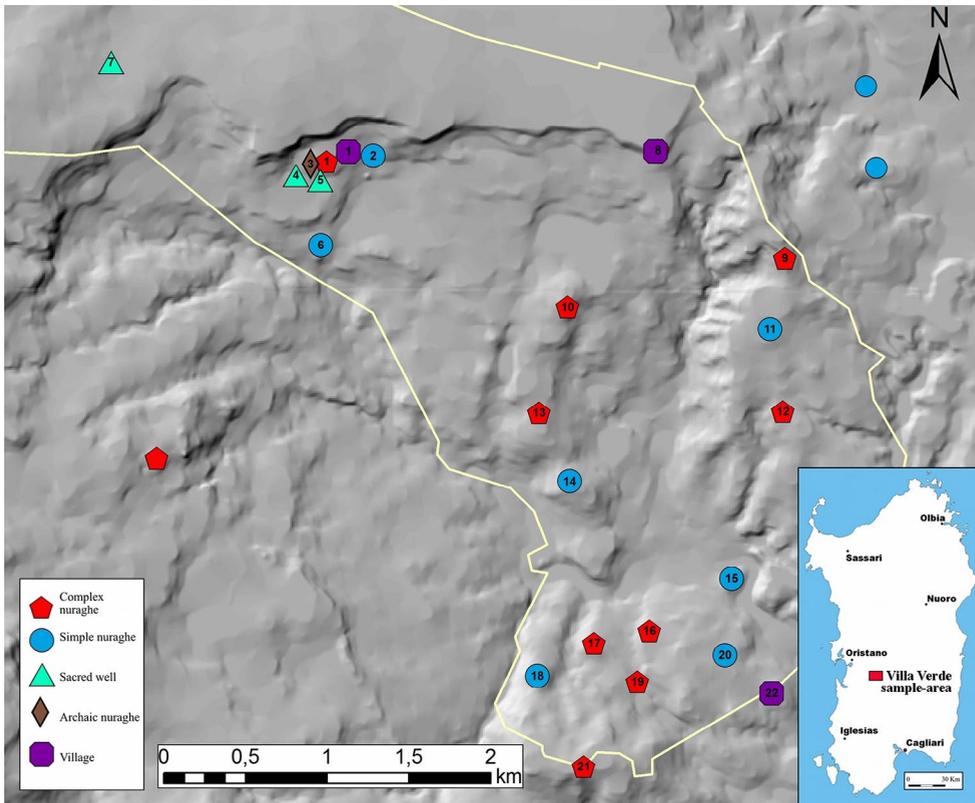


Fig. 5.—Villa Verde, central-western Sardinia. Distribution map of the nuragic sites (from Cicilloni and Cabras, 2014). Figure in colour in the electronic version.

without doubt stands out. It is situated in the woods immediately to the north of Mitza Margiani, characterized by the presence of some water sources. The archaeological area includes a nuraghe and a large village of Protohistoric Age (Middle and Late Bronze Ages), consisting of over twenty huts. The site is being currently excavated by the University of Cagliari (Cicilloni and Cabras, 2015; Cicilloni *et al.*, 2015; Cicilloni *et al.*, 2016c; Cicilloni and Cabras, 2018a; Cicilloni *et al.*, 2018a) (fig. 6).

GIS analyses carried out on the area sites denote an almost systematic territorial control, showed by the location of almost all the nuraghi on hill tops, a placement that allows to monitor the valleys below. Furthermore, the strong intervisibility found demonstrates Protohistoric people's a desire to keep tight control all areas economically important, such as transit routes, pastures and arable areas. Among the resources taken into consideration, a fundamental role clearly was played by water: the presence of springs and watercourses certainly influenced the settlement on the territory. In fact, at least two significant groupings are found, probably related to take possession of certain portions of the territory particularly important for the life of the populations, with presence of springs and streams. The first cluster is identified in the northern area of the municipality, higher and rich in



Fig. 6.—Villa Verde, central-western Sardinia. Huts of the nuragic village of Bruncu 'e s' Omu. Figure in colour in the electronic version.

spring resources, the second one is situated in the hilly area located south of the studied territory. People, who occupied this area of Villa Verde and neighboring municipalities in Protohistoric Age, had, therefore, an approach with the territory in which they lived essentially of a utilitarian way. They searched the control of the territory, of its natural and economic resources and its access and passage roads. Excluding the nuraghi of Bruncu 'e s'Omu and San Mauro, most of Villa Verde nuraghi, even those of a complex kind with several towers, have rather simple planimetric types, so it is not possible to identify a hierarchy according their size or shape. On the contrary, we find the presence of buildings of a similar level, often located very close to each other. The sites presented in this area appear to be related to a medium-sized territorial control system, connected to other neighboring systems, through various connecting points (Cicilloni and Cabras, 2014). It could be considered that we have observed a peripheral landscape defined from political centres out sample area.

