Prologue

Wind of Change from the Ural Mountains to Atlantic Lusitania between the Fourth and the Seventh Centuries AD

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In the course of the last twenty years, a novel interest in the transitional phases between Late Antiquity and the Middle Ages has emerged while an endless flow of new data about the concerned period has become available. The session proposed to address the debate about landscape archaeology's approaches to this specific phase using regional and subregional synthesis, balancing the presentation of new data, with methodological discussion (see C. Corsi, in this volume).

Contributors were invited to present regional case studies in light of the newest acquisitions in our knowledge on trade and productions and, with the support of the geosciences, on changes in the ecological conditions. We asked for topics such as the relationship between town and country, the settlement patterns, the transformations in land use and communication networks. We focused our attention on issues related to the transformation of urban space and the suburbs, as well as the dynamics of expansion, reduction or abandonment of towns, inserted into the wider evaluation of the surrounding landscape and catchment area. Any geographical scope for setting the possible regional analysis was indicated, with the aim of covering the widest range of fields and approaches. The choice of the time span delimited by the fourth and seventh centuries was made, knowing full well that the different historical conditions among geographically distant regions would have determined the moving of both its lower and higher chronological limits.

Indeed, we experimented practically on how one of the main problems in the periodisation about Late Antiquity is determined by the progress of the research, which complicated and extended the geographic and ethnic framework. We must also warn that the resulting final overview, which seems to extremely relativise the divide between Late Antiquity and Early Middle Ages and also overcome the "Romanocentric" premise, is mainly caused by the particular subject of the selected proposals and the abundant data regarding the peculiar regions of different extensions, the easternmost of which is located at the extreme border of the European continent.

Nonetheless, one of the most significant outcomes of the session was the fact that we could compare how human resilience, societal vulnerability and sustainability have changed through an almost synchronic span of time in several European regional frameworks, resulting in a long-term "wind" of transformation and complexity.

As it is now ascertained, in the increasingly vast territory of physical and anthropic Late Antiquity, the traditional separation of the Byzantine world weakens, and the observation points and their hierarchies translate. This is evident in the case of near-eastern regions, which can be considered as the scenario where some of the phenomena typical of this era appeared in a complete and striking way. This is one of the reasons why the paper concerning ten different regional case studies, each one following particular methodologies and purposing different targets, is presented in geographical order, unusually moving from East to West.

Far east to the North Caucasus, the first contribution (D. Korobov) concerns the evidence

of the Kislovodsk basin, a relatively well-studied district that enabled the Institute of Archaeology of the Russian Academy of Sciences to create an archaeological geographic information system for the microregion. This paper reveals that the period dating from the fifth to eighth centuries AD was characterised by the highest population density, consisting of 120 fortified and unfortified settlements of the early medieval Alanic tribes. Pieces of ethnographic and archaeological evidence were used for modelling and interpreting the results. They indicate a dispersed model of settlement for that period, composed of small patronymic villages, inhabited by few families' clans, located at 1800 m of altitude and higher, inside the resource zones that could provide sufficient food for them.

The second paper (V. Iacomi & V. Cassiani) aims to assess some meaningful data emerging from the studies of the two authors, members of the Missione Italiana at Elaiussa Sebaste, about urban transformation and productive patterns of the countryside in the Isaurian territory corresponding to Roman Rough Cilicia. Archaeological evidence, consisting of rural and suburban productive settlements which included olive/wine presses and urban kilns for the fabrication of Late Roman 1 amphoras, shows that in Late Antiquity, coastal Isauria fostered previous economic activities and developed a new approach to the exploitation of natural resources. The most important example, in this sense, was represented by the cultivation of grapevine and olive trees, which were connected to an unprecedentedly wide production of wine and olive oil. This phase of evidently increasing commercial activity projected coastal Isauria into the Mediterranean routes to the West.

Moving to this direction, the following paper (C. Röhl et al) presents a truly relevant project started in 2014 by the Römisch-Germanisches Zentralmuseum Mainz in cooperation with the Archaeological Institute in Belgrade and the École française de Rome, concerning the Byzantine town of Iustiniana Prima (at the site of Caričin Grad in southeastern Serbia). The short life of the city, newly founded by the Emperor Justinian as the episcopal and administrative centre of the region in around 530 and abandoned in 615, is for the first time investigated from the perspective of human ecology and social sciences, using methods of archaeozoology, archaeobotany, geoarchaeology, soil science and GIS.

Another contribution (C. Tsigonaky & A. Sarris) illustrates the first results of a project launched in 2014 to highlight the changes in Cretan settlements from the fourth century to the early ninth century. During this long period, major changes in political, social and economic life influenced settlements in terms of both their form and function. The crucial question has been to understand why certain settlements survived the crisis of the seventh to eighth centuries, while others disappeared forever. The paper has focused on two distinctive cases: the group of coastal settlements, facing towards the sea, but isolated from the mainland by mountains, and the group of semimountainous cities, the economy of which made them economically self-sufficient even in times of crisis.

Surprisingly, two articles concern Sicily. A. Facella focuses on some interpretative aspects that he considers essential for the reconstruction of the settlement trends which characterised from the fourth to seventh centuries, the territory of the modern municipality of Contessa Entellina (province of Palermo) in western Sicily. A systematic archaeological survey was conducted there from 1998 to 2004 by the Laboratorio di Scienze dell'Antichità of the Scuola Normale di Pisa.

The author reflects brilliantly on how

> *our success in extracting sensible meanings and applying models depends not only on the reliability of the data under analysis, always subject to improvement and refinement to the best, but also on our ability to filter them through a correct scheme of interpretation.*

In this way, the rise in the number of detected sites dating from the beginning of the fifth century, in comparison with the sites attributed to the previous period, could have been dependent on a much higher density of fifth-century diagnostic artefacts, when compared with the previous and the two following centuries.

The massive presence of fifth-century artefacts may not be exclusively caused by a population increase: economic and sociocultural factors most likely also came into play, distorting the resulting settlement picture. More precisely, a possible higher tendency towards a grain monoculture may have caused a massive import of African foodstuffs (attested by amphorae) between the late fourth and the middle fifth centuries, and peculiar dietary customs could explain the all-pervading diffusion of African red slip ware cups belonging to particular forms.

Another paper (L. Zambito) presents a very interesting study on the sulphur mining in the territory at the east of Agrigentum. The author planned the survey as the base of his research, considering the historical and topographical data which proved mining activity. The evidence on the ancient mining production, such as the detection of *tegulae sulphuris*, has been implemented by other objective data: the sulphur vein when looking for the entrance to the mine and some indication, related to the continuity of use through time of both the extraction sites and the exploitation techniques.

The analysis of the pottery record allowed dating the ancient sulphur production from the late Hellenistic age to the Byzantine time. New settlement patterns, consisting of "villages", have been connected to the mining activities from the end of the fourth century. Agrigentum, which seems to lose the function of fiscal centre at the beginning of the sixth century, maintained an important commercial vitality and a strategic role as harbour until the ninth century, maybe precisely thanks to the sulphur trade.

Continuing north along peninsular Italy, the contribution of F. Redi illustrates the transformation which occurred to the urban settlements located in the territory of L'Aquila (Abruzzo region) in the transitional period between Late Antiquity and Early Middle Ages. The paper demonstrates the research progress of the recent years on urban archaeology, focusing on the material aspects of the settlement transformations, recognising the most common patterns in which this phenomenon occurred.

The paper of C. Bassi and V. Amoretti reports the results of the archaeological excavation conducted in the site of San Cassiano, in the northern part of Garda Lake. It debates the related anthropological studies concerning two separated burial areas linked to a rural settlement of Imperial Age, the productive part of which was occupied in the fifth to sixth centuries by a church. Thanks to the crossing of archaeological and anthropological data, this small area of 6,000 m^2 adds an important contribution to the reconstruction of the landscape history of the Garda territory in the considered transitional era.

Still following westward the geographic location of the areas concerned by the covered topics, it happens that both the two last papers from our collection discuss the phenomenon of Christianisation of urban and suburban landscapes, in Italy (A. Luciano) and in central Lusitania (E. Gallo), respectively. The synthesis essay on Italy shows how the settlement of early Christian sanctuaries, connected with the development of a relics' cult, was crucial in transforming the Italian landscape. Meanwhile, two different case studies are presented for the Portuguese area, using new topographical data from the excavations conducted in the abandoned town of Ammaia and in the bigger town of Evora, which was seat of the diocese from the fourth century AD and has had continuity of occupation until the current era.

Early Medieval Settlements and Land Use in the Kislovodsk Basin (North Caucasus)

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Abstract

In the context of searching for agricultural landscapes which have escaped recent anthropogenic disturbance, the evidence of the Kislovodsk basin (North Caucasus) has special importance. Its sheltered location and the fact that it is relatively well-studied, enable us to create, for the first time in Russia, an archaeological Geographic Information System (GIS) for the microregion, which currently includes data on over 920 archaeological sites, from the Aeneolithic to modern times. Preliminary analysis of the archaeological record of the Kislovodsk basin has revealed that the Early Medieval period dating to the fifth - eighth centuries AD was characterised by the highest population density. The Site Catchment Analysis used in the framework of GIS revealed over 120 fortified and unfortified settlements of the early medieval Alanic tribes. The investigation consisted of several stages in the course of which potential ploughing areas were modelled for each settlement. It was based on the combined archaeological and soil field survey around fortified settlements in the different parts of the area. It appears that from the fifth to the eighth centuries AD relatively flat territories of 1 km round the site were the most valuable for agriculture. The rest of the economic area, simulated using Thiessen tessellation, could have been used for pasture and hay-making. Computer simulation of the potential economic territories gives the possibility to determine the area of proposed ploughing and pasture holdings and to estimate the quantity of settled population along with their cattle. As a result, a modelling thesis of a small dimension of the patronymic society of the Alans who occupied these early medieval settlements and the affirmation of self-sufficiency of their economy were confirmed.

Keywords: Early Middle Ages, North Caucasus, GIS, Spatial Analysis, Agriculture

Introduction

The present study uses spatial GIS analysis and landscape archaeology (a multidisciplinary approach to interaction between people and the environment) (Aston, 1985; Darvill & Gojda, 2001; Steuer, 2001; David & Thomas, 2008) and gives, for the first time, a comprehensive analysis of how the Alanic population settled the Kislovodsk basin during the first millennium AD.

Medieval settlements and their economy have been the topic of many recent studies in Russia (Makarov, Zakharov & Buzhilova, 2001; Krenke, 2011; Afanasyev, Dobrovolskaya & Borisov, 2012) and the Ukraine (Koloda & Gorbanenko, 2010). However, the adaptation and usage of GIS technologies in landscape archaeology are scarce both in Russia and other Post-Soviet states (Garbuzov, 2007; 2008; Manigda, 2012; Tomashevsky & Vovkodav, 2007). At the same time, GIS, remote sensing data and methods of spatial GIS analysis (Tomashevsky & Vovkodav, 2007; Manigda, 2012) are instrumental in enlarging the scope of such studies. G.E. Afanasyev was the first to use those methods for the study of Alanic settlements in the Kislovodsk basin (Afanasyev, Kislov & Chernyshev, 2002; 2004: 50-88). The present study is an outgrowth of the already existing works on the

settlement system in the microregion in the first millennium AD. These works were based on the methods developed in the 1980s - 1990s and used the materials from forest-steppe Saltovo-Mayatsk settlements (Korobov, 2012a; 2012b).

Kislovodsk Basin - the Region of Investigation

It is not by chance that the Kislovodsk basin has become the testing ground for this research. As far as archaeology is concerned, the basin, which is a unique natural site, is rightfully considered to be the best-studied microregion in the North Caucasus. The over one hundred and fifty years of fieldwork by archaeologists and local amateurs (Afanasyev et al, 2004: 9-49) helped accumulate a large amount of information about sites there. The information was actually doubled with the elaboration of the Kislovodsk AGIS (archaeological geoinformation system), the first Russian system of its kind, which the present author created in the Institute of Archaeology of the Russian Academy of Sciences under the supervision of G.E. Afanasyev in 1996-2000 (Afanasyev et al, 2004: 60-62). As of the present millennium, we know over 900 archaeological sites from different periods and cultures covering about 1150 km^2 in the Kislovodsk basin. Primary analysis of their spatial distribution gives a general picture of how people from the Aeneolithic to the present day have settled in the basin (Afanasyev, Savenko & Korobov, 2004; Reinhold & Korobov, 2007; Korobov, 2013).

A significant part (over one-third) of the located archaeological sites in the basin belongs to the first millennium AD and may be connected with the Alanic population of the North Caucasus. Even though some scholars defy their ethnic interpretations (Abramova, 1997: 137-54), this connection is implied by the abundance of burials in T-shaped catacombs generally believed to have been a kind of "visiting card" of the Alanic culture for a thousand years, from the first century AD to the time of the Mongol invasions (Kouznetsov, 1962: 13-14; 1992: 37-42; Afanasyev, 1992; Kouznetsov & Lebedinsky, 1997: 22; Kovalevskaya, 2005: 151-52; Gabuev & Malashev, 2009: 146-49). Recent studies in anthropology, including those of ancient DNA (Afanasyev et al, 2014; Berezina, Frizen & Korobov, 2014), seem to confirm the above assumption. Thus, the Kislovodsk basin provides great possibilities for further studies of Alanic settlement in Central Ciscaucasia in the first millennium AD.

Results of Paleoenvironmental Studies in the Kislovodsk Basin

Throughout the basin, settlements are found at altitudes up to 1500-1800 m above sea level, which implies that they were all located in an environment suitable for mixed farming: cattle-breeding and crop-growing. The conclusion is supported by the results of the paleoclimate GIS-modelling carried out with the help of a special computer module created by a team of geographers, climatologists and archaeologists headed by G.E. Afanasyev (Afanasyev, Kislov & Chernyshev, 2002: 74-75; Afanasyev, Savenko & Korobov, 2004: 78-80; Korobov, 2008; Borisov & Korobov, 2013: 25-60). However, the means of treating the soil changed with time and seriously influenced the settlement system. The pedological and archaeological investigations that we have been jointly conducting with A.V. Borisov since 2005, the results of which have recently been published (Borisov & Korobov, 2013; Korobov & Borisov, 2013), provide the key to understanding some of the consistent patterns in the settlement system of the Kislovodsk basin in different time periods. Below we list some of the main conclusions that we have arrived at in our work.

The large isolated terraces on steep slopes (Type 1 terraces) are clear evidence of agriculture back to the Koban culture population in the first millennium BC. Agriculture was intense and covered almost all the territories in the microregion, thus inevitably contributing to erosion processes. The unprecedented cultural expansion of the Koban culture population, which had reached its peak by the mid-first millennium BC (a period of drastic climatic change in the Kislovodsk basin),

was fraught with truly catastrophic consequences for the soils of the microregion. The landscapes had radically changed; the watershed plateaus had practically lost their surface soil covering; the slopes which housed Type 1 terraces were covered over with a thick layer of infertile loamy colluvial sediments. Traces of erosion processes have also been found on promontories near the slopes, where it was possible for eroded materials to accumulate. Most of the areas near the slopes, however, had no soil covering.

For about 500 to 700 years the Kislovodsk basin remained practically uninhabited. We can assume that during that period soil formation was at the initial stage, plant life was represented by pioneer species, and the productiveness of plant formation was not sufficient for even minimal amounts of grazing.

However, by the beginning of the present era the consequences of the above-described palaeoecological catastrophe became to a certain extent less evident. Soil formation gradually processed the thick colluvial layer that covered the entire territory of the basin, a natural plant cover developed on the yet thin soils, and in some areas the thickness of the soil layer was already sufficient for agriculture. Yet on the whole the vast territories of the basin were still unsuitable for agriculture in the fifth - eighth centuries when the Alanic population were settling there: the soil had recovered its fertility only on the small flat promontories at the bottom of mountain slopes. It is possible that the early medieval population chose the locations for their settlements depending on whether there were fertile areas suitable for agriculture. It was in these areas that pottery from the first millennium AD was found, proving that organic fertiliser was used for the fields around the settlements (Williamson, 1984; Wilkinson, 1989; Bintliff, 2000; O'Connor & Evans, 2005: 245).

Celtic Fields and Strip Lynchets in the Kislovodsk Basin

Since fertile land was so scarce, tillable areas were of special value and were treated with special care. This gave rise to a new form of agricultural plot: rectangular-shaped and bordered by the stones collected during tillage. Hardly visible on aerial photographs, these land plots can be identified in the course of field work if the lighting is favourable. The area of the plots varies from 0.1 to 0.3 ha (Korobov & Borisov, 2013: 1097-99).

First recorded by Dutch cartographers in the late seventeenth century, such plots of land were popular in Europe and have been called Celtic fields. The fields appeared after cross-ploughing with a symmetrical ard. This type of instruments had existed in Northern Europe throughout the Early Iron Age and had been encountered in some areas until the Early Middle Age (Muller-Wille, 1965: 108-14; Bradley, 1978: 267, 275; Fries, 1995: 122, 133). In the Early Middle Age Alans used agricultural tools similar to the simple symmetrical ard, as indicated by the iron share dating from the eighth - ninth centuries, found at Kozyi Skaly settlement near Pyatigorsk (Kouznetsov & Rudnitsky, 1998: 297-98: 300, fig. 12, 5).

The choice of areas suitable for tillage was very limited. At watersheds the soil layer was preserved only partially, at the bottom of dense rock formations; the steep slopes with Type 1 terraces were only suitable for cattle-grazing; the soil layer on the promontories in the lower part of the slopes was either eroded or covered over with a thick layer of colluvial sediments. Tillage was only possible in the areas with a slope inclination of 5º to 10º where the perforce thin colluvial layer had been altered due to soil-formation by the first century AD.

These smooth slopes housed another type of agricultural plot: cascades of narrow terraces up to 400 m in length, sometimes ending in an S-shaped curve (Korobov & Borisov, 2013: 1096-97). These agricultural plots have striking analogies in Western Europe known as strip lynchets. Such plots appear on slopes ploughed with a heavy plough or mouldboard ard that turned the soil in the downslope direction only. There are different opinions about the age of these tilled terraces. The basic viewpoint is that mouldboard ploughing tools appeared in Europe at a rather late stage, and,

consequently, that ploughed terraces emerged only at the turn of the second millennium AD. The researchers stress that ploughed terraces are typologically close to a similar type of land plots, that is, to open ridge and furrow fields traditionally dated to the High and Late Middle Ages. Actually, lynchets are also terraces, located on smooth slopes (Crawford, 1923: 356; Curwen, 1946: 49, 63, 70; Bowen, 1961: 42; Evans, 1967: 295; Fowler & Taylor, 1975: 88-90; Fowler, 2002: 196-97).

However, there are arguments in favour of more ancient dates for some of the ploughed terraces in Great Britain and southern Germany. Besides the numerous finds of Roman pottery in the ploughed layers of the investigated terraces, the very fact that mouldboard ploughing tools could have existed throughout the territory of Europe in the Late Roman times speaks in favour of that assumption (Taylor, 1975: 91; Bradley, 1978: 267; Taylor & Fowler, 1978; Fowler, 1983: 177; Fries, 1995: 134, 152).

Alanic Settlements in the Kislovodsk Basin

The specific features of settlement and land-use in the Kislovodsk basin in the first millennium AD are studied here mainly on the basis of data from fortified and unfortified settlements, the monuments that have to do with the day-to-day activities of the Alans. Since little is known about them at the present stage, we suggest creating a starting-point for analysis through dividing the entire mass of available data into several classes in accordance with topographic features. We divided the 153 fortified sites into four classes depending on their location: on residual mountains (buttes), on rocky promontories, on promontories with escarped slopes and on high hills (Korobov, 2012a: 48-54). The 131 settlements have also been divided into four classes: settlements on promontories, plateaus, slopes and river terraces. However, only the 29 open settlements which have architectural ruins, cultural layer and abundant surface finds can be reliably considered places of habitation outside the fortified sites. The other sites which have been identified as settlements on the basis of pottery found on the surface are more likely to have been resource ploughed area around the fortifications or places where waste was dumped. Thus, the study uses data from 182 fortified and unfortified settlements in the Kislovodsk basin of the first millennium AD.

Now that we have created a classification of the fortified and unfortified settlements in the Kislovodsk basin and analysed the specifics of their spatial distribution, access to water supplies, visibility of the terrain from the fortified sites and settlements of different classes, spatial correlation with the already known ground cemeteries, available data on pottery, stray finds, and radiocarbon dates for the coals and animal bones recovered from trenches and ground surfaces, we can tentatively divide the entire mass of settlements into two chronological groups. The first one includes fortified settlements on promontories with escarped slopes and on hills (elevations) as well as unfortified settlements on river terraces, which more often yield material from the first half of the first millennium AD. Pottery, metal objects and radiocarbon dates, as well as the burial sites from the second half of the first millennium AD associated with settlements, are more typical of stone fortresses on residual mountains and rocky promontories, and also of the open settlements on promontories, plateaus and slopes. Here we examine the sites of the second period including 110 fortified and thirteen unfortified settlements (fig. 1).

Methods of GIS Analysis of the System of Habitation

We studied the settlement system of the Alanic population in the Kislovodsk basin through spatial GIS analysis, which is covered in more detail below. Such type of analysis seems to be very effective when we manage a large amount of spatial data distributed on a rather wide area. Archaeologists have been using spatial analysis of

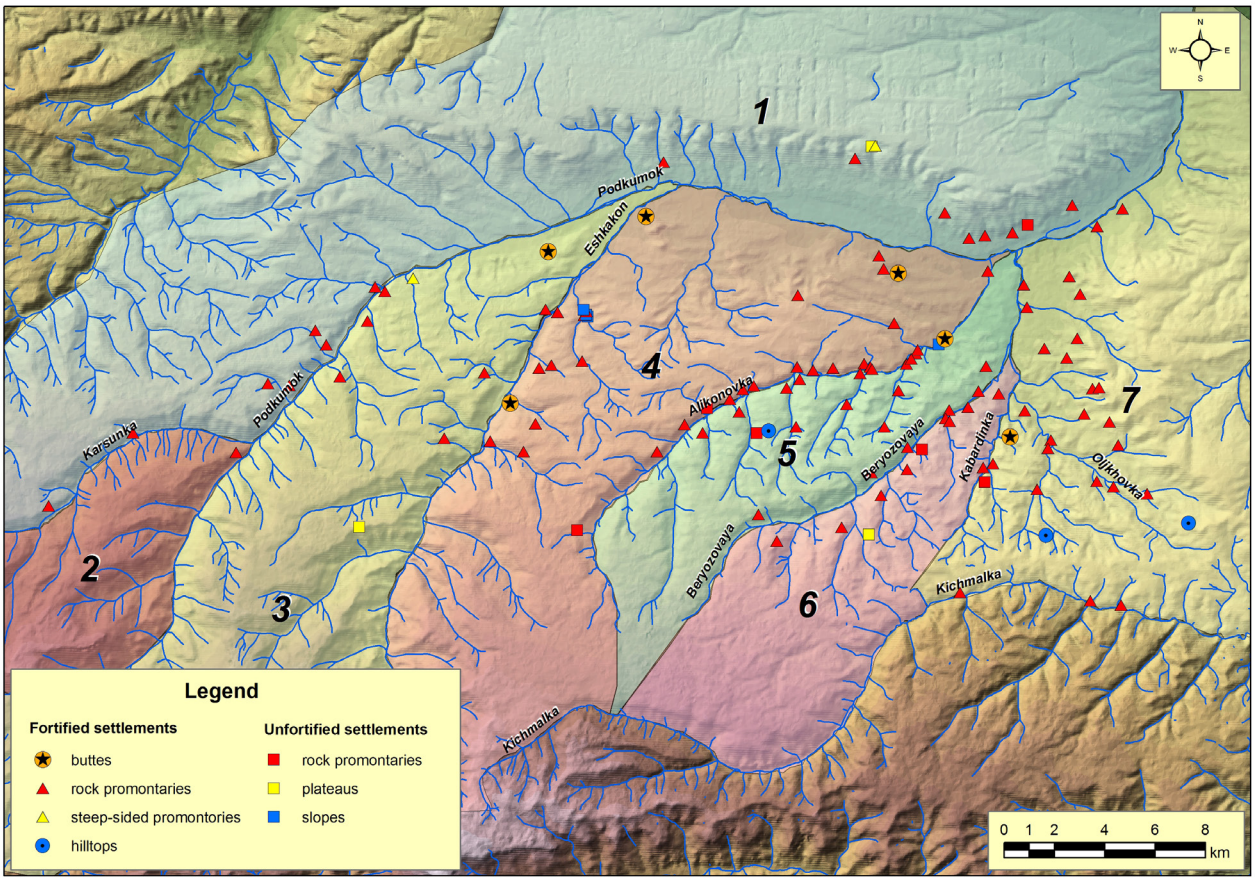

Fig. 1. Types of fortified and unfortified settlements of the Early Middle Ages in the Kislovodsk basin divided by means of "mask" polygons.

archaeological data for some decades now, after the science adapted the methods of New Geography (Hodder & Orton, 1976; Korobov, 2011: 111-23). In the mid-1980s archaeologists started using Geographic Information Systems (GIS), giving new possibilities and advantages to such area of study as landscape archaeology, which actively uses the methods of spatial GIS modelling (Garbuzov, 2007).

Landscape archaeology has not yet become widespread in Russian archaeological science. There are almost no theoretical studies on the use of GIS as an instrument for analysing and modelling the archaeological record. Hence, one of the major tasks is to adapt methods of spatial GIS analysis to archaeology, which is one of the main goals of the study of settlement structures of the first millennium AD being carried out by the author in Central Ciscaucasia on the Kislovodsk basin.

Spatial analysis provides a new perspective on archaeological sites and allows us to model their economic environment (Korobov, 2012b). For the modelling we use GIS, remote sensing data, fieldwork data, palaeopedology, osteologic analysis of animal bones, study of the macrobotanical remains discovered through flotation of the cultural layer at the fortified settlements, the results of geophysical survey at archaeological sites, etc.

We used Site Catchment Analysis and Cost Distance Analysis, which enabled us to outline the boundaries of the settlements and the minimum size of the tilled areas on the basis of the time needed to cover certain distances (Wheatley & Gillings, 2002: 151-62).

The present study analyses the main economic parameters of a sedentary population that practices agriculture and animal husbandry. The radius for potential ploughed lands around a settlement is the distance that correlates with the time required for covering 1 km of open terrain while

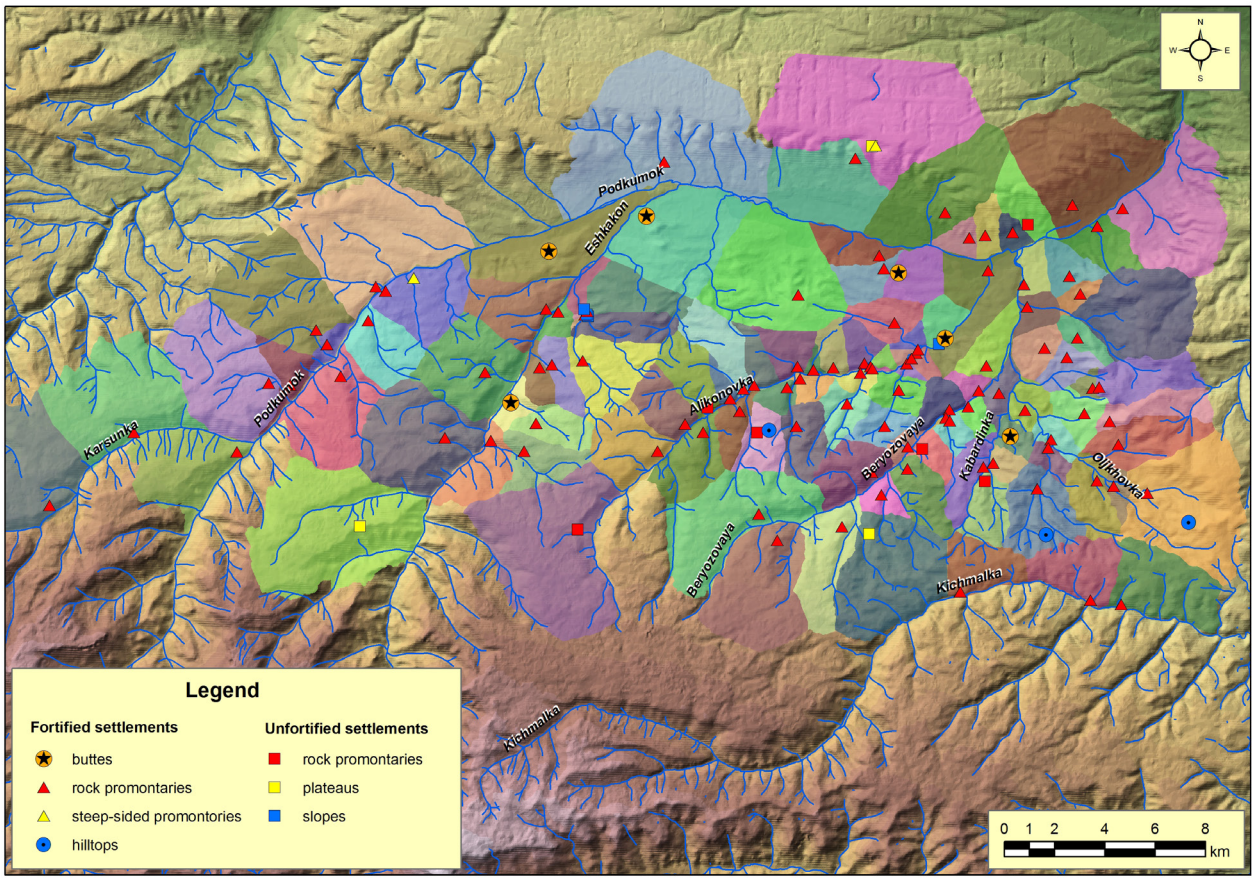

Fig. 2. Map of potential economic territories for Early Medieval fortified and unfortified settlements constructed by means of Thiessen tessellation.

the radius for potential pasture lands is 5 km. This limitation of agricultural activity around the place of permanent habitation correlates with the time limit of one hour of movement. It has been demonstrated on a lot of ethnological material and became the basis for further modelling of resource zones in different archaeological cultures (Jarman, Vita-Finzi & Higgs, 1972).

The boundaries of the potential resource zone between the settlements were modelled through Thiessen tessellation. They are created through building polygons around point objects whose boundaries are drawn halfway between them (Wheatley & Gillings, 2002: 149-51). The main drawbacks of the procedure include the fact that the polygons along the periphery of the data array under analysis have no boundaries, the internal spatial boundaries (e.g., deep river canyons) are not taken into consideration and neither are the efforts and energy needed for covering an irregular terrain (for details see Ruggles & Church, 1996: 147-73). To overcome these limitations we used the following procedures:

1) we divided the territory of the basin into seven polygons ("masks") along the main rivers, which are natural internal boundaries;
2) in building the Thiessen polygons, we used Cost Distance Analysis, which takes into consideration the steepness of the ground, hence the use of the time required for crossing the irregular terrain between the settlements instead of the geometric distance between them; and
3) the modelled zones of potential agricultural areas between the sites were limited to a five-km radius when taking into account the calculated energy needed for covering that distance (one hour of walking).

After analysing the specific features of the data and the methods, it became possible to start GIS

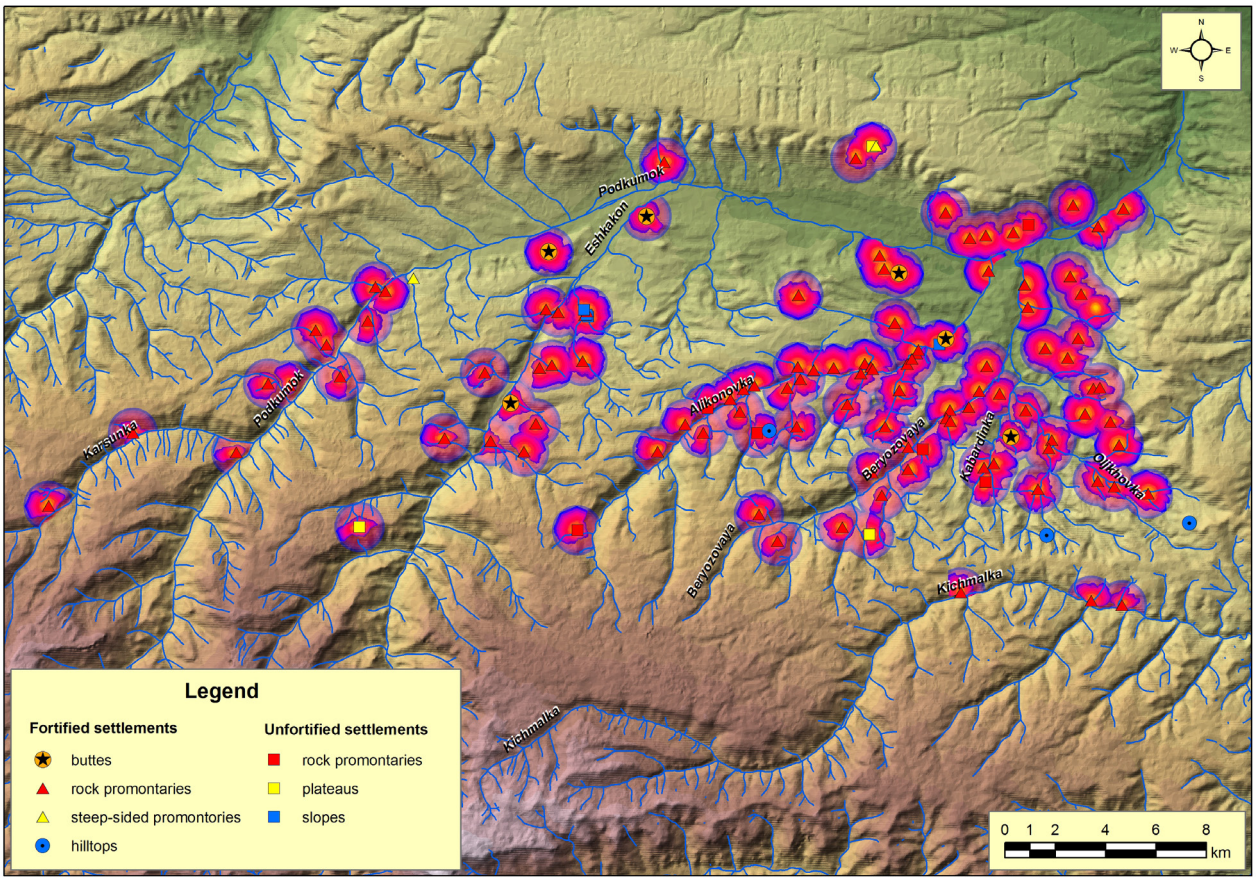

Fig. 3. Site Catchment Analysis of the Early Medieval fortified and unfortified settlements with two models to calculate the location of potential ploughed lands around habitations: the minimum (the distance that corresponds to the time needed to cross 1 km of open terrain) and the maximum (within a 1 km radius).

modelling of the potential economic zones around the Alanic settlements in the Kislovodsk basin, taking into consideration the differences in its economic use. Initially we created a model of the terrain based on the remote sensing data obtained through ASTER (Advanced Spaceborne Thermal Emission and Reflection Radiometer) that has a spatial resolution of up to 15 m and an accuracy of spatial referencing of up to 20 m.

The resulting digital model of the surface became the basis for analysing the steepness of the slopes, which was done with Slope procedure in the 3D Analyst module of the ArcGIS software. The analytical raster with data on the steepness of the slopes was reclassified (Reclassify procedure in Spatial Analyst) to six classes of relief with a 10° step. The procedure created a map with an analytical raster, where each 10 x 10 m cell contains information on the steepness of the relief from 0° to 60°.

After that, the potential resource zones were built as Thiessen polygons around the fortified and unfortified settlements inside the polygonal "mask" layers. A total of seven "masks" were used, corresponding to the seven microregions of the Kislovodsk basin, with natural boundaries along the canyons of the main rivers: the Podkumok, the Eshkakon, the Alikonovka, the Berezovaya, the Kabardinka, the Kichmalka and the Karsunka (fig. 1). The distance limit for the Thiessen tessellation was the radius of a one-hour walk (5 km), the most favourable zone for agriculture and sedentary stock farming. Thus, in building the inner boundaries between the polygons and their outer boundaries, we took into consideration the energy costs that are required for moving across

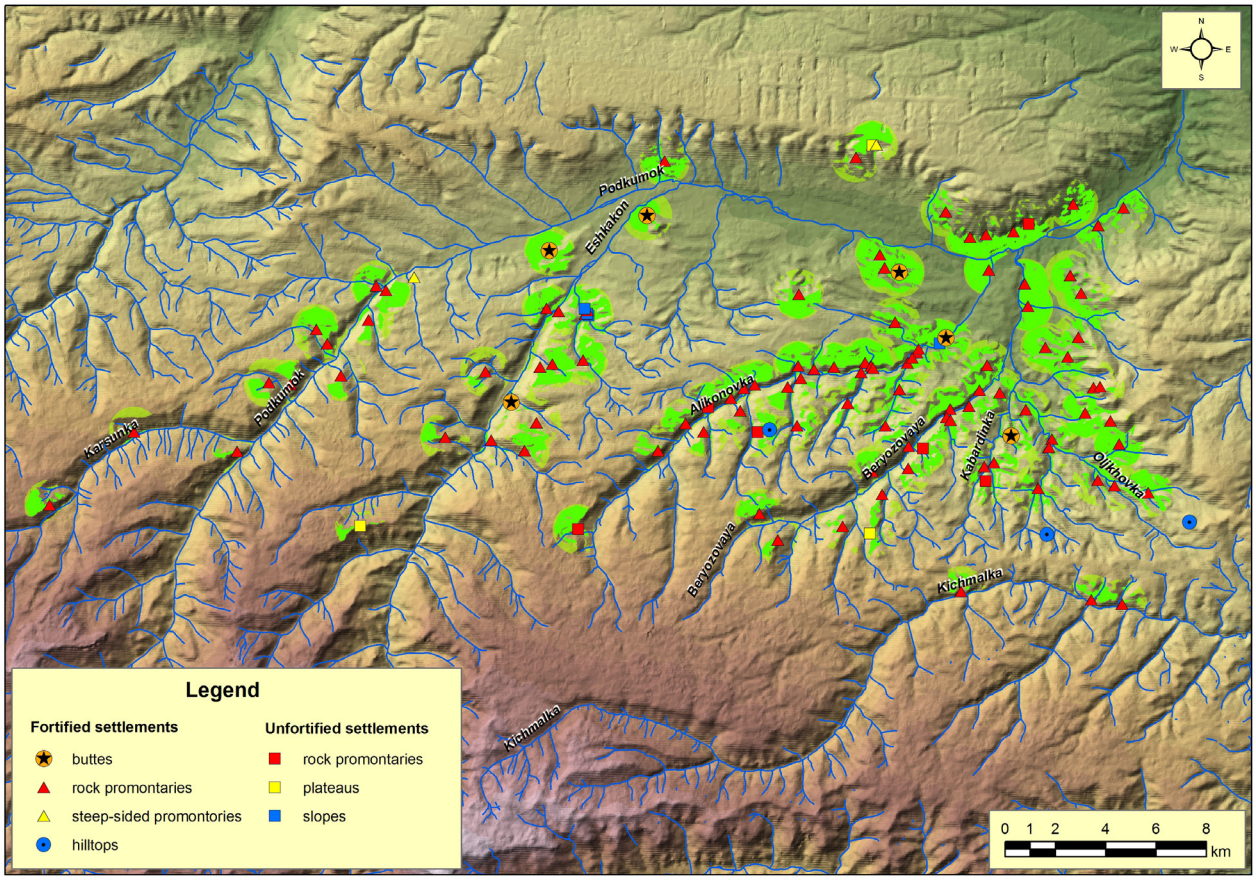

Fig. 4. Map of potential arable fields around Early Medieval fortified and unfortified settlements (the parts of the relief which have an inclination of less than 10° and are located at a distance which corresponds to the time needed to cross 1 km of open terrain around a settlement, or at a straight distance of 1 km).

irregular terrain. For this we used Create Allocation procedure for Cost Weighted analysis in the Spatial Analyst module. The analysed raster was the layer in which the surface slope was categorized with an increment of 10º, as described above. The work created a map of potential economic territories for the Early Medieval fortified and unfortified settlements (fig. 2).

The next step was to model the potential ploughlands for each of the settlements. For this, two criteria were used: distance from the settlement and inclination of the slope. Studies in Caucasian ethnography show that these factors are the ones that determine the value of land. The most valuable plots are level and tillable land with a good soil and located near the settlement (Kantaria, 1989: 56-57, 67).

On the basis of the above-mentioned palaeoeconomic reconstructions of the economic zones of sedentary farmers (Jarman, Vita-Finzi & Higgs, 1972), the most likely ploughland zone is deduced from the minimum distance that corresponds to the time needed for crossing 1 km of open terrain and the maximum distance of a 1 km radius around the settlement. The canyons of the major rivers were included as internal boundaries of the radial zones around the settlements in order to better identify the location of the land-plots (fig. 3). However, each of the zones can include landscapes with very different surface slopes. Palaeopedological investigations at the potential agricultural zones around early medieval fortified sites have shown that the most probable locations of Alanic agricultural plots are level surfaces with a slope of 5º-10º or less (Borisov & Korobov, 2013: 198-205).