Gerrei sample-area (south-east Sardinia)

The third study case is constituted by the sample area identified in the historical region of Gerrei, in south-east Sardinia, with a rich settlement system of prehistoric and protohistoric sites. Among these, 51 refer to the Bronze and Iron Ages: nuraghi, villages, giants' tombs, sacred wells and sources (fig. 7).

Gerrei is a region with a strong agricultural and pastoral vocation, developed in isolation until the construction of modern communication network of roads. Gerrei is characterized by the dominance of mountain areas over the lowlands, limited to the fertile valley of Ballao River, formed as a result of flooding of Flumendosa River. The territory to be analyzed can be defined as a large plateau (average altitude about 650 m a.s.l.) which from the Flumendosa valley, which overlooks sheer, rises progressively towards the South West up to 838 m of Mount Ixi. Overall, small plateaus and mountainous alignments alternate with deep gullies, in a steep and fragmented environment.

GIS analyses show that nuragic towers are built on hills not too naturally defended or unreachable, but these sites are sufficiently protected by the not excessive difference in altitude with respect to their surroundings. Moreover, these sites were located to control certain routes especially required in an especially fragmented geomorphological context (Cicilloni and Forci, 2012; Cabras, 2013; Cicilloni *et al.*, 2015a; Cicilloni *et al.*, 2018c) (fig. 8).

We don't pretend to talk about a real Protohistoric road network, of which there are not traces but about habitual ways, almost intangible but distinguishable not only for their physical characteristics but also thanks to the fact that viewsheds most of the nuragic sites coincide on them. These routes were configured as functional regarding to the activities carried out by the Nuragic populations along this territory and were probably traveled on foot or on animals, or, up to certain degrees of inclination, by means of wagons. For the territory in question, in conclusion, we

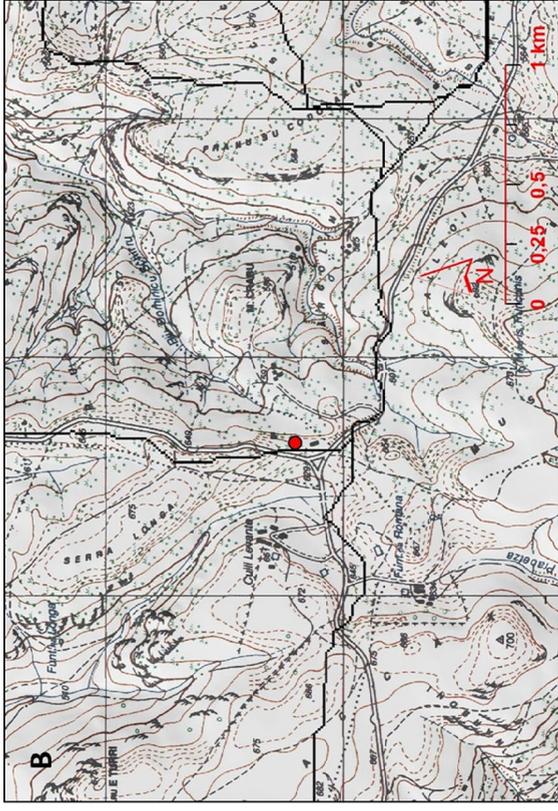
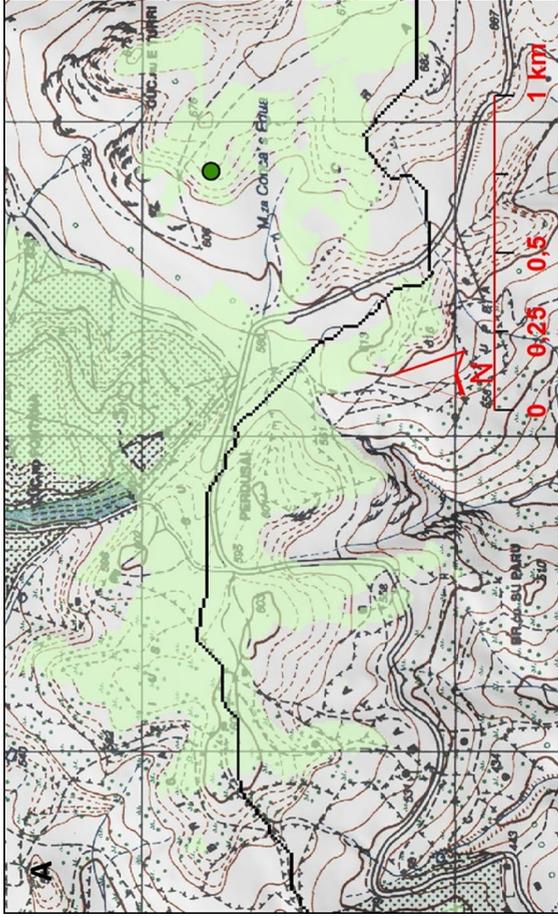