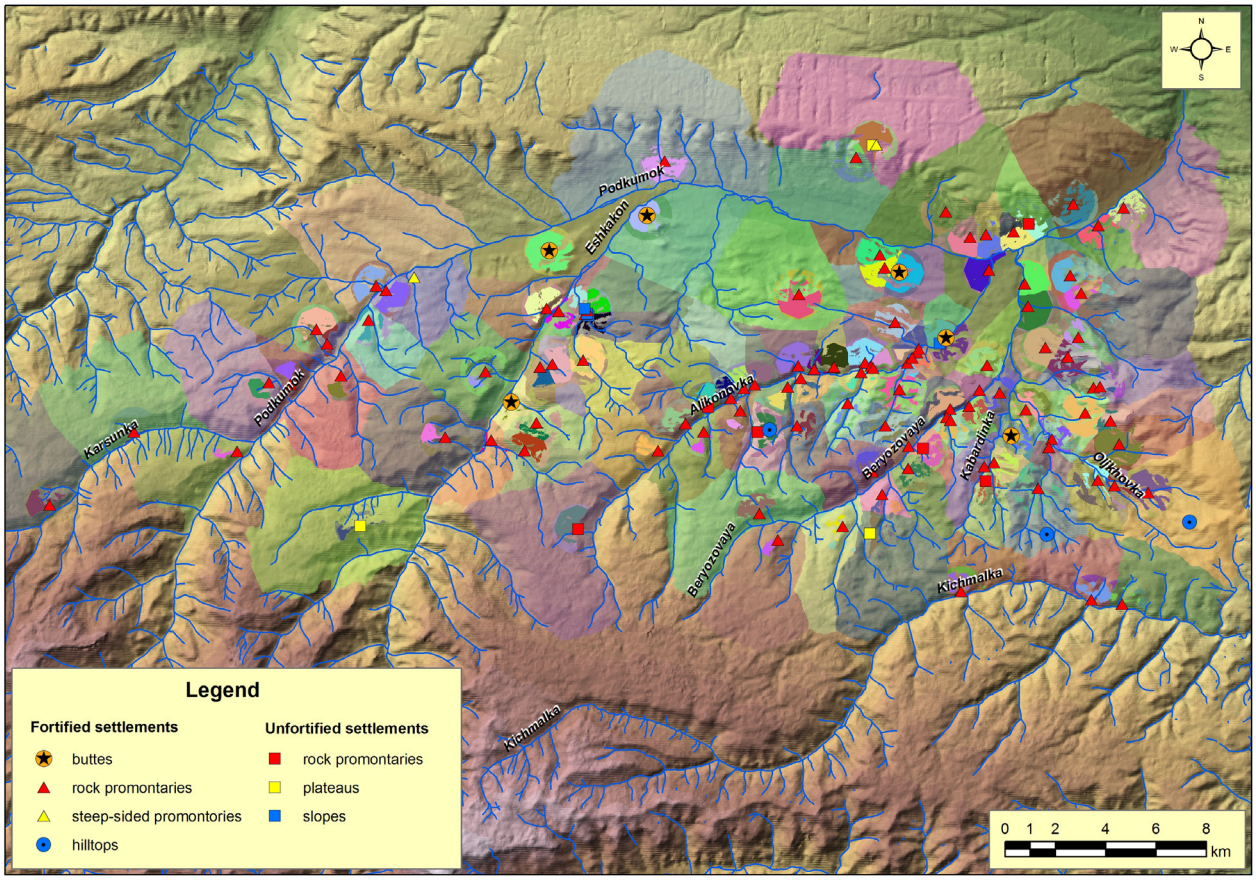

Fig. 5. Map of possible ploughlands constructed for each of the settlements within the identified resource zones represented by Thiessen polygons.

On the basis of that assumption we corrected the results of the modelling. First, we used the instruments of the program to identify the class of relief that has an inclination of 0º to 10º. The resulting analytical layer was multiplied by the layer for which maximum and minimum zones (1 km round the settlements) were built. The result was a new analytical layer, which identifies the parts of the relief with an inclination of less than 10º located at a distance which corresponds to the time needed for crossing a 1 km of open terrain around a settlement or at 1 km as the crow flies (fig. 4).

Next, through multiplying the raster layers with the Thiessen tessellation by the layers that show the potential ploughlands within 1 km of the settlements, we get maps of possible ploughlands for each of the settlements within the identified resource zones represented by the Thiessen polygons (fig. 5). The number of 10 x10 m cells for each of the settlements allows us to estimate the size of their potential ploughlands. We have tested this model in the field and it proved to be adequate. Nearly all the soil sections taken at the potential agricultural territories modelled in our analysis yielded early medieval pottery, which must have found its way to the fields along with the fertiliser (Williamson, 1984; Wilkinson, 1989; O'Connor & Evans, 2005: 245; Borisov & Korobov, 2013: 65-66, 171-83). We also found some natural indicators of such fertilisers by means of soil studies (Chernysheva et al, 2015: 28-29).

It seems likely that the associated territory was used for pasturage and haymaking, which assumption is confirmed by Caucasian ethnography (Kaloev, 1993: 68-69, 104-105, 112-13; Shamanov, 1972: 73) and analogies in synchronous agricultural patterns. For instance, starting with the third - fourth centuries the system of land use in Northern Europe included infield and outfield systems

(located close to settlements or at a distance) with the first being used for tillage and the second for pastures and hayfields (Hedeager, 1992: 205; Fowler, 2002: 217; Thurston, 2001: 98; Widgren, 1983: 73-84).

Results and Conclusions

The Alans settled the entire territory of the Kislovodsk basin in the early fifth century AD and stayed there until the mid-eighth century. Early medieval sites are thickly scattered almost throughout the territory of the basin and are found at 1800 m of altitude and higher. Most of them are in the lower and middle reaches of the Podkumok and its tributaries (fig. 1). The Alans usually lived in small (up to 0.5 ha) fortified settlements at the edges of rocky promontories adjoined by level areas of fertile land followed by slopes of low hills. The latter were frequently used for catacomb burials. There are also some unfortified settlements that show traces of habitation, i.e. ruins of stone buildings on the surface.

The analysis allowed calculating the spatial cells of the territory, providing an estimate of the area of potential tillage and pasture plots for each of the first-millennium settlements in the microregion. In modelling and interpreting the results we used ethnographic and archaeological evidence. For instance, for reconstructing the population numbers we assume that with two-field crop rotation one small family used a tilled area of about 5 ha (about 1 ha per person) (Ebersbach, 2007: 43-46; Gadzhiev, 2000: 339-40; Kaloev, 1981: 37-33). The number of farm animals in conversion to great cattle is calculated on the premise that 4 ha of pastures and hayfields are required per head of cattle (Ebersbach, 2003: 84; 2007: 53-54; Osmanov, 1990: 126). According to these assumptions the majority of the settlements could have been created by rather small groups of population, around 30-50 people, with possible live stock of up to 100 cows. These calculations are substantiated by the number of dwellings visible on the ground surface of the sites as stone ruins.

In some of the cases, the modelled zones of ploughlands included the agricultural plots with boundary walls (the so-called "Celtic fields") that we had discovered in the environs of the fifth - eighth centuries AD settlements of Zubchikhinskoye 1 and 3, Kich-Malka 1, Medovoye Pravoberezhnoye 1, and Podkumskoye 6. It appears that such land plots were the main form of agricultural plot for the Alans in the Kislovodsk basin during the period in question (Korobov, 2012a: 50; Borisov & Korobov, 2013: 135-42, 167, 182-83; Korobov & Borisov, 2013: 1097-99).

Thus, the majority of settlements from that period were small patronymic villages, inhabited by family clans comprising one - five families (Afanasyev, 1978) and located inside the resource zones that could provide sufficient food for the clan. This situation indicates a dispersed model of settlement, which implies a high degree of autonomy for social communities and, consequently, a low level of hierarchy and social development.

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La Cilicia/Isauria tra IV e metà VII secolo: insediamenti, produzioni e attività economiche. Nuove considerazioni alla luce dei più recenti studi sulla regione

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Abstract

Questo contributo si propone di analizzare in maniera organica alcuni dati significativi, emersi combinando gli studi delle due autrici, in merito alle trasformazione dei modelli urbani e produttivi nella Cilicia Tracheia/Isauria nel periodo tardo romano e protobizantino.

Da una prima analisi emerge un quadro della regione piuttosto complesso e articolato che vede un territorio ricco di centri urbani a cui si alternano aree rurali dedite alla produzione agricola e alla lavorazione delle materie prime e che attraversa in questo periodo (IV – metà VII secolo) una fase di evidente incremento dell'attività commerciale, proiettando le città della costa dell'Isauria nelle rotte mediterranee fino in Occidente. Un tale mutamento nell'assetto economico, però, non può prescindere da una crescita dell'attività produttiva che raggiunge una portata inedita e che si manifesta principalmente nella coltivazione della vite e dell'ulivo e nella commercializzazione di vino e olio.

Dal punto di vista archeologico ciò si riscontra, per esempio, nella diffusione sul territorio extraurbano di impianti legati principalmente alla produzione di olio e vino e nella presenza considerevole, soprattutto in contesti cittadini, di fornaci per la fabbricazione di contenitori da trasporto: la produzione sembra non più volta a soddisfare il solo fabbisogno locale, ma razionalizzata in maniera tale da garantire un *surplus* di materie prime destinate al commercio. In questo contesto doveva essere fondamentale il sistema integrato aree rurali – città costiere, basato sulla produzione nelle prime e sulla commercializzazione delle merci nelle seconde, malgrado resti ancora di difficile comprensione il sistema amministrativo che doveva regolare i rapporti tra le due realtà. D'altra parte, nello studio integrato di tali dinamiche si riscontrano ancora numerose problematiche che si auspica possano essere superate attraverso l'acquisizione di nuovi dati e ulteriori indagini sul territorio.

Keywords: Cilicia/Isauria, economia, Elaiussa Sebaste, vino e olio, anfore *LR1*

Al di là delle considerazioni di natura storiografica sottese alle valutazioni sul complesso periodo di transizione tra l'antichità e i successivi sviluppi bizantino-medievali, è indubbio che la fondazione e la progressiva affermazione di Costantinopoli segnarono nello scenario mediterraneo un momento fondamentale e foriero di molteplici sviluppi: dal punto di vista dell'economia, se le regioni microasiatiche avevano già in parte affermato il proprio ruolo nelle esportazioni, soprattutto vinarie, nei secoli precedenti, le regioni del Mediterraneo sud-orientale e in particolare la Cilicia, Cipro e la Siria costiera settentrionale esordirono allora nel commercio interprovinciale e i loro prodotti seguirono nuove rotte toccando tutti i maggiori

Fig. 1. La Cilicia Tracheia/Isauria con i principali siti menzionati nel testo (da Hild & Hellenkemper, 1990).

centri dell'Impero. Lo studio delle ricadute sul piano politico-economico soffre ancora di un'analisi purtroppo parziale, soprattutto in ragione della mancanza di valutazioni organiche di quegli indicatori che potremmo definire di natura economica. Tra questi, l'urbanizzazione, la distribuzione topografica degli insediamenti e la loro organizzazione gerarchica sono sicuramente i più immediati e *diretti*, senza per questo sottovalutare aspetti all'apparenza *indiretti* ma altrettanto funzionali all'analisi, quali per esempio l'articolazione degli spazi urbani, relativamente sia alle costruzioni *ex novo* che a progetti di rifunzionalizzazione e ripianificazione urbanistica; se i dati archeologici evidenziano lo stato di fatto, restituendo solamente gli elementi materiali che risultano dalle attività economiche, solo grazie ad una sovrastruttura interpretativa è possibile inserire tali dati all'interno di un quadro complessivo più puntuale in merito al sistema agricolo e a quello commerciale.

Questo contributo si propone di costituire un primo tentativo di colmare, seppure in fase ancora embrionale, tali lacune in merito ad una provincia relativamente periferica ma al tempo stesso cruciale nel quadrante sud-orientale del Mediterraneo, quale la Cilicia, e in particolare la Cilicia *Tracheia*/Isauria (fig. 1) del periodo tardo romano e protobizantino (IV – metà VII secolo). I diversi percorsi di ricerca di chi scrive (Iacomi, 2008; Cassiani, 2009) hanno consentito infatti, nel confrontare risultati e problematiche analizzate, di riscontrare come i resti monumentali ancora visibili nella regione offrano la possibilità di investigare in maniera privilegiata alcune delle dinamiche di natura, in ultima analisi, economica, che contraddistinsero questa fase.

A dispetto della scarsità di studi di ambito regionale per il periodo preso in esame (si vedano

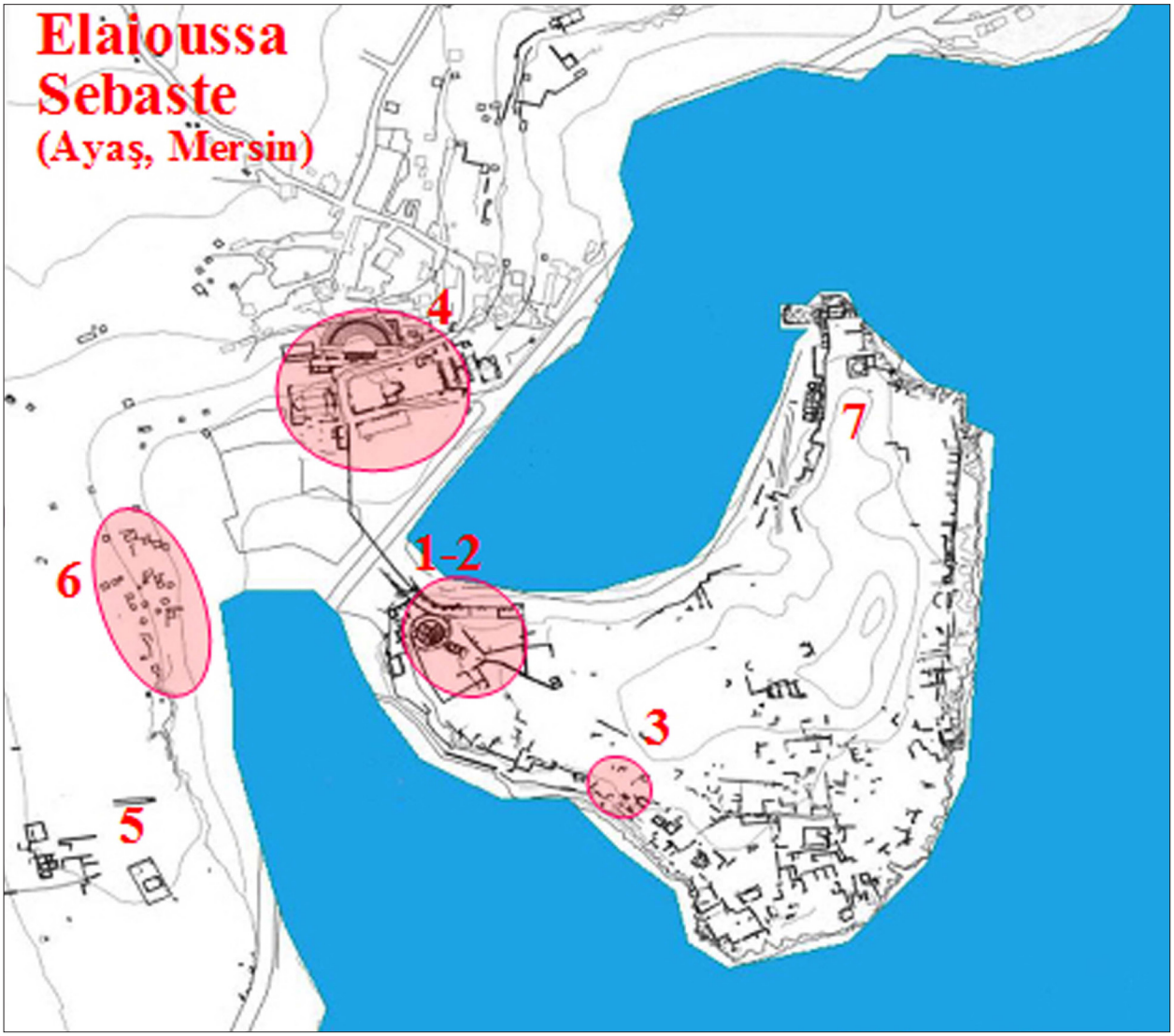

Fig. 2. Elaiussa Sebaste. Pianta degli scavi. 1-2. Il promontorio tra i due porti-il palazzo bizantino; 3. Il quartiere residenziale sul porto sud; 4. Il quartiere pubblico monumetale (agora, teatro, basilica delle Grandi Terme); 5. Il tempio romano; 6. La necropoli sud-occidentale; 7. Terme del Porto.

per esempio Elton et al, 2006; Varinlioğlu, 2013) e di indagini stratigrafiche estensive, ed Elaiussa (fig. 2) rappresenta in questo senso un caso ancora oggi a suo modo eccezionale (Equini Schneider, 1999; 2003; 2010), la regione offre un ricco patrimonio di insediamenti e siti la cui occupazione copre un ampio arco cronologico (catalogo, ormai datato ma indispensabile, in Hild & Hellenkemper, 1990) e la cui varietà monumentale consente una serie di considerazioni di ampio respiro.

Ad un'analisi preliminare, pertanto, ciò che emerge in maniera considerevole è la diffusione di insediamenti urbani e di villaggi (con le dovute cautele nella definizione gerarchica dei siti: Varinlioğlu, 2013) in maniera capillare in tutto il territorio. Apparentemente fu la metà circa del VII secolo, con limitate eccezioni nei siti costieri, a marcare un momento di vera e propria rottura nella continuità insediativa, mentre i secoli immediatamente precedenti sembrano mostrare uno sviluppo continuo e costante dei processi e delle dinamiche già avviati nel periodo medio-imperiale romano e, ancor prima, nel tardo ellenismo e durante il Principato.

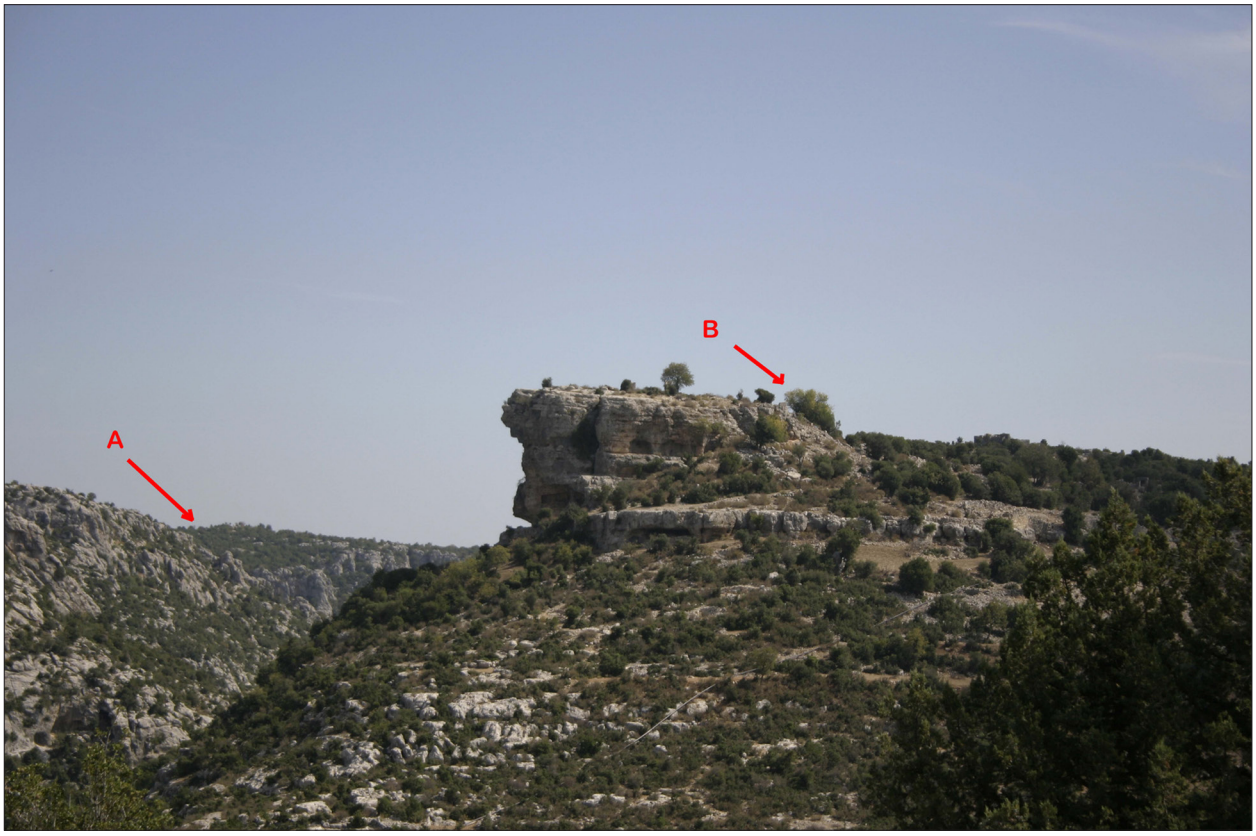

Fig. 3. Meydan Kalesi, a) Necropoli ellenistica, b) Necropoli romana (foto di V. Iacomi).

Un esempio significativo degli indicatori "indiretti" utili alla definizione dei modi dell'urbanizzazione è dato dall'analisi delle necropoli, e in particolare delle tombe rupestri, soprattutto in quei distretti in cui i resti monumentali siano scarsamente riconoscibili (o siano andati altrimenti perduti): è questo il caso della *Tracheia* interna (attuale distretto di Karaman, in antico gravitante intorno alla città di *Germanikupolis*) per la quale una certa rarità di nuclei abitati risulterebbe peraltro giustificabile data l'orografia del territorio (Elton et al, 2006: 301). Al contrario, la presenza non sporadica di necropoli rupestri lascia intravedere un modello insediativo differente, con siti di diversa estensione e importanza politico-territoriale connessi attraverso una rete stradale tanto alla costa quanto alla valle del *Kalykadnos* e all'Anatolia interna. L'urbanizzazione originaria del distretto, variamente inquadrabile all'epoca di Antioco IV di Commagene o in età adrianea (cfr. Iacomi, 2008), proseguì verosimilmente senza soluzione di continuità fino al primo periodo bizantino, quando i maggiori centri dell'area vennero a costituire la c.d. "Decapoli Isaurica" (Hild & Hellenkemper, 1990: 235-36). La stessa localizzazione topografica delle necropoli consente di determinare, sia pure in via ipotetica, il ruolo e la funzione degli insediamenti di riferimento delle necropoli ancora visibili, con centri di controllo territoriale attestati su pianori che dominano i paesaggi più impervi ed agglomerati più propriamente urbani sviluppatisi nelle zone vallive.

Problemi di natura diversa presenta invece il settore più orientale della *Tracheia*, in particolare l'area della valle del *Kalykadnos* (moderno Göksu) e la stretta fascia costiera che prosegue verso est lungo la direttrice che unisce i centri di Silifke e Mersin: i resti monumentali riferibili al periodo preso in esame in questa sede raramente sono stati oggetto di scavi stratigrafici o di studi di dettaglio (Kanytelis: Iacobini, della Valle & Paribeni, 2007; Alahan: Elton et al, 2006) e dunque le

Fig. 4. Fornace per la produzione di anfore LR1 nell'atelier del quartiere residenziale (foto di V. Iacomi).

datazioni proposte fino ad oggi, non di rado basate su tecniche costrutive e confroni tipologici, raramente hanno trovato conferma nel dato stratigrafico. Ciononostante, si riscontra una ininterrotta occupazione dei siti, a fronte tuttavia di cospicui cambiamenti che ne interessarono il tessuto urbano, talvolta con trasformazioni di notevole impatto non solo sul piano monumentale ma anche su quello ideologico e di autorappresentazione delle comunità.

Tra le attività edilizie che ebbero effetti maggiori sul panorama urbano va indubbiamente annoverata la trasformazione dei luoghi cittadini di maggiore rappresentatività alla luce delle mutate condizioni politiche e religiose della prima età bizantina: chiese e basiliche vengono adattate in monumenti più antichi (a Elaiussa, l'agora: Equini Schneider, 2010; la palestra delle Grandi Terme; il tempio romano: Gough, 1954) e in luoghi simbolici della religiosità pagana (Basilica 4 presso la dolina di Kanytelis: Iacobini, della Valle & Paribeni, 2007; Chiesa al *Korykion Antron*; tempio di *Zeus Olbios* a Diocesarea: Wannagat, 2005) ed enfatizzano in una nuova prospettiva antichi percorsi, allora verosimilmente investiti di un inedito ruolo cerimoniale e sacrale (come la strada costiera che univa Elaiussa a Korykos, sebbene il rapporto gerarchico in termini politici ed ecclesiastici tra i due siti non sia ancora del tutto chiarito). Queste attività costruttive devono aver comportato, accanto al consistente e documentabile riuso da spolio, l'estrazione di materiali lapidei *ex novo*; d'altro canto è ampiamente nota, fin dagli studi del Mango, l'abilità tecnica dei capomastri isaurici (Mango, 1966).

In generale, e soprattutto per quegli insediamenti che vantano una occupazione da epoche molto antiche, si assiste spesso alla riorganizzazione topografica secondo una nuova concezione in chiave simbolico-ideologica degli spazi urbani. È questo il caso di Meydan Kalesi, il cui insediamento primitivo, di età ellenistica, è da mettere in relazione al controllo territoriale dell'area da parte

dello stato sacerdotale di Olba: l'intento di massima visibilità ricercato per i sepolcri più antichi, scavati nella roccia e ubicati nella vallata su cui si affacciava la fortificazione ellenistica, pertanto in posizione altamente scenografica e simbolica (secondo modelli ben riscontrabili anche altrove nella regione: Iacomi, 2013a), lascia il passo ad una necropoli assai più modesta per tipologia sepolcrale (semplici *chamosoria* privi di tratti distintivi) e per collocazione (lungo la via di accesso al sito) (fig. 3).

Lo scenario urbano muta profondamente anche in termini di rifunzionalizzazione di interi settori cittadini: si tratta, in effetti, di un fenomeno che è possibile osservare in poche circostanze, vale a dire laddove scavi stratigrafici estensivi abbiano consentito di indagare con continuità lo sviluppo diacronico di singoli comparti o interi quartieri. Come accennato, a Elaiussa tra il IV ed il VI secolo si assiste ad un'evidente riorganizzazione dell'assetto urbano con la riconversione di complessi preesistenti e soprattutto con la costruzione di nuove aree a vocazione artigianale.

L'ampio progetto di riqualificazione comprendeva, tra gli altri, in una delle terrazze del quartiere residenziale lungo la fronte del porto meridionale, la creazione di un *atelier* per la produzione di anfore del tipo *LR1* (da ultimo, Iacomi, 2013b; per la descrizione, Borgia & Iacomi, 2010) che sembra rispondere ad un preciso progetto di pianificazione urbana databile stratigraficamente dalla fine del IV secolo; il complesso produttivo risulta del tutto autosufficiente rispetto ai quartieri residenziali all'interno dei quali è inserito ed è composto da un'area più marcatamente produttiva, con la fornace, circondata da ambienti di lavorazione che rimasero in uso fino all'abbandono databile intorno alla metà del VII secolo (fig. 4).

Nel settore precedentemente occupato dal palazzo bizantino, lungo l'estremità occidentale del promontorio, invece, le indagini hanno rivelato una fase di rifunzionalizzazione dell'area avvenuta nella prima metà del VI secolo, immediatamente dopo l'abbandono e la spoliazione degli ambienti del palazzo, quando venne realizzato un altro *atelier*. L'edificio precedente subì allora modifiche volte esclusivamente a consolidare, dove necessario, le strutture più danneggiate e a facilitare il sistema di circolazione all'interno del complesso produttivo: di fatto, la struttura doveva apparire già fortemente compromessa, tanto che ne venne sfruttato il solo settore occidentale, evidentemente meno interessato da problemi di natura statica. Anche in questo caso l'*atelier* è articolato intorno ad una prima fornace, sostituita alla fine dello stesso VI secolo da una seconda struttura in mattoni e blocchetti di calcare; entrambe furono installate a ridosso della fronte del porto sud e l'intero complesso comprende una serie di ambienti di servizio ricavati all'interno delle sale del palazzo (per una ricostruzione preliminare del palazzo e delle sue fasi, Morselli & Ricci, 2009).

Altre tre fornaci sono state individuate nei dintorni di Elaiussa; la prima si trovava subito al di fuori del nucleo urbano, nei pressi della foce del Paşa Deresi (per la ceramica pertinente alla fornace, Burragato et al, 2007); la seconda si imposta su strutture esistenti nella necropoli d'età romana, progressivamente obliterata a partire dalla fine del IV secolo, sul versante nord-occidentale delle alture che delimitano il sito (in generale, sulla necropoli, Machatschek, 1967: 26, Equini Schneider, 1999: 156; per un'analisi del complesso produttivo Ferrazzoli & Ricci, 2010); una terza è stata individuata ancora lungo la linea della fronte del porto meridionale, in un'area non ancora indagata integralmente.

Tale intervento di riqualificazione urbana può essere spiegato soltanto immaginando, in questa fase, una spiccata propensione artigianale, produttiva e commerciale di Elaiussa, verosimilmente conseguenza di un imponente afflusso di derrate alimentari provenienti dall'entroterra e dal territorio circostante. Già nota nei secoli precedenti per produzioni ceramiche locali e di uso regionale infatti, Elaiussa si afferma in questo periodo quale centro produttivo di anfore del tipo *LR1* e al tempo stesso esportatore di prodotti locali: tali attività si svolgono su una scala inedita e sembrano destinate ad imporsi sui mercati mediterranei in maniera massiccia (sulla diffusione delle anfore *LR1*, argomento ampiamente discusso in molti studi recenti, cfr. per esempio Reynolds, 2005). D'altra parte un

Fig. 5. Impianto di produzione da olio a Kanytelis (foto di V. Cassiani).

aumento della produzione agricola si registra in quasi tutta la Cilicia come dimostrato dalle fonti letterarie ('*palmite viret et frugibus multi*' Amm. Marc. 14.8.1) e suggerito da quelle epigrafiche e archeologiche, a dimostrazione di una pianificazione volta a garantire una razionalizzazione della produzione e più in generale un *surplus* di materie prime destinate al sistema commerciale.

A conferma di ciò possono essere citati i numerosi impianti per la produzione di olio e vino disseminati nel territorio periurbano e nei centri limitrofi (Cassiani, 2009; Varinlioğlu, 2011; 2013); tali complessi, quasi mai oggetto di scavi sistematici, sono per lo più ricavati direttamente nel banco roccioso naturale e dunque difficilmente databili. Altrettanto complessa risulta essere la questione della destinazione d'uso, dal momento che dal punto di vista strutturale gli impianti per la produzione dell'olio e quelli per il vino dovevano essere sostanzialmente molto simili: di fatto sembra ormai del tutto superata la teoria secondo cui l'eventuale presenza di alcuni elementi, quali la macina, sarebbe discriminante nell'attribuzione della funzione produttiva (in particolare: Brun, 1993a: 310; più in generale: Brun, 1993b). D'altra parte, il confronto con strutture analoghe dell'area mediterranea e l'analisi dei dati archeologici, nonché delle fonti storiche, letterarie ed epigrafiche relative alla regione tra V e VI secolo, consentono di formulare alcune ipotesi relative alla gran parte degli impianti di produzione e più in generale alla vocazione produttivo-commerciale di questa parte della Cilicia *Tracheia*. Un primo dato interessante riguarda la distribuzione topografica di tali impianti in relazione alla presenza di centri abitati. Va sottolineato che

l'analisi statistica e distributiva delle strutture non può non tener conto delle difficoltà oggettive di individuazione sul terreno, dovute sia alla tipologia costruttiva – scavate nel banco roccioso – che all'orografia del territorio. Se ad oggi un numero consistente degli impianti individuati sembra concentrarsi all'esterno dei centri abitati, o nelle immediate vicinanze di questi, tale constatazione risente fortemente della mancanza di indagini sistematiche all'interno dei siti urbani, come in parte dimostrato dal caso di Kanytelis dove almeno tre impianti produttivi sono emersi inaspettatamente a seguito di scavi effettuati nei pressi della dolina; i risultati di questi scavi sono ancora in attesa di pubblicazione integrale (fig. 5).

Con la necessaria cautela imposta dunque dallo stato della documentazione, si può presupporre l'esistenza, in particolar modo nella *Tracheia* orientale, di un sistema integrato aree rurali – città costiere, basato sulla produzione nelle prime e sullo stoccaggio e smistamento delle merci nelle seconde, a loro volta proiettate, attraverso il Mediterraneo, nell'articolato sistema delle rotte commerciali transmarine. Gli impianti rurali sono generalmente di piccole dimensioni, fatto che suggerirebbe una produzione di poco maggiore del fabbisogno dei nuclei di riferimento (peraltro, in larga parte sconosciuti nella loro estensione ed articolazione), mentre in ambito cittadino la produzione di contenitori da trasporto conosce uno sviluppo senza precedenti: si deve pertanto presuppore che la città convogliasse su di sé un *surplus* di produzione proveniente da più siti gravitanti nella sua orbita, probabilmente anche amministrativa.

Un altro elemento ancora poco definito ma strettamente connesso al sistema di occupazione, in senso più ampio, del territorio è rappresentato dal metodo di conservazione e di trasporto delle materie prime; resta ancora da chiarire se i prodotti raggiungessero le città già lavorati o se, invece, venissero semilavorati nelle aree rurali e se ne completasse il processo di lavorazione in quelle urbane prima di metterli in commercio. In questo senso, un elemento di valutazione imprescindibile è costituito dal clima torrido della regione, in particolare lungo la costa, in grado di compromettere tanto la fermentazione del vino quanto la decantazione dell'olio. Il sistema viario capillare che percorreva l'intera provincia sin da età imperiale facilitava considerevolmente il trasporto delle merci garantendo, attraverso i numerosi percorsi che dall'interno raggiungevano la costa, spostamenti rapidi e sicuri. Anche in questo caso i dati emersi a Elaiussa sembrano suggerire uno scenario plausibile: poiché in area urbana non sono ancora stati individuati impianti legati alla produzione dell'olio e del vino mentre numerose sono le fornaci, ciò farebbe presupporre che i prodotti raggiungessero la città già finiti o almeno semilavorati e fossero lasciati decantare all'interno dei numerosi grandi catini scavati nel banco roccioso attestati nel sito, in attesa dello stoccaggio e delle successive operazioni di travasamento in contenitori adatti al carico su imbarcazioni. Inoltre le fornaci per la produzione ceramica presenti in città sono per lo più in posizione periferica, a ridosso del porto meridionale e in stretta connessione con il sistema viario probabilmente proprio per facilitare le manovre di carico e scarico delle merci.

Alla luce dei dati presentati in via preliminare in questa sede, sembra evidente che nonostante una innegabile ricchezza di elementi utili all'analisi dell'economia della Cilicia *Tracheia*/Isauria su scala locale e regionale, rimangano ancora da precisare diverse questioni. Se da un lato la continuità del fenomeno insediativo (e in particolare, la presenza di insediamenti urbani) sembra potersi affermare senza alcun dubbio, manca ad oggi un'analisi dei modelli di occupazione territoriale e dei rapporti gerarchici intercorsi tra i siti in termini non solamente politici, ma anche e soprattutto economici e produttivi. Quanto ai settori economici delle attività attestate nella regione, la ricerca archeologica può documentare solo parzialmente ciò che è deducibile da altre fonti, per esempio quelle epigrafiche (Patlegean, 1977; Trombley, 1987); nel loro insieme, tuttavia, dati di diversa natura sembrano indicare una preponderanza dei settori vinario e, in secondo luogo, oleario. Del resto, impianti produttivi per vino e olio, seppur di piccole dimensioni e di difficile datazione, come

si è visto, sono diffusi in maniera capillare, così come le fornaci legate alla produzione di quelle anfore che proprio al trasporto di vino (e olio) erano adibite. Dalla disamina degli elementi raccolti a Elaiussa sembra emergere un ulteriore dato interessante legato allo sviluppo del sistema economico-commerciale che potrebbe essere esteso ad altri distretti della regione, perché se da una parte l'*atelier* impiantato nel quartiere residenziale mostra un'evidente pianificazione, le altre fornaci furono piuttosto il risultato di operazioni edilizie dettate da esigenze impellenti. Il rapido aumento della capacità industriale della città sembrerebbe potersi giustificare alla luce di circostanze al momento solamente ipotizzabili, come un proporzionale incremento della produzione agricola. Un così brusco cambiamento nell'assetto economico della regione potrebbe trovare spiegazione solo ammettendo interventi mirati alla razionalizzazione delle produzioni, probabilmente dettati da necessità di natura economica sovraregionali. Infine, risultano del tutto ignote le forme di approvvigionamento delle materie prime, la cui fornitura deve essersi basata sulle risorse naturali disponibili nella regione: argilla, inerti e acqua per le anfore, legname per le fornaci; altrettanto poco noto è il sistema normativo che doveva regolamentare la proprietà, la gestione e lo sfruttamento di terreni, cave di argilla, foreste e legname in generale. Quanto al trasporto e allo stoccaggio delle materie prime, così come dei prodotti agricoli e dei prodotti finali, le tracce archeologiche sono al momento ancora molto labili.

Per concludere, sulla base delle preliminari considerazioni espresse in questa sede, è intenzione di chi scrive proseguire la raccolta e la rielaborazione di dati utili all'analisi delle attività economiche della Cilicia *Tracheia*/Isauria nel periodo preso in esame: pur con le obiettive difficoltà nel precisare alcuni aspetti, in particolare in relazione alle dinamiche economiche dell'intero quadrante orientale del Mediterraneo, il sistema economico della regione nella prima età bizantina viene via via delineandosi nei suoi tratti generali, evidenziando l'innegabile ruolo che le città cilice svolsero nell'ambito dell'impero, così come suggerito anche da documenti epigrafici quali l'Editto dei Prezzi (Cassiani, 2009) o la Tariffa di Abydos (Iacomi, 2010; corso di stampa).

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An Imperial Town in a Time of Transition. Life, Environment, and Decline of Early Byzantine Caričin Grad

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Abstract

The site of Caričin Grad in south-eastern Serbia – currently listed on UNESCO's tentative list – has been the subject of archaeological investigations for more than 100 years. For the last decades it has been the focus of a joint project of the Archaeological Institute in Belgrade and the École Française de Rome. A reconstruction of the economic, environmental and social history of the city is the main objective of a cooperative project started in 2014 with the Römisch-Germanisches Zentralmuseum Mainz.

The remains of the early Byzantine complex of Caričin Grad show the features of a city built in the classical, Hellenistic-Roman tradition, combined with ecclesiastical Christian architecture. Based on the comparison of Byzantine text sources with the settlement's topography and its architecture, Caričin Grad is supposed to be identical to Iustiniana Prima, a city newly founded by the Emperor Justinian as the region's episcopal and administrative centre.

With the period of occupation covering a mere 90 years, from circa AD 530 to circa AD 615, the site allows a rare archaeological "snapshot" of a short period of very intensive use, which furthermore remained undisturbed from later encroachments. Due to these circumstances, Caričin Grad offers the unique opportunity to analyse a city at

the turn of the Late Antique era to the Early Medieval epoch and the complex issues associated with periods of cultural transition.

Based on the perspective of human ecology and social sciences, the project will establish new approaches and investigate the concept of "The Short Life of an Imperial City" during periods of cultural transition by using methods of archaeozoology, archaeobotany, geoarchaeology, soil science and GIS.

The main topic addressed within this context, "Households, consumption and everyday life" will deal with single domestic units concerning methods of production, consumption and activity zones regarding comestible goods. This perspective on the town and its consumption will be complemented by a viewpoint on the surrounding landscape focussing on its resources and agrarian production.

Keywords: Urban Archaeology, Household Archaeology, Ecological Archaeology, Environmental Archaeology, Late Antiquity

Introduction

Caričin Grad is a prominent late antique site in the Central Balkans. Based on the comparison of Byzantine written sources with the settlement's topography and its architecture, Caričin Grad is supposed to be identical to Iustiniana Prima, a city newly founded by the Emperor Justinian as the region's episcopal and administrative centre (for this debate see Snively, 2001). The town itself is divided in an acropolis with the episcopal basilica and palace, an upper, and a lower town with some newly discovered suburbs (Bavant, 2007; Duval & Popović, 2010). With the period of occupation covering a mere 90 years, from around AD 530 to AD 615, the site allows a rare archaeological "snapshot" of a short period of very intensive use, which furthermore remained undisturbed from later encroachments.

Perspectives

Therefore, Caričin Grad offers the unique opportunity to analyse a city at the turn of the Late Antique era to the Early Middle Ages and the complex issues associated with periods of cultural transition. Hence, the main objective of the new project "The Short Life of an Imperial City" is to reconstruct different aspects of the city's economic, environmental and social history and to understand the town as a human ecosystem.