Fig. 8.—Historical region of Gerrei, results of GIS analyses: A) visual control (in light green) from the Cuccuru 'e Turri nuragic tower towards the pass of Perdusai and on the least-cost paths directed from Gerrei to Trexenta that follow today rounds. B) the insistence of the nuragic tower of Perda Sisinnia (indicated by the red circle) on today trivium connecting Gerrei with Trexenta and Siurgus (by M. Cabras) (from Cicillioni *et al.*, 2018c). Figure in colour in the electronic version.

by basaltic plateaus, defined, in Sardinian language, as “giare”. We know about 38 nuragic monuments: 2 archaic nuraghi, 12 simple towers, 16 complex nuraghi, 4 nuraghi of which a planimetric reading is not possible; 2 huts in the territory of Serri; 2 villages, one of which has main cultural functions (Santa Vittoria di Serri).

From the GIS analysis carried out on these monuments, we can deduce that all settlements take full advantage of natural conformation of the territory, with the aim of having also an important function of territorial control, through points with great visibility (Porcedda, 2019; Cicilloni *et al.*, 2019) (fig. 9).

The results of the analysis, in fact, reveal a prevalence of sites with territorial control, but there are also ones with low visibility and tied to certain resources, but, above all, not everyone exercise the same spatial control (Cicilloni *et al.*, 2018; Porcedda 2019). The study has been realized with spatial analysis on topographic variables combined through multivariate statistical analysis methods, known as Cluster Analysis and Principal Component Analysis. All these analysis, combined with studies on visibility, make it clear that all the territory under consideration is organized primarily on the basis of the plateaus: actually, both in the Giara of Serri and in the plateau of Guzzini and Pranu Ollas, there is a strong presence of control structures on the territory, particularly connected to plateaus and to passage ways; in this sense we can indicate the cluster of the plateau monuments of Pranu Ollas, in the territory of Isili, which control the underlying valleys. The records say

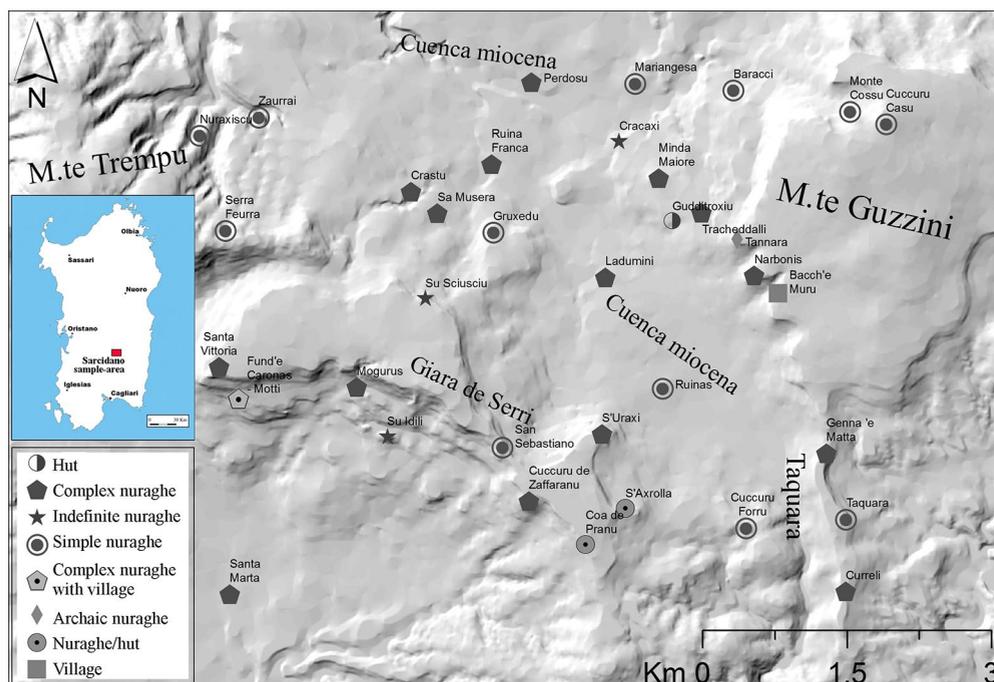


Fig. 9.—Distribution map of nuragic sites in the territory of Serri (from Cicilloni *et al.*, 2018b).
Figure in colour in the electronic version.

that all three monuments of this cluster, such as the case of the nuraghe Genna ‘e Matta of Nurri, are complex monuments to control of surrounding valleys. Another particular situation is the presence of complex structures in the area addicted to farming, particularly related to main water resources.

A group which presents a greater homogeneity from the typological point of view is that related to single tower nuraghi, related in turn with other nuragic sites at the border between Isili and Serri, present both in the Miocene basin of Isili and related to northern edge of the Giara of Serri; so, in this way the valleys, and therefore the majority of complex monuments present in the study area, are protected by monuments located on the edges of the “giara”.

Among sites located on slopes or at the base of the plateaus, we can highlight the case of nuraghi with a single tower of Monte Cossi and Cuccuru Casu, related to the edge of the Guzzini plateau, which controlled a passage way that went from the valley floor towards the plateau; a similar peculiarity can be noticed also in the giara of Serri, on the southern side, with complex nuraghi of Mogurus and Su Idili, which had a role in the control of the ways that returned to the same giara. Analogously, the nuraghe Fund ‘e Caronas was built in a strategic area next to south-western sides of the giara, for the control of paths used for the comeback to the Serri plateau, probably linked to the Santa Vittoria nuraghe, as suggested by the analysis on the journey modality, made with GIS applications. The latter, in fact, controlled, in turn, the western area of the plateau, strategically located on the edge of the same plateau. The nuraghe Fund ‘e Caronas could be another point of reference in the scientific research on the transition phases between the late Bronze Age and the Iron Age if, in the event of future stratigraphic investigations, materials dating back to the Iron Age were found, setting this structure as a strategic point also in the period in which the Santa Vittoria area took on a certain importance from a sacred and economic point of view for all the regional territory.

The nuragic sanctuary of Santa Vittoria, the only one systematically excavated since the first years of the twentieth century (Taramelli, 1931; Cicilloni and Porcedda, 2019), is, without a doubt, the archaeological area of main scientific interest in all the study area, by presenting the main values in terms of territorial visibility and control (fig. 10). The sanctuary has been since the ancient times a point of reference for communities of the territory: between the Bronze Age and first Iron Age, a large village was built with buildings for different functions: houses, structures with collective and religious purposes. The occupation goes on during the subsequent phases of Punic and Roman age, but the human presence in this time could be attributed to the strategic control of crossing places which conduct to the backcountry rather than an attendance of a religious place. Some burials and the first plant of a small church refer to the Byzantine period, demonstrating the fact that this area once again takes on a sacred value. The titling of the church to Santa Vittoria martyr is a probable evidence of the presence of Victorian monks (Paglietti *et al.*, 2016). The area was populated also in precedent periods, as it testifies the presence of a nuraghe of archaic type, with elliptic plant, attributable to the Middle Bronze Age, located on the edge of the Giara of Serri. Probably,



Fig. 10.—The nuragic sanctuary of Santa Vittoria, near Serri: the nuragic sacred well and the church of Modern Age on the western edge of the Serri plateau. Figure in colour in the electronic version.

this nuraghe was then incorporated in a more complex structure (according to an architectural process testified in other nuraghi, for example the nuraghe Cuccurada di Mogoro (Cicilloni, 2015)).