Households, Consumption and Everyday Life

A first, town-centred part of our research deals with domestic units concerning consumption, methods of production and activity zones regarding comestible goods. As a case study the first campaign in summer 2014 focused on a small 18 sq m, rather simply built and modestly equipped building, directly outside of the acropolis' fortification. The small house, called "Building 23", had a loam floor and a small fireplace which was probably aired via a chimney. The find of a sickle blade indicates amongst other finds a background in agriculture. Technically we adopted excavation strategies by consequent single point measurement, systematic soil sampling and GIS-implemented 3D photography. We investigated destruction and occupation layers in order to gain archaeobotanical, archaeozoological as well as data from soil analyses, which will provide some insights in daily life activities.

Resources for Building and Maintaining Caričin Grad

Questions of energy needs, nutrition and other supplies connect the small-scale household perspective to landscape archaeology in the surroundings of the town. Based on an existing 3D reconstruction, the amount of material needed for the construction of the city will be estimated. Detailed excavations will provide data for con-

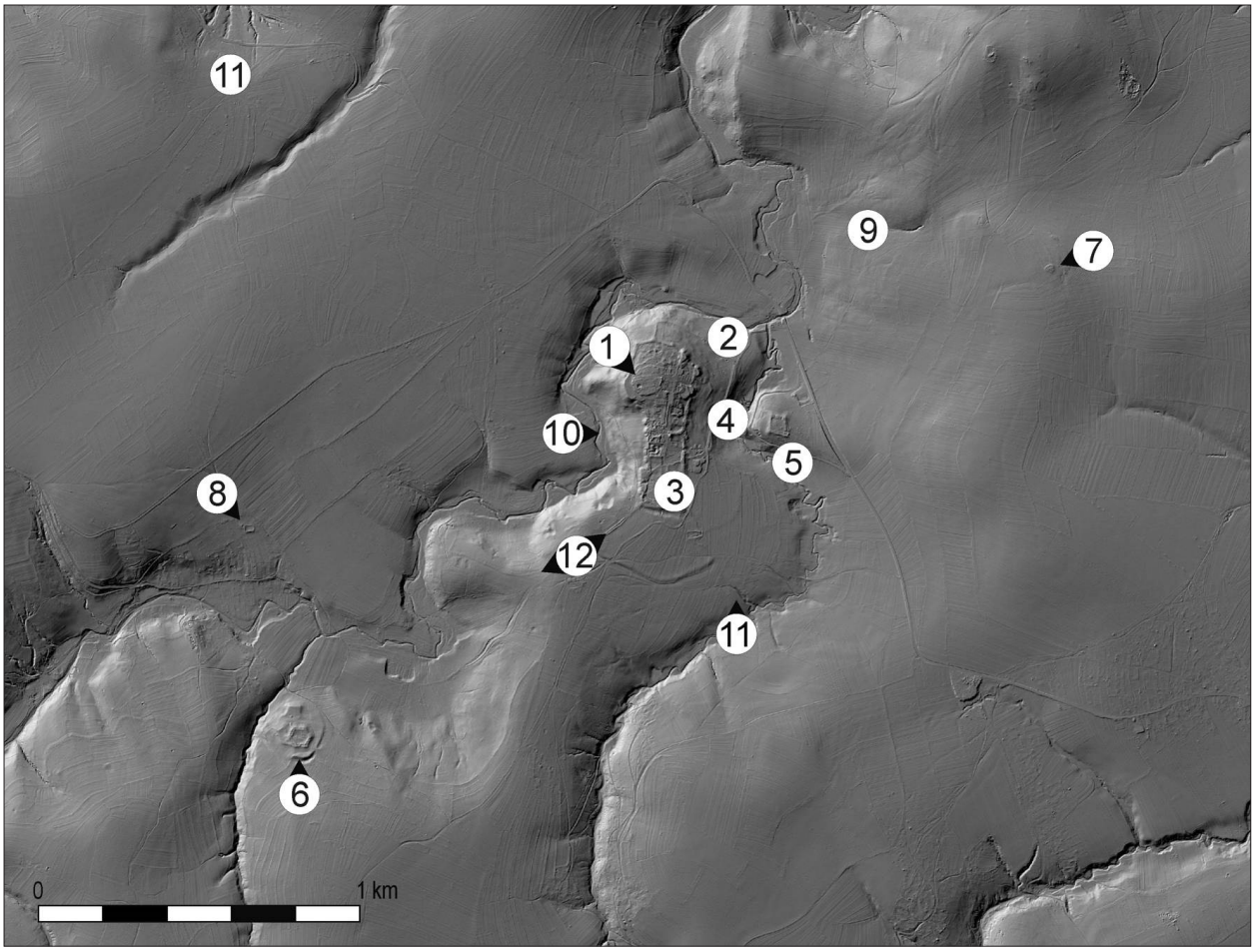

Fig. 1 LiDAR-Scan of the surrounding of Caričin Grad: 1 acropolis, 2 upper town, 3 lower town, 4 dam, 5-7 fortifications, 8 church, 9 agrarian fields, 10 kiln, 11 erosion gullies, 12 aquaeduct (by ArcLand.eu, 2011).

sumption at a small scale. This perspective of consumption is complemented by a perspective of production looking beyond the limits of the town. Targeted surveys deal with the pattern of agrarian production and mining. An approach of site catchment analysis looking for landscape potential and resources is complemented by an archaeological landscape assessment, looking for actual traces of past land use practices.

Archaeological Landscape Assessment

In addition to the research within the town, we also work on understanding the sixth century's landscape, as there are some indications for an intensification of land use during this century. Besides some early Byzantine churches in the surroundings of the town we know several kiln sites. One of these, in the valley below the acropolis, is buried by accumulated sediments which will be analysed in the course of the project. A LiDAR-Scan, provided by the EU-funded ArcLand project (fig. 1), shows many landscape details such as erosion gullies, fossil agrarian terraces indicating past landscape changes. Targeted surveys will evaluate known archaeological sites of Roman *villae*, Byzantine churches, mining activities, old roads and hollow tracks, and fortifications in the surroundings of Caričin Grad (Stamenković, 2013; Ivanišević & Stamenković, 2014).

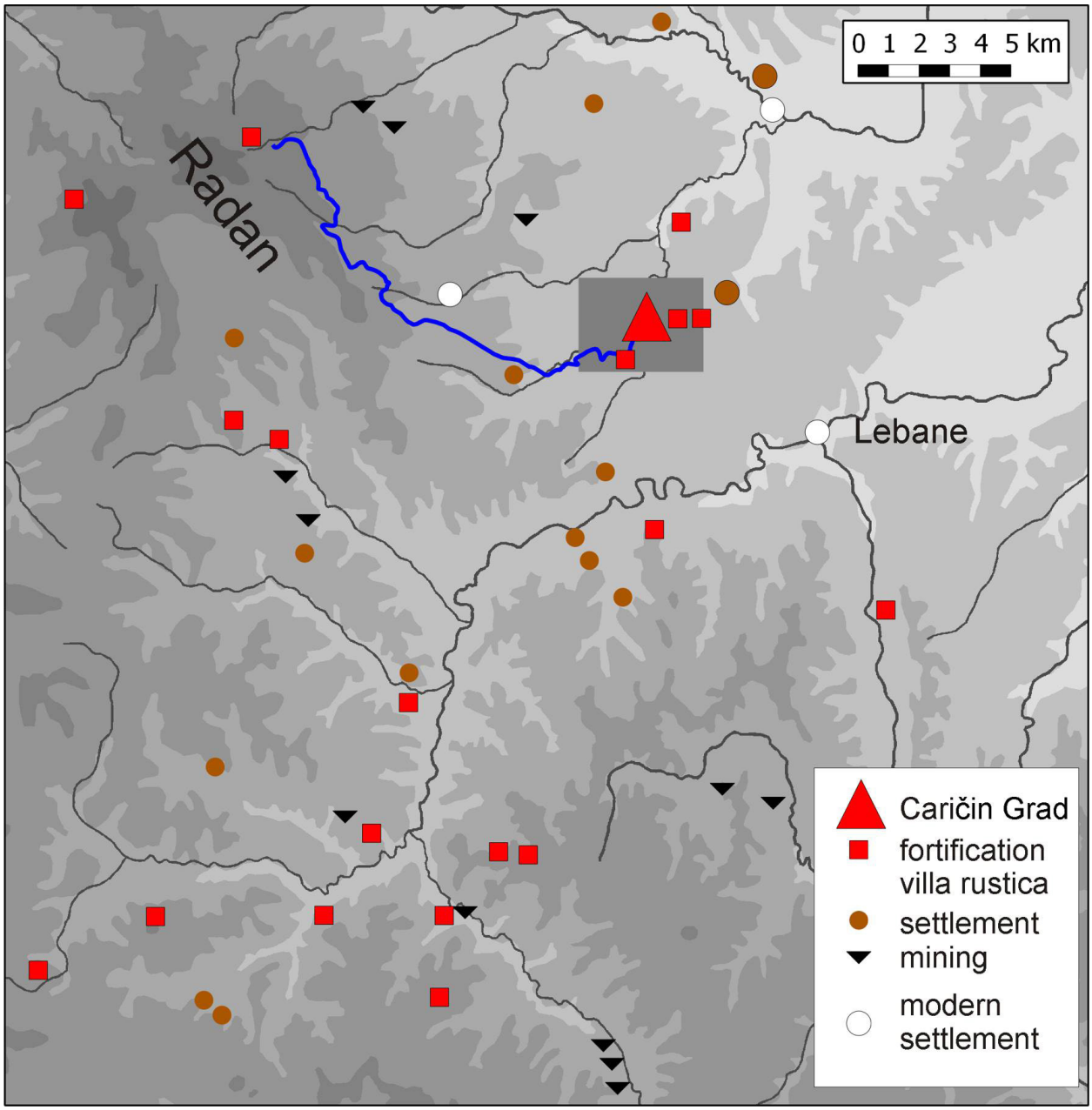

Fig. 2 Roman and late antique settlement in the surrounding of Caričin Grad after Stamenković 2013.

The location of the town was probably rather far from the Roman traffic routes following the Morava valley in 20 km distance. The region around Caričin Grad provides, however, fertile agricultural land as well as various ores. In the Radan mountains, around 10 km to the west, there was Roman mining activities, probably mainly of silver and lead, but little has been researched so far. The remains of mining activities were recognised in the whole area of the southwestern part of the Leskovac basin, ascertained in some villages south of the Radan mountains, such as Ravna Banja and Marovac (fig. 2). This region is mostly known by its mining zones, from prehistory to today. Historical sources and archaeological evidence, so far, indicate well organised mining activity in this part of the Leskovac basin in Roman times (Stamenković, 2013).

Fig. 3 Caričin Grad and the Radan mountains, view from the east (photo: RGZM).

On the other side, besides mining as certainly one of the most important economic activities in this area, the hilly landscape (fig. 3) provides a remarkable agrarian potential, used since Neolithic times. Further research at Caričin Grad aims for a rough calculation of the expanse of agrarian fields and attempts to identify relics of the Byzantine cultural landscape. The positions of some villages in the immediate vicinity of Caričin Grad indicate the possible existence of Roman villae rusticae. Two stone presses from the village of Vrbovac could have been used for making wine (Stamenković, 2013).

A Byzantine brick kiln down in the valley below the town, excavated in the 1970s (Jeremić, 2010) and buried by alluvial clay, provides first indications of an intensive agricultural land use around the town. Erosion gullies may be seen in the same context. Geoarchaeological research will help to evaluate human impact during the town's short existence.

Excavations

Archaeological excavations on the northern slopes of Caričin Grad provide an important picture of the economic and non-representative architecture of the city. Situated between the Acropolis rampart and the northern defensive wall of the city, the western part of this area was structured by at least eleven small buildings, divided by corridors and small passageways leading up to the acropolis, and arranged in a predominantly radial layout. In stark contrast, this area diverges from the other areas outside the primary perimeter which follow the linear arrangement applied within the classical layout of the city.

Archaeological research shows that two of the buildings (11, 15c) were used for storing fruits. In building 11 a lot of walnut shells were found and in building 15c lots of wild pears were detected. They were placed in ceramic vessels, mostly in *pithoi*, the latter aspect being confirmed by the amount of pear pits discovered inside one of them. During the excavation of building 15c, it was decided to investigate a part of the corridor east of it. This resulted in the discovery of a furnace made of brick with a stone foundation. Grains of wheat suggest that it was an oven used for baking bread.

The excavations of building 18, a somewhat bigger estate with a courtyard, adjacent to the northern rampart of the Acropolis, could possibly be assigned to a military owner, due to the finds of several arms.

One of the small scale domestic units, building 23, directly at the rampart, was chosen for a detailed analysis in anticipation of a well preserved stratigraphy. After removing the destruction

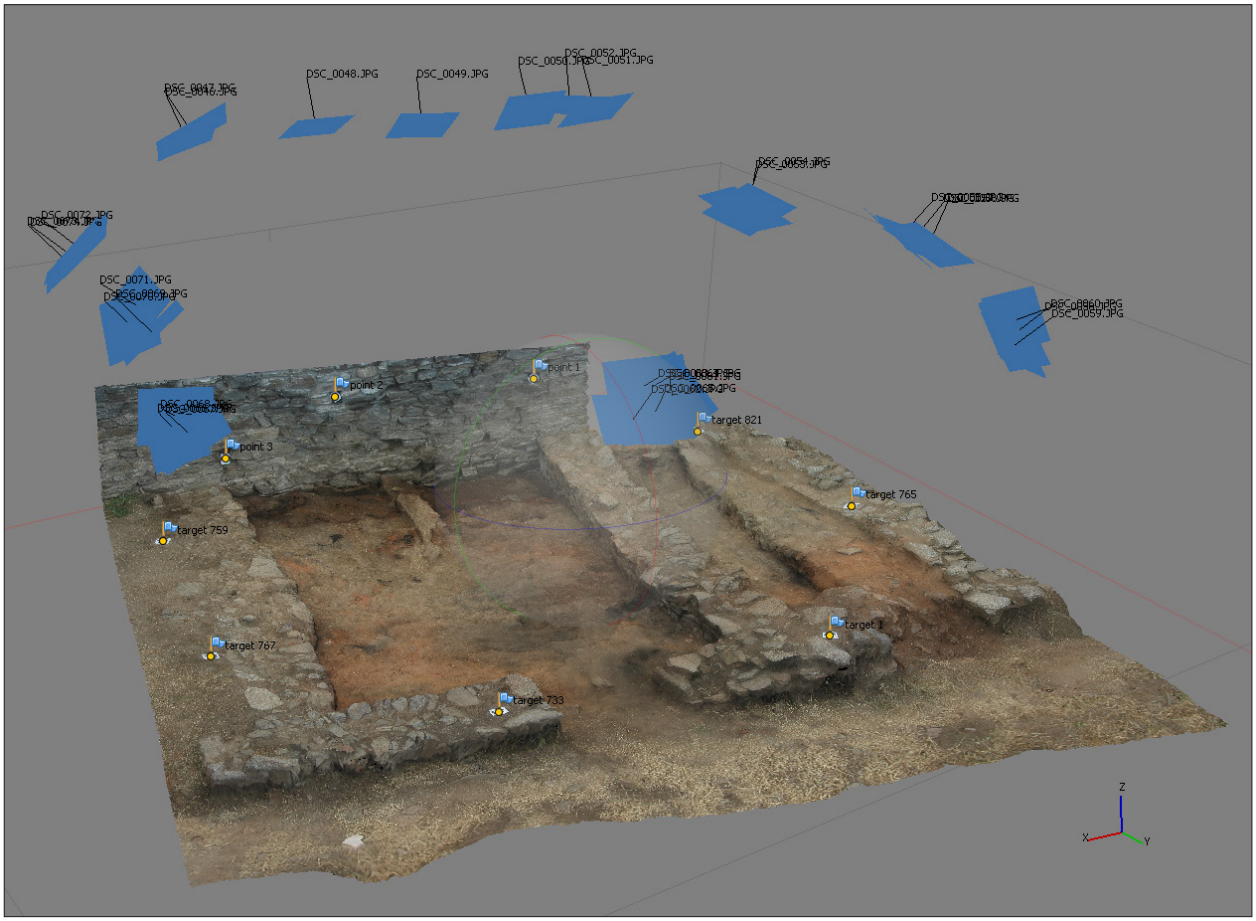

Fig. 4 3D-documentation (structure from motion, elaboration empowered by Agisoft) of building 23 (RGZM, Archaeological Institute Belgrade).

layers, which contained traces of subsequent use and the possible remains of an upper floor, a tile constructed fireplace and a canal were discovered in the house. The excavations also included the interspace between the buildings 23 and 25. The interspace was filled with a considerable amount of finds compared to the finds within building 23 and their distribution in fact indicates a waste deposit and thereby secondary use. Finds from building 23 include - *inter alia* - sherds of *pithoi*, several knives and a sickle, a buckle, a snaffle and a coin which dates to the early sixth century. The excavation included sampling for archaeobotanical, archaeozoological and soil scientific analysis.

The *horreum*, built in *opus mixtum*, is probably the oldest building on the northern plateau of the Upper Town, belonging to the initial construction phase of the town. From what we know so far, the 28.5 m by 12.5 m large building underwent a series of modifications in the later stages of the town's history. It is likely that it had lost its original public function which could testify to important changes in the economy in the late sixth century. South of the *horreum* there was an open space excavated in the 1950s. The 2014 campaign also revised these excavations and uncovered a series of small channels for drainage which give some insights of the infrastructure of the town.

The eastern part of the Upper Town shows a different picture. Buildings in this area are orientated in the southwest-northeast direction in linear arrangements indicating a planned layout following the main north-south axis of the city. Ongoing excavations made it possible to compare

buildings from these two different 'units' of the northern Upper Town, which indicated the economic function of this whole area. Furthermore, there are some possibilities for comparisons with the economic buildings in the Lower Town, excavated earlier (Ivanišević, 2010).

Methods

Excavations in the different parts of the town are being sampled for animal bones, botanical macroremains and soil samples. Detailed studies in building 23 provide further references due to a higher resolution of sampling, single point measurements of all archaeological finds and special attention to the formation processes of the archaeological record (fig. 4). Excavation techniques have specifically been adapted to the needs of soil sampling, in order to gain reference samples from levels 5 and 10 cm above the floor of the house. Documentation uses single point measurement of all finds by a total station and a photographic documentation by "structure from motion" allowing a direct integration of all data within a GIS.

Due to recent technological developments, methodology and documentation of archaeological excavations have undergone technological advances, enabling a uniform system of documentation based on GIS. Therefore, a database for the archaeological site of Caričin Grad based on free GIS-software solution packages had been made that provides the ability to create a virtual space and its reduction in a two-dimensional or three-dimensional data model. This offers answers to specific groups of questions. Used as the basis of this database have been topographic, geology and soil maps, orthophotos, data obtained by LiDAR, terrain elevation models, aerial images, geophysical scanning, cadastral maps, and digitised plans from previous excavations. All data are georeferenced. Besides these data, the reconstruction and georeferencing of data from old archaeological excavations in Caričin Grad has been undertaken. The application of the geographic information systems allows us to visualise, analyse and interpret data from the urbanism of the city to the distribution of small finds.

Archaeobotany

The aim of the archaeobotanical investigation is first to get knowledge about the diet and consumption of the inhabitants of the town. Which species were cultivated and which were economically significant? The weed spectrum can answer questions on agricultural techniques and the quality of the soil of the arable land. Using that, it is interesting to try to assess to what extent the inhabitants of Caričin Grad were involved in agricultural production. Is it possible to find out if they were mainly consumer or producer and to which extent trade activities were important? The detection of activity areas according to processing and stock-keeping is also important. Social differentiation is also a question as well as the development from the beginning to the end. Furthermore, it is important to find out if the crop spectrum is typical for the time and region or if there is any evidence of influences on diet by, for example, the indigenous population or other groups.

During the excavation seasons 2013/2014, 116 soil samples for archaeobotanical analysis were systematically taken from occupation layers of different structures of the Upper Town area north of the acropolis and from four towers of the fortification of the acropolis. Beside the systematically taken samples, 36 hand-picked samples from previous excavations in the Lower Town and Upper Town area were available for analysis. All samples were flotated, using a flotation machine with closed water circulation and a 300 µm mesh sieve. A total of 2963.25 litres of soil was processed in 2013 and 2014. The further processing of the samples took place in the Institute of Pre- and Protohistoric Archaeology of the Christian- Albrechts-University, Kiel. All macroremains are preserved in charred condition, with a total amount of more than 70,000 remains up to now. The concentration of findings is rather low with 6.4 finds in

Fig. 5: Whole charred walnut (Juglans regia) from a storage context in the Upper Town Area (photo by authors).

one litre of soil.

The plant spectrum is dominated by crop plants, wild plants are underrepresented. Most of the cultivated plants belong to nine detected cereal species. Cereals are mostly represented by grains, chaff, stems and culm nodes are rare. The most common species were bread wheat (*Triticum aestivum*), broomcorn millet (*Panicum miliaceum*) and rye (*Secale cereale*). Six-rowed barley (*Hordeum vulgare* var. *vulgare*), two-rowed barley (*Hordeum distichum*), einkorn (*Triticum monococcum*), emmer (*Triticum dicoccum*), oat (*Avena sativa*), and spelt (*Triticum spelta*) are represented in only small proportions or as single findings. The bulk of the cereal grain findings, especially bread wheat and broomcorn millet, belongs to the hand-collected samples from the Lower Town area, which originate from storage facilities. Unlike the cereal spectrum of the Lower Town area, the spectrum of the Upper Town area, represented by mixed deposits from settlement layers, is clearly dominated by rye. In addition to rye, broomcorn millet and bread wheat are also common.

Legumes are represented by six taxa, but in relation to the cereal findings only few are preserved, because legumes normally are badly preserved in charred condition. Taxa found are: broad bean (*Vicia faba*), common vetch (*Vicia sativa*), lentil (*Lens culinaris*), pea (*Pisum sativum*), chickpea (*Cicer arientum*) and bitter vetch (*Vicia ervilia*). The majority is represented by broad bean from storage facilities of the Lower Town area. Common vetch and bitter vetch normally were not used for human consumption but primarily as animal fodder. Especially bitter vetch can be toxic for humans, pigs and horses, but not for sheep, goat and cattle. To remove the toxic bitter compounds they must have been cooked or soaked in water before consumption. Most of the fruits of common vetch were found in Tower C and D of the fortification of the acropolis, an indicator that animal fodder could have been stored in these two towers. In the Upper Town area, lentil and pea are the most common legumes.

In addition to cereals and legumes, a lot of collected and cultivated fruits and nuts were found. Most important are grape vine (*Vitis vinifera*), walnut (*Juglans regia*) and wild pear (*Pyrus* sp.). Abundant finds of small underdeveloped pips of grape vine indicate the cultivation of common grape vine (*Vitis vinifera* ssp. *vinifera*). Grape vine is the most abundant crop species in Caričin Grad, fragmented or whole pips were found in more than 50 % of all samples. But also fragments of shells of walnut are abundant with 40 % in all samples (fig. 5) . In addition to these three species, seeds and fruits of wild collected plants like peach (*Prunus persica*), raspberry (*Rubus ideaus*), blackberry (*Rubus fruticosus*), strawberry (*Fragaria* sp.), cornelian cherry (*Cornus mas*), black elder (*Sambucus nigra*) and cherry plum (*Prunus cereasifera*) were found. In addition, the finds of fig seeds (*Ficus carica*) and olive (*Olea europea*) indicate trade activities.

Archaeozoology

The main objectives of the archaeozoological investigation, carried out in a close Serbian-German cooperation, were to reconstruct the diet in different parts of the city, the animal husbandry strategies, the artisan use of animal raw materials

(e.g. bone and antler) (Marković & Stamenković, 2014: 24) and the exploitation of wild animals. The latter is a good indicator for activity zones outside the city walls as well as for trade connections (e.g. Danubian or sea-fish).

The spatial distribution of the bone finds, supported by GIS, can be used to attempt a mapping of animal origin material cycles within the city. For this purpose, an attempt will be made to identify waste complexes stemming from different processes, e.g. butchery, artisanship, and the preparation of upscale or common meals. These analyses contribute to the first research question of the interdisciplinary project, i.e. households, consumption, and diets.

The evaluation of the wild animal spectra with respect to activity zones as well as the indications the livestock spectrum gives concerning applied animal husbandry strategies is crucial for the second research question, which is dedicated to the erection and maintenance of the city. Within this field, another important issue will be the exploitation of animal labour in the city and its surroundings, for agricultural as well as for transportation purposes. As comparably numerous camel bones have been identified so far, this does not only apply for cattle and equids but also for these rather exotic labour animals in this area. Finally, we shall try to detect diachronic changes in animal use that can at best be ascribed to altered economical, social, or ecological circumstances during the short existence of the city.

Soil Science

The excavation of building 23 and the adjacent areas was adapted to allow dense soil sampling. Soil samples were collected from the original floor and underlying layers. Additionally, samples were collected from the debris above the floor. Samples from this debris were collected to investigate post-abandonment leaching of substances from these layers into the original floor.

Ongoing soil analyses include methods already established in the context of archaeological excavations as well as some more recently developed analyses. Classically, phosphate was analysed in soils to detect ancient human activities areas (Eidt, 1977; Bethel & Máté, 1989; Woods, 2003; Holliday & Gartner, 2007). Phosphorus is suitable for the analysis of human material deposition because of its universal association with human activities (Eidt, 1977). Due to instrumental developments in the last decades, simultaneous analyses of several elements in soil extracts were facilitated. In this way, multi-element analyses were used in an increasing number of studies to analyse anthropogenic inputs (Linderholm & Lundberg, 1994; Middleton, 2004; Wilson, Davidson & Cresser, 2008; Oonk, Slomp & Huisman, 2009). Analyses of several elements in addition to phosphorus can deliver hints about the kind of the material deposited. In Caričin Grad, activity areas are divided by mapping of phosphate concentrations. Mapping of phosphate concentrations is compared with mapping of the total concentrations of several elements.

In selected samples biomarkers are analysed that are characteristic for organic material deposited by human activity. So the input of animal remains in soils at archaeological sites was investigated e.g. by analyses of fatty acids and steroids (Morgan et al, 1983; Nolin, Kramer & Newman, 1994). Especially, biomarkers are analysed in samples from Caričin Grad that allow identifying latrines and animal husbandry. Faecal deposition to soils and terrestrial sediments can be traced by 5ß-stanols (Bethell, Goad & Evershed, 1994; Bull et al, 1999; 2002). Their high stability also permits their application in an archaeological context (Evershed & Bethell, 1996; Bull et al, 1999; 2002). 5ß-stanols originate mainly from microbial reduction of Δ5-sterols in the gut of mammals. Δ5-sterols (e.g. cholesterol and b-sitosterol) are widespread substances in animal and plant membranes. 5ß-cholestan-3ß-ol (coprostanol) is the most abundant reduction product of Δ5-sterols in the faeces of omnivores, while high amounts of 5ß-stigmastan-3ß-ol occur in the faeces of herbivores. Using this difference, 5ß-stanols patterns can be used to gain information about the origin of faeces in environmental samples (Bethel, Goad

& Evershed, 1994; Evershed and Bethell, 1996; Leeming et al, 1997). Bile acids deliver more detailed information about the source of faeces than stanols (Evershed and Bethell, 1996; Bull et al, 2002; Tyagi, Edwards & Coyne, 2008). Therefore, especially stanols, Δ5-sterols and bile acids are analysed in this project to identify areas of faecal deposition, animal husbandry and which animals were kept in Caričin Grad.

Creating a Synthesis

Excavations at Caričin Grad started 100 years ago. The three years' term project funded by the German Leibniz-Association brings together researchers from Serbia, France and Germany. This international and interdisciplinary research has high potential for new ideas that change our view of Late Antique / Early Medieval urbanism and lead to an overall perspective on the city's resource management and methods of maintenance. In addition to the long-lasting interest in architectural planning of the town and its representative buildings and more recent approaches to deal with the economic aspects of urban life, the project aims to understand the town in terms of urban ecology, questioning the impact of the town on its surroundings.

Data from these various disciplines will be integrated into an all-encompassing interpretation using perspectives of ecological and social archaeology. This leads us to new research questions concerning the role of production and consumption for the development of the town, the role of people mainly involved in processes of subsistence; their social practice for the development of the town and the role of land use practices for the subsistence of the town and landscape changes.

Already there is evidence for an impact on the landscape by the establishment of the town. Furthermore, there are several hints from archaeology as well as from botanical data indicating a ruralisation of the town of Caričin Grad during its short existence. Approaches of social and ecological archaeology will help to gain a better understanding of the short life of the imperial town *Iustiniana Prima*.

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Recapturing the Dynamics of the Early Byzantine Settlements in Crete: Old Problems – New Interpretations through an Interdisciplinary Approach

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Abstract

This paper presents the methodological framework and the first results of a project launched in 2014 entitled *Recapturing the Dynamics of the Early Byzantine Settlements in Crete: Old problems – New Interpretations through an Interdisciplinary Approach*. Through an interdisciplinary approach, combining a careful reading of historical and archaeological evidence with the spatial analysis offered by the application of new technologies in archaeological research, the project highlights the developments of Cretan settlements from the fourth century to the early ninth century. In particular, we will examine the data categories and discuss how they are brought together for analysis in a Geographical Information System.

Keywords: Crete, Early Byzantine Period, Settlement History, Remote Sensing, GIS

Introduction

Recapturing the Dynamics of the Early Byzantine Settlements in Crete: Old problems – New Interpretations through an Interdisciplinary Approach is the title of a research project launched in 2014. With an interdisciplinary approach, combining a careful reading of historical and archaeological evidence with the spatial analysis offered by the application of new technologies in archaeological research, the project attempts to highlight the changes in Cretan settlements from the fourth century to the early ninth century. The main goals of the project are the detection of the network of Cretan cities and their territories and the investigation of the different types of settlements and their interdependence with micro-geographical features.
A methodological approach which considers the geographical and environmental context of settlements as one of the determining factors for the interpretation of complex historical phenomena goes back to the issue of environmental determinism which has influenced both classical and prehistoric archaeology (cf. Förster et al, 2012: 171-72). Owing to its recent development as a discipline, Byzantine landscape archaeology has not experienced the conflict between processual and post-processual archaeologists seen in other disciplines. In Greece in particular, only in the last two decades has landscape archaeology been developed thanks to a number of important regional surface surveys (Bintliff, 2013). Without historiographical tradition, and without historiographical weights, Byzantine archaeologists in Greece began to explore the landscape as the cultural product of the interaction between humans and their environment under continuous transformation. To what degree the historical developments of the Byzantine settlements are linked with their physical

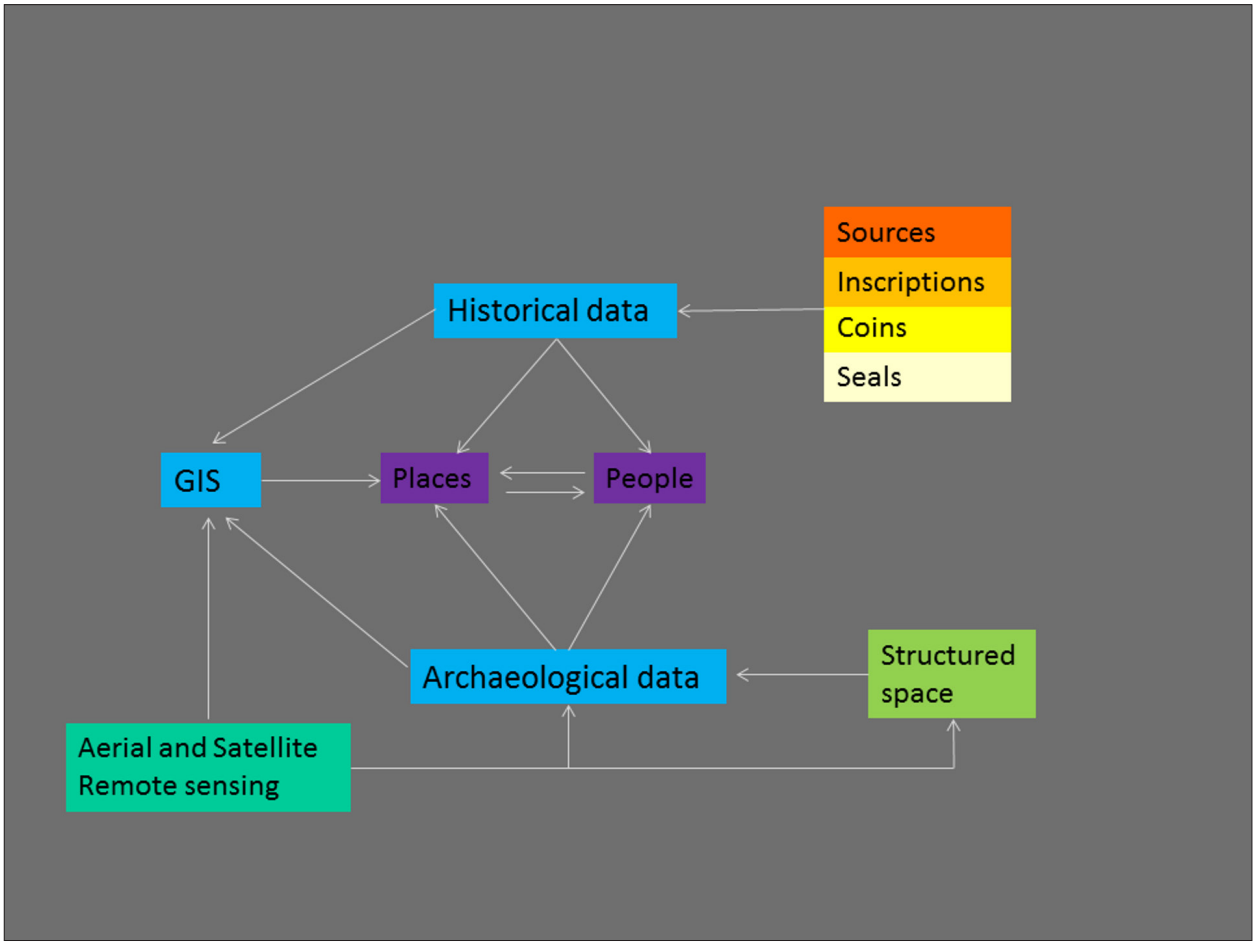

Fig. 1. Conceptual schema of the project.

location is a completely new question, open to discussion.

During the long time period covered by the project, major changes in political, social and economic life influenced settlements in terms of both their form and function. A crucial question is how to understand why certain settlements survived the crisis of the seventh-eighth centuries, while others disappeared forever. Given the "global", rather than local, nature of the crisis of the seventh-eighth centuries, the integration of the micro-regional analysis of the Cretan landscape in a wider Mediterranean and insular framework is required.

Crete from the Fourth Century to the Arab Conquest: the Historical and Geographical Context

Crete was fully integrated in the maritime military and trade routes given its strategic position in the unified Mediterranean Sea. This sea surrounding the island, connected it with, but also isolated it from, the outside world. Attempts to detect a Mediterranean insular system during the Early Byzantine period revealed useful comparisons between Crete, Cyprus and Sicily (Zanini 2013a). The island seems to have enjoyed a long period of peace and prosperity from the first century BC until the first half of the seventh century AD (Cosentino, 2013). On the other hand this stresses how different the history of Crete is when compared with other regions of the Byzantine Empire. The island did not suffer from invasions similar to those inflicted on the Balkans, nor did it experience the serious consequences of the Byzantine-Persian wars on

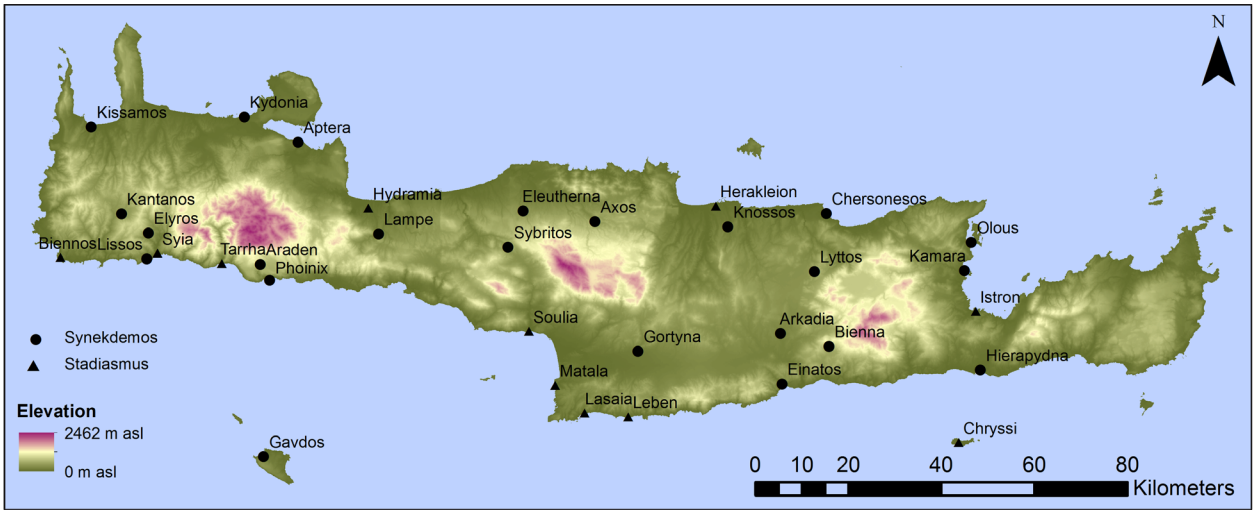

Fig. 2. Crete. Cities and important settlements mentioned in Synekdemos and Stadiasmus that have been identified on the ground (map by K Armstrong).

the eastern borders of Empire. Crete belatedly entered a period of crisis when compared to other Byzantine provinces. The main reason for this crisis was the rapid spread of the Arabs through the eastern Mediterranean basin. The island was eventually conquered by Arabs around 824 (Christides 1984) and ceased to belong to the Byzantine Empire for almost 150 years. It returned to Byzantine authority only in 961. The Arab conquest constitutes an absolute break in the periodisation of the island's history.

Crete is characterised by a wide variety of landscapes. Apart from long miles of coast, mountain ranges, such as Psiloritis, the White Mountains and the Mountains of Lassithi, occupy approximately 52% of the island and constitute the main geographical feature of the Cretan landscape. Plains occupy a mere 3.6% (Chaniotis, 1999: 181). Between the coast and the mountains, the landscape is defined by hills, valleys, plains, plateaus and gorges. According to a widespread view, the fragmentation of the landscape, with dominating mountains which isolate several areas, probably determined the organisation of Cretan populations into several autonomous cities in antiquity. Such an interpretation of urban organisation echoes the concept of landscape settlement chambers (Siedlungskammer) with micro-regions well-defined by physical constrains; the latter was proposed in the pioneer study of H. Lehmann regarding the long-term history of settlements of eastern Crete (Lehmann, 1939. Cf. Farinetti, 2011: 5-11).

The main geographical distinction lies between coastal and inland settlements although many significant differentiations in the micro-geography of both coastal and inland settlements can also be detected. Kissamos, Kydonia, Chersonesos and Hierapydna were important *poleis* and ports with fertile plains in close proximity and enjoyed easy communication routes with the interior. To the contrary, a group of settlements along the south coast of Crete, such as Syia, Lissos, Tarra, Phoinix and Einatos, faced exclusively towards the sea, while isolated from the interior by steep mountains that limited communication routes. After the shrinkage of "globalised" Roman commerce, the isolation of these southern coastal settlements seems to have been absolute and to have led to their permanent abandonment.

This development of the coastal settlements does not exclude a parallel development of inland cities. The completion of the Cretan road system under Hadrian gave impetus to the development of inland cities sited close to major routes. The case of mountainous or half-mountainous cities, such as Syvritos, Lampe, and Eleutherna, is typical: like

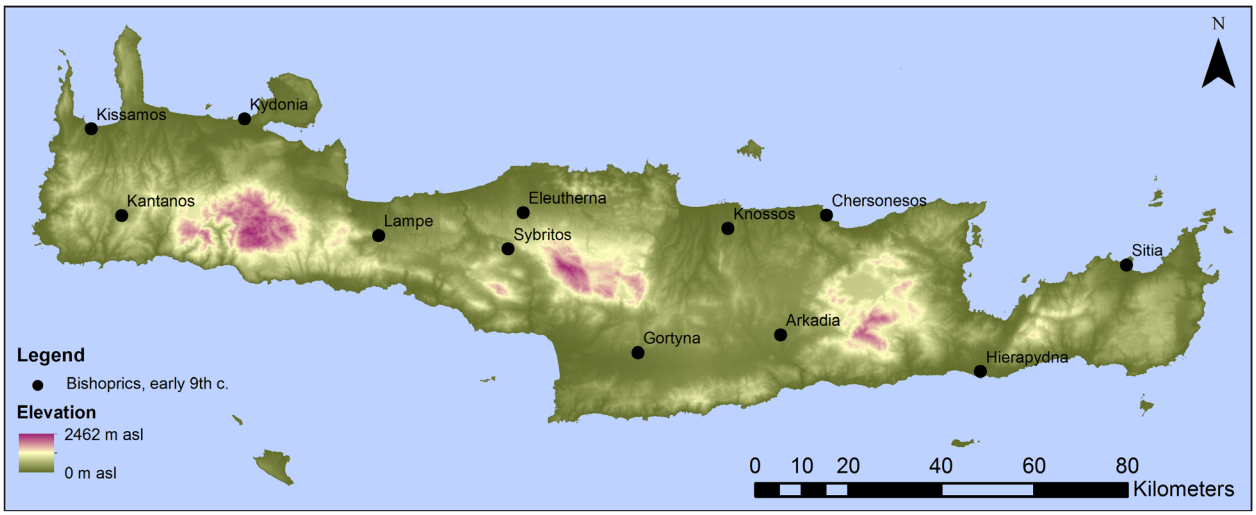

Fig. 3 Crete. Bishoprics in the early ninth century, as mentioned in *Notitia Episcopatuum 3* (Darrouzès, 1981: 235; map by K Armstrong).

the majority of inland cities, they were situated at an altitude of 300-400 m above sea level. Their economy – based on agriculture, animal breeding, beekeeping, timber and herb-gathering (Chaniotis, 1999) – allowed them to enjoy the status of economic self-sufficiency even in times of crisis (Tsigonaki, 2007: 264-65).