Unlike what has been seen for the other sample areas taken into consideration, the situation in the Serri area seems to be much more complex. Although it is not a completely autonomous area, as it should be part of a larger territorial entity, in this territory we can observe all the characteristics that can define the Nuragic communities territorially. In fact, we can observe, in the Serri region, the set of location characteristics already highlighted in the three previous study areas: on one hand, the model of visual connection system among different points of the territory, in this case mostly between plateaus and the valley, such as in the area of Mogoro, on the other hand the model of pathways which allowed communication between these different areas, such as what previously said about the Gerrei region and, at last, the importance on the control of certain areas, as it has been seen even more clearly in Villa Verde. In any case, the more important aspects revealed for the area of Serri come both from the structure of an even more global system in the phases of Early Iron Age around the sanctuary of Santa Vittoria and, above all, from the definition, even more clearly than in the Gerrei area, of a boundary line defined not

only by empty spaces but by the visual control towards them from elevated points (Cicilloni *et al.*, 2018b). In this sense, in the area of Serri not only a diversified but integrated landscape has been drafted between the Middle and Recent Bronze Age, visible from the suggested border and from within the system of which the territory is part, but also it is verified its modification towards a sacralized and centralized landscape around the sanctuary of Santa Vittoria.

CONCLUSION

Other areas have been investigated by our research team, using both GIS analysis and univariate and multivariate statistics: for example the Gonnostamatza municipality (Cicilloni *et al.*, 2016b; Cabras, 2018; Cicilloni and Cabras, 2018b), also in the historical region of Marmilla, in central-western Sardinia, and the territory of Suelli (Todde *et al.*, 2017), in the historical region of Trexenta, in Southern Sardinia. As, for the latter territories, the search has not yet been completed, we preferred not to talk about the results achieved for these areas, but we would only say that the preliminary results are mostly similar to those already exposed for the comparison of the above mentioned cases (figs. 11 and 12).

In conclusion, in Sardinia, during the Middle and Late Bronze Ages, there was a widespread distribution of nuragic sites, with a very strong intervisibility. In the various regions analyzed, the research has brought to light different territorial control strategies, also due to the different geomorphological realities of the landscape. In all areas, however, we can see a strong common will to manage and control the zones of their own pertinence, as well as a great ability to adapt to the morphology of the territory. These nuraghe can occupy therefore the top of isolated hills, or they can be located on the edge of the plateau areas, or even in plains and hilly ridges that appear on river valleys or areas easily accessible (points of passage and natural passes). The dissemination of domestic and funerary monuments denotes an increasing stability to ensure full exploitation of all the economic resources, as farming, wood and other forest resources or transit routes. These needs drive to a systematic control of the whole territory, a complex spatial organization, with a dense occupation and strict control from strategic positions.

This political system of territorial control was planned in order to protect the whole community, and not individual autonomous groups, with the existence of a link, almost like a chain, between the various settlement systems in a wide territory, each functioning as a cluster in itself but inserted into a reticular system of relationships which would seem to bring together entire geographical regions (an relative polities). To explain this “complete territorial structuration”, testified in different areas of Sardinia Island, several scholars have proposed a model of “budding and saturation” (Vanzetti *et al.*, 2013), whereby the original cores represent the coagulating pole of the new foundations.

Variety of settlement systems as shown here or in other works (Vanzetti *et al.*, 2013) would seem to witness a high fragmentation of political system. However,

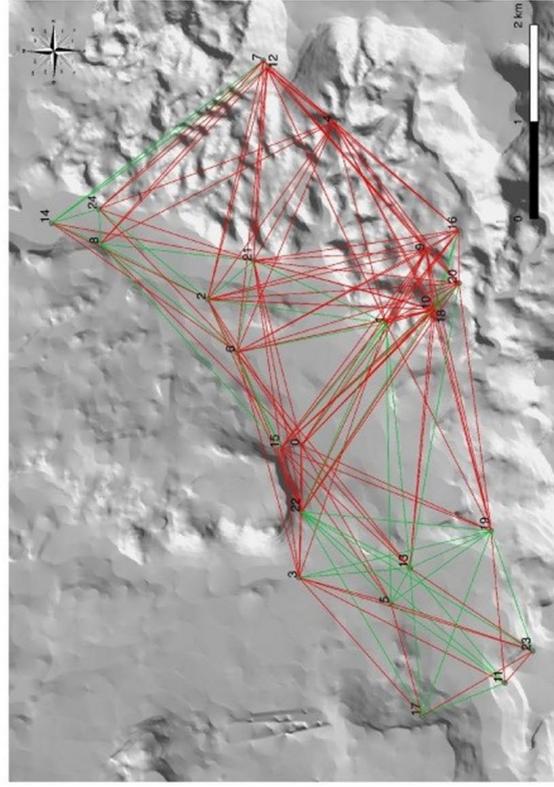
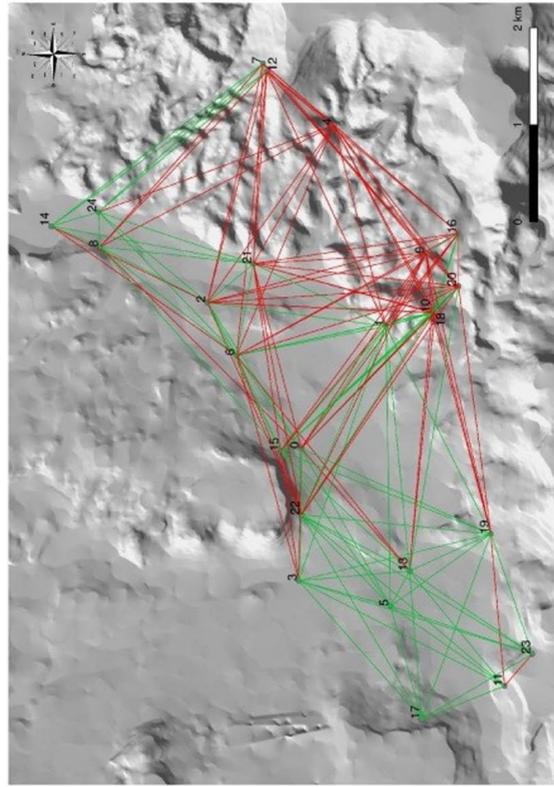
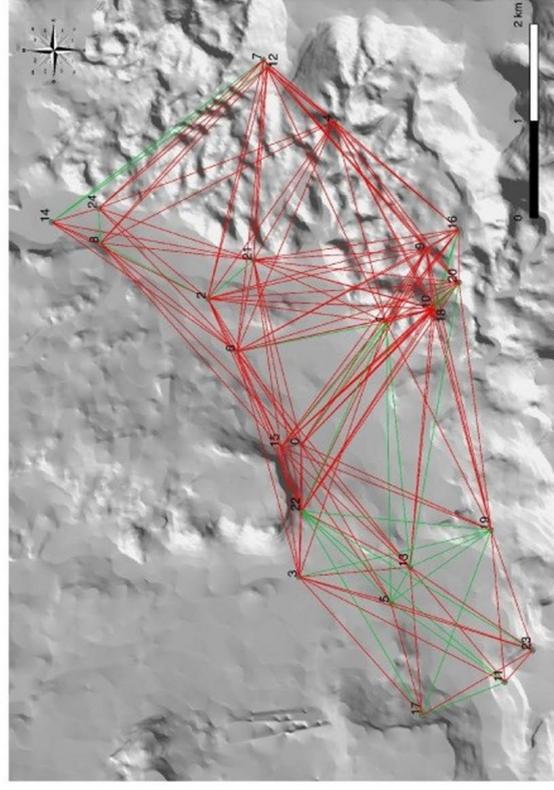
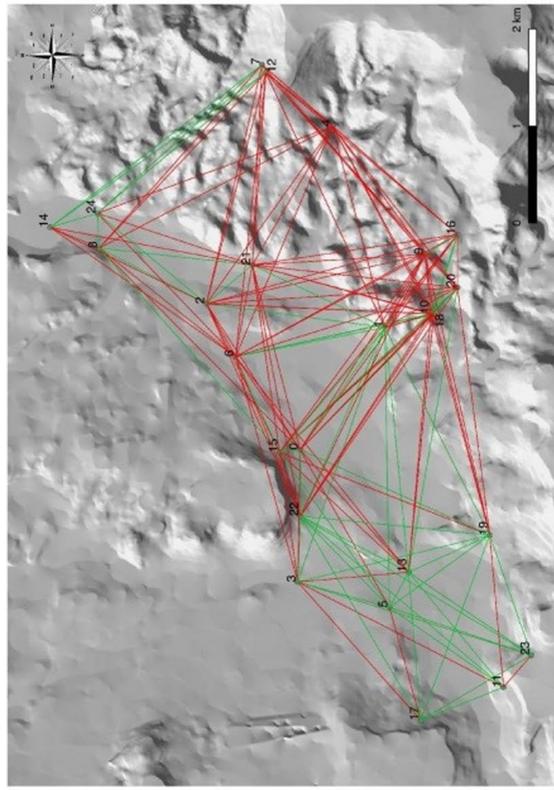