Project Goals and Methodology (fig. 1)

Historical Data Retrieval

The first thread of the project is a systematic retrieval of all of the historical information available. The retrieval of, and commentary upon, historical sources has already been attempted by earlier scholars, such as D. Tsougarakis and A. Bandy (Bandy, 1970; Tsougarakis, 1988; 1990; 2011). However, the historical evidence that covers the Early Byzantine period is very limited. There is no written source dedicated to Crete, only sporadic pieces of information that may be separated by a great chronological distance. It is like a projector throwing ample light on specific segments of space and time, while others are left completely in the dark. A characteristic example is that of Andrew of Crete, archbishop of Crete and prolific writer of the end of the seventh/first half of the eighth century (Auzepy 1995). His writings offer abundant evidence of the island and especially the see of Gortyn at a very critical juncture. On the other hand, although there are numerous references in the Byzantine sources to the occupation by the Arabs in the early ninth century, one of the greatest historical adventures of the island, many points remain obscure.

Regarding settlement history, the disadvantage of the textual sources is that they speak only about the cities and the most important settlements (fig. 2). Hierokles Synekdemos constitutes an official public document which although compiled in the sixth century (before 535), reflects the situation of the cities in the middle of the fifth century (Honigmann, 1939: §649, 3-651, 2; Avramea, 1997: 35). The 22 Cretan cities mentioned therein are considered to be those that enjoyed the status of official *polis* (*civitates*): Gortyna, Einatos, Bienna, Hierapydna, Kamara, Alygos (Olous), Chersonesos, Lyktos, Arkadia, Knossos, Sybritos, Oaxos (Axos), Eleutherna, Lampe, Aptera, Kydonia, Kissamos, Kantanos, Elyros, Lissos, Phoinix and Araden. For that reason, it is not surprising that many settlements with a different status are omitted. The *Stadiasmus Maris Magni*, a guide for seafarers, offers a full picture of the coastal settlements. However,

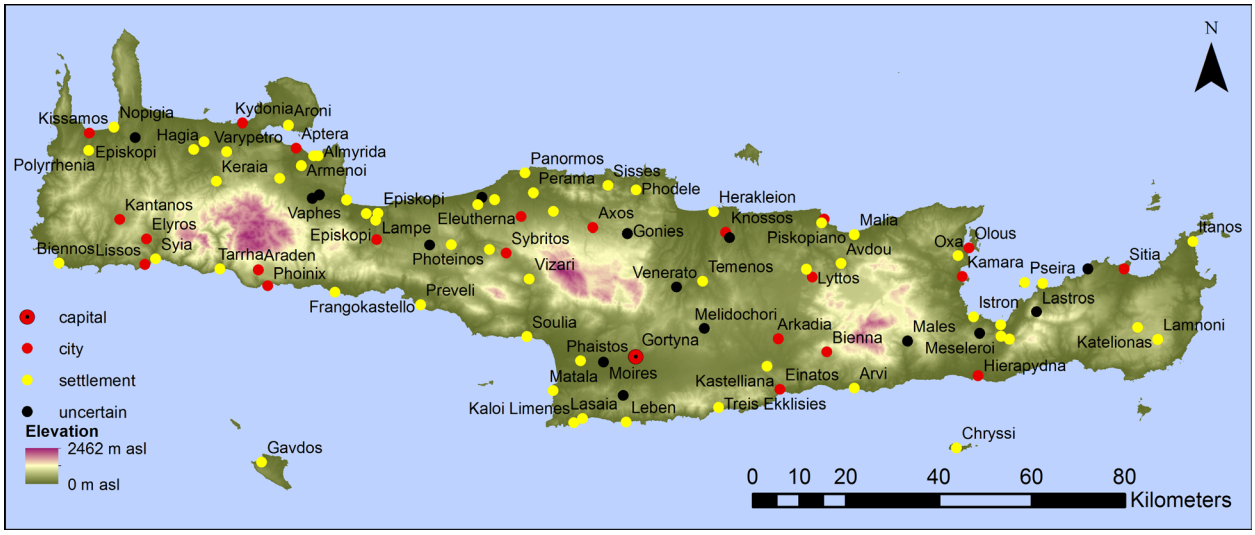

Fig. 4 Crete. Cities and settlements known from archaeological evidence (Map created by K Armstrong from data gathered by the project as of 28 Febuary 2015).

its dating is quite problematic. Specialists date the compilation of the work from the third to the fifth century (Arnaud, 2009: 166-70). Many of the Cretan sites mentioned in the *Stadiasmus* have yet to be identified on the ground. If these two documents taken together illustrate the situation at the beginning of the period examined by the project, official documents regarding the ecclesiastical organisation of the island highlight the situation at the end of the period. *Notitia Episcopatuum 3,* a document dated to the first decades of the ninth century (Darrouzès, 1981: 7-9; Zuckerman, 2006: 202-14), i.e. just before the Arab occupation, refers to twelve bishoprics in the following hierarchical order (fig. 3): Gortyna, Arkadia, Knossos, Chersonesos, Sitia, Hierapetra (Hierapydna), Sybritos, Lampe, Kantanos, Kissamos, Kydonia and Eleutherna (as cited in Darrouzès, 1981: 235).

The review of historical sources will enable the integration of new data and the use of new analytical research tools. Some rethinking over the available historical sources may shed further light on the mobility of people, the religious environment and other aspects of social and economic life.

The research program focuses on the following categories:

1) Literary sources, such as geographical and hagiographical works, chronicles, Conciliar Acts, *Notitiae Episcopatuum* and letters, provide an accurate list of the Cretan settlements and highlight the administrative and ecclesiastical status of each of them. In particular, hagiographical texts reveal important aspects of the settlements' socio-economic history and preserve toponyms relating to their micro-geography.
2) Inscriptions shed light upon building activity by political and ecclesiastical authorities. They also provide specific information about the physical presence of different social groups, urban elites, artisans and traders.
3) In terms of coinage, the absence of numismatic finds from excavated sites has received special attention within the controversial question of the collapse of the urban economy in the so-called Byzantine "Dark Ages". The recording of published numismatic finds from the Cretan settlements will allow for a re-consideration of this issue.
4) Dated, inscribed seals contribute to the discussion of the status of the cities and their place in the administrative system of Crete. Furthermore, the localities where the seals were found serve as topographical indicators for the spatial organisation of the cities, since the find-spots of seals may indicate the city's religious and administrative centres.

Archaeological Data Retrieval

The second thread of the project is the retrieval of all the available archaeological data concerning Cretan settlements of the Early Byzantine period. Along with the settlements known through written sources, a large number of important settlements are understood from archaeological evidence (fig. 4).

The first scientific archaeological records date back to the nineteenth century, thanks to the pioneering work of archaeologists like A. Taramelli, F. Halbherr and St. Xanthoudidis. Although they were mainly interested in inscriptions or prehistoric antiquities, they did not ignore the Byzantine monuments when they encountered them. The monumental work of G. Gerola, who explored the island from one end to the other, is dedicated exclusively to the medieval monuments of Crete. He bequeathed four precious volumes to us, plus a photographic archive (Gerola, 1905-1932; Curuni & Donati, 1988). A modern contributor to the first archaeologists' work was I. Sanders. His book on Roman Crete, the fruit of diligent topographical fieldwork, also incorporated the monuments of the Early Byzantine period (Sanders, 1982). Modern archaeological investigations on the island include a significant number of extensive topographical surveys and, importantly, intensive field surveys, conducted in different regions of the island, such as Sphakia, Akrotiri Peninsula, Chamalevri, Hagios Vassileios, Knossos, Malia, Kavousi, Kommos, Hagiopharango, Western Messara, Vrokastro, Gournia, Kavousi, Itanos, Gavdos and Chryssi (cf. Gkiasta, 2008 for further bibliography). Although most of them focus on the prehistoric period, they rescue valuable information on the rapidly evolving Cretan landscape. Cities of the Early Byzantine period that have been systematically excavated number only two: the capital Gortyn (Di Vita, 2010; Zanini 2013b) and Eleutherna, a small sized city in the centre of the island (Tsigonaki, 2007; 2012). For the majority of sites, the archaeological data derive from the rescue excavations conducted by the Greek Archaeological Service.

The scarcity and uncertainty of the archaeological evidence becomes clear from the above brief account of the archaeological research reality on the island. The uncertainty concerns both the date and the function of the sites, the two principal axes of any spatial-temporal analysis. Besides some obviously incorrect dating given in old publications, the application of different systems of periodisation, along with the fuzzy use of terms like Greco-Roman, Late Roman, Late Antiquity, Early Christian or "Dark Ages" in modern publications, further complicate the analysis. The interpretation of function and the typological categorisation of architectural structures is a major problem for any spatial analysis project, whatever the historical period. How to distinguish a village from a hamlet or a farmstead or even a monastery when the only information available derives from isolated rescue excavations or surface surveys? Even worse, the meaning of relating terms varies from one publication to another (cf. Farinetti, 2011: 27-39).

All published information on the remains of fortifications, infrastructure, public and religious monuments, houses, workshops and cemeteries are being recorded in a relational database, alongside and related to the historical evidence discussed above, and with links to a GIS system, realised in an Arc GIS 10.2 environment. Moreover, the GIS contains additional information, such as terrain models, geology and hydrology. The uncertainties within the current archaeological data are tempered by a critical reading of the published information and parallel topographical fieldwork. The latter includes the localisation of sites, surveying them with high-precision GPS, recording detailed descriptions and the photographic documentation of the archaeological structures. This process not only fills the large gaps in the published documentation, but also ensures the accuracy of the localisation of specific structures which is required for spatial analysis in a GIS environment.

At this stage of the project fieldwork is focused on fortifications. Scholars agree that the need for security and defence against external invaders was a key factor in the radical transformation of Byzantine settlements, which led either to the fortification of their old acropolis or their reloca-

Fig. 5 Crete. Early Byzantine fortifications at Gortyn (top left), Matala (top right), Veni Korphi (bottom left) and Eleutherna (bottom right) (photo: C. Tsigonaki).

tion to safer places in the hinterland (Saradi, 2006: 464-70). We consider Cretan fortifications a prime indicator of the spatial re-organisation of the settlements, which have been systematically neglected by previous research. The historiographical *topos,* according to which the urban population had abandoned the cities of the island already in the second half of the seventh century so that Crete fell defenceless into the hands of the Arabs, is until now very powerful (for example Cosentino, 2013: 99). Scholars passed over the fortifications of the Early Byzantine period without recognising them. The publication of the Early Byzantine fortifications at Gortyn (fig. 5) (Perna, 2012: 145-67), Eleutherna (fig. 5) (Tsigonaki, 2007: 272-76), Kydonia (Andrianakis, 2012), Herakleion (Andrianakis, 2013) and Lyktos (Gigourtakis, 2011-2013) contributes to a shift in the dominant historiographical perception. For all the above cases a date of the seventh or the eighth century has been proposed based, not only on historical arguments, but also, as regarding Eleutherna, to archaeological data provided by systematic excavations (Tsigonaki, 2015). Through the study of the fortifications, the issue of the abandonment of the cities of Crete in the seventh century is placed on a new footing.

The increasing volume of data regarding the fortified settlements in Early Byzantine Crete is valuable in terms of regional research, so each dot added to the map is precious. However, in this process methodological problems arise, such as the identification, documentation and dating of fortifications, but broader historical issues also arise. Which types of settlements were eventually fortified? Can we detect specific characteristics which are related to the geographical-environmental parameters? Did central planning, evoking the militarisation of the island, actually exist? Does the fortification signal the shrinking of the city or the demarcation of controlled areas within the city? How do the constraints of security redefine the relationship between towns and country during a period of prolonged insecurity? Some examples will illustrate the complexity of these issues.

Syia (Sougia) is an important coastal settlement, where the landscape has been disfigured by unregulated building activities. It is located to the west of the nearby city of Lissos which remains largely unexplored but also untouched by modern human interventions. During topographical fieldwork, sections of Early Byzantine fortifications have been discovered at Syia, but not at Lissos. The contrast between the fortified settlement of Syia and the unfortified official city of Lissos should be emphasised, although it is not presently placed within a comprehensive narrative. Evidence for the dating of the defensive work at Syia to the Early Byzantine period is provided by masonry style, a chronological criterion that is not entirely reliable, but is in most cases, the only one available.

The fortification on the acropolis of Matala, one of Gortyn's harbours sites, was published by the Kommos Survey team. This section of the wider publication has passed largely unnoticed, concealed, as it is, in a collection largely dedicated to a prehistoric Cretan site. The fortification is dated to the fifth century on the basis of pottery from the surface survey (Shaw & Shaw, 1995: 329, 335, 337-38, 672). However, strong similarities of the masonry style, building technique and general form between the Matala fortification and those at Gortyn and Eleutherna leaves no doubt that these defensive works are contemporary, all dating to the seventh or the beginning of the eighth century (fig. 5). The question here involves the representativeness of surface findings; in simple words, how reliable is the evidence of the surface pottery (which is *de facto* out of context) for the dating of the fortification on a multiperiod site, particularly on a strongly eroded surface?

The type of masonry also indicates a date in the seventh or the beginning of the eighth century for the fortification at Veni Korphi (fig. 5). At Veni Korphi the fortification proves beyond any doubt the existence of a hitherto completely unknown Early Byzantine settlement in central Crete, whose identification and character should be investigated.

Remote Sensing and GIS Spatial Analysis

The GIS-based spatial analysis, making use of the fieldwork data, remote sensing (satellite imagery and aerial photography) and the processing of digital elevation models (DEMs) will comprise the third thread of the project.

The way we perceive and understand the landscape today is radically different from that of previous decades. Apart from visiting and exploring sites, an absolutely essential process, where the researcher experiences the landscape with all his or her senses, we have at our disposal analytical tools, such as aerial or satellite photography, that distance the researcher, permitting an overview of the landscape. Traditional aerial photography and alternative images taken through the use of Unmanned Aerial Vehicles (UAVs) allow us to capture the details of specific Early Byzantine settlements and to digitise their internal architectural features, as well as consider their landscape settings. New aerial reconnaissance is being conducted using a UAV with a digital camera that allows the production of detailed topographic models, particularly in a mountainous landscape like that of Crete, using photogrammetric approaches (Cantoro & Sarris, 2012). This method is coupled with an examination of older aerial photos provided by the Greek Geographic Service of the Hellenic Army and old topographical maps. Where excavation plans are available, they will add detailed dating evidence to the investigation, permitting an examination of the changing use of space within the settlement over time.

A key component of the project is the use of GIS to perform various analytical tasks using the historical and archaeological records. Rather than simply acting as a repository for the spatial data, the GIS will also be employed analytically at the scale of the whole island and in order to study micro-regions where we have a more complete picture of the archaeological record. This study will include Site Location Modelling (identifying common landscape elements present at Early Byzantine settlements), Site Catchment Analysis (examining the resources available for each set-

tlement) and Territorial Models (looking at political control and settlement hierarchies).

The GIS will also allow for an investigation of settlement networks and communication as well as their accessibility to the sea, their proximity to cultivable territories, to water sources and to sources of raw materials. Modelling and classification of the landforms will provide an insight into the naturally fortified character of certain settlements, their inter-visibility and the defence-network planning. The results of remote sensing analysis combined in the project GIS will allow an assessment of various aspects of the settlements, such as the estimation of the size of the inhabited area or the area and morphology of the enclosed urban space and the precise location and nature of fortifications.

Criticisms have been levelled at this sort of GIS analysis: opponents have argued that it places too much emphasis on the geographical features of the region or the micro-region (Gaffney & Van Leusen, 1995), rather than to social and historical factors that have an influence on the human use of space. However, up to now, the geographical factors in the settlement history of early Byzantine Crete have gone wholly unexamined in the literature. Balance is needed, and while a characterisation of past people as economic minimisers-maximisers is certainly inappropriate, the environmental characteristics of the space in which humans act has some role to play; the question concerns the extent of this role. Therefore this analysis will employ, wherever possible, models and methodologies that humanise the spatial analysis. This includes introducing social factors into the location models, such as relational (for example, time-based rather than Euclidean) calculations of distances, "fuzzy" topographical analysis (Fisher, Wood & Cheng 2004) and visibility analysis (Wheatley & Gillings, 2000). The latter is crucial for the investigation of a centrally-planned defence system, if one exists. Besides, historicity must certainly be a factor in these models, considering how the previous settlement patterns exert influence on the Early Byzantine use of the landscape.

Epilogue

Considering the overall scheme of the data and the structure of the project (fig. 1) the methodology proposed is straighforward: the collection and analysis of information about the geographical and environmental setting of the settlements allows a better understanding of the interaction between human interventions in space and geographical features related to these interventions. People acting in and on spaces and places are at the centre of this analysis, which is why the incorporation of all available information from historical sources and archaeological data is necessary.

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Settlement Dynamics and Site Hierarchies in Western Sicily from the Fourth to Seventh Centuries AD: Interpretative Challenges in the Contessa Entellina Survey

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Abstract

The Contessa Entellina survey is an intensive and systematic archaeological survey carried out in western Sicily, on an area extending over 136.4 km^2, out of which more than 114 km^2 were physically covered. The observation of settlement trends from the fourth to seventh centuries shows, on first glance, a noticeable drop in the number of sites from the third to fourth centuries, a new rise in the fifth century and a dramatic fall around the end of the century, followed by a period of stability or slow decrease throughout the sixth and seventh centuries. A more detailed analysis reveals, on the other hand, a much higher density of fifth century diagnostic artefacts (per site and per settled hectare), when compared with the previous and the two following centuries. The fifth century is therefore much more "visible" on the ground, and this may have contributed to the higher identification of fifth century sites.

The massive presence of fifth century artefacts may not be exclusively due to a population increase: economic and socio-cultural factors most likely also came into play, distorting the resulting settlement picture. More precisely, a possible higher tendency towards a grain monoculture may have caused a massive import of African foodstuffs (attested by amphorae) between the late fourth and the middle fifth century, and peculiar dietary customs could explain the all-pervading diffusion of African Red Slip Ware cups belonging to the form Hayes 80-81. Similarly, if we take into consideration also less diagnostic artefacts such as roof tiles, we find that the fall in the number of sites between the end of the fifth and the sixth-seventh centuries may have been less drastic than it appears, and that it was followed by attempts to work out new settlement strategies, showing a fairly good resilience.

Keywords: Settlement Trends, Late Antiquity, Sicily, Archaeological Survey, Rural Population

The Contessa Entellina survey (fig. 1) was a systematic intensive archaeological survey in the territory of the modern municipality of Contessa Entellina (province of Palermo) in western Sicily, carried out from 1998 to 2004 by the Laboratorio di Scienze dell'Antichità of the Scuola Normale di Pisa (for preliminary information and contributions on specific topics, see the references mentioned in Facella et al, 2014: 529, note 1). The surveyed area was 136.4 km^2, out of which more than 114 km^2 were physically covered (on methodology, see Facella, in press a). A total of 282 sites, and more than 150 off-site finds (that we were able to delimit and map, thanks to the absence of a real "background noise" carpet) have been identified. It is my responsibility to study settlement dynamics in Late Antiquity, precisely from the fourth to the seventh century AD. At least 74 archaeological sites and numerous off-site finds (around 40) can be dated within this period; full publication of the results is forthcoming (Facella, in press b).

In this paper, I will focus on some interpretative aspects that to me seem essential for the reconstruction of late antique settlement trends

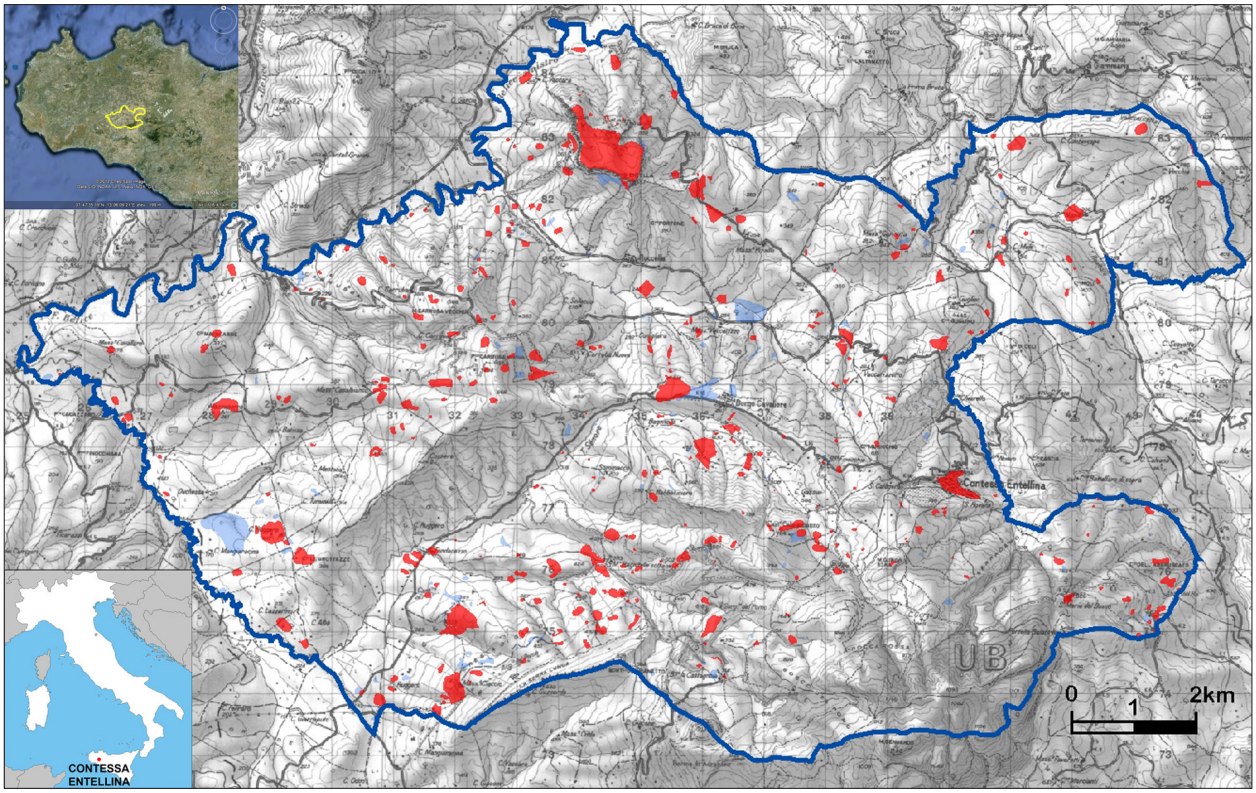

Fig. 1. Contessa Entellina survey: sites (red) and off-site finds (pale blue).

in the investigated area. Our success in extracting sensible meanings and applying models depends not only on the reliability of the data under analysis, always subject to improvement and refinement to the best, but also on our ability to filter them through a correct scheme of interpretation. I would like to start from what is usually a conclusive point: a brief description of settlement trends from the fourth to the seventh century AD, based on a crude analysis of "raw" data.

In the investigated area we can identify a remarkable stability in site location and settlement patterns between the Early - Middle Imperial Age and the fourth century and beyond: many sites that are active in the first and second centuries AD are still alive in the fourth century, even if from the third century we notice, in some of them, important typological changes, for example Early Imperial villas that spread and become veritable villages (Vaggioli, in press). Between the third and fourth centuries the level of continuity in site location is significantly high, but a dramatic drop in the number of sites, from 70 certain sites (plus eight probable) to 35 (plus eleven probable), seems at first sight to be detectable.

In the fifth century we instead notice an apparent new and considerable rise in the number of settlements: we count 56 certain sites, plus two probable (figs. 2-3). Settlement in the investigated area seems therefore to become more all-pervading. A remarkable increase in the extent of settled areas is also detectable (fig. 3).

Almost all sites that are active in the fourth century, on the other hand, seem to continue their life in the following century. Settlement continuity between the fourth and the fifth centuries therefore seems unquestionable and the site-replacement rate is very low, conforming to the trend detected in the first three centuries AD. In the fourth-fifth centuries we can ascertain the existence of a complex hierarchical settlement pattern, given the contemporary presence of estate-centres provided with luxury residential sectors (villas), villages (*vici*), a possible "agro-town" (the

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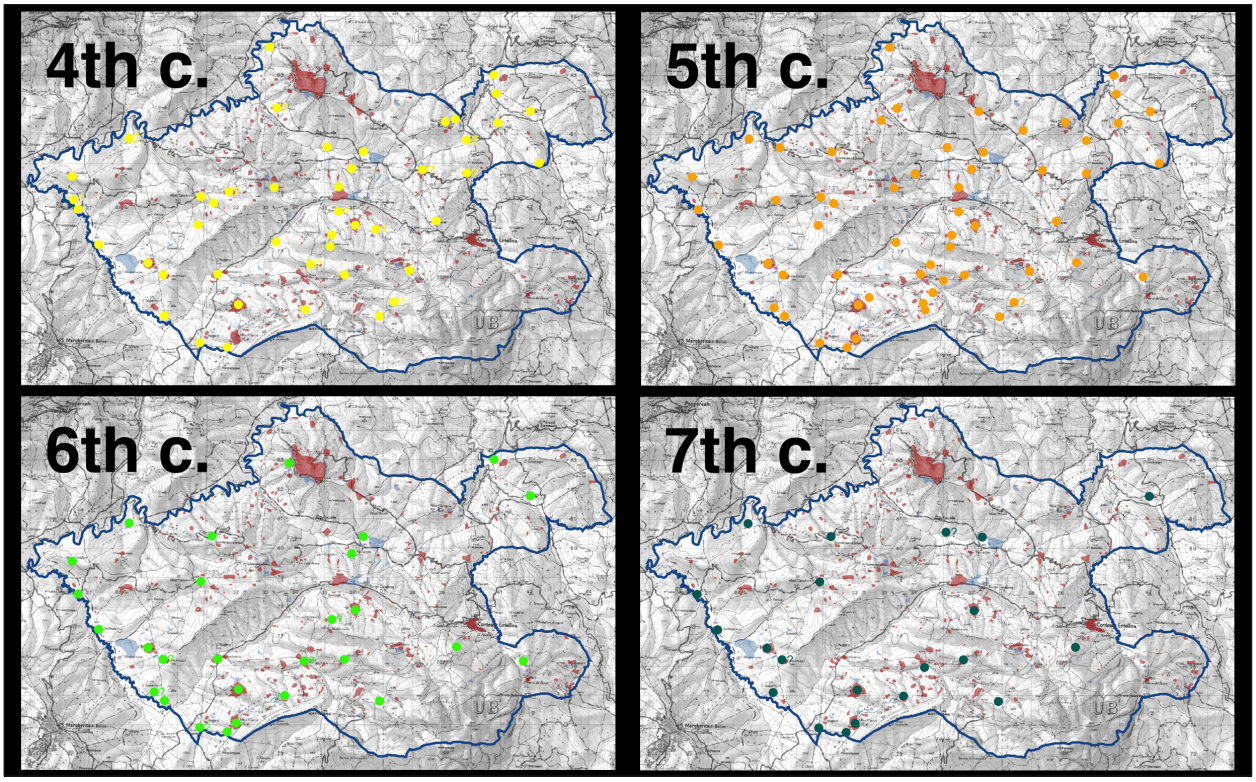

Fig. 2. Contessa Entellina survey: fourth, fifth, sixth and seventh century sites.

settlement of Miccina, over 17 ha wide; on "agro-towns", see Wilson, 1990: 232-33), and large-, medium- and small-sized isolated farms.

At the end of the fifth century, a dramatic fall seems to occur in the number of rural settlements, as well as in the extent of settled areas (figs. 2-3): for the sixth century we count only 23 sites (plus five probable); this fall is even more marked in the central and eastern portion of the investigated area, and can be interpreted as the result of systemic transformations in the land set-up, followed by a phase of new stability in settlement patterns, lasting probably – as we will see – up to the late eighth century. Between the sixth and seventh century, we notice a strength in the number of sites and in the extension of settled areas (figs. 2-3), and the persistence of a remarkable settlement continuity: almost all seventh century sites (nineteen, plus two probable) had been already active in the former century, and most of them are long-lived settlements that had arisen in the Early Imperial, Late Republican, Hellenistic, or even Archaic/Classical Age.

Sixth-seventh century sites appear to be well distributed in the territory: inter-distances between them are around 2-3 km, with very few exceptions. Settlement organisation seems to still be rather hierarchical and complex. We can identify:

1) very large-sized sites (more than 4 ha), that can no doubt be interpreted as villages, usually quite far from each other;
2) large-sized sites (often, Imperial Age villas that continued in or returned to a settled state in the sixth-seventh centuries, although the nature of settlement seems now not very clear, and the material evidence is usually much more scanty compared with the two former centuries); and
3) medium- and small-sized sites (less then 1 ha), even if considerably less in number compared with the fifth century.

Among the factors that permitted some sites to survive the strong selection of the late fifth century and continue into the sixth-seventh

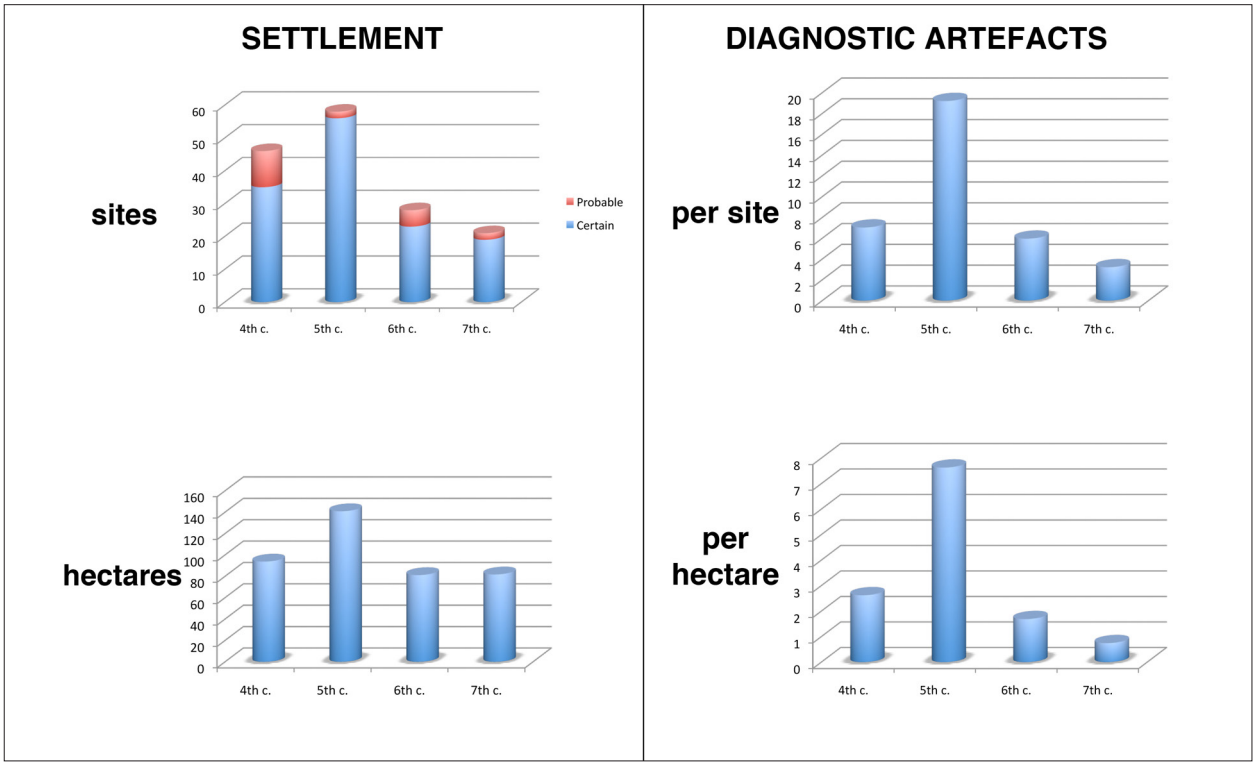

Fig. 3. Contessa Entellina survey: sites and extent of settled areas (left); average of diagnostic artefacts per site and per hectare (right).

centuries, we must consider proximity to major roads, and above all, size: a feature that seems to remain important over time. The few sixth century sites that do not reach the seventh century are all small to medium-sized sites, and all large sixth century villages remain settled in the following century, although in a more rarefied way. The only significant variation in settlement patterns between sixth and seventh centuries is precisely a further reduction in the number of small sites.

In general, late-antique settlement dynamics in the investigated area reveal a twofold tendency, both to the development of nucleated settlement and to the rarefaction of medium- and small-sized sites, the second being a possible evidence of progressive concentration of land property. Both are long-lasting trends, detectable from the Early Imperial Age onwards, and find close comparisons with other areas of Sicily (development of villages: Alfano & Sacco, 2014: 34; Bergemann, 2011: 92-97; Cambi, 2005: 629-30; Di Stefano, 1997: 459; Fentress, Kennet & Valenti, 1986: 85; Johns, 1992: 414; Maurici et al, 2014: 23; Molinari & Neri, 2004: 122; Molinari, 2014: 336; Vaccaro, 2013: 281; Wilson, 1990: 223-36; decrease of small sites and concentration of landholdings: Belvedere, 2002: 394; Bernardini et al, 2000: 116-22; Cacciaguerra, 2011: 293-95; Cambi, 2005: 630-34; Molinari & Neri, 2004: 115; Wilson, 1990: 234). This is, in short, the general picture emerging from a first analysis. In order to check whether this provides a reliable or distorted picture, the data that led to this first interpretation have been analysed to greater depth.

Let us start from the first striking phenomenon: is the fall in the number of fourth century sites, compared to the third and fifth centuries, really as marked as it seems? And do the fluctuations in the extent of settled areas point to population variation? If we look carefully, out of the fourteen sites that seem to arise *ex-novo* in the fifth century, a solid nine reveal to have been certainly settled in the second-third centuries AD. Can we be absolutely certain that, at least for these sites,

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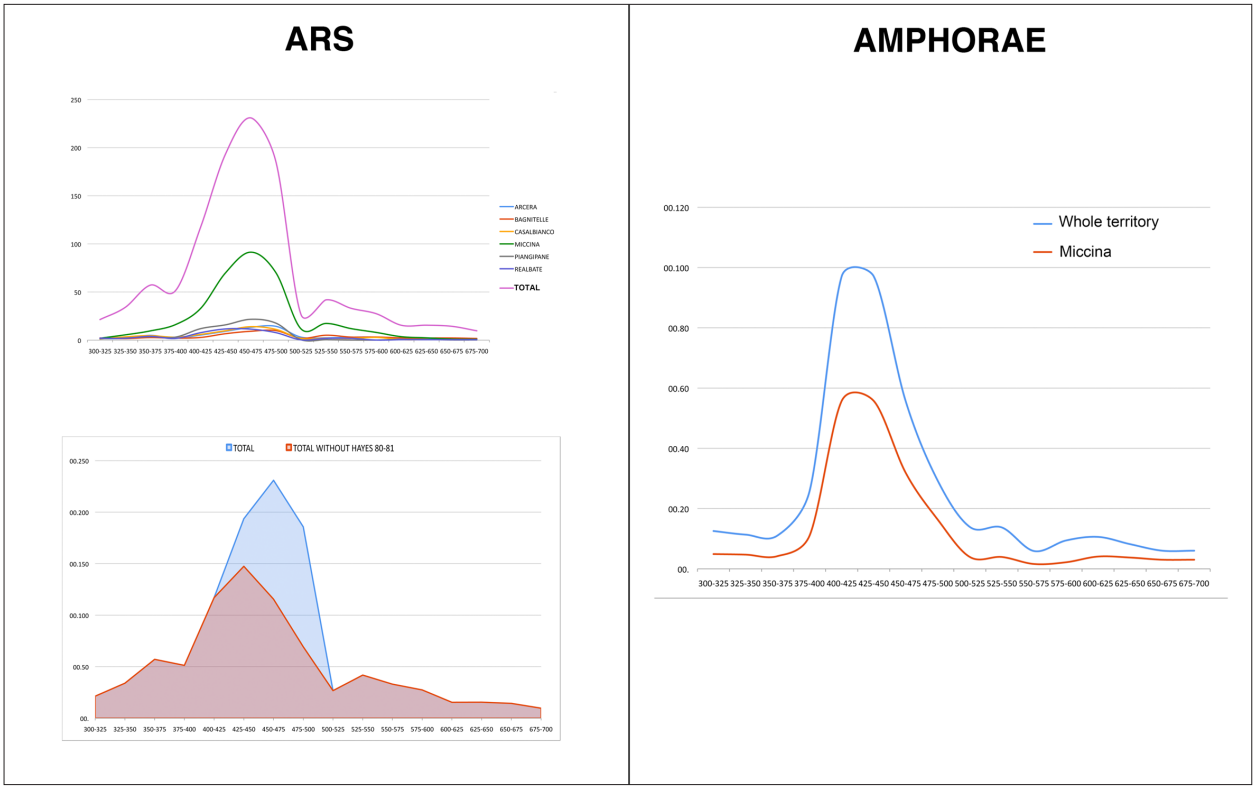

Fig. 4. Contessa Entellina survey: ARS ware (left) and amphorae (right) from fourth to seventh centuries AD. The chronology of each specimen has been equally divided into quinquennia, then grouped in 25 years periods.

the gap in fourth century evidence is due to a lack of settlement and not more simply to a lower density – in surface assemblages – of artefacts that can be dated to the fourth century? Such rarity, if confirmed, could indeed make a fourth century phase less easy to identify.

I accordingly made a chart that shows the average of diagnostic artefacts (mainly, but not only, fine wares and amphorae) per site in each of the four centuries (considering only the sites that are certainly alive in that century), and another chart with the average of diagnostic artefacts per settled hectare (fig. 3, right). Interestingly, the two charts are very similar, and this appears to be a sign of reliability of the results. As one can see, the difference between fourth and fifth centuries is remarkable, as well as between fifth and sixth-seventh centuries. The diagnostic artefacts that can be ascribed to fifth century are much more numerous than those of the former and the two following centuries, and the increase in the number of finds is clearly greater than the increase in the extent of settled areas from fourth to fifth century. The fourth century seems therefore to be undoubtedly less "visible" than the fifth.

Hence, out of the fourteen "new" fifth century sites only the five sites that were not knowingly settled in the second-third centuries can be confidently considered to describe "genuinely" new settlements (although most of these were actually simply resettled, after a gap of several centuries). Three out of five are very close to other contemporary settlements, to which they could be linked as a sort of satellite, and only two (that can be interpreted as medium-size farms) arise in an isolated position.

The higher density of fifth century diagnostic artefacts in the area of Contessa Entellina does not seem to be a completely isolated phenomenon in Sicily: it has been observed, for example, at Sofiana, in the central part of the island (Vaccaro,

2013: 284-86), and probably (since most of fifth century diagnostic ceramics are imports from Africa) in some western coastal sites as well, like Carabollace and Verdura, as noted by M. Bonifay on the basis of the assemblages of African pottery (Malfitana & Bonifay, in press).

But, how can we explain it? Should we think of a higher population density per hectare (that is: more people) in the fifth century, compared to the fourth? Or a higher power to acquire certain goods by the rural population (that is: the same number of people, yet wealthier)? Or of different cultural practices (that is: the same number of people now using more artefacts)? Or, better, of a combination of demographic, socio-economic and cultural factors?

It is not easy to answer such questions. Besides, a more in-depth analysis shows that the fifth century peak in the Contessa Entellina survey is actually the result of the combined massive presence of two different artefact classes: (mainly) amphorae for the first half of the century, and (mainly) African Red Slip Ware (ARS) for the period ranging approximately from 440 to 500.

If we look at a chart which shows the trend of amphorae finds in the four centuries under examination (fig. 4, right), both in the most important site (Miccina, a veritable Late Antique "agro-town", as stated above) and in the whole Contessa Entellina survey (including Miccina), we see that the increase in the number of finds is much greater than the increase in the extent of settled areas from fourth to fifth century, and the highest peak falls in the first half of the fifth century.

The fifth century amphorae found in the survey are, for the largest part, imports from Africa: besides *salsamenta*, they also transported wine and – probably to a lesser extent – olive oil: foodstuffs that the land in the Contessa Entellina district was undoubtedly capable of producing in abundance. It is possible, therefore, that their very high number indicates for our area in the fifth century a stronger tendency towards a grain monoculture, addressed to exportation (to Rome and *Suburbium*, above all), with a local production of olive oil and wine insufficient to entirely meet the population demand (similar considerations on other districts of central and western Sicily in Cambi, 2005: 632-33; Filippi, 2003: 502; Lentini, 2010: 211-12; Molinari, 2002: 334; Rizzo et al, 2014: 218; on Italy in general, Vera, 1997: 54-55). On the other hand, it shows a market opened up to imported products, and a strong level of integration in an interregional exchange network.

Such a tendency towards a wheat monoculture appears to predate the Vandal conquest of Africa (439, capture of Carthage) and the final interruption of the *annona* from North Africa (455) that gave Sicily an essential role as a grain supplier in the *annona* system. Rather, it could be linked to the great development of grain production in the island after the diversion of the Egyptian *canon frumentarius* to the new metropolis of Constantinople (332), with much of Sicilian surplus probably finding an outlet in the free market (Vera, 1997; 2005: 28-30; 2010; Wilson, 1990: 189).

A second chart (fig. 4, top left) shows the chronological distribution of ARS from the fourth to seventh centuries in the six major sites of the Contessa Entellina survey (each one providing from circa 60 to circa 360 records) compared to the total finds from the whole survey. I took only rims into consideration (so as not to overestimate the forms that are detectable also from decorated body-sherds and bottoms), for a total of about 1100 records.

If we compare the "total" line with the number of sites per century, we clearly see the higher density of diagnostic artefacts in the fifth century, with a peak in the third quarter of the century. We also note that there are no significant differences in the behaviour of each one of the six major sites, but – as well as for the amphorae – the higher the total number of artefacts, the greater the number of fifth century artefacts we find.

The picture of ARS between the fourth and the seventh centuries, on the other hand, does not appear to fully match that of the few Sicilian survey contexts so far analysed in detail, which show a peak in the second half of the fourth to the beginning of the fifth century (Fentress et al, 2004: 154; see also Bonacasa Carra & Vitale, 1997: 385,

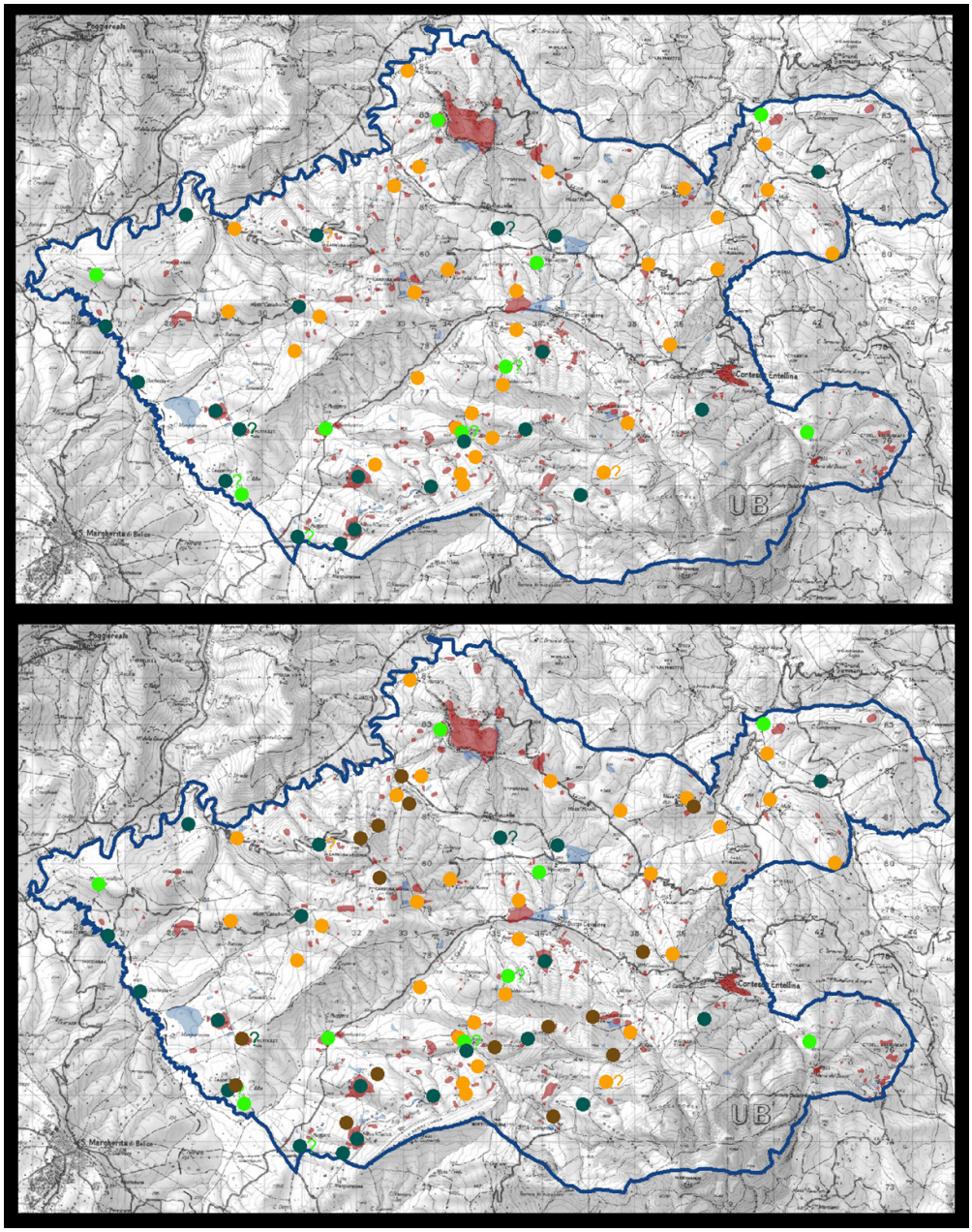

Fig. 5. Contessa Entellina survey: sites not surviving beyond the late fifth century (orange), sites not surviving beyond the sixth century (light green), seventh century sites (dark green), sites attested only by combed tiles (brown, bottom).

411) or in the first half of the fifth century (at Sofiana: Vaccaro, 2013: 290-94), and can find possible comparisons with just some sites of central-western Sicily, such as Verdura and Carabollace (see above). Again, do we have to explain the ARS picture in mid and late fifth century as the result of a higher population density per hectare, or did other factors, economic and cultural, come into play?

An aspect that could point to differences in material culture is that of the cup Hayes 80-81. This form is extremely widespread in mid-late fifth century assemblages from the investigated area (in particular, the type Hayes 81A: over 250 records out of 360): even excluding body sherds (where Hayes 81A are over-represented), Hayes 80-81

represent over 42% out of the total amount of fifth century ARS D from the investigated area (Facella et al, 2014: 532 fig. 6). In this case as well, the massive presence of the Hayes 81A does not seem peculiar to our territory: it has been reported also at Agrigento and its hinterland (Bonifay in Malfitana & Bonifay, in press; Castellana & McConnell, 1990: 34), in the Platani river valley (Rizzo, 2004: *passim*) and at Monte Pellegrino, near Palermo (Di Stefano, Garofano & Gandolfo, 1997: 13). However, for Sicily as a whole this form does not appear to be particularly common (Bonacasa, Carra & Vitale, 1997: 411, 441). The shape of this cup, fairly deep and measuring some 15-20 cm in diameter, points clearly towards the individual consumption of liquids or semi-liquid food, for instance soup or porridge. Such a dietary custom would require, for each household, a larger pottery set, provided with individual cups, when compared to the habit of meals consisting only of food served on one large communal plate.

Thus, if we remake the chart of "total" ARS, this time not counting Hayes 80-81 (fig. 4, bottom left), we observe that the density of fifth century ARS decreases noticeably, though remaining higher than the density in the other three centuries, and the ARS trend from fourth to seventh centuries is now closer to the trend of the number and extent of sites.

It seems therefore that specific economic processes and peculiar aspects of material culture related to the most diagnostic artefact classes, that is ARS and amphorae, may have provoked a greater visibility of fifth century sites, contributing to an "inflated" difference between their number and that of identified fourth, sixth and seventh century sites.

Another issue that deserves a closer examination is the seeming fall in the number of sites from fifth to sixth-seventh centuries. As for North Africa, C. Wickham has warned us on the fall in the number of identified sixth-seventh centuries settlements, which is usually interpreted as depopulation and land abandonment, but may rather be linked to a decreasing presence of fine ware: 'I would argue that most of the changes in these field surveys have to do with ARS availability [...] rather than with settlement'. As a matter of fact, where it has been possible (as at Dougga) to establish firm chronologies even for coarse ware, sixth-seventh century sites have multiplied (Wickham, 2005: 723-24; similar considerations on Italy: Bintliff, 2012: 70). This could be valid for Sicily too, where many surveys seem to reveal a remarkable fall in settlements' number from the fourth-fifth to sixth-seventh centuries (Bernardini et al, 2000: 116-22; Bonacini, 2007: 90, 94; Burgio, 2002: 158-59, 164; 2008: 256-57; Cacciaguerra, 2009: 299; 2011: 293-95; 2014: 380-81; Cambi, 2005: 633; Fentress, Kennet & Valenti, 1986: 81; Filippi, 2002: 377-79; Giordano, 1997: 347; Giordano & Valentino, 2004: 18; Maurici, 2005: 213, 217, 255; Molinari, 2002: 325-28; Molinari & Neri 2004: 115; Rizzo, 2004: 148; 2005: 642; 2010: 285-86; Rizzo, Danile & Zambito, 2014: 352; Rotolo & Martín Civantos: 2012, 414; Vaccaro, 2013: 281), and where, in sixth-seventh centuries, diagnostic artefacts do indeed represent a small percentage of the total amount of ceramic finds (e.g., at Segesta: Facella, 2013: 294-95; Facella, Capelli & Piazza, 2013: 50-51; Facella, Minniti & Capelli, 2014).

In the Contessa Entellina survey, the study of sixth-seventh century cooking ware and coarse ware, most of which were locally produced, is still in progress, and we are not yet able to create a reliable chronologic grid. Diagnostic sherds are still, for the most part, fine wares, lamps and amphorae.

Nevertheless, we can take advantage of another "index fossil": combed roof tiles. In Sicily, tiles decorated with combed lines appear in the last quarter of the fifth century, and remain in use at least until the end of the seventh century (Arcifa, 2010a: 108-11; 2010b: 28-29; Rotolo & Martín Civantos, 2012, 414; Wilson, 1979, 23; 1999: 538). Of course, non-combed tiles can still be found in sixth century contexts, due to the practice of reiterated reutilisation (after the collapse of a roof) of tiles that remained in good condition. Similarly, we can find combed tiles even in eighth century contexts, when new roof tiles, with vacuolated fabric, begin to appear (first, both combed and vacuolated, then, only vacuolated: Alfano, 2014: 251; Alfano

& Sacco, 2014: 9; Cacciaguerra, Facella & Zambito, 2015: 208-09 with further bibliography; Rizzo, 2001: 250-51; 2004: 147). We can thus assume that if we find combed non-vacuolated tiles, then there is a very high probability that they refer to a sixth-seventh century settlement. For this reason, I tried to identify sites with no sixth-seventh century diagnostic sherds, but that did produce combed tiles. Unfortunately, in the Contessa Entellina survey, roof tiles have only been sampled. For this reason, I have only taken into consideration sites that produced at least two samples of combed tiles or more, assuming that multiple sampling implies a significant presence on the ground.

In this way, we are able to identify at least sixteen sites attested only by combed tiles. Adding these to the sixth-seventh century sites identified by diagnostic sherds, which number 30, we reach a total of 46 sixth-seventh century sites, only ten less than the fifth century certainly-active sites and only sixteen less than fourth and fifth century sites combined. Interestingly, as you can see from the comparison of these two images (fig. 5), sixth-seventh century sites attested only by combed tiles (fig. 5 bottom, in brown) do not correspond simply to sites already settled in the fifth century, nor are they located close by: hence they can neither be considered mere continuators nor substitutes of fifth century sites. Moreover, they are all, apparently, small-size settlements, located in fairly secluded areas and showing no hierarchical relations between each other.

Undoubtedly, the massive abandonment in the late fifth century of at least 25 sites, often following a several centuries-old existence, is indicative of a strong discontinuity, and probably of a systemic collapse. Sites attested only by combed tiles seem to show an attempt, after the crisis, to "colonise" new areas, previously unsettled, at least in a couple of sectors (NNW and SSE) of the investigated area. For the first time since the Augustan Age we notice a new approach to the territory, and some (although limited) innovations in settlement strategies, while, to date, the emergence of new settlement patterns was detectable only for the late eighth-early ninth centuries (as we will see below).

To sum up, bias correction and closer analysis of available data have allowed us to soften some features that would have been depicted in a more dramatic way by superficial investigation and to reconstruct a more complex trend.

The increase in the number of sites from fourth to fifth century is probably overestimated since the presence of fifth century artefacts appears to be inflated by economic and cultural aspects. The phenomenon of the appearance of new sites in the fifth century could be downsized, and speculations on a possible population increase, or on "prosperity", should be softened. The hypothetical fifth century population increase, if ever there was one, may have been so dramatic and the few new sites could instead testify to simply a tendency to also settle "marginal" areas and more intensive land exploitation.

The systemic change that took place around the end of the fifth century brought about not just a decrease in number of sites, but also new answers and new settlement strategies. We can infer, in the sixth and seventh centuries, when the villa system does not seem to exist anymore, a still complex, hierarchical and rather all-pervading rural settlement system, with contemporary presence of villages of various size and structure, possible estate-centres, small- and medium-size isolated farmsteads, and maybe also scattered buildings with uncertain functions. Such a diversified settlement pattern is also symptomatic of economic complexity, and that a good level of integration remained in an exchange network on a Mediterranean scale. A fairly good resilience and ability to react to shocks, carrying out new strategies of land exploitation, is also noticeable – as shown by the first attempt to break from the centuries-old "Roman" settlement system – and partly disproves an apparent picture of full settlement continuity and conservativeness.

On the other hand, starting from the late eighth-early ninth centuries, we notice clear elements of rupture. A new settlement framework begins to appear: most of the seventh century sites now disappear and new small (or very small) sites arise, away from watercourses and main

roads and in higher (but not hill-top) locations, apparently unstructured and similar to each other (Corretti, Facella & Mangiaracina, 2014: 343-45; Corretti, Michelini & Vaggioli, 2010: 170-73). This is not an isolated phenomenon, and can be detected in other areas of western and central Sicily (Cacciaguerra, Facella & Zambito, 2015: 203-04, with further bibliography; Rizzo, 2004: 152; 2010: 286; Rizzo, Danile & Zambito, 2014: 352; Molinari, 2002: 334; 2014: 336). It is fascinating to think of these new sites as a result of relaxation of the double grip of taxation and *latifundium*, with the elites (above all local aristocracies, but the forfeiture of the Church properties in Sicily and Calabria to the patriarchate of Constantinople, in the thirties or – more probably: Prigent, 2004 – forties of the eighth century, also comes to mind) no longer able to exercise control over the peasant population, and consequent spread of small properties and the "colonisation" of "marginal" areas (Belvedere, 2004: 6-8; Belvedere, Burgio & Cucco, 2014: 371-72; Molinari, 2002: 334).

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Estrazione e raffinazione dello zolfo e paesaggio nella Sicilia romana tra IV e VI d.C.

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Abstract

Sulphur was important in several fields: military, tanning, wool's disinfection and many other activities. Nevertheless, the largest quantity of sulphur was used in agriculture, particularly in viticulture as it was used to combat fungal diseases especially in wine production areas. Sicily, and in particular the area surrounding Agrigento, was the main site of sulphur extraction. This built strong relationships with Rome and other agricultural centres in the Mediterranean Sea. Very important among the historical sources and the archaeological evidence are the so called *Tabulae sulphuris,* concerning the sulphur exploitation at the Agrigento's area. Recent finds and studies gave a new chronology dating to a few of the *tegulae sulphuris* and the related sulphur exploitation between the end of the fourth and the sixth centuries. It is now possible to attribute to Sicily (in particular, the *"area solfifera"*) the trade relationships which arose in Classical times. We must connect these commercial and cultural ties to the export of wheat and other commodities. The main goal of this paper is to show new data on the exploitation structures and the transformation of the mining landscape between Late Antiquity and the Byzantine Age. During this time, *Agrigentum* lost its function as fiscal centre, maybe because other centres were acquiring this role.

Keywords: Sulfur Exploitation and Trade, Ancient Landscape, Survey, Roman Economy, Roman Sicily

Introduzione

In questo contributo ci si occuperà dell'aspetto del paesaggio minerario in età romana, dei *markers* della produzione del minerale e del rapporto fra le miniere e il porto di *Agrigentum* in età tardoantica. Si tratta di un lavoro cominciato da anni e che prevede un approccio multidisciplinare. Infatti, ad una prima fase in cui si sono indagati i campi di applicazione dello zolfo e quindi i mercati potenziali a cui poteva essere destinato, ha fatto seguito un'indagine sul campo per documentare le evidenze archeologiche delle attività estrattive e le strutture insediative ad esse correlate.

Fin da quando questa ricerca è stata concepita, si è riflettuto su alcuni tratti caratterizzanti le attività estrattive che si mostrano fortemente conservativi, tanto da rimanere costanti nel tempo. Si è appurato che tali attività non richiedevano un grande investimento tecnologico, avevano un notevole impatto sul territorio circostante e, di contro, altrettante ricadute positive; ancora, è stato accertato che era necessario un controllo diretto da parte dell'investitore al fine di evitare latrocini da parte delle figure intermedie nella catena estrattiva.

Importanza del minerale sui mercati dell'antichità

Grande fu il fabbisogno di zolfo sul mercato in età preindustriale, quando la richiesta di acido solforico per la produzione di soda generò una forte domanda e determinò la nascita, nel territorio

Fig. 1. Serie gessoso solfifera e l'area delle miniere romane (cerchiata in rosso).

agrigentino, di un gran numero di zolfare, che generarono un benessere economico diffuso e bloccarono, temporaneamente, i forti flussi migratori verso l'estero.

In età romana, le officine vetrarie, le fullloniche, le attività militari, quelle mediche e, infine, l'agricoltura e la scienza veterinaria richiedevano grandi quantità di zolfo (Zambito, 2010). Questa domanda fece in modo che *Agrigentum* fosse meta di navi onerarie destinate all'esportazione dello zolfo verso i mercati del Mediterraneo. Il minerale veniva esportato in grandi lingotti e non richiedeva contenitori peculiari come nel caso dell'allume eoliano e melio. Unico indicatore, quindi, della sua circolazione sono i pochi relitti che conservano traccia di lingotti di zolfo nel carico: quello elbano di Procchio, quello mazarese di Punta Granitola e due relitti sardi per cui abbiamo solo fugaci segnalazioni (Parker, 1992).

Caratteristiche del paesaggio zolfifero

Il territorio agrigentino è caratterizzato da grandi depositi di calcare zolfifero e gesso. La cosiddetta "Serie Gessoso solfifera", nella quale si trova lo zolfo, copre una superficie di circa 1500 chilometri quadrati (fig. 1) ed è compresa fra le province di Agrigento, Caltanissetta ed Enna con un piccolo affioramento a Lercara Friddi (Palermo). Tuttavia, l'area interessata dai siti minerari romani sembra molto più ristretta e concentrata solo nel territorio a est di Agrigento.

Le particolari caratteristiche delle attività di estrazione e raffinazione determinarono e condizionarono le dinamiche insediative. Se, infatti, da un

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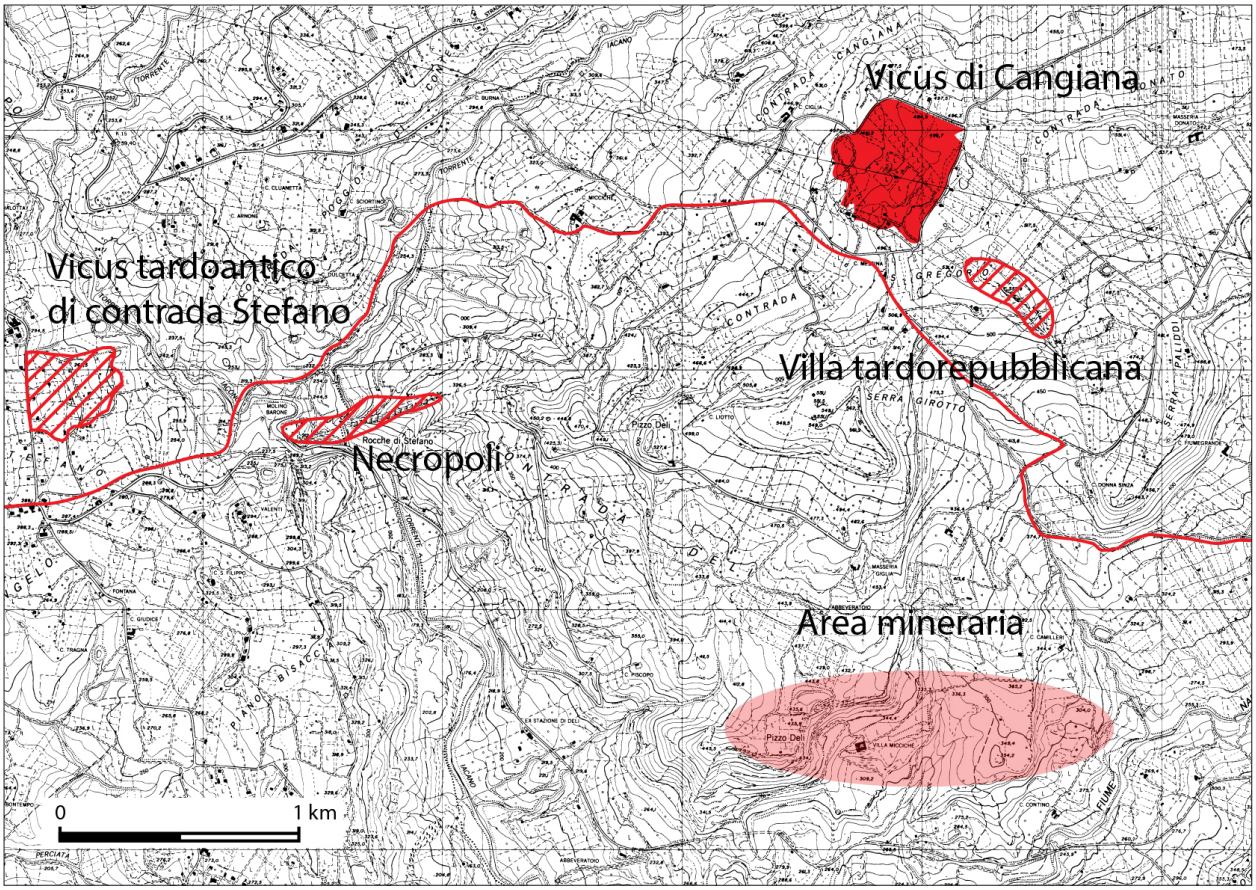

Fig. 2. Area attorno ai siti di Cangiana e Stefano e loro rapporto con il bacino minerario e la viabilità.

lato è necessario un diretto controllo delle attività lavorative e quindi una prossimità con le aree insediate, dall'altro lato, la produzione di anidride solforosa era dannosa per le coltivazioni, per il bestiame e direttamente per l'uomo. Le modalità insediative, quindi, dipendono dalla mediazione fra queste due esigenze. Se le attività di estrazione del minerale sono ad alto impatto, con tunnel e depositi all'aria aperta, il momento della raffinazione non prevede la costruzione di strutture di particolare complessità tecnologica: lo zolfo puro, infatti, si ottiene per autocombustione della ganga in grandi cumuli; il minerale, del resto, fonde a bassa temperatura e, per questo, non necessita di nessun apporto di altri combustibili.

Non era, perciò, necessario collocare gli stabilimenti di raffinazione in prossimità di risorse boschive o idriche. A tal proposito, sono interessanti i documenti di archivio e le transazioni notarili ottocentesche da cui emerge, chiaramente, l'intento di tutelare le coltivazioni dagli effetti negativi della vicinanza alle zolfare ma che, altrettanto chiaramente, lasciano trasparire la precisa intenzione di privilegiare le seconde sugli interessi dei primi con permessi e deroghe rilasciate facilmente. Se, come abbiamo visto, l'impegno tecnologico richiesto in una zolfara era minimo, il suo impatto sulla natura del territorio e perfino sulla sua orografia era devastante: nuovi rilievi, costituiti da rosticcio, torrenti e corsi d'acqua deviati, condizionamento delle aree insediative e coltivate sono solo alcuni dei macrofenomeni, documentabili direttamente per l'età contemporanea, attraverso le fonti di archivio, per l'età basso-medievale e per la prima età moderna, e che vanno ricostruiti attraverso una attenta analisi dei dati, per l'antichità.

Descrizione del progetto di ricerca: metodologia-area di studio

In sede di progettazione della ricognizione, finalizzata e da condurre su aree-campione, si è tenuto conto dei dati storici e topografici testimonianti l'esistenza di attività minerarie. Gli indizi sulla produzione mineraria antica, limitati alla presenza di *tegulae sulphuris* (fig. 2), portavano fin dall'inizio a concentrare le indagini nella porzione di territorio a est di Agrigento e fino a circa 40 chilometri da esso. Si è ragionato sulla distanza media percorribile, giornalmente, dagli addetti e, quindi, le aree-campione sono state delimitate tenendo conto dei seguenti due poli di attrazione: i siti in cui erano state rinvenute le *tegulae sulphuris* da un lato e, dall'altro lato, i filoni zolfiferi in cui cercare l'imbocco delle miniere.

Nove le aree campione iniziali: Casalvecchio, Fico, Quattro Finaite, Firrìo (nel territorio comunale di Racalmuto), Cignana (nel territorio di Palma di Montechiaro), Punta Bianca, Stefano, S. Gregorio (nel territorio di Favara), Puzzu Rosi (nel territorio comunale di Comitini) i cui confini sono stati disegnati tenendo conto di precisi confini topografici (l'esistenza di particolari caratteristiche orografiche e altimetriche, la presenza di bacini fluviali, l'esistenza di grandi arterie viarie) e analizzando il loro rapporto con i filoni solfiferi. Si sono documentate anche le discenderie, i forni e le strutture relative alle zolfare moderne rinvenute nelle aree della ricognizione così come si sono registrate anche le attività secondarie, sia contemporanee che successive rispetto alle zolfare: estrazione e lavorazione del gesso, produzione di beni e strumenti funzionali alla gestione delle miniere, cantieri di recupero del minerale esausto e cave di calcare. Tutte queste attività hanno ovviamente pesato e condizionato, quando non reso impossibile, l'analisi dei dati sulle miniere romane.

Si è deciso fin dall'inizio di effettuare ricognizioni ripetute e in stagioni diverse approfittando, in alcuni casi, di condizioni meteo-climatiche particolari (Belvedere, 1994: 75 con bibliografia precedente). Solitamente non si è superato il numero di due ricognitori; le ottime condizioni di visibilità hanno consentito di coprire giornalmente una vasta area (nell'ordine dei quattro ettari per giorno/persona) con una distanza reciproca fra i ricognitori di 8-10 m (Plog, Plog & Wait, 1978: 389-94). Nelle aree interessate da sterpaglie e in quelle in cui i rilievi collinari si facevano particolarmente importanti, si è camminato a distanze ridotte segnalando eventuali tracce di anfratti, tombe e, soprattutto, di manufatti legati ad attività produttive moderne.

I forni per la raffinazione dello zolfo hanno conosciuto, nei secoli, poche variazioni: dalle semplici *calcarelle*, accumuli di zolfo all'aria aperta, si passò ai più complessi *calcheroni*, cumuli di minerale coperti da rosticcio esausto. Infine, e solo a partire dalla fine dell'800, si diffuse il cosiddetto *forno Gill* che permetteva di riutilizzare il calore prodotto dalla fusione per altri forni, consentendo, così, un risparmio di minerale.

Particolarmente utile si è rivelata, infine, una lunga indagine di archivio che in alcuni casi (come quello di Racalmuto) ha consentito di restituire il contesto di rinvenimento per le *tegulae*. Gli esemplari racalmutesi furono rinvenuti, infatti, alle porte del centro moderno e la loro scoperta era stata annotata da un erudito locale nel 1897. Un altro caso è quello relativo alla tegola da Grotte, oggi conservata presso il Museo di Palermo, riguardo alla quale si conservava solo la generica indicazione 'trovata a mezzo miglio a tramontana dalla stazione di Grotte'. In questo caso la ricerca sul terreno ha permesso, con il rinvenimento di un frammento riconducibile allo stesso tipo, di rintracciare con esattezza l'area di Firrìo che, appunto, si trova a circa 800 m a nord dalla stazione di Grotte.

Primi dati dalla ricerca

Se le fonti letterarie e la documentazione archeologia sono sostanzialmente "mute" riguardo all'estrazione dello zolfo siciliana, non c'è dubbio che ci troviamo di fronte a uno "*speaking landscape*". L'indagine topografica è servita, infatti, a

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dare una definizione di spazio e paesaggio minerario. Ci si è chiesti quali sono le peculiarità delle attività estrattive e cosa sappiamo delle modalità di sfruttamento minerario nell'antichità. In realtà abbiamo pochi dati che trasmettano indicazioni sul lavoro nelle *fodinae*: in questo caso un testimone imprescindibile, anche, per la sua conoscenza diretta dell'argomento, è Plinio il Vecchio (Lana, 1990: 453-502). Gli addetti all'estrazione vengono solitamente poco considerati da Plinio e sono indicati solo di rado con la loro qualifica: *operati*, *fossores*, *vigiles*, *operae*.

Ad ogni modo, dal passo pliniano, si evincono alcuni importanti dati sull'organizzazione del lavoro nei filoni minerari spagnoli: i turni erano di dieci ore e gli addetti, nelle ore di riposo, non uscivano alla luce del sole ma organizzavano sotto terra la pausa: '*cuniculis per magna spatia actis cavantur montes lucernarum ad lumina; eadem mensura vigiliarum est, multisque mensibus non cernitur dies*'. Il dato è analogo a quello che si ricava dalla *Lex Metallis* di Vipasca in cui è documentato anche l'uso, una volta esaurita una vena, di procedere all'allargamento del fronte di cava: partendo proprio dai vecchi *putei* si procedeva all'escavazione di cunicoli laterali (Plin., *NH*, 33, 70).

Un secondo modello di gestione delle miniere è conservato in Diodoro Siculo (5, 35-38), il quale documenta la gestione delle miniere egiziane e i massacranti turni continui a cui erano sottoposti gli schiavi:

gli schiavi impegnati nel lavoro in miniera producono ai loro padroni profitti di incredibile entità; essi sotto terra nelle gallerie, logorando il loro fisico giorno e notte, in molti muoiono per l'eccessivo patimento; non hanno diritto a riposo né a pausa del lavoro mal costretti dalle frustate dei sorveglianti a sopportare la terribilità dei loro mali, gettano via infelicemente la vita e la sofferenza è prolungata per quelli che resistono più a lungo a causa del loro vigore fisico e della loro forza d'animo. Per loro la morte è preferibile alla vita, tanto grande è la sofferenza (Lana, 1990: 480-87).

Il colorito malsano dei minatori, un tratto topico, è dovuto tanto alla loro esposizione a polveri, vapori e altri agenti inquinanti (sia naturali quanto prodotti dalla stessa escavazione) quanto alla lunga permanenza sottoterra. In epoca moderna gli zolfatai erano pendolari: dai centri urbani si dirigevano alle bocche di miniera e, finito il turno, vi facevano ritorno. Nei casi in cui le miniere erano particolarmente lontane si aveva un pendolarismo settimanale, tuttavia le dannosissime attività di raffinazione dello zolfo, che producendo anidride solforosa rendevano il territorio inadatto a qualsiasi altra attività e, quasi alla vita stessa, erano strettamente legate agli imbocchi delle miniere. Analogamente il proprietario della licenza o l'affittuario doveva controllare con frequenza l'attività in cui, spesso, aveva investito tutte le sue liquidità. Ci si chiede, quindi, se questo genere di insediamento potesse avere, in qualche maniera, un antecedente di epoca romana.

Uno degli obiettivi iniziali del survey è stato verificare sul campo se tale asserzione avesse un fondamento. Il paesaggio minerario è "liquido" per definizione, è infatti possibile trovarvi cave di rosticcio esausto, usato per il fondo stradale o come inerte nelle fondazioni delle abitazioni; sono molto comuni, inoltre, grandi cave di calcare e ciò ha ovviamente un grande impatto sulle caratteristiche orografiche della zona. Ancora, di solito, nei depositi geologici di zolfo si trovano tracce dell'estrazione del gesso: tagli nella roccia, blocchi pronti per essere estratti e numerose fornaci per la cottura della pietra (*calcare*). Frequenti, infine, anche altre strutture più semplici, come i forni da pane, per il sostentamento degli operai.

All'interno di ciascuna area si è effettuato, pertanto, un survey intensivo, documentando il record ceramico e, in taluni casi, le emergenze architettoniche. Sono stati percorsi complessivamente circa undici chilometri quadrati e sono state individuate 35 UT: tra queste, tre sono siti produttivi (Piano di Corsa, Lucia e Cozzo Tondo), in cui la raffinazione del minerale è testimoniata da uno strato di zolfo accumulato sulle *tegulae sulphuris* rinvenute e da evidenti segni di contatto col fuoco e con alte temperature. Altri (Cignana, PianoVento, Punta Bianca, Stefano, Saraceno, Firrìo, Quattro Finaite) sembrano interpretabili come siti residen-

Fig. 3. *Tegulae* di Gellius Pelorus.

ziali; nei restanti casi si tratta di necropoli.

Prima di questa ricerca non si era in grado di inserire le *tegulae sulphuris* in una griglia crono-tipologica (esse erano indistintamente assegnate ad un periodo compreso fra il II e il IV secolo d.C.). In alcuni casi, invece, si è potuto assegnare ciascun gruppo di *tegulae sulphuris* al singolo sito o contesto topografico e, quindi, ridefinire meglio la datazione della tegola sulla base del record ceramico attestato.

Conclusioni e prospettive di ricerca

L'analisi del record ceramico e della sua distribuzione consente di delineare, per la produzione dello zolfo, un *range* cronologico molto ampio che va dalla tarda età ellenistica ad epoca bizantina. Gli abitati di epoca imperiale sembrano qualificarsi tutti come residenze di pregio, probabilmente legate alla figura del *dominus* dell'impresa mineraria. I siti interpretabili come *villae* cessano di essere frequentati entro la prima metà del III secolo d.C. mentre, a partire dalla fine del IV d.C., si osserva, nell'area della nostra ricerca, la diffusione di una

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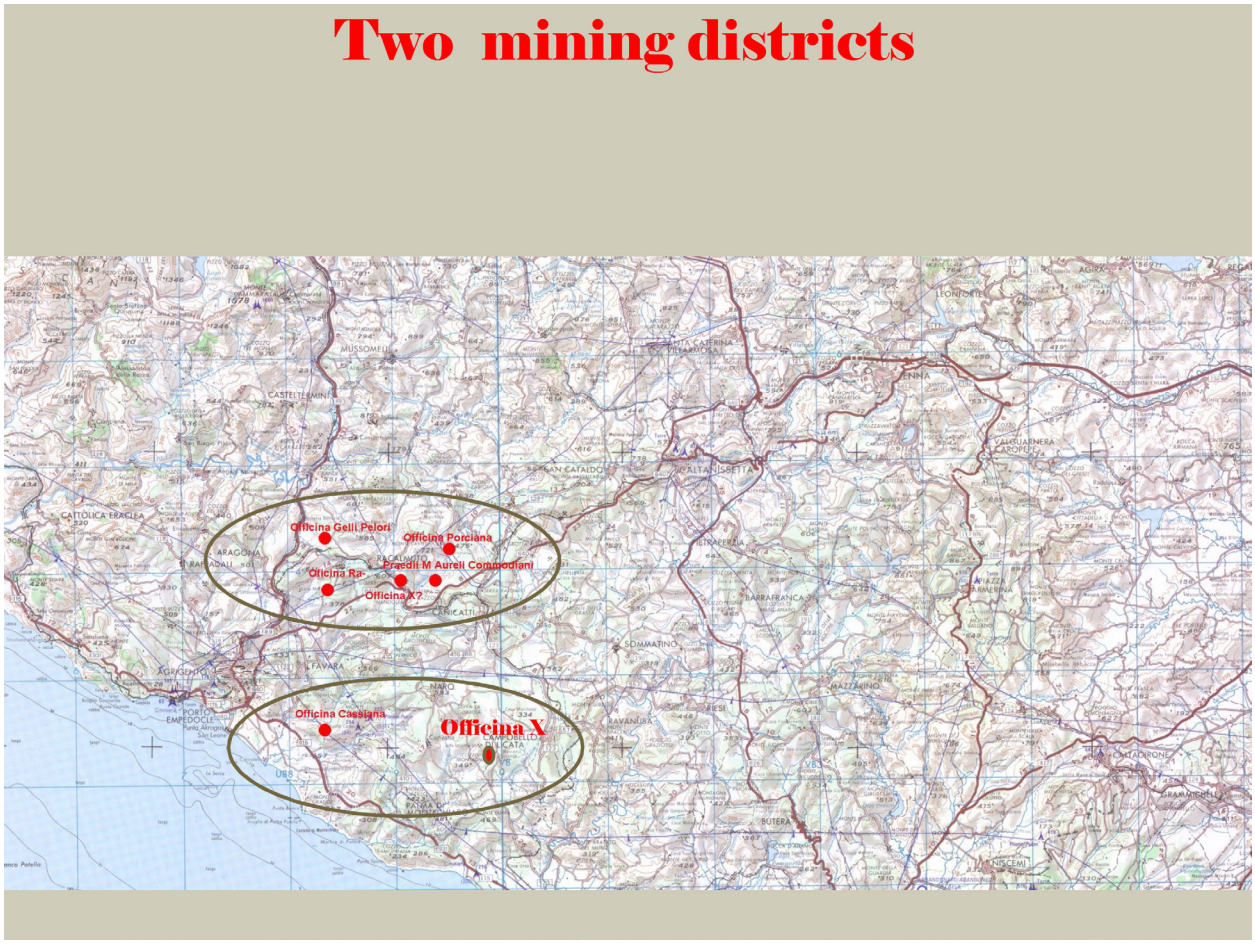

Fig. 4. Distribuzione delle *officinae*, localizzate in due distretti principali

nuova forma insediativa: il villaggio. All'interno di questi nuovi insediamenti, inoltre, sono presenti indicatori di molteplici attività artigianali e produttive: produzione di calce, vetro, ferro e grandi impianti per la produzione di vino e olio.

È possibile, ora, ricostruire alcuni settori del paesaggio minerario e disegnare una carta delle infrastrutture, primarie e secondarie, funzionali all'estrazione, alla raffinazione e all'esportazione del minerale (tunnel, aree abitate, assi viari, aree di necropoli). Certo, rimane ancora elevato il numero di *tegulae sulphuris*, conservate presso il Museo di Agrigento, per cui non conosciamo ancora il contesto produttivo. Continuare l'indagine topografica in aree solfifere diverse, potrebbe sicuramente ampliare le nostre consocenze su quei distretti. Ma è senza alcun dubbio all'indagine stratigrafica che devono essere affidate le prospettive di una migliore comprensione dell'articolazione interna delle *officinae* e della loro evoluzione nel tempo.

Nella ricostruzione proposta, tuttavia, c'è una grande assenza: si tratta del personale che, direttamente lavorava all'estrazione. Dalle fonti sappiamo che doveva essere di condizione schiavile oppure si trattava di condannati per gravi reati. Stupisce, comunque, la completa assenza di qualsiasi traccia di frequentazione nei tre siti individuati come sedi di zolfare (Zambito, 2014b) e di impianti di raffinazione del minerale. Esisteva un pendolarismo giornaliero verso l'abitato? Oppure, piuttosto, gli operai trascorrevano tutto il loro tempo sul luogo di lavoro e, per questo, in superficie non se ne rinviene traccia?

La ricerca ha riportato alla luce gli elemen-

ti principali del paesaggio minerario, da epoca romana fino ad età bizantina. In pochi fortunati casi è stato possibile anche connettere la singola *tegula sulphuris* alla singola produzione e, in ultima analisi, ad uno e un solo distretto produttivo con la sua area di raffinazione. Dei circa 35 tipi differenti di *tegulae sulphuris* almeno 20 rimangono ancora da assegnare a un preciso contesto topografico. Questo dato indica quanto e verso quale direzione la ricerca potrebbe continuare.

Alcuni fortunati rinvenimenti hanno consentito di stabilire dove si trovasse l'*officina Cassiana*: tra Miniera Lucia e Ciavolotta, due importanti zolfare moderne all'interno del bacino del fiume Naro. Anzi, fu, con ogni probabilità, proprio la presenza di canyons generati dal fiume a rendere più semplice l'individuazione dei filoni da sfruttare. Un secondo centro minerario si sviluppò attorno a Racalmuto (Ag). A nord del vallone di Racalmuto, a fine '800, furono rinvenuti alcuni esemplari di *tegulae sulphuris* con tracce di contatto con zolfo e che documentano la presenza della *officina Porciana*. A sud-ovest del centro moderno, invece, è stata ubicata l'officina *Ra-* (ancora oggi riesce difficile integrare il toponimo). Ancora, a nord-est, tra Racalmuto e Milena, sono da individuare le proprietà di Marcus Aurelius Commodianus. Sulle colline a nord di Grotte è da collocare la presenza della *officina Gelli Pelori* (fig. 3).

L'area mineraria antica pare, dunque, concentrarsi in due principali distretti: il primo, a est-nord-est di Agrigento, oggi fra i comuni di Racalmuto, Grotte e Milena; il secondo, costiero, nel bacino del fiume Naro, pochi chilometri a sud-est di Agrigento (fig. 4).

Agrigentum sembra aver perso, nel corso del VI d.C., la sua funzione di centro fiscale di riferimento a favore di altri centri economici dell'hinterland che si affermarono durante la tarda antichità e la prima età bizantina; tuttavia l'estrazione dello zolfo non sembra aver conosciuto una soluzione di continuità.

Un centro anonimo, in prossimità di Racalmuto, acquisì tale ruolo come pare documentato da numerosi dati convergenti, quali la scoperta di un importante tesoretto di aurei, databile a metà del VII d.C., un sigillo di metà VIII d.C., che testimonia la presenza di interessi di un certo *Antiochos Notarios* funzionario bizantino e, non ultima, la tegola di Eusebius (fig. 5), che si propone di datare ad età bizantina, sulla base dell'iscrizione e del fatto che non sia stata prodotta ad Agrigento, come tutte le altre, ma nei dintorni di Racalmuto stessa (Zambito, 2014a).

Fig. 5. *Tegula* bizantina di Eusebius.

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Infine, recenti indagini archeologiche nel porto di Agrigento sembrano confermare la grande vitalità da esso mantenuta almeno dal VII d.C. e, senza soluzione di continuità, fino agli inizi del IX d.C. Il commercio dello zolfo potrebbe essere la chiave per spiegare la valenza strategica di questo approdo e aver costituito un cespite economico su cui Agrigentum contò per un lungo periodo.

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Changes and Transformations of the Spatial Structure and Landscape in the Area of L'Aquila between the Fourth and Eighth Centuries AD

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Abstract

In the period between Late Antiquity and the Early Middle Ages, the territory of L'Aquila underwent a number of transformations that also occurred elsewhere. The cities (*Amiternum*, Civita di Bagno, *Peltuinum*, *Aufinum*) suffered a heavy setback in their urban and economic development because of the general crisis of the Empire, the devastating effects of earthquakes in the second half of the fourth century, the Greek-Gothic war, the barbarian migrations and last, but not least, the changes in society and the ideological-cultural transformation induced by Christianisation. The relationship between town and country / city and territory undergoes fundamental changes, with different connotations in terms of landscape and settlements. The archaeological research and excavation of the surface, which we have carried out in the territory of L'Aquila for over a decade, is beginning to provide evidence of the results of the urban and rural landscape transformations: the Christianisation of space and functional transformation of major public and private facilities are confirmed by the discovery of churches replacing temples, as in Centurelli and in Piana San Marco and so on. Other evidence is provided by citadels obtained through the restoration of theatres and amphitheatres or city gates, as in the restorations and transformations of *Peltuinum* and *Amiternum*. We can also mention functional transformations such as private *domus*, sometimes with a long occupation of public spaces, such as in *Amiternum* and *Peltuinum*, or the defunctionalisation of infrastructures such as thermal complexes, roads, aqueducts and sewers. Homes or wooden cabins occupy the scene in the *Amiternum* theatre; churches like Santa Maria of Ansedonia abut the city walls. The rural landscape is changing for many reasons: the spread of Christian places of worship, the collapsing of public infrastructures such as roads or waterways, the advancement of wetlands and uncultivated areas and grazing activities to the detriment of agricultural areas. By the seventh century there is a further change in urban and agro-pastoral planning, which will be illustrated with concrete examples provided by the archaeological research we are carrying out.

Keywords: L'Aquila, Changes and Transformations, Settlement Patterns, Landscapes, Fourth-Eighth Centuries AD

1. The Cities

a) Amiternum

Our recent archaeological excavations in the area of the primitive cathedral of Santa Maria in Civitate, in the area of Campo Santa Maria, are providing useful information, despite their incompleteness, on the continuity of settlement, at least in the area of the ancient city from the second to the thirteenth century. This puts back by at least four centuries what had been considered the proof of the abandonment of the city: the visit by Deoderico, bishop of Metz, around AD 970 (Redi et al, 2013; Redi et al, in press). (fig. 1)

The bishop, appointed by the Emperor to collect relics, arrived in *Amiternum* and described the city as a distressing pile of ruins. The truth is that the site occupied by a prestigious *domus* of the Early Imperial period was restored between the fourth

Fig. 1. *Amiternum* "Campo Santa Maria", aerial view of the excavation.

and fifth centuries after a brief abandonment, probably caused by the earthquake in AD 346. It was rebuilt with the inclusion of a space for the Christian cult, with a semi-circular apse covering part of its western wall. This ecclesiastic structure can be dated between the fifth and the sixth centuries, during the time of the bishop of *Amiternum* Valentino or his successor Castorio, contemporary to Equizio, founder of a pre-Benedictine monastic movement and shortly after the monumentalisation of the martyr Vittorino's tomb wanted by Bishop Quodvultdeus (Giuntella, 1994; 1999; 2001; 2002; 2003; Pani Ermini, 1972; 1975; 1979; 1987; Redi, 2009; Somma, 2012). (fig. 2)

A large semi-circular apse of a three-aisled building stands against the southern side wall of the rectangular space with an E-W orientation. The aisled building follows a N-S orientation and is dated to the Lombard period, when the bishop of *Amiternum* was Ceteo, martyred between 590 and 604. With Ceteo the *series episcoporum* of *Amiternum* was interrupted but not the activity within the ecclesiastic structure, probably a cathedral, which revealed signs of the renovation of the liturgical decorations of the rebuilt choir *plutei,* similar and contemporary to the ones not far away in the catacombs of San Vittorino (Pani Ermini, 1976; 1978; Redi & Savini, in press).

These, just like the *insula episcopalis* that we mentioned, had modified the urban setting from

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Fig. 2. *Peltuinum*, church of Santa Maria di Ansidonia, partially leaning against a segment of the Roman walls.

as early as the third-fourth century by creating a new point of reference, like a sanctuary, a visual and directional goal for the Late-Antique and Early Medieval settlement, by attracting the cult of Observants and the euergetism of ecclesiastics and by Lombard aristocracy. As previously mentioned, during the fifth century, the Bishop Quodvultdeus monumentalized the tomb of the martyr Vittorino and built in front of it, in the same catacomb, a small single-aisle basilica with apse, a sort of *martyrium*, for the cult of the Saint. At a later date the local Lombard aristocracy positioned its family burials in this same space and enriched the building with reliefs typical of the same period as the *plutei* of the church built over the catacomb and dedicated to Saint Michael (Giuntella, 2002; Pani Ermini, 1975; 1979; 1987; Redi, de Iure & Di Blasio, 2012; Redi, de Iure & Siena, 2012; Somma, 2012).

The urban setting of *Amiternum* appears to also be modified by the spoliation of public buildings, in addition to the creation of new Christian ecclesiastic points of reference and the architectural reuse of Patrician *domus*, like the one with *peristilium* close to the amphitheatre, where a copper medallion with a Christ monogram was found (Clementi, 2003; Pani Ermini, 1987; Redi & Savini, in press; Scrinari, 1978). Structures became quarries for building materials such as columns, capitals, friezes, etc. for the construction of religious buildings, and new structures created in perishable materials such as clay and wood occupied the area of the collapsed or transformed ones (like close to the steps of the theatre), as a proof of the significant cultural and functional changes of the previous urban setting (Tuteri, 2014). Also the urban road network was damaged, due to the spoliation of residential buildings and the digging of burials in tombs that were excavated, removal of pavers, collapse of buildings and the rough restorations of different levels in the streets.

But what was happening in other cities of the territory, such as *Peltuinum* and Civita di Bagno-Forcona, in the same period?

Fig 3. *Peltuinum*, reuse of the structures of the portico.

b) Peltuinum

As revealed by the series of archaeological excavations conducted by the archaeological Soprintendenza and Sapienza Università di Roma, the situation was not so different from the one described in *Amiternum*. Public buildings were spoliated and readapted to different functions; Christian cult buildings occupied relevant positions next to gatehouses and defensive walls, inside and outside of the urban precinct (Campanelli, 1996; Clementi, 2007; Redi, de Iure & Di Blasio, 2012; Redi, de Iure & Siena, 2012; Redi & Savini, in press).

Some milestones found close to the main road axis of the city, identified with the *Via Claudia Nova* still in use at that time, were dated to the fourth century, so to the Late-Antique period. The earthquake of AD 346, despite its destructiveness evident from the signs of collapse of a porch wall in the temple of Apollo, did not determine the end of the city. It continued to survive, even if with evident reductions and transformations, for another seven centuries until the fourteenth century, when the city of L'Aquila rose (Redi 2009; Redi, de Iure & Siena, 2012; Tartara, 2007).

In the post-Constantine period some residential spaces were restructured, with the use of *spolia* from the Republican period, while the *tabernae* used for the assistance of travellers along the axis of the main road show signs of continuous use until the fifth century, although the buildings were restored and readapted. After all, as noticed in previous papers, the place-name Ansidonia acquired by *Peltuinum* during the Middle Ages, is a clear sign of the continuity of life in the city, despite its transformations and readaptations, in

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the Byzantine period. This means that, like the city with the same name in Tuscany on the Argentario, Ansidonia was used for the stockpiling of food and grains most likely for the Byzantine troops during the Greek-Gothic war. The term "Ansidonia" probably derives from the Greek "*Sitòn*" (Patitucci, 2001; 2004a; 2004b; Redi, de Iure & Siena, 2012; Tulipani, 1996).

The filling of the colonnade and the finding of a monolith, with the typical carving of an "H" next to a circular incision, in the southern part of the porch in the temple of Apollo, provide further proof of the activity of spoliation and readaptation of the urban setting. The monolith, like in other areas of the same territory and with strong comparisons with similar phenomena in Vandal North Africa, not absolutely identifiable with sacrifice altars, is part of a fundamental element of the *prelum* of an olive or grape press. Between the fifth and sixth centuries, this kind of press was installed into defunctionalised cultural or public buildings (Milanese, 2003).

While the dating of the restorations and consolidation of the theatre is uncertain and is generally identified with the Early Medieval period and with Lombard activities in cities connected to the placename "Parlascio" (Garzella, 1990), the building of a church identified as Santa Maria di Ansidonia can surely be associated to the Byzantine period (fifth-sixth centuries). The building presented a group of burials positioned against the city walls and the eastern gatehouse which could be dated by their grave goods (Giustizia, 2007; Redi, de Iure & Siena, 2012). (fig. 3)

After all, the early Christianisation of the city, for which no mention of a bishop has been found, is documented by the finding of a bronze ring with a typical christogram *Chi Rho* dated to the fourth century near the porch of the temple of Apollo. Harder to date is the Christian epigraph reused in the southern wall of the church of San Paolo, located outside of the city walls and west of the theatre (Giustizia, 2007).

In the structures of the church, essentially relatable to a twelfth-thirteenth century building, are included some sculptural fragments dated to the eighth-ninth century belonging to a previous ecclesiastic Early Medieval building (Giustizia, 2007; Redi, 2010). Also in the same period, the existence of a *Curtis S. Angeli* is documented, belonging in 787 to a Lombard *skuldheis* named Scaptulus probably buried in a cemetery close by where a small golden cross (published by Rotili) was found (Redi, de Iure & Siena 2012; Rotili 1992-1993). In the eighth century, the Lombards had therefore constituted a *skuldheis*, that is a district composed of military units (or arimanni) established in strategic positions as Ansidonia had been for the Byzantines. The *Curtis S. Angeli* of Scattulo, described as a property of the abbey of Farfa in 888, also had an agricultural function, for the tillage of uncultivated lands or forests and for cultivation or pasture activities.

An urban landscape, by now largely de-structured, dispersed and rural, characterized the territory of *Peltuinum* in what had once been a flourishing city.

2. The Relationship between the Urban/ Rural Context and Road Network: the "Paganico-Vicano" and "Plebano" Systems

As for the cities, *vici* and *pagi* transformed during the Early Middle Ages and defined new territorial settings as a consequence of the phenomenon of Christianisation, the pressure of Barbarian migrations and the settlement of new cultural and ethnic groups. The data provided by two of our archaeological excavations, conducted in Barete (a few kilometres from *Amiternum*) and Piana San Marco (in the surroundings of a *pagus* at 1100 metres a.m.s.l. on the Gran Sasso Mountain), contribute to our knowledge of this process of territorial transformation.

a) Pieve of San Paolo di Barete

The Christianisation of the city of *Amiternum* happened early, as revealed by the artefacts studied

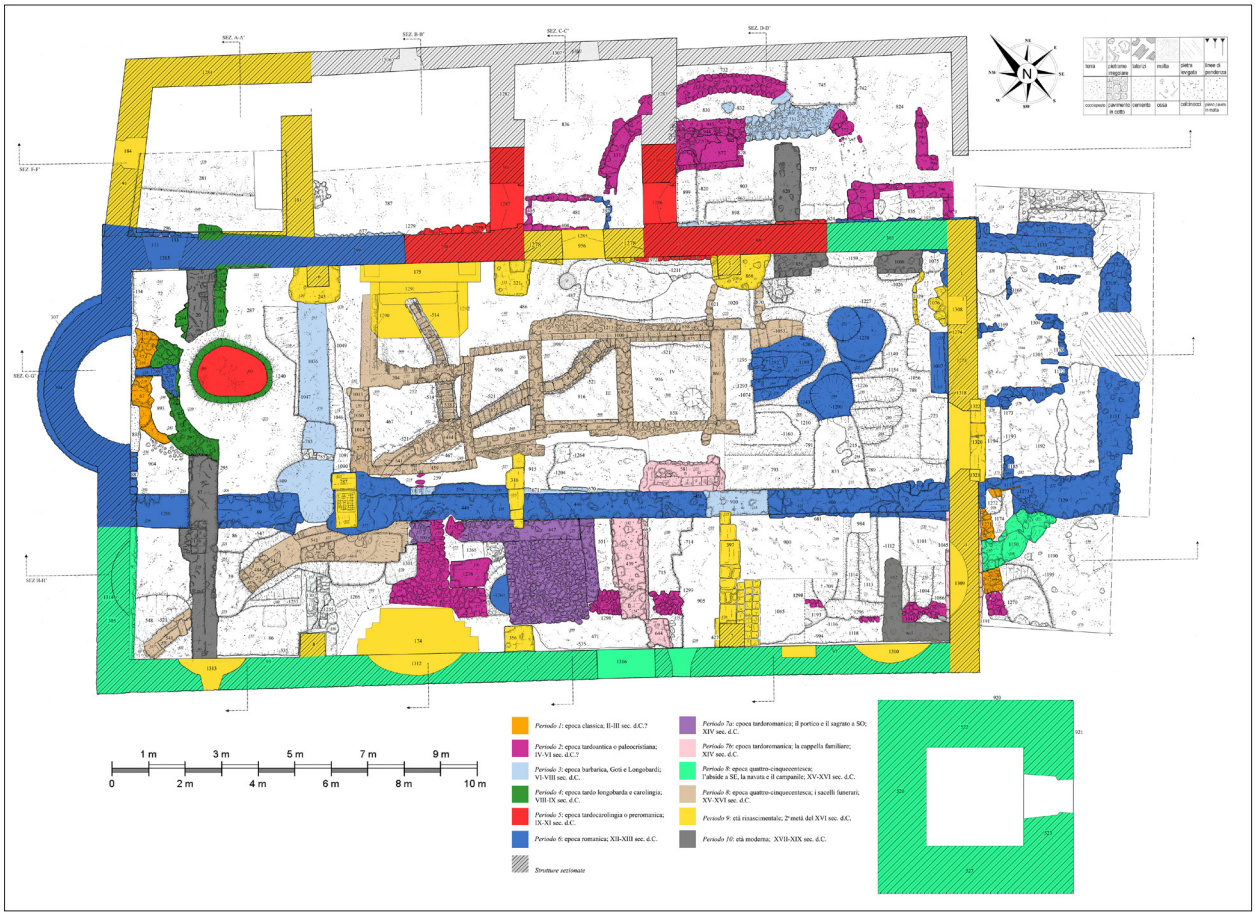

Fig. 4. Barete, church of San Paolo, general plan of the excavation.

by Bevignani and Scrinari and the presence of the catacombs of San Vittorino and the early Christian cathedral found by us. We can attest to the rapid spread of Christianisation in the surrounding territory also.

The cemetery of the *pagus* of *Labaretum*, only four kilometres NW of *Amiternum*, received the burial of Domitilla, daughter of the Emperor Vespasian, converted to Christianity by Vittorino; a church with rectangular plan, oriented perpendicularly to the main axis, with a wide exedra between two tombs and with a shallow narthex on the façade, was built in the fifth-sixth century next to a tower or cubed-shaped tomb dated to the second-third century. In the middle of the apse, between a baptismal font of the same period and the semicircular wall, a special burial pit was prepared, of an upper-class young boy (as deduced from the find of a sixth century bone-comb in the burial) (Redi, 2007; 2009; Redi & Forgione, 2014). (fig. 4)

Local aristocracy, perhaps Roman-Byzantine, lived in Barete in this period, but also influential characters of Ostrogoth origin were buried in Colle di Casciano in the area of Barete, as evident from the three *fibulae*, inlay worked with gold and gems, found in 1892 and kept in the museum of Villa Giulia in Rome (Antonelli & Tornese, 2013; Redi & Forgione, 2014).

Amphorae of the Late Roman Amphora 4 type, dated to the sixth century, found in Barete and *Amiternum*, attest to long-distance commerce in the Byzantine and then Lombard period. In the church of San Paolo di Barete the traces of a sixth to seventh or seventh to eighth century building with a simple rectangular plan next to a space with a baptismal font were found. The presence of a baptistery is particularly interesting since it proves that, with the transformation

Fig. 5. Piana San Marco, aerial view of the excavation.

of the fifth-sixth century, the church acquired the function of *cura animarum* of the small settlements spread in the surrounding area. These settlements were clustered around small *ecclesiae* like San Mauro and Sant'Eusanio in Barete, dated at least to the seventh-eighth century (Redi et al, 2012).

The baptismal church of San Paolo has also revealed significant traces of an apsidal and frontal enlargement in the Carolingian period and of a remake of liturgical instruments by local workshops with the use of cartons from Spoleto, Teramo and Cividale del Friuli (Redi, 2010; Redi & Forgione, 2014). Traces of the removal of a burial were found beneath the altar, belonging to the body of a Saint venerated within the church, as deduced from the location and ritual features.

The widespread dissemination of Christianity in the rural landscape took place thanks to particular sanctuarial nodes, positioned strategically along the Roman road network, still widely used. A proof of this is the monumentalisation of the catacombs of Santa Giusta of Bazzano, along the Claudia Nova about six kilometres south-east of L'Aquila, and of San Massimo of Aveia in the cathedral of Civita di Bagno in Forcona (Redi, 2007; Redi & Savini, in press; Redi, de Iure & Di Blasio, 2012).

b) Piana San Marco

Once again the excavations revealed evidence of significant continuity (Redi, 2009; Redi & Iovenitti, 2006; Redi & Malandra, 2004; Redi, de Iure & Siena, 2012). The *pagus* of Marcianisci, which had replaced the fortified Italic site of Colle della Battaglia, transferring the settlement almost to the centre of

a fertile carsic sinkhole, was structured in a series of residential buildings belonging to a *domus* with farm and other auxiliary buildings. This can be understood through the interpretation of the cemetery and about forty of the epigraphs found there (published by Mommsen in *CIL* IX) coming from a pear-shaped Roman-Italic pit and from a temple, of which we found the podium and several architectural elements, such as columns, bases, fragments of frieze, etc. Our excavations have also brought to light Byzantine and Early Medieval structures, the auxiliary buildings of a monastic cell part of the monastery of San Vincenzo al Volturno, known from the ninth century, and a small church built over the podium of the Roman temple between the thirteenth and fourteenth centuries (fig. 5).

This was restructured in the Byzantine period and surrounded by walls without foundations, built with irregular-shaped stones and roughly bonded with low-quality mortar. These walls, built most likely as a fortification during the Greek-Gothic war, are dated both stratigraphically and by the find of a golden *aureus* of Justinian and six silver coins, an extraordinary treasure recovered in our excavations.

The site, besides being characterized by the presence of a sinkhole used for agricultural purposes (arable and forage) and surrounding hills, was also inhabited because it represented a strategic hub of the minor road network being crossed by commercial and military routes. This road network linked the Adriatic area to the high pasture lands of Gran Sasso across the Forca di Penne, in a period during which transhumance, at least vertical transhumance, had not ceased.

c) Roundabout of S.S. 17 to Centurelli

The reconstruction of the landscape made possible by the archaeological excavations conducted by the Soprintendenza Archeologica at the time of works on the SS 17 road confirms what has been previously established on the continuity of settlement patterns: Italic burials, Roman road networks and the podium of a destructured Roman temple (transformed into a church with sepulchre between the sixth to seventh and the twelfth centuries) and also the indications of abandonment both of the road network (obliterated by burials) and of structures for farming activities belonging to a *mansio* or *hospitum* along the road (showing signs of a later readaptation and reuse). (D'Ercole & Martellone, 2007; Redi & Savini, in press; Redi, de Iure & Siena, 2012).

d) The mansio of Bazzano

Again in this case the excavations conducted by the Soprintendenza Archeologica, at the time of the construction of a warehouse for the Akron corporation, uncovered the ruins of a *mansio* dated to the Republican period with signs of a later obliteration from five burials (with burial goods) in the fifth-sixth century. In this second phase, the colonnade dividing a rectangular space into two separate aisles was filled with several wall structures constructed from *spolia* (Martellone, 2007; Redi, de Iure & Siena, 2012; Redi & Savini, in press). The interruption in excavations did not allow for the identification of the possible site of Christian cult, connected to the burials found (and to a larger cemetery area). The probable transformation of the *mansio* into a *hospitum* with chapel and cemetery is evidence of the continuity of use of the local road network, most likely used for military and traffic purposes rather than commercial and farming activities as in the past.

3. Conclusions

It is therefore clear that the archaeological excavations conducted by different research institutions (Soprintendenza, Universities, etc.) are still too incomplete to give an exhaustive framework on the transformations of the territory of L'Aquila in the urban and rural context. The results of these excavations are, however, sufficient to confirm the general trends of settlement patterns and to delineate the transformations of urban and rural landscapes.

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Roman Order and Early Christian Redefinition: Crossed Archeological and Anthropological Analysis from Riva del Garda (TN)

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Abstract

This paper draws its origin from a series of archaeological interventions led by the Soprintendenza per i Beni Archeologici della provincia Autonoma di Trento under the supervision of Cristina Bassi in the area called "piana Benacense", a fertile plain near Riva del Garda, in the northern part of Lake Garda. The results of the excavation that took place in San Cassiano (2005-2006) are debated along with related anthropological studies. The site, placed beside the current Via Marone, follows the layout of an ancient Roman street characterised by the presence of burial areas. The area, about 6000 m^2, presented the existence of a road that divided a Roman villa from two separated burial areas (dated respectively to the third and fourth centuries AD). The Roman villa, with structures that are dated from the first to the fourth centuries AD, included a large productive area better identified after the anthropological analysis of the individuals buried in the southern necropolis. In this area there were both incinerations and inhumations graves, all characterised by the same markers of osteological stress compatible to wool manufacturing. The smaller northern burial area was built for wealthier people, sometimes showing the traces of similar work activities.

In the fifth-sixth centuries the landscape totally changed and a church was built, hosting a few high-status graves. The analysis of human remains revealed that all the individuals were males and showed the so-called "horseman syndrome" with some trauma fractures. We suppose that this leading group commissioned the church. After the fifth century, data agree upon a generalised implosion of economic structures, as confirmed by the markers of occupational stress on bones. Therefore the crossing of archeological and anthropological results trace the landscape history of the Benacense plain, from the well-organised and productive Roman period to a period lacking organisation and economic structures. This is the reason San Cassiano could be considered a significant component for the historical reconstruction of the Garda area in "the time of change".

Keywords: Riva del Garda Area, Anthropological Analysis, Transition Era, Early Christianisation, Landscape Use

Introduction to the Archeological Context

The area of San Cassiano is situated in the NW part of Riva del Garda (Trentino), next to an ancient road that connects the centre of Riva to the centre of Varone and to Arco further on, running along the western hillsides of the slope that delimit the valley on this side. The archaeological investigations carried out in 2005-2006, led by the Soprintendenza per i Beni Archeologici della Provincia Autonoma di Trento, involved an area of 6000 m^2 containing throughout its entire extent both Roman and medieval remains (fig. 1).

Fig. 1. San Cassiano - Riva del Garda (Trentino). General plan of archaeological area.

The most ancient testimony is provided by a *via glareata* (a dirt road with a gravelled surface), with a NW/SE direction and crossing the entire archaeological area. The stretch of road that continues south probably reached the area currently occupied by the Church of the Inviolata, where there was a crossroads of streets leading to the Roman town of Riva (*vicus*).

Gradually an articulate and broad burial area developed along the eastern side of the road; this burial area remained in use until the sixth-fifth century AD (Bassi, 2010b). The area – occupied by the Roman necropolis – spreads north to the ancient bed of the river Albola; however it was not possible to establish its eastern and southern boundaries due to the fact that this area was not involved in archaeological excavations. At this stage, 56 burial sites were investigated. It was possible to recognise two different main groups. The first, located on the southern area of the investigated sector, is composed by a considerable number of cremation burials with different types of structure (graves made in clay bricks, *cappuccina* burials, simple trenches in the ground, cremations inside stone box graves or *in amphora*); there were also some inhumation burials inside a stone box structure, dated to the fourth-fifth century AD (Bassi, 2010a; Granata, 2010). All the recovered grave goods show a certain uniformity and standardisation; the oil-lamp is especially recurrent, as well as pottery vessels, glasses, coins and personal objects. Furthermore, the presence of writing tools is remarkably interesting. Burial 94 (dated end of the first-beginning of the second century AD) distinguishes itself for its rich grave goods, also comprehensive of ornamental objects

deriving from local tradition, that appear to underline the particular role played by the individual within the community (Bassi, 2010a).

A second group of graves, almost all inhumations referred to the third century AD, was discovered in the northern area of the excavation; in this sector graves are characterised by monumental architecture. Indeed, all burial chambers are built with masonry walls of remarkable dimension, internally finely plastered. For this reason it is possible to assume that this site is the resting place of an influential local aristocratic family.

A significant element is the presence in this area of a funeral monument pertaining to the *Magii* family documentarily linked to the church of San Cassiano and Ippolito and presumably found in the surrounding area (CIL V 4990; InscrIt 5 1065; Paci, 1988; Garzetti, 1991; Bassi, 2010c; on the presence of the *Magii* family in the surrounding of *Brixia* see Gregori, 1990).

The ties of this family to the elite social group in Riva is documented by the considerable bequest of 60.000 *sestertia* allocated by Cornelia Severa for a ceremony celebrating the memory of her husband Lucius Magius Magianus, her father-in-law and her son. The existence of this memorial, palaeographically dated to the second-third century AD, suggests that the discovered graves could pertain to members of this family. The systematic plundering of burials since ancient times is the indirect testimony of the richness of buried individuals.

Only in one case, Burial 27, was a part of grave goods preserved from pillage, even though it was recovered at the bottom of the funerary structure, arranged in a cluttered manner (Bassi, 2010a). We are talking about a small treasure composed of 10 *antoniniani* coins (Pavoni, 2010), a splendid couple of gold and emerald earrings, a bronze silver-plated bowl, a belt buckle engraved with the name Tertia, some pearls, a jet knife handle and an iron *stilus*. This is a prestigious combination, certainly not a common prerogative, and it is dated to the second half of the third century, the same chronology of the aforementioned funerary monument.

In San Cassiano, where archaeological stratigraphy has not suffered many alterations, some evident concentrations of charred remains – in particular intentionally smashed pottery and animal bones – were discovered directly above the grave structures (Spinetti, Marrazzo & Fontana, 2010). These are important proof of the funerary ceremonies that were conducted near the burial.

In particular, burial number 58 was rich in domestic pottery, especially earthen jars and pans; similarly burial number 60 contained jars and bowls made mostly in *terra sigillata*, one of these showing an engraved name – probably the name of the deceased – on the external surface.

Other traces of funerary offerings were also found above burial number 94. Moreover, the tombs were marked by funerary *stele* that left traces on their bases (Bassi, 2010a); graves were also often inserted inside perimeter ruined walls.

On the western side of the *glareata* road, remains of an articulate building, dated to the fourth-fifth century AD, were discovered (Bassi, 2013b; Brogiolo, 2013). This building is better preserved in its northern sector, in large part not damaged by other interventions.

The identified rooms are set around the perimeter of a wide courtyard, delimited in the NE sector by a narrow beaten-earth street. The chambers are characterised by mortar floors and walls with no evidence of plaster; internally, fireplaces, small silos and a stone-made basin without connection with structured underground utilities were found. All these elements lead to the hypothesis of a purely functional use for the spaces. Consequently, we are probably dealing with the productive area of a bigger building, perhaps a rural complex the structures of which continue beyond the excavation area. Also in the southern part of these spaces a series of yards and compartments characterised by the presence of silos and scorched surfaces, pertaining to the same period of the other, were discovered. In all probability, this was a productive area the functions of which could not be further defined by archaeological evidence but can probably be attributed to preparation of food or of other perishable products.

Even though the stratigraphic connection between these two areas is interrupted by distur-

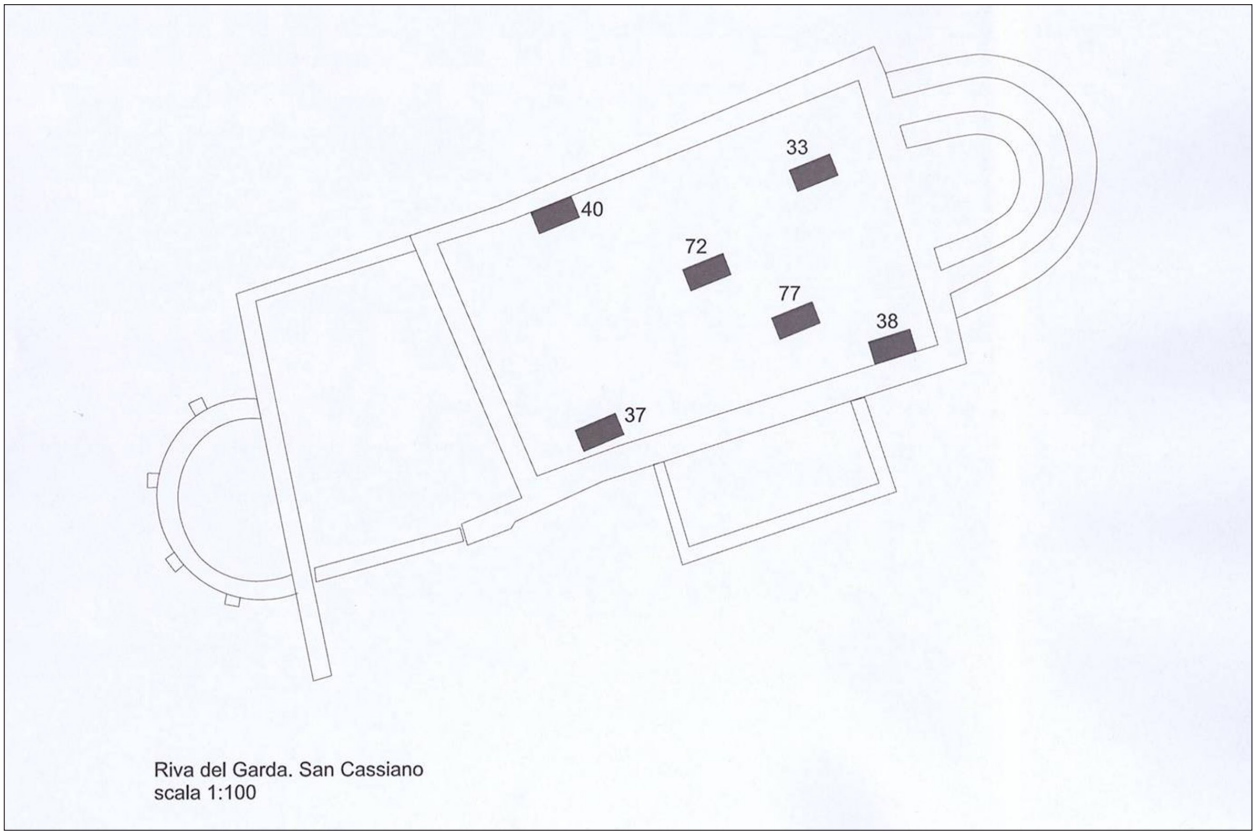

Fig. 2. Plan of the San Cassiano church with burial localisation.

bances, the contemporaneity of the whole complex is clear. We can suppose it pertains a large rural building. The two parts of the complex are separated by a later building that was identified as the ancient church of the Saints Cassiano and Ippolito, with related graveyard (Bassi, 2011; 2013a) (fig. 2). The presence of an early Christian church directly above a Roman construction is a well-known and widespread phenomenon in the Garda area, where almost all the parish churches arose from ancient *villae*; this custom is a common trait in other pre-alpine regions as well. Furthermore the presence of funeral oratories built within agricultural farms between the seventh and the eight centuries AD is sometimes observed in settlements across the area.

We possess a rich documentary record for this church, particularly concerning the documents attesting visits, as well as a rich iconography, even though this is attributed to the period after the seventeenth century. In fact, the church is reproduced in the large painting describing the arrival of General Vendome in Riva del Garda in a map dated to the seventeenth-eighteenth century AD, where it appears in a schematic representation as a building with a gabled roof and a bell tower and another map dated 1720. Furthermore a 1750 document states that the church had an apse.

We also know that during the eighteenth century the building was in a decaying state and that its ruins were sold to the Florio family. In the maps of Riva dated 1812 there are no traces of these ruins, so we can deduce that at the time, its total obliteration must have taken place. Through literature we know that research was carried out on this site in the year 1800 during which some burials and the ruins of the church were discovered.

Archaeological investigations have discovered a rectangular one-nave church, closed on the western side by a semi-circular apse distinct from the perimeter walls. Archaeological data were heavily influenced by strongly invasive removals. For this

Fig. 3. Burial number 28. Extramasticatory use of incisors.

reason, it is impossible to clarify if this half-round structure was inserted within an external straight wall.

In the earliest periods, the nave floor was a simple beaten mortar level but in the corridor at the back of the rectory bench slabs in *cipollino* marble were recovered. Dating to the earlier times of this first period and positioned in the centre of the nave in front of the presbytery, a grave structure was recovered, composed of brick walls and a monolithic slab as covering – burial 72 – containing human remains pertaining to three different individuals, two adults and one child, not buried at the same time. The oldest burial was an adult male (40-45 average age at death), then a five-six year old child and an adult male of 27-30 years (Amoretti, 2010); there was a total absence of grave goods. The topographic position of this burial and its uniqueness lead to the hypothesis that the first inhumed individual had a particularly preeminent role within the community and for the construction of the church itself. We could suppose that he would have been the founder of the oratory – maybe the owner of the ground on which the church was built – buried together with the male members of his family. Later, but contextually at the same period as this ground floor, new grave structures for other burials were built: a total of six burials.

In the external part of the religious structure, next to the northern and the southern perimeter walls, a new burial area developed; the northern part was limited to the area adjacent to the church walls; in the first one there is evidence of an enclosure that marked the cemetery area on the northern side. Other burials were set, further apart, in the area situated north of the structures of the late Roman villa, no longer in use for production activities. In this area female and non-adult subjects found their resting place as well. Many events and architectural modifications marked the life of this area. Repeated destruction, due both to anthropic and natural events, determined the almost total removal of the most recent stages.

Interdisciplinary Approach to Landscape Archaeology with the Use of Anthropological Data

Sometimes human bodies transform the landscape in which they rest and the transformation they bring also affects the body itself. This is the reason why this specific archaeological context and analysis was approached with a methodological interdisciplinary perspective, with the purpose to integrate archaeological data with information deriving from the study of human skeletal remains from burials. This kind of perspective arises from the fact that the body – which human remains represent – plays a key role in archaeology and in understanding the spaces in which bodies occupy (Sofaer, 2006).

A meticulous examination of some markers of stress on bones could help archaeologists in the interpretation of data, even data concerning the use of soil and landscape. The first authors dealing with the identification from the bones of activity, and consequently working patterns were Ronchese (1948); Angel (1982); Hawkey & Merbs (1985); Dotour (1986); Kennedy (1989); Wilczak & Kennedy (1997); Capasso, Kennedy & Wilczak (1999): all these studies focus on the principle that we can read activity patterns on bones and, in the case of many individuals, hypothesise the working activities of the ancient community that is under consideration.

Sometimes we also have the possibility to cross all the data derived not only from archaeology

and anthropology, but also from archaeozoology (Spinetti, Marrazzo & Fontana, 2010): the case of Riva del Garda was effectively based on the lucky connection of data, leading to the better understanding of the past in the pre-alpine territory.

In particular, the anthropological analysis considered the small northern necropolis (pillaged in ancient times and characterised by rich grave goods), the large southern necropolis (with grave goods of variable prosperity), the cemetery inside the early San Cassiano church (pertaining to the transitional age of the fifth century) and the older burial area, also pertaining to the church in the Early Medieval - Medieval times.

The exam of the human remains related to the two Roman burial areas reveals that there was not a very strong difference in activity patterns in the two cemeteries, even for interred or cremated individuals in the southern necropolis. Of course, those similarities are not subject to a convincing statistical computation because of the fact that bones from the northern necropolis were fragmented by the action of robbers, and cremated bones present some problems in analysis, due to splintering, morphological alteration and selective collection (the so-called *ossilegium*).

A good number of individuals show signs of a particular activity (specifically in the southern area) testified to by a light skeletal stress on the thigh, medium stress on calf and contrasted by a medium and high work of the upper limbs. The patterns of movements carried out in life were especially related to abduction, rotation and lateral bending of the arm, elbow flexure and forearm pronation. But there was also a high workload impressed on the hand bones: in particular, a really high development of flexors digitorum and of the long abductor muscle of the thumb. There were signs of arthritis on the spinal column, in the cervical and thoracic areas, due probably to diseases linked to age rather than carrying heavy loads on the back (this kind of activity normally leaves traces in the lower part of the column, in particular on the lumbar vertebrae). Also teeth were involved in some extramasticatory activity. In fact they show a particular dental wear pattern that includes a higher use of the incisors, if related to the rest of oral cavity; there is also a presence of chipping and interproximal roots, generally indicators of extramasticatory tooth use (fig. 3).

By connecting all the data, it is highly probable that we are dealing with a human group employed in some form of craftsmanship. The kind of dental wear found – together with a diffuse palatine porosity – can be compared to that typical of tailors, basket makers and leather artisans. All those movements are compatible with the use of loom, for which broad movements are essential, with forearm pronation and the strong use of carpal muscles and ligaments that could justify the recorded enthesis, and the practice of stitching, that could explain why the abduction of the thumb was so pronounced. This is the movement used in inserting the needle. We could not exclude the hypothesis of leather manufacture that could be confirmed by the productive structure discovered inside the building.

The results of archaeozoological analysis, observing that there was a numerical preponderance of osteological remains of sheep compared with goats, could suggest that the productive area should be related to handcraft production involving these animals (we must also notice that scissors and knives were found as grave goods and osteological analysis confirmed the use of these tools).

There is an almost total absence of direct testimony of manufacturing systems related to weaving (Busana, Cottica & Basso, 2011) and also the absence of loom weight is not incontrovertible, because of the fact that these tools could have been made of perishable material, such as wood. So, we can only hypothesise the presence of a weaving area, a fact that could be compatible with other activities such as fulling or washing the wool. Furthermore, we could not exclude other activities linked to sheep production, as leather tanning or the production of food derived from sheep milk or meat that could explain the productive area. A similar complex – not better recognisable – was found in an adjacent district, in Altino (Busana, Cottica & Basso, 2011).

As stated above, some individuals of the northern smaller necropolis (but not all) showed

Fig. 4. The femur of remains found in Burial number 106. Arrows indicate where the *adductor magnus* was inserted. The subject shows developed adductors, important muscles for riding horses.

the same activity markers. However there was a difference regarding the pathological conditions. Some human remains presented a good number of fractures on the bones, - in particular ribs - that could be the result of interpersonal violence. Moreover, even though bones were very fragmentary, it was possible to appreciate some similarities in morphological traits between some of the individuals. This fact could be the expression of a genetic proximity: there is the possibility that the individuals buried in this area were part of the same family group.

The analysis conducted on individuals from the later church of Saints Cassiano and Ippolito, built during the "time of changes" (the presence of a funerary inscription dated to 24 December AD 539 with reference to a previous burial (Bassi, 2011) directly above the Roman building, is really significant, for the dating of the church and because it also reveals unexpected information).

Inside the Early Christian church eight stonework graves were discovered, with the peculiar trait that all the individuals buried there were males. This was the group presenting the highest average age at death throughout the entire archaeological area (47,5 years compared to 35,3 years for the human group buried outside the building). This group too presents some repeated morphological traits that lead to the hypothesis of a familial connection.

An evaluation by MOS (markers of osteological stress) highlighted the fact that exactly this group presented a series of features ascribable to the so-called "horseman syndrome". In particular we recorded highly developed enthesis on gluteus maximus and femoral biceps (muscles used for bending and abducting the thighs), but especially adductors (fig. 4), which have the function of tightening the legs in medial direction, resulting essential to the practice of horse riding. There was also a great development of the medial vastus, which is a muscle scarcely used and consequently infrequently observed; it has the task of making the knee stable and is essential in maintaining balance. It has been noted also the presence of a series of accessory facets both in coccyx and coxal bones, together with the presence of ischial bursitis, that is caused by a series of little traumatic impacts while seated. All these facts contribute to strengthen the idea of horse-riders. In the upper limbs we observed a severe arthrosis on the left glenoid fossa, together with a more

Fig. 5. The skull of remains found in Burial number 77. The subject presents the deviation of the nasal septum, probably due to a traumatic event.

severe employment of the right arm compared to the left one. This could be associated to the use of some kind of weapon, such as a sword or a javelin. There are also a great number of fractures on the metatarsals and the phalanges (maybe due to the crushing of feet by the horse hoofs), and vertebral fracture typical of fall, as vertebral wedge-shaped fractures. A good example of a probable horse rider is individual T 77, the one deceased at the oldest age in the site (over 60 years at death) that showed all the markers of horseman syndrome, together with a wedge-shaped fracture on a lumbar vertebra (with evidence of osseous reparation), an ancient fracture of tibia and fibula (with rotation, typical of falls with a fixed foot: the presence of a stirrup could be possible), two fractures on foot phalanges, one on a left rib, and a deviated nasal septum, probably caused by impact trauma (fig. 5).

All these traumas on the bones show signals of healing: this is the reason why we can not know if these "knights" effectively became involved in conflicts or if these markers of skeletal stress were only the reflection of military exercise of a ruling family. But if we consider in which chronological context they are set, we could suppose that the participation with war or defence activity is not so unconvincing. We also have to underline the fact that in the same area another church with a chronology referred to the fifth-first half of the sixth century AD was excavated and burials similar for grave structure, bone stress markers and palaeopathological evidence were found (San Pietro in Mavinas, Sirmione: Breda et al, 2011; San Lorenzo in Desenzano: Chavarria Arnau, 2011).

After this period, anthropological studies recorded the transition to less specific activities, in contrast with the same and sometimes harder muscle work. This kind of evidence signals the passage from a more structured society to less specific occupations, as in a typical pattern of mixed economy of medieval subsistence.

In this case the crossing of data referred to archaeological evidence was confirmed and better illustrated by the resorting to the study of human skeletal remains. We could hypothesise a visible change in the structures of society during the so-called "transition era", also reporting the results of the study of human bones, that tells us about the implosion of the Roman world and the beginning of a new order, and consequently a change in landscape use and economic exploitation. This is the reason why we can underline that anthropological studies are not only self-referential as in the common thinking, but are a great tool for tracing the history of economy and landscape, and could constitute one of the keys for a more profound and holistic comprehension in landscape archaeology.

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The Early Christian Sanctuaries and the Transformation of Italian Landscape

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Abstract

In the early Christian period the birth and development of relics' cult led to the transformation of urban, suburban and rural Italian landscape. Indeed, the deposition of venerated bodies in *extra-muros* cemeteries led to the gradual Christianisation of the whole peninsula. The link between territories and martyrs' cults is shown by Christian Calendars, which reported just the *dies natalis* and the place of *depositio*. The saints were so territorially well established that their burials were simply considered as *loca* by ancient Christians. The gradual monumentalisation of martyrs' tombs led to the birth of huge sanctuaries. They were composed of funerary and religious buildings but also service facilities, accommodations for pilgrims and monasteries. The most important sanctuaries were those of Saints Peter in the Vatican, Erasmus in Formia, Alexander in Nomentum, Felix in Cimitile, Januarius in Naples, Felix in Venosa, Marcianus in Syracuse and the Apostles in Concordia. They became so popular that Jerome said: '*movetur urbs sedibus suis*'. It seems that sometimes there was a coincidence between sanctuaries and episcopal palaces, such as in Sardinia, in some part of Latium and probably at Cimitile, Venosa and Concordia Sagittaria. In the fifth and sixth centuries some sanctuaries spread also in rural areas, usually along important routes. Suburban and rural sanctuaries led to the development of new settlements, as shown by the birth of new villages. The current word "Cimitile", for example, derives from "*Cimiterium*" and even Paulinus of Nola wrote about a *vicus* nearby the sanctuary. At Saint Peter's tomb, a *Civitas* was born in the Early Middle Ages. At the end of the Early Christian era, the *traslationes* broke the tie between relics and their *locus depositionis*, causing new urban sanctuaries to form.

Keywords: Christian Sanctuaries, Relics, Saints, Basilicas, Graves

Introduction

In the early Christian period the birth and development of relics' cult led to the transformation of urban, suburban and rural Italian landscape. Indeed, the deposition of venerated bodies in *extra-muros* cemeteries led to the gradual Christianization of the whole peninsula. The link between territories and martyrs' cults is shown by Christian calendars, which reported just the *dies natalis* and the place of *depositio*. The saints were so territorially well established that their burials were simply considered as *loca* by ancient Christians (Brown, 1983).

The Tombs of the Saints

During the second and third centuries AD, some humble *memoriae* were built on the Roman apostolic tombs, the trophies of Saint Peter in Vatican (Guarducci, 1995) and Saint Paul on Via Ostiense (Bucarelli & Morales, 2011). The term *memori-*

ae refers to the first martyrial buildings: simple funerary structures, poorly decorated, built to honour the venerated graves.

Around the mid-third century, the *Memoria Apostolorum* on Via Appia was dedicated to both apostles and built on a pagan cemetery undergoing Christianisation (Fiocchi Nicolai, 2001: 7-47). Here, a courtyard was surrounded by: an altar which remembered the Vatican trophy, a portico attended by pilgrims and the so-called *Triclia*, a room for *refrigeria*, occupied by a counter and a fountain. The walls and pillars of the *Triclia*, decorated with frescoes, were covered by hundreds of scratched inscriptions with invocations to Peter and Paul and references to *refrigeria* in their honour (Carletti, 2008). For the first time, a Christian building led to a real transformation of a suburban area and was frequented by several pilgrims.

Also the earliest tombs of common martyrs usually spread in pagan cemeteries undergoing Christianisation (about the sanctuaries of Rome: Spera, 1998: 1-104; 2012a: 33-58; Pani Ermini, 2000; 2001; Fiocchi Nicolai, Granino Cecere & Mari, 2001; 2004; 2005; 2006; 2008; Agostino, 2013; Luciano, 2013: 909-18). During the third century, many venerated tombs were placed in catacombs (Bisconti et al, 1998; Pergola 2002). The *depositio* of saints at the entrance of hypogeal cemeteries was very common and often documented by both historical and archaeological sources. Just the presence of a saint's body often led to the birth of catacombs. It is striking that Hyacinth's grave was found completely intact. It was a *loculum* dug at the entrance of the catacomb of Hermes (Bisconti & Mazzoleni, 2005: 26-27). Some privileged burials were grouped together into *cubicula*. The Crypt of the Popes was a cubicle built in AD 235 in the catacomb of Saint Callixtus and housed, in the third century, the graves of nine popes (Fiocchi Nicolai & Guyon, 2006: 121-61).

As in Rome, the other Italian martyrs were buried both in catacombs and *sub divo* cemeteries (Luciano, 2014). The first ones have been found only in Latium, Campania, Sicily and Sardinia, in presence of tuffaceous soils. Their sanctuaries reused earlier Roman cemeteries or were dug *ex novo* by Christians. In the first case, they occupied squared funerary rooms since Roman noble tombs, unlike the Christian ones, were small and simple, as seen in the burials of Saints Agrippinus in Naples (Fasola, 1993), Victorinus in Amiternum (Somma, 2012: 185-94), Marcianus at the catacomb of Saint John in Syracuse (Sgarlata, 2010: 253-72) and Lussorius in Fordongianus (Spanu, 2000; Cisci, 2001: 371-406). The venerated burials in the newly excavated catacombs could be found at the entrances or in the inner areas, but always near the main gallery. An example is the grave of Saint Lucy, found in an *ambulacrum* at the catacomb of Syracuse. Two or more sanctuaries in the same catacomb were usually separated from each other, as in some sites in Latium. The most important one is that of Saints Alexander, Eventius and Theodulus at Nomentum (Padovano, 2006; Fiocchi Nicolai, 2009: 219-76).

The subdial cemeteries sanctified by relics have been excavated only recently. Saint Erasmus was buried in a pit grave at the suburb of Formia (Punzo, Miele & Frecentese, 1992), while Felix of Nola was inhumed in a tile tomb inside a frescoed mausoleum (sanctuary of Cimitile) (Ebanista, 2006). The supposed Felix of Venosa was buried in a masonry tomb at the so-called Complesso paleocristiano instead (Marchi, 2010: 201-18).

The Peace of the Church

The Peace of the Church in AD 313 gave strength to the cult of saints. Emperor Constantine supported it and enhanced the sites linked to the memory of Christ (Biddle, 2006), the apostles and the most venerated martyrs (Krautheimer, 1986; Carandini, 2013). The Emperor built a small church, with a single nave, on Saint Paul's tomb and a huge basilica, in the Vatican, with an atrium, five naves, a transept and a semicircular apse (Testini, 1980: 180-85; Zander, 2007: 21-23, 128-30).

In suburban cemeteries, close to the hypogeal sanctuaries, some circiform basilicas equipped with an ambulatory were built (Guyon, 1987: 207-260; Fiocchi Nicolai, 1996: 69-139; Cianetti &

Pavolini, 2004; Nieddu, 2009). The construction of basilicas close to the relics, but not above them, was justified by the need to not affect the saints' tombs. Furthermore, it was linked to the Roman tradition: the places used for funerary liturgies had to be separated from the burial rooms. Architectural accommodations, such as staircases or galleries, allowed a link between the basilicas and hypogeal sanctuaries nearby. The Constantinian basilicas were funerary churches, *coemeteria subteglata* according to the ancient Christian sources, used for martyrial ceremonies and *refrigeria*. The floors were occupied by many graves of faithful people who aspired to have a privileged burial; also Pope Mark was probably buried in a sarcophagus in the *exedra* of his basilica. As well as in the Vatican, great mausoleums were built outside the circiform basilicas, such as the *monumenta* of Empress Helena near Saints Peter and Marcellinus, and Constantina close to Saint Agnes.

Smaller funerary basilicas with a classical plan were promoted by the popes, such as the three *"Iuliae extra muros"* on the *Viae* Aurelia, Portuense and Flaminia (Cecchelli, 2003). Some remains of the basilica of Saint Valentine were found near the tomb of the martyr, on Via Flaminia. It was a small single-nave building, occupied by tombs dated between AD 318 and 523.

The *cellae trichorae*, trefoil *martyria*, were common in the first half of the fourth century (Luciano, 2012: 363-65). The Western Tricora, in Saint Callixtus' cemetery, was the mausoleum of Popes Tarcisius and Zephyrinus. Next to the *martyrium* of Saint Sinforosa, however, a basilica was built; the central apses of the two buildings were joined and connected through an opening. The *trichora* close to the circiform basilica of Saint Lawrence was Pope Leo's mausoleum, while the structure near Saint Agnes might have been a first sanctuary of the martyr.

The enlargement of hypogeal sanctuaries led to the birth of *Aulae ad Corpus*. That of Saint Thecla in Rome had three naves and was occupied by graves and decorated with frescoes; the venerated tomb was kept visible on the western side. In the Agrippinus' *aula* in Naples, the area sanctified by the bishop's tomb became an elevated presbytery, equipped with apse and *cathedra*. In the sanctuary of Saints Alexander, Eventius and Theodulus, two different *aulae* were built. A small *aedicula* covered the grave of Victorinus in Amiternum, while the construction at Saint Lussorius in Fordongianus was more substantial. It created a walkway for pilgrims, an apse and a funerary monument on the saint's grave, which was surrounded by an ambulatory connected with two privileged sarcophaguses. The *aulae ad corpus* spread also in subdial areas, as seen in the small single-nave basilica of Saint Erasmus in Formia and that of Saint Felix in Cimitile, which was built on the earlier mausoleums, and had a narthex and a *triforium*.

Since the mid-fourth century, pilgrims' graffiti covered the walls of the *aula* at Cimitile. They were fairly numerous since, as noted by Paulinus (Carm. XIV 85), the tomb of Felix was at that time well known and visited. The construction of the *Basilica Vetus*, in the second half of the fourth century, led to the association of a liturgical building to the *martyrium*, a model already tested in Rome. In the same period, a *cella trichora* was built in Concordia Sagittaria, while Saint Severus of Ravenna was buried in a mausoleum in a Classis cemetery.

The Great Bishops

The enhancement of the sanctuaries between the second half of the fourth century and the beginning of the fifth was promoted by great bishops. In Rome, Pope Damasus (AD 366-384) looked for the venerated graves, then enriched them with elaborate marble decorations and enlarged the sanctuaries to make the circulation of the pilgrims easier. He also dedicated poetic compositions to the saints inscribed on epigraphs (Ferrua & Carletti, 1985). The holy crypts became brighter thanks to marble facing, white plastering, openings and enlargements with skylights. Some devotional *itinera* had been created through the construction of new stairs. The most important Damasian restorations concerned the Crypt of the Popes, Peter and Marcellinus' sanctuary, Januarius' in Praetextatus,

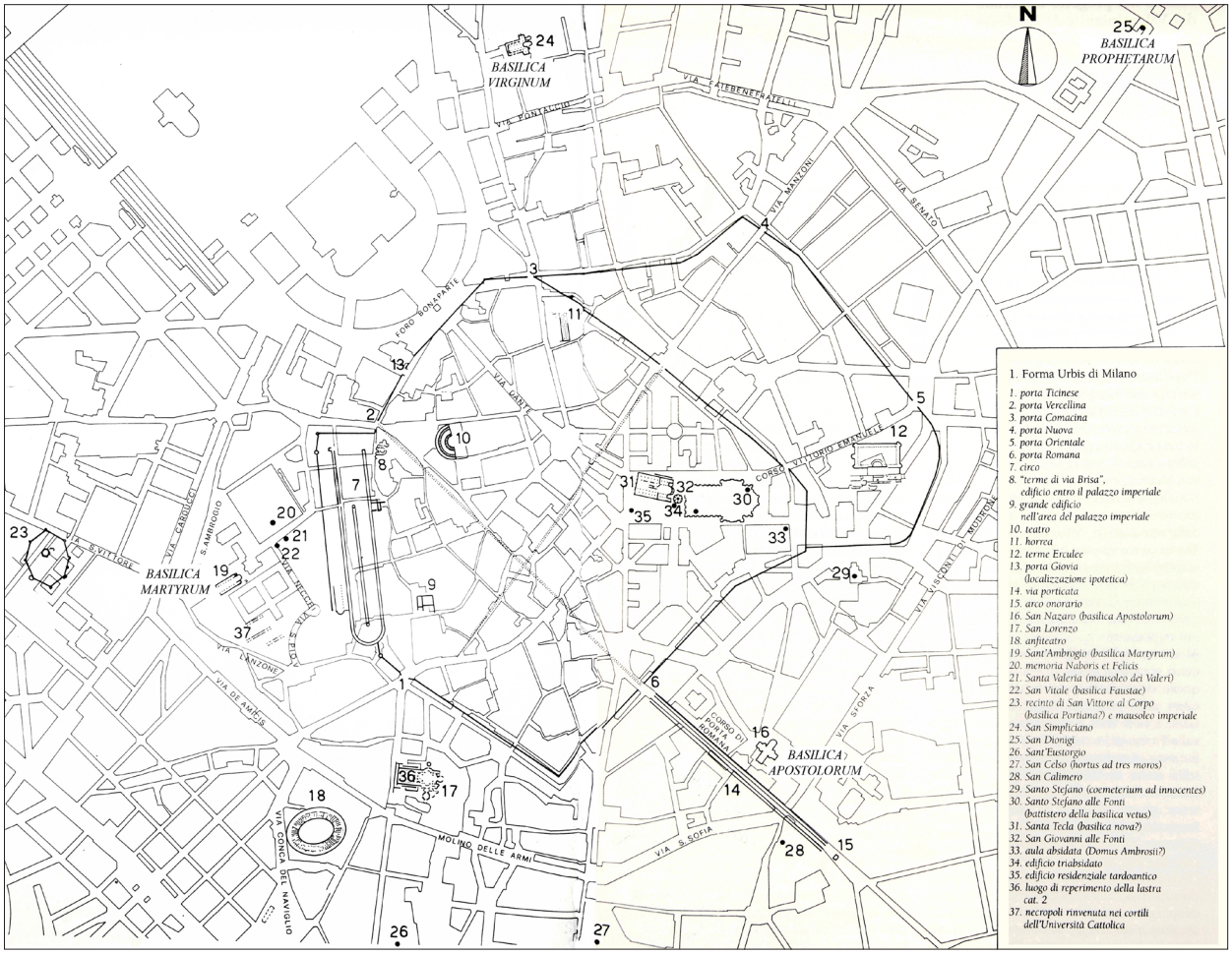

Fig. 1 The martyrial and funerary basilicas of Milan (Rizzi 1997, 18-19).

Sebastian's in his catacomb and Nereus and Achilleus' in Domitilla. The renovations of the Crypt of the Popes were very significant. The original stairs were reconstructed, a third staircase was added and an altar supported by pillars was built.

In the second half of the fourth century, the *retrosanctos* became common, changing the catacombs' topography (Duval & Picard, 1986; Spera, 1994: 111-27). The presence of venerated tombs led to the birth of new areas (e.g. behind Saint Agnes' tomb), simple privileged rooms (behind the Crypt of the Popes), big rooms extensively used (catacomb of Saint Thecla) and sets of poor burials which were grafted into tight spaces (catacomb of Commodilla).

During the pontificate of Damasus, the use of funerary basilicas built by Constantine and his successors went on. In this period the main patrons of the churches were no longer the imperial authorities, but the popes. Damasus himself promoted the building of new churches, uniquely decorated according to priests Faustinus and Marcellinus. Addressing to Emperor Theodosius, they criticised the excessive wealth of the contemporaneous basilicas, which were full of gold and marble coverings. In the cemetery of Generosa, the apse of the funerary church of Damasus, probably dedicated to Faustinus, Simplicius and Viatrix, was equipped with a *fenestella* connected to the sanctuary. The basilica, with three asymmetric naves, was semi-hypogeal and preceded by a narthex.

After the Damasus' papacy, the building activity in the catacombs was quite limited, concerning simple embellishments or renovations promoted

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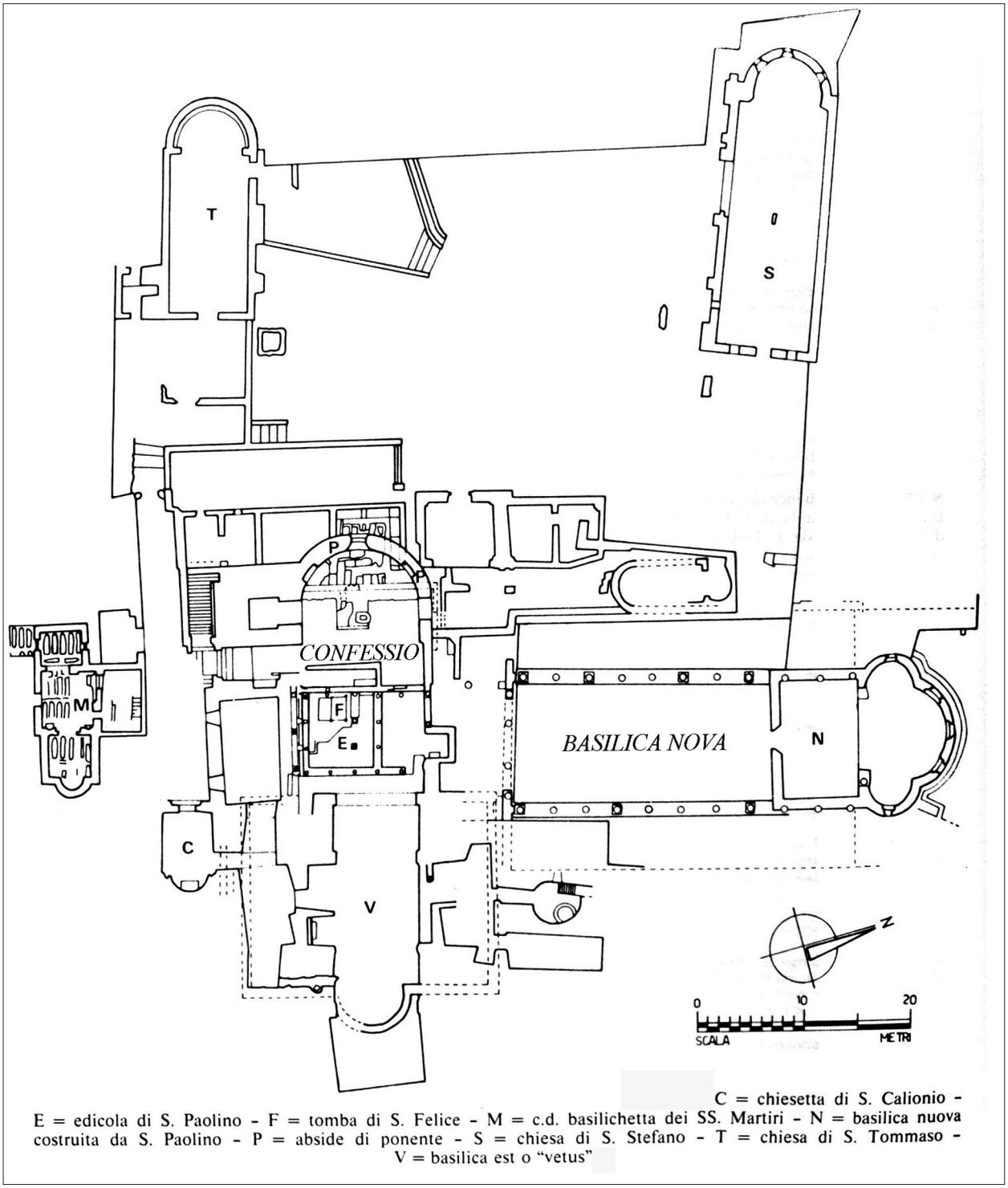

Fig. 2 The sanctuary of St. Felix at Cimitile (Testini 1986, 220).

by church members or aristocrats. In this period, however, the church of Saint Paul, on the initiative of Valentinian II, Theodosius and Arcadius, was widened and became an important worship place, like Saint Peter's, from which the plan was derived. Large privileged mausoleums were built

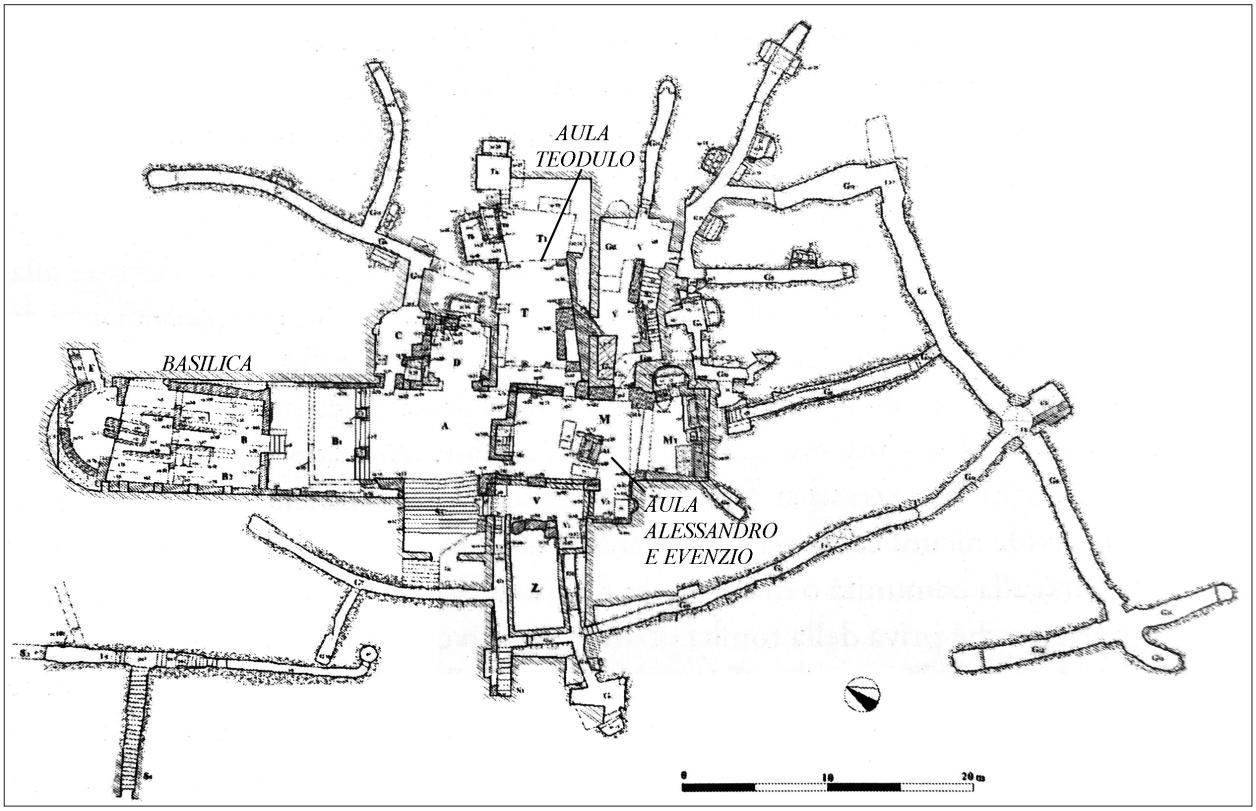

Fig. 3 The sanctuary of Sts. Alexander, Eventius and Theodulus at Nomentum (Fiocchi Nicolai 2009, 230).

close to the most important basilicas, such as those near Saint Peter, which probably belonged to Emperors Honorius and Theodosius.

Pope Damasus inspired many bishops of his time. Paulinus of Nola (355 Bordeaux - 431) and Ambrose of Milan (AD 374-397), in particular, miraculously discovered new relics (*inventiones*). They reorganised the suburbs of their cities, enhancing the old sanctuaries and building new ones. In Milan, the four Ambrosian basilicas (*Martyrum*, *Apostolorum*, *Prophetarum*, *Virginum*) occupied each of the cardinal points, forming a cross (Lusuardi Siena, Rossignani & Sannazaro, 1997) (fig. 1). The relationship between suburban basilicas and cities is symbolised by the *porticus* connecting the *Apostolorum* to Milan. Similar structures joined the sanctuaries of Saints Peter in Vatican, Paul on Via Ostiense and Lawrence on via Tiburtina to Rome.

In Naples, the *inventio* of Januarius' relics led to the birth of a new sanctuary in the catacomb of Capodimonte. Everywhere, new churches were built both in hypogeal and subdial cemeteries. Consequently, the sanctuaries became larger, with different religious and funerary buildings. They became so crowded that Saint Jerome said: '*movetur urbs sedibus suis*' (*Ep*. 107.1) or 'the cities moved from their original location'.

The sanctuaries of Saint Alexander on Via Nomentana and Saint Felix at Cimitile (Brandenburg & Pani Ermini, 2003; Ebanista & Fusaro, 2005) show that similar architectural models were often used (figs. 2-3). In both sites a large basilica with a confessional altar was linked to the *aula ad corpus* through some *triforia*. Paulinus, Ambrose and the other great bishops of that period usually became saints and were often buried in the suburban sanctuaries, at the martyrs' tombs they supported. Instead, Pope Damasus chose the new basilica on Via Ardeatina as his burial place.

The Arrival of Foreign Relics

During the fifth century, in spite of the obstinacy of the Roman Church to preserve its venerated graves, many relics reached Italy from many parts of the Mediterranean. Holy fragments from North Africa arrived especially in southern regions and in the islands, brought by the exiles of Vandalic persecution. The cities of northern Italy were connected to the Adriatic trade and Constantinople imported mostly Eastern relics, such as those of Saint Stephen and apostles. Even Helene, mother of Constantine, brought to Rome some fragments of the Holy Cross, which were placed in Santa Croce in Gerusalemme, at the Lateran Palace.

As with the *inventiones*, the *traslationes* were managed by the bishops, Ambrose and Paulinus in particular. In this way they could show their influence and, through the consecration of new churches and the sanctification of suburban areas, increase the importance of the Roman Church. The arrival of holy fragments was considered as a miraculous event and celebrated as an imperial *adventus*. The scene represented on an ivory tablet from the Treasure of Treviri, dating back to the fifth century, has significant importance on this subject (Chavarria Arnau 2007: 101). A reliquary is carried by two bishops standing on a cart preceded by a procession. The emperor and his wife are in the first row surrounded by crowds of rejoicing people. The procession is going to a church under construction since the translated relics were usually used to consecrate the altars.

The foreign relics of Rome were usually placed in catacombs, inside cubicles or galleries, but those of Quirinus and Stephen occupied, respectively, a mausoleum (the so-called Platonia) and a basilica. In all cases, however, the *locus depositionis* was a small reliquary, since the relics were usually *ex contactu* or fragmented. Instead, the areas sanctified by relics were preexisting since the cults were probably promoted by private faithful, as shown by Quirinus' memorial inscription (*ICUR*, 5, 13276). The three-nave basilica of Saint Stephen, for example, was built by the patrician Demetrias on her own property but under the oversight of presbyter Tigrinus, as attested by the marble slab dedication (*ICUR*, 6, 15765). The church, equipped with a baptistery, probably belonged to a rural settlement and had martyrial, funerary and pastoral functions (Nuzzo, 2012: 332-33). On Via Ardeatina, the *ad corpus* basilica of Greek Martyrs was a rectangular semi-hypogeal building with an apse. At the beginning of the Christian Age, the Roman Church did not have the need to increase its sanctoral, the *depositiones* of new relics in suburban cemeteries was probably related to the presence of foreign communities.

Since the early fifth century, the foundation of new churches caused the *traslatio* of apostles' and Stephen's fragments from the Holy Land (Martorelli, 2012: 231-64). *Basilicae Apostolorum*, churches of Saint Stephen and the earlier bishop's and martyrs' *memoriae* led to the setting-up of sanctified areas in the suburbs. This model of urban planning, typical of Rome and found in Milan too, spread in particular in Northern Italy, due to the influence of Ambrose and the presence of ports connected to Eastern Mediterranean (Crosato, 2008). Examples can be found at the *suburbia* of Aquileia (Cuscito, 2008: 45-94), Ravenna (Augenti, 2012: 537-53), Aosta (Bonnet & Perinetti, 1986), Rimini (Negrelli, 2008: 18-25), Ostia (Pannuzzi & Carbonara, 2007: 4-16), Naples and Capua. The *Basilicae Apostolorum*, like that of Constantinople, usually had cruciform plan to recall the Passion of Christ, as attested by the commemorative inscription of Ambrose (*ILCV* 1800).

Even the basilicas of Saint Stephen were sometimes cruciform but their *confessiones* are less known. The church of Aquileia is poorly investigated, such as that of Milan, founded by bishop *Martinianus*, who was buried inside. The cruciform basilica of Verona (first half of the fifth century), and that of Aosta (beginning of the fifth), with double apses, are better known. Also Saint Stephen *in Arce*, a small building on Cidneo hill in Brescia, had two *exedrae* delimiting an ambulatory (Spera, 2012b: 280-81). Saint Stephen's basilica in Rimini, probably situated on Via Flaminia, was built by Galla Placidia (AD 392-450) according to the historical sources. The Empress, who was

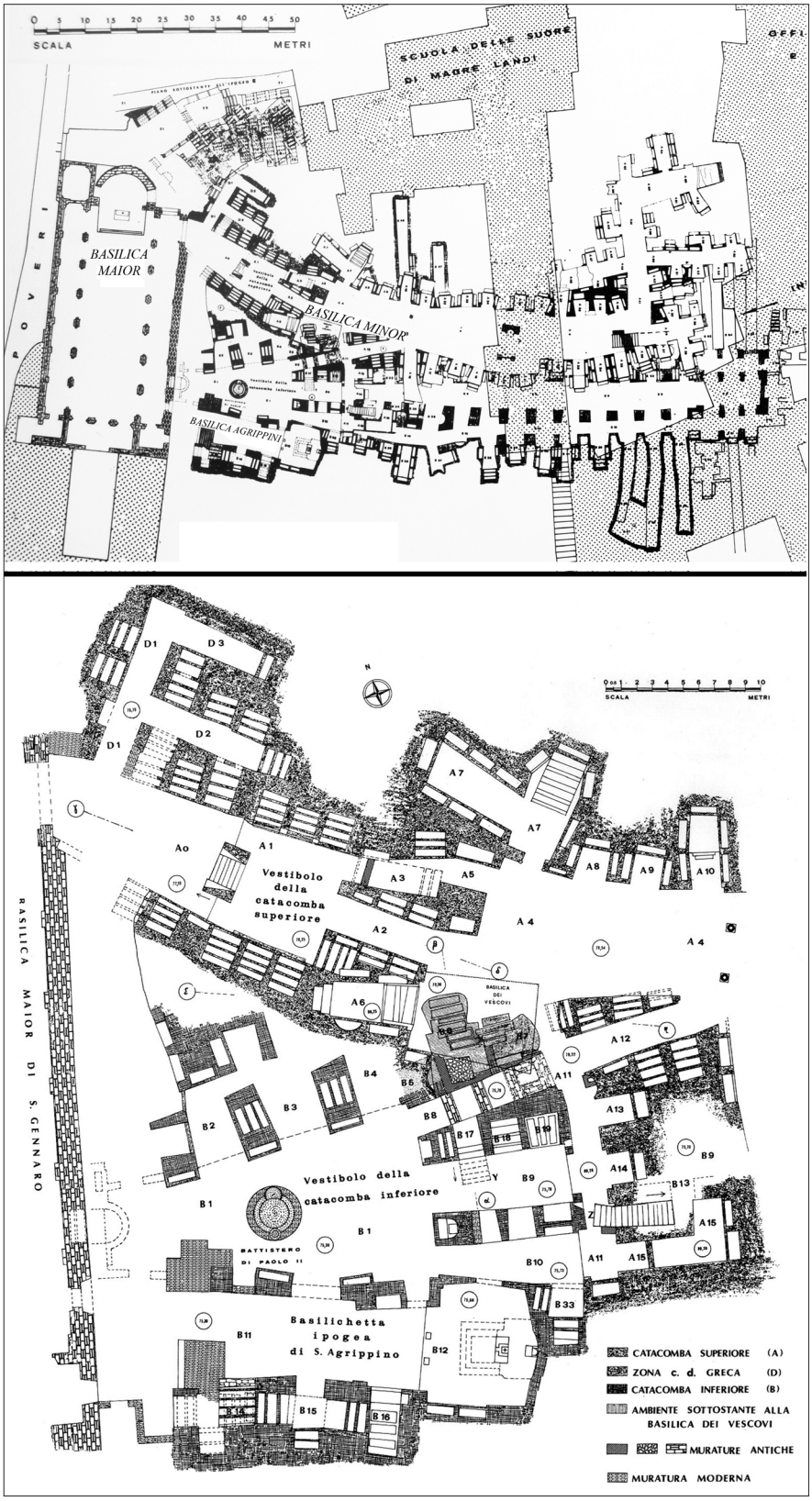

Fig. 4 The catacomb of St. Januarius in Naples and its central part (Fasola 1993, Pianta I and III).

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born in Constantinople, was very involved in the Oriental cults. In Ravenna she built the basilica of Holy Cross, consecrated with the wooden fragments, while in Rome she restored Santa Croce in Gerusalemme (David, 2012: 687-96). Other churches of Saint Stephen were in Campania. The Medieval *Martyrologium* of Beda spoke of a basilica in *Puteoli*. Inside it, Proculus, Acutius and Eutyches, martyrs with Saint Januarius, had been buried. The building is hypothetically recognised in a structure of the Roman cemetery of Via Celle, also used by Christians (Arthur, 2002: 76-77). The *Sancti Stephani* mentioned in the biography of Bishop Victor (AD 485-498), which was in the sanctuary of Saint Januarius at Capodimonte, could be recognised in the building commonly known as *Basilica Maior*. The church of Saint Stephen in the sanctuary of Cimitile, with one nave and two side structures which gave it a cruciform plan, dates to the beginning of the sixth century.

Many basilicas jointly dedicated to the proto-martyr and other native saints were in Southern Italy, usually in country areas, such as the church of Saints Stephen, Pancratius and Euplius in Messina, mentioned by Gregory the Great (*Epist*. 2.6). The basilica dedicated to the proto-martyr and Agatha at Siponto was founded by Bishop Lawrence, as attested to in his *Vita*. It was a building with three naves and a fenced presbytery, dated to the end of the fourth-beginning of fifth century. If the cruciform *martyrium* of Vaste (fifth century) was really dedicated to Stephen, we would assume that his relics should have been arranged at an altar because a section of the presbytery was carefully fenced (D'Andria, Mastronuzzi & Melissano, 2006: 231-321). The rocky cemetery behind the church was occupied by some privileged burials.

In addition to the apostolic relics, the remains of John the Baptist and other common martyrs arrived in Italy between the fifth and sixth centuries. The remains of Forty Martyrs of Sebaste, instead, were venerated in the basilica *Ad coetum sanctorum* in Brescia, founded by Bishop Gaudentius.

In the three-nave building of Saint Phocas in Priolo, near the catacombs of Manomozza, the relics of the martyr, which were arrived in Sicily in the early fifth century, were discovered under the altar (Sgarlata, 2005: 73-74, 85-92). The funerary church of Saint Restituta in Ischia, mentioned by Gregory the Great, was dedicated to the martyr of Carthage just after the arrival of her relics. In the apse of Saint John at Timavo (fifth century), the supposed relics of the Baptist and Evangelist were placed in a real masonry tomb (Nuzzo, 2012: 335).

The End of Late Antiquity

Pope Symmachus (AD 498-514), known as "builder of churches" in *Liber Pontificalis*, promoted the enhancement of the sanctuaries. In the catacombs, it led to the completion of construction undertaken by Damasus, with the strengthening of the *itineraria* and the building of some *ad corpus* basilicas. At that time, the *hypogea* were only used for devotional purposes and many old burial areas were destroyed. The replacement of *aulae ad corpus* with real hypogeal or semi-hypogeal basilicas is well documented: Saints Felix and Adauctus, Saint Hippolytus, Saint Hermes, Saint Lawrence, Saints Marcellinus and Peter, Greek Martyrs and, later, Saint Agnes. The graves of the saints became altars, and the funerary-martyrial liturgy coincided with the pastoral-Eucharist one.

In this period, in the catacomb of Capodimonte, the *Basilica minor* of Saint Januarius was built (fig. 4). It was single-nave, accessible by *triforium* and connected through an opening with the underlying *confessio*. A *Basilica maior* was instead built in the *sub divo* cemetery so that the Januarius' sanctuary became very large. The early-medieval *Homilia de Miraculis Sancti Ianuari* made references to the '*omnia tecta antraque beati matyris Ianuarii*'.

Subdial basilicas, built above or near the underground cemeteries, were very common across Italy, in Latium in particular (Fiocchi Nicolai, 1988; 2008: 313-34). Unfortunately, they aren't archaeologically well known, but often documented in historical sources or by the buildings that replaced them in the Middle Ages. Instead, the three-nave basilica built above the large Crypt of Saint Marcianus in Syracuse (sixth century) is well known

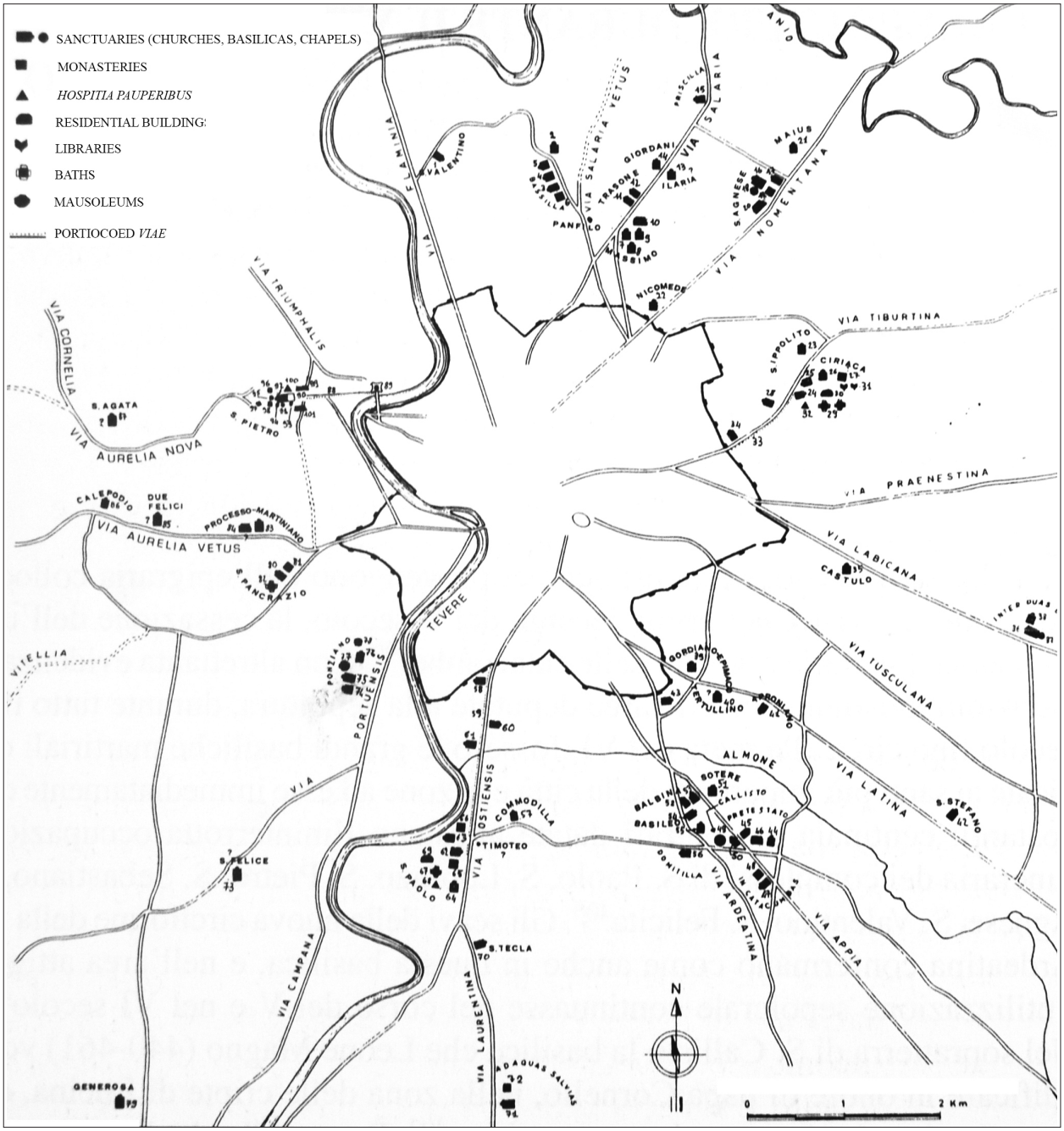

Fig. 5 The sanctuaries and related buildings of Rome in the 7th century AD (Fiocchi Nicolai 2001, 132).

(Sgarlata, 2003). The main altar was aligned with the underlying venerated tomb.

The gradual loss of importance of the cities led to the spread of worship places in rural areas and, perhaps, to the acquisition of episcopal and parish functions by some sanctuaries. That of Saint Alexander on via Nomentana, for example, was known as *paroecia* in historical sources. In the fifth and sixth centuries, the rural sanctuaries were usually located along important routes, as shown by those of Cantiani on *Via Gemina* (San Canzian d'Isonzo) (Toplikar & Tavano, 2007), not far from Aquileia; Saint Lawrence in Gozzano; the controversial example of Saint Giusto near Foggia. They usually

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consisted of small churches with reliquaries dug in the presbytery and enhanced by simple architectural elements, sometimes in perishable materials, such as in Gozzano.

Until the sixth or seventh century, many suburban churches of Rome were dedicated to non-Roman saints and probably consecrated with their relics, like those of Aristo, Agatha, Christina, Victoria, Cyrus, Apollinaris, Euplius, Menas, Menna, and Cyprian (Spera, 2002: 691-712). Sometimes, these buildings were located near the sanctuaries of Saints Peter, Paul and Lawrence, or along their *porticus*. The basilica of Saint Menna, remembered by Gregory the Great (*In eveng*. 2, 35) was perhaps founded by Pelagius II (AD 570-590) and located near that of *Sancti Pauli*. It's likely that the basilicas built far away from the walls had a parochial function, such as that of Saints Nicander, Eleutherius and Andrew, built by Gelasius I (AD 492-496) on Via Labicana (*Lib. Pont.* I, 255). Also the basilica of Saint Cyprian on the same via, known through a funerary inscription of AD 577 (*ICUR*, 1, 1122), was probably used for *cura animarum*.

The coincidence between sanctuaries and episcopal sees seems pretty clear in Sardinia (Giuntella & Pani Ermini, 1989: 63-83), in some part of Latium and probably at Cimitile, Venosa and Concordia Sagittaria (Flaborea, Sottil Zanco & Vignadel, 1996: 12-35). These sites, such as the sanctuary of Saint Erasmus in Formia, were architecturally very complex. According to the *Liber Pontificalis* and archaeological sources, between the fifth and sixth centuries, service facilities (baptisteries, *balnea*, housing staff, libraries and chapels), accommodations for pilgrims (*xenodochia*, *habitacula pauperibus* and porticoes), privileged burial areas and monasteries were built close to the martyrial basilicas (Tarquini, 2005: 1-133) (fig. 5). The transformation of the sanctuaries in *episcopia*, attested by the remains of baptismal fonts, needed easy accessibility by citizens. Not surprisingly, the site of Venosa was located in an urban area, that of Concordia near the city walls, while the sanctuary of Cimitile attracted a suburban settlement. The relationship between sanctuaries and *episcopia* led to the birth of small collective bishops' cemeteries, such as in Cimitile, Saint Lawrence in Aosta, Saint Alexander on the Nomentana and Saint Juvenal at Narnia (Perissinotto, 1998). These funerary areas were in hypogeal crypts, mausoleums and churches, sometimes consecrated by apostolic relics (Picard, 1988).

The supposed displacement of episcopal sees goes hand in hand with the gradual urbanisation of the suburbs. It also led to the birth of monasteries at the sanctuaries, historically and archaeologically attested, such as that of Saint Martin of Copanello, probably founded by Cassiodorus (AD 485-580). It had the same plan of the sanctuaries of Venosa and Concordia, with a central complex composed of a small funerary trilobed chapel and a martyrial basilica (Coscarella, 2012: 299-316).

Conclusion

At the beginning of the Early Middle Ages, the presence of buildings with different functions at sanctuaries, the erection of porticoes connecting them with the cities and the change of urban gates' names show that city walls were just a simple physical barrier. On the other hand, suburban and rural sanctuaries led to the development of new settlements, as shown by the birth of new villages. The current word "Cimitile", for example, derives from "*Cimiterium*" and even Paulinus of Nola wrote about a *vicus* nearby the sanctuary (Ebanista, 2005: 313-77). In Rome, a real *Civitas* was born at Saint Peter's tomb in the middle of the ninth century.

The *traslationes* finally broke the tie between relics and their *locus depositionis*, causing new urban sanctuaries to form. Translated relics were usually placed in the altars and crypts of urban churches. For the first time, Saints Primus and Felician were moved by Pope Theodore (AD 642-649) from Via Nomentana into the basilica of Saint Stephen. In the Middle Ages the cult of relics became an urban phenomenon, although the suburban sanctuaries continued to be visited by pilgrims.

In conclusion, the cult of relics really led to the transformation of Italian landscape, causing

the gradual integration of urban, suburban and rural areas. The *suburbia* and *vici* turned into settlements thanks to the attendance of pilgrims. Later, the cities welcomed new sanctuaries due to the translation of relics. The ancient distinction between the city of people and the city of dead fell away at the beginning of the Early Middle Ages.

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The Transformation and Christianisation of Urban Landscapes in Central Lusitania during Late Antiquity and the Early Middle Ages: the Cases of *Ammaia* and *Ebora Iulia*

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Abstract

This research focuses on the process of late transformation and final abandonment of Roman towns, on the Christianisation phenomenon and on the late antique evolution of settlement patterns in central Lusitania. The traditional explanations of sudden abandonments of Roman centres, due to "external" events, were swept away by a more scientific approach to archaeological evidence. The article presents data on the Late Antiquity phases of *Ammaia* and *Ebora Iulia* (today Évora). The results of a long period of archaeo-topographical research on the deserted Roman town of *Ammaia* (Marvão, Portugal), supported by international scientific collaborations, disclose new scenarios. On the basis of the survey data, integrated with the results of the recent ground-truthing excavations, it is possible to state that, from the beginning of the fourth century AD, the town seemed to be interested in a process of transformation and not of degradation. Évora was a bigger town and it was, from the fourth century AD, the seat of the diocese. In fact, it was one of the first towns of Lusitania and its bishop was present at the Council of Elvira (306/314 AD). Évora, unlike *Ammaia*, had continuity of occupation and therefore archaeological research has to deal with the problems usually connected with urban archaeology. The intention is to draw a short summary about the transformations that characterise the two towns in this period and, finally, identify common elements and differences.

Keywords: Christianisation, Lusitania, Transformations, Urban Landscapes, Rural Landscapes.

This research, framed by a PhD project, focuses on the process of late transformation and final abandonment of Roman towns, on the Christianisation phenomenon and on the late antique evolution of settlement patterns in central Lusitania. In fact, the traditional explanations of sudden abandonments of Roman centres, due to 'external' events like natural disasters or barbarian invasions and destructions, were swept away by a more scientific approach to archaeological evidence, which provided a more complex interpretation of historical and economical developments of the Late Antiquity period and to a deeper understanding of the acculturation phenomena.

The results of a long period of archaeo-topographical research on the deserted Roman town of *Ammaia* (Marvão, Portugal) (fig. 1), supported by an international scientific collaboration (University of Cassino, Italy; Gent University, Belgium and the Universities of Évora and Coimbra, Portugal), disclose new scenarios into understanding the process of late transformation and final abandonment of this Roman town.

Beginning from the fourth century AD, the city seemed to be involved in a process of transformation and not of degradation. The new stratigraphical excavations (Corsi, 2014), the extensive geophysical survey (Corsi & Vermeulen, 2012), the analysis of preserved Late Antique and Medieval structures, investigated with a methodology aimed at "decoding" the complex stratigraphical sequences of infrastructures (''Archaeology of Architecture') (De Minicis & Gallo, 2014) and the processing of archaeological materials collected during the last fifteen years, have given the opportunity to register a dramatic increase in our

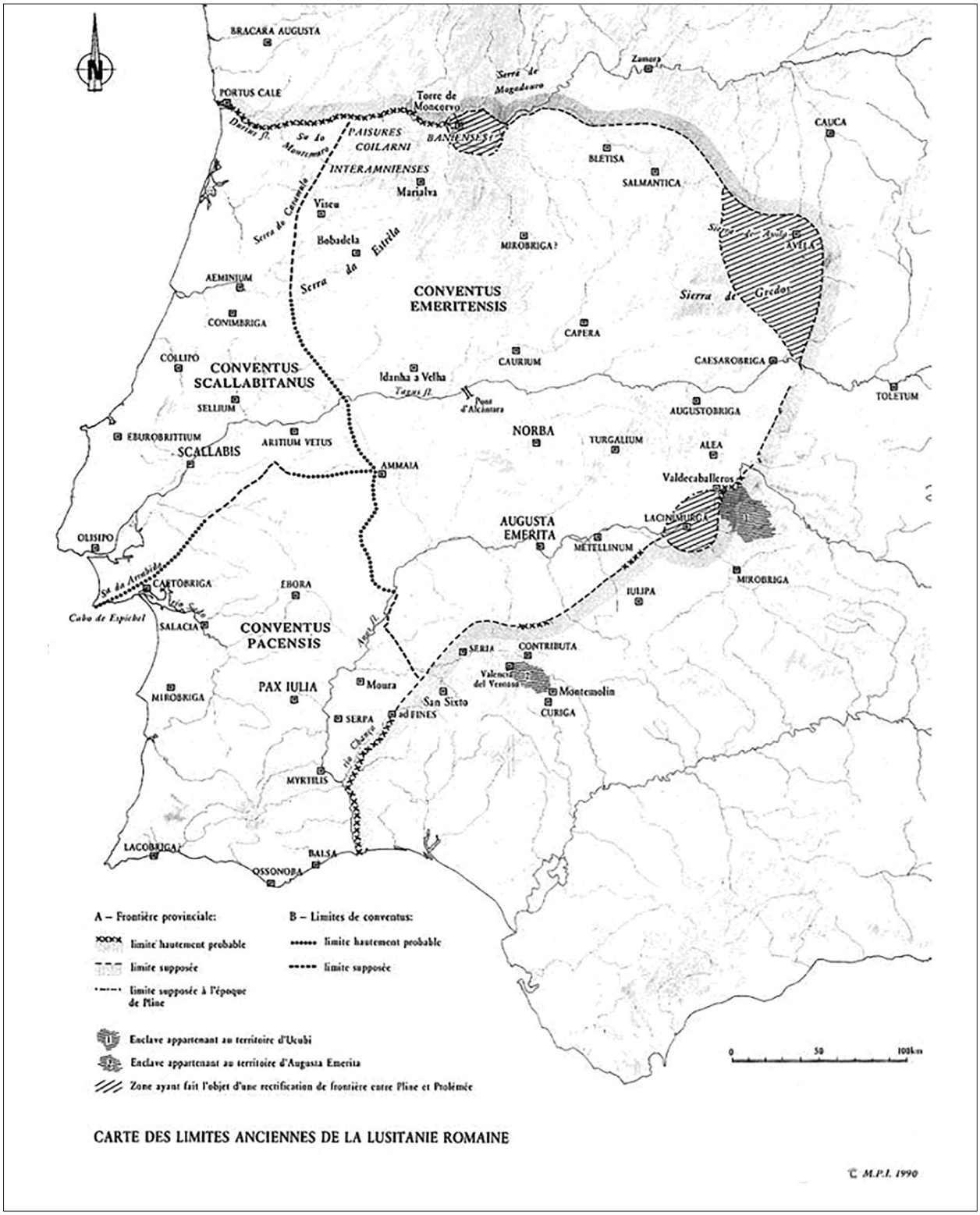

Fig. 1. *Ammaia* and *Ebora Liberalitas Iulia* in Roman Lusitania (after Mantas, 1998: 33).

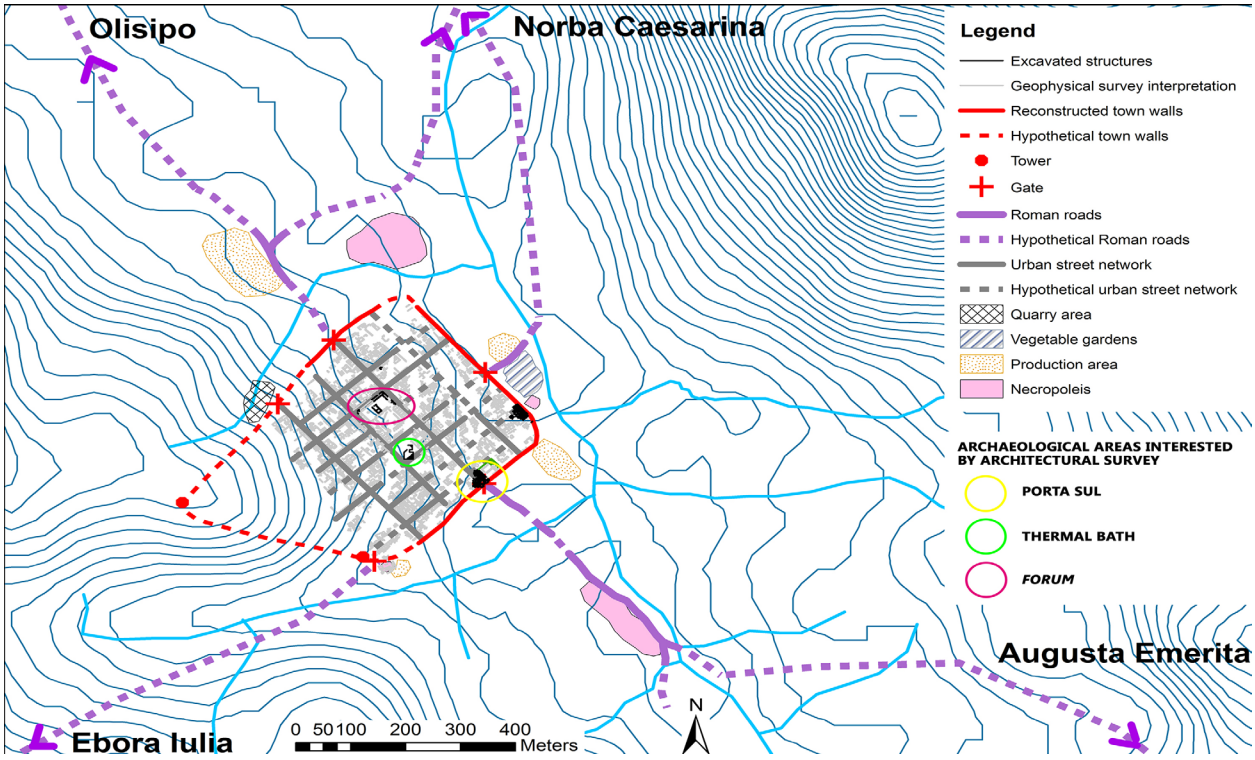

Fig. 2. *Ammaia.* City and *suburbium* with location of the archaeological areas interested by architectural survey (elaborated by author after Corsi & Vermeulen, 2012).

knowledge of the town, its material culture, its economy and its evolution (fig. 2). The architectural survey discloses new scenarios about the development and transformation of urban settlement dynamics during the Late Antiquity period; the study suggests a phase of continuity of city life at the southern gate (Porta Sul) (fig. 3) and a phase of abandonment of the part of town where the *forum* and the thermal baths were located (De Minicis & Gallo, 2014) (fig. 2).

After having been analysed individually, the samples were first compared with the other walls belonging to the structures already dated in the city of *Ammaia,* and then one another. Finally, an analysis of the mortars was carried out (Cardoso et al, 2013). The results of the study of material culture and numismatic findings have already supported this first evaluation. On the basis of the survey data, integrated with the results of the recent ground-truthing excavations, it is logical that during the late fourth century the town started a long process of transformation and not of decline. When looking at indications for the 'Christianisation' of the city, we have to admit that at this stage no indication can be signalled. None of the buildings seen through the 'radiography' of the subsoil can be interpreted as a possible Christian basilica, and thanks to the presence of larger building features with an apse, this type of structure can normally be easily recognised. Instead, the finding of a Christian inscription in the Monte Velho area remains uncertain (Pereira, 2005). It is indeed possible that in this area, as elsewhere documented, rural settlements in the countryside for the construction of Christian worshipping places were preferred, for example the *villa* of Torre de Palma.

The excavations carried out in the *villa* of Torre de Palma (Monforte) prove undoubtedly that this huge rural complex, with its basilica and baptistery, played an important role for some rural districts, at least for Christian cults (Maloney, 1995; Ringbom & Maloney, 2000). This complex had a series of transformations during the course of the

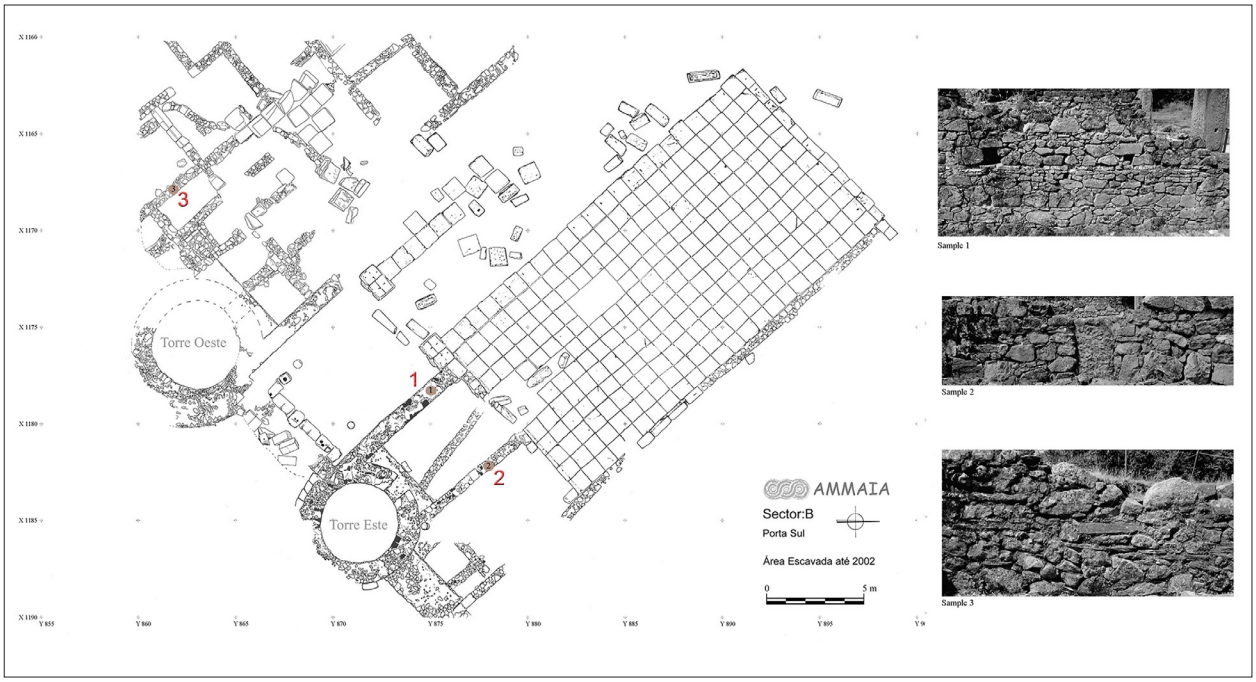

Fig. 3. *Ammaia*. Archaeological map of Porta Sul with samples of architectural survey (rielaboration by author after Corsi, 2014).

fourth and fifth centuries and can be considered a real parish as it was connected to the practice of a cult, a baptistery and a burial space.

Myrtilis, although it was not an episcopal centre, had an urban Christianisation, whereas *Ammaia* had a rural one. Geomorphology and economical trends influenced the different evolution of these two cities. The main difference between them was that *Ammaia* had large *villae* within its territory but *Myrtilis* did not.

In this period, the rural world and the *villae*, in the territory of *Ammaia*, acquired major centrality. In my opinion, however, the causes of ruralisation could not be identified by the "catastrophic" arrival of foreign troops, but in an economic change, already begun in the fourth century and realised later in the fifth.

The urban identities adapted themselves to new demands: the rural heritage ensured greater economic sustainability, certainly in the Northern Alentejo, which became an attractive centre for those populations who lived in difficult urban conditions. During the Late Antiquity period, cities were subjected to changes which were included into the phenomenon of 'urban isostasy'. The latter can be described as the 'equilibrium' in the demographic figures and the evenness in the distribution of activities among cities, suburbs and the territory.

To sum up, we have reasons to think that the city of *Ammaia* did not collapse at the end of the fifth century, but continued to live: some areas of the city had disappeared but the suburb and the territory were now ready to welcome the populations from the town in their rural *villae*.

Évora (fig. 1) was a bigger town and it was the seat of the diocese from the fourth century AD. Évora, unlike *Ammaia*, had continuity of occupation and therefore archaeological research has to deal with the problems usually connected with urban archaeology.

In various contexts the importance of Évora in Roman times continued into Late Antiquity: late Roman, Germanic and Visigothic periods. This centrality lasted and increased, although this process may seem senseless, if we keep in mind the fact that this city suffered, as others Lusitanian cities did during the transition from the third to the fourth century. This was due to a restriction on

their urban development with the building around the city of protective walls against barbarian invasions (figs. 4, 5) (Val-Flores, 2004). Effectively, the small amount of information that is available is enough to assume the intensity of social, economic and artistic relations occurring throughout the fourth century in the territory of Évora, adding a new stance to the city, fundamentally for the role it would play during the visigothic domination: that of the episcopal 'headquarters'.

The results of the study of material culture gave evidence of the changing ideologies where Christianity left ineffaceable marks. Quintianus, bishop of Évora, one of the most ancient episcopal centres of the Iberian Peninsula, signed the *Actas do Concilio de Elvira* (AD 306/314) (Jorge, 2002).

The cult of the martyrs, one of the more dynamic aspects of Christianity during the Late Antiquity, was also present in Évora. This could be noted from a narrative included in the *Passio* of São Mancio or Mancios which stretched back to the seventh century but which was also indirectly witnessed by the study of place names and by the dedication of the parishes and churches towards the first martyrs, particularly in the countryside (Fernández Catón, 1983).

It is important to make reference to some of the more valuable material traces from the Christianisation of the territory of Évora, technically its countryside, providing evidence that enabled the Germanic/Visigothic perspective from which the Byzantine evidently emerged, making the relationship with a possible occupation in the south of Lusitania by the Byzantine troops in the beginning of the seventh century obvious.

The analysis of the excavation's reports, obtained thanks to the collaboration with the Regional Direction of Culture of Alentejo, in Évora, allowed me to get important information concerning the investigated period. Also the excavation at the Roman temple provided essential information.

In the *cryptoporticus* area, a large number of ceramic fragments belonging to medieval phases were discovered, leaving a supposition of a reoccupation of private housing, probably dating at the time of the reconquest. These data show an abandonment of the area which had already happened during the Late Antiquity and the Early Middle Ages.

In 1990, during the excavations, small architectural fragments were found under the pavement of the square, in the layers preserved in the original stratigraphic sequence. These pieces were dated by T. Hauschild to the Visigothic period. Fragments of pots and a bowl were found in the same excavation. They were similar to those from the Visigothic layers of the excavation in Cancho of Confesionario (Madrid) and Recópolis (Guadalajara).

In 1995, during the campaign of excavations, made again near the Roman temple, a well preserved marble sima was found in a silo. This was an interesting discovery, because, until then, whole pieces of architectural decoration belonging to the Visigoth period were never discovered in Évora. This place of discovery corresponded to a silo located approximately 10 m north of the Roman temple, filled with earth, stones and fragments, from a second phase. According to the study of the ceramic fragments, its contents can be dated back to the late Islamic period, that is, between the eleventh and thirteenth centuries.

According to G. Maciel this finding belongs to an architectural liturgical context: more precisely, he supposed that this "sima" belonged to a religious building located in the vicinity of the forum of the city (Hauschild, 1996). This assumption was based on the comparison with the "sima" localised in the baptistery and in the apse of the basilica of Casa Herrera, near Mérida (Hauschild, 1996).

In my opinion, the analysis of unpublished reports of excavations made between 1996 and 1998 in the area of the museum of Évora, could confirm this hypothesis. I contend that the presence of a Visigoth church is possible in the vicinity of the area investigated by the excavations. The identification of a marble slab with Visigoth decorations and the presence of lateral grooves typical of a gate of the period, along with the discovery of the "sima" in the ruins of the temple and the identification of abundant pottery fragments belonging to the late Roman and Visigoth period, support my

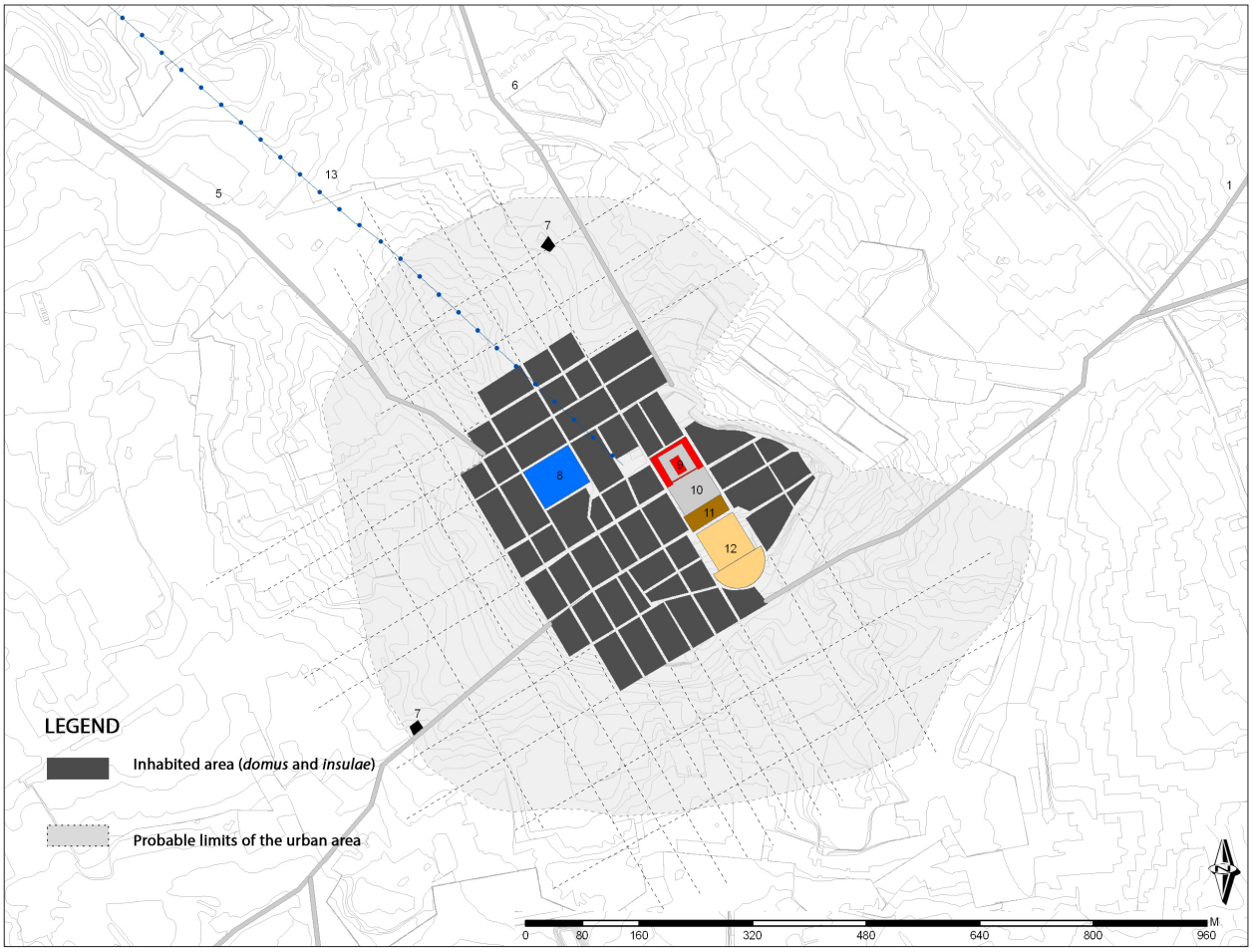

Fig. 4. *Ebora Liberalitas Iulia*. Map of town and *suburbium* during the first century AD (elaboration by author after Val-Flores, 2004).

hypothesis. In the museum there is also a marble pillar of the seventh century unmentioned in the examined excavation reports. Finally, I would like to underline, that we are in one of the oldest cities of Lusitania, the seat of the diocese. For this reason we can suppose that Évora had a cathedral, whose location was probably in the ancient Roman forum reoccupied in the Late Antiquity period. Further surveys would be necessary to confirm this hypothesis.

In conclusion, the urban model based on the city-countryside interaction gives, in time, a true and solid stance to the daily life of the countryside (fig. 5). The fact that Évora was the capital of a *civitas* and that the bishop established his seat there, surely influenced the Late Antique development: for these reasons it conserved its power through the centuries, while *Ammaia* was completely destroyed in the Early Middle Ages.

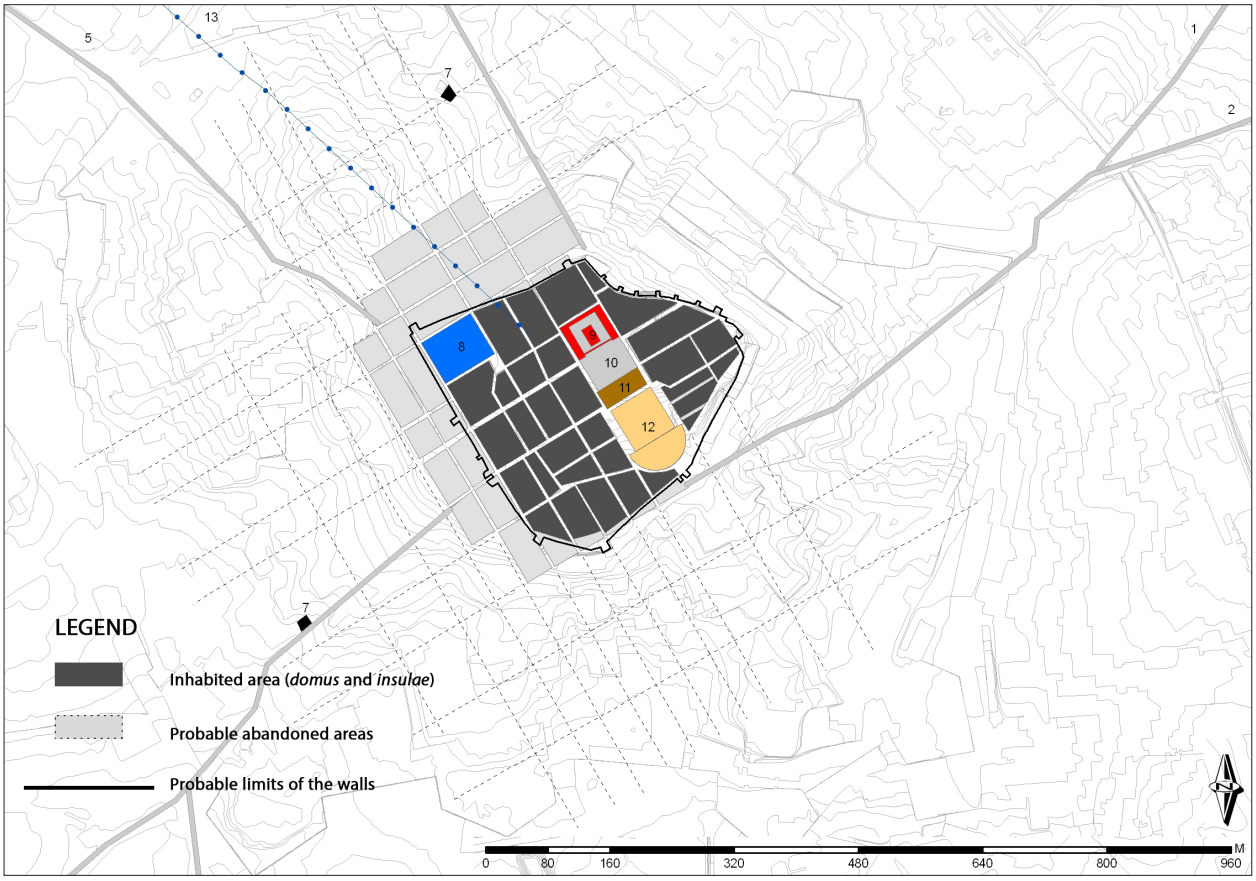

Fig. 5. *Ebora Liberalitas Iulia*. Map of city and *suburbium* during the fourth century AD (elaboration by author after Val-Flores, 2004).

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Epilogue
In Search of an Identity: Landscape Archaeology for Post-Classical Studies
Defining and Understanding Archaeological Landscapes

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Over the course of the last several decades, landscape archaeology has achieved the status of a discipline in itself, with clearly defined parameters, established methodologies and instruments of research. Nonetheless, that which can also be termed as 'the archaeology of landscapes' covers numerous fields, ranging from geographical to social space, and from physical and environmental aspects to the symbolic significance of places (David & Thomas, 2008: 19). This great diversity and variety of contents and approaches probably stems from the fact that the concept of landscape is charged with innumerable meanings with virtually impressionistic or speculative definitions that have resulted in a remarkable assortment of approaches.

To start, it is interesting to examine how the definition, interpretation and role of landscape in our culture have evolved, starting from the sixteenth century, when, in the western world, the notion of landscape was "inextricably bound into notions of power and status" (Robertson & Richards, 2003: 1). The eighteenth century was ruled by landscape design and painting. Landscapes, mainly natural but also those shaped by man, were often represented through the lens of the prevailing romanticism, and in such a way that even contemporary views and perceptions were nuanced with the romantic feeling of landscapes as pictorial (Aurand, 2006: X). More recently, this aesthetic approach has been enriched and imbued with immanent symbolism and ideology. The concept of 'ideological space' can be very easily applied to townscapes, where the surrounding built environment can be intended as "an ideology about the correct way of living a life, and that ideology involved more than just building a town, but also locating daily activities within it, making it part of the unquestioned mental map of people dwelling there" (Revell, 2008: 43; cf Keay, 1997: 203-204). When it comes to settlement dynamics, this means that landscape organisation had an immanent ideological dimension, and from the way that settlements are displayed and from their architectural shape it is clear that there was an underlying ideology (Metzler et al, 1995).

A more anthropological approach has caused landscape to be viewed as the result of "the practice of transforming land into landscape, [which] began when the first caveman/woman placed a rock carefully or scratched a tree on a wall" (Robertson & Richards, 2003: 1). Indeed, the fertile encounter between archaeology and anthropology has brought about the awareness that cultural landscapes have to be tackled in a more problematic way, and they have to be considered not as an outcome, but as a process in which nature and culture are two aspects of the same dynamic (Tilley, 1994). The key issue is the perception of the landscape itself; from a phenomenological stance, landscapes can be described as the way in which people experience and understand the world (Robertson & Richards, 2003: 7).

Within this framework, the concept of 'taskscape', as elaborated by Tim Ingold, is intended as a socially constructed space of human activity, perceived with spatial boundaries and delimitations. The concept stresses the notion that landscape is the space where people perform their daily activities, thus constructing a cultural

knowledge of it (Ingold, 1993). This perspective has been implemented by Eric Hirsch (Hirsch, 1995: 8). In his interpretation, the definition of landscape as a 'representational reading' of the surrounding space is enriched with a more geographical approach, whereby landscape is considered "a cultural process that brings together the cultural meaning of landscape with the concrete actuality of everyday life" (Hirsch, 1995: 3).

This process has paralleled the advancement of historical geography, in which new perspectives and theoretical frameworks have been adopted. This discipline has also steered its interest towards processes rather than outcomes and as a result, man has become a more active agent of the transformations and a more active than passive subject. Concepts such as 'attitude' and 'ideology' have rooted themselves in the interpretation of landscapes as 'artefacts' (see e.g. Barker, 1979: 561 for an example of a more traditional approach).

The outcome of these intersected perspectives is that landscapes can be studied as physical, ideological, social and cultural objectives of our research. Furthermore, we can study the ways in which landscapes are represented once we individuate the values, meanings and symbols that we attach to them (Robertson & Richards, 2003: 2). In this context, the understanding and decoding of landscapes is done from a subjective point of view, whilst with the more traditional approach, the aim of historical landscape analysis was to grasp the evolution in features bearing traces of the shapes imprinted by physical and cultural actions (Robertson & Richards, 2003: 2; cf Sauer, 1925).

Landscape Archaeologies: Multifaceted Approaches to the Time-Space Relationship

This multiplicity of protean definitions of landscape and interpretations of the way in which mankind has related and interacted with it, has resulted in a composite framework. Over the past 40 years, diversified approaches to landscape archaeology have developed from the theoretical as well as from the methodological point of view within this framework. Scholarship was engaged first with the archaeology of settlement patterns (Chang, 1972: 1-26) which was soon framed into the "spatial archaeology" outlined by D. Clarke (1977). The breakthrough of ICTs and digital processing generated a dramatic proliferation of GIS applications and the transposition of statistical spatial models from contemporary geography, economics, architecture and ethology, even though several theoreticians underlined the peculiarities of the analysis of past human behaviour, from the micro to the semi-micro and macro scales of aggregation. As Clarke himself stressed, in this type of paradigm of the discipline, "the retrieval of archaeological information from various kinds of spatial relationship is a central aspect of the international discipline of archaeology and a major part of the theory of that discipline wherever it is practiced" (Clarke, 1977: 1). This approach soon revealed its limits, with respect to the extreme technicalities of the landscapes investigated as mere spaces, "devoid of meaningful places and meaningful emplacement, just as they are devoid of social experience and salience" (McNiven, David & Barker, 2006: 14).

New developments in the discipline brought a shift in focus from the settlement patterns to the settlement systems, in such a way that a new interest and innovative theoretical speculation about the use and the meaning of landscapes to the people who inhabited them arose (Social Landscapes studies: see, e.g. David & Thomas, 2008: 32-38). This tenet was rooted in a reaction to or a rejection of the overwhelming importance attributed to survey data. Indeed, plotting some dots on a map has been mistaken for practising landscape archaeology. Instead, our goal should be "to reconstruct people's experience in the landscape", thus performing a "major interpretative operation" (Finlayson & Dennis, 2002: 225-26). This operation can be described as the contextualisation of the widest range of information and data, retrieved within the framework of an interdisciplinary team covering areas such as geomorphology, botany, historical documentation, ethnography, and remote sensing (Given, 2004: 20).

Context, complexity and interdisciplinarity are the keywords to delineate the most recent developments, as landscape has been considered