Fig. 11.—Intervisibility analysis in Gonnostamatza region, central-western Sardinia (from Cabras, 2018). Figure in colour in the electronic version.

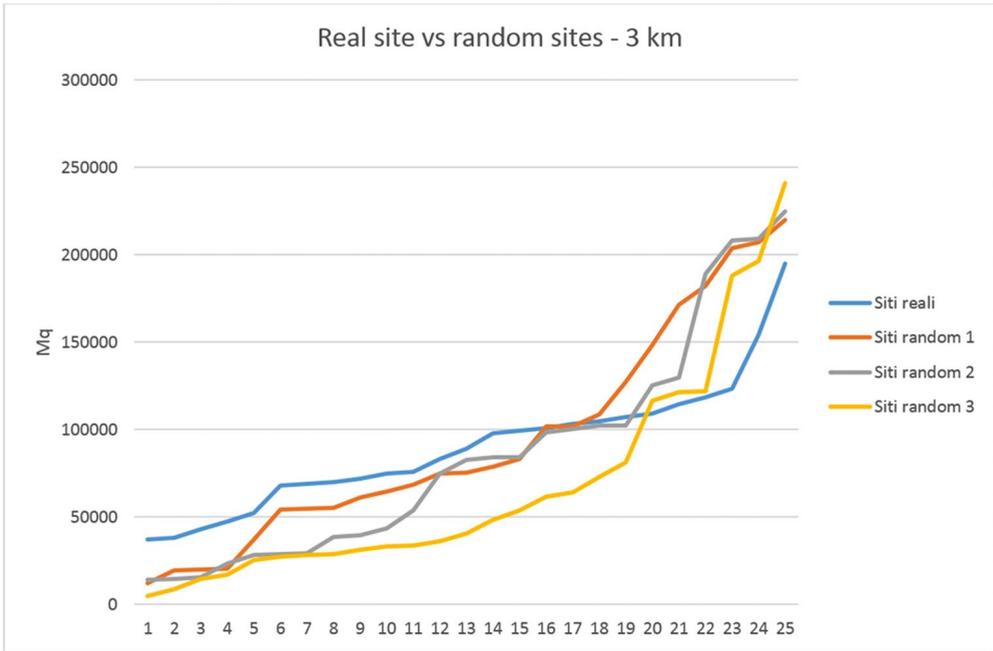


Fig. 12.—Visual quantity analysis (in square m.) and relationship between real sites and random sites in the Gonnosramatza region, central-western Sardinia (from Cabras, 2018).

similarities may show, therefore, settlements pertinent to polycentric polities united by kinship and collaboration in which nuragic towers would be not only places to see and to be seen but also symbols of increasing empowering. In this way, every cluster, as studied here, therefore seem to constitute networks of settlements in constant reciprocal relationship, microsystems that are going to form larger macrosystems, true polities with defined boundaries as suggested in some of our study areas, as Gerrei an, mainly, Serri. These proposed boundaries have been suggested in other zones (Spanedda and Cámara, 2014) and it has been suggested the need to study wider areas in order to best identify them (Spanedda, 2007).

Changes in territorial organization, assimilation, conquest and other processes doubtless took place along Protohistoric period in the different Sardinian areas and a good example can be proposed around Santa Vittoria sanctuary, a place which could become the political-religious centre of a larger polity during the Early Iron Age. Only the continuation of the research with extended and intensive surveys, and necessary excavation data, could confirm or not these hypotheses.

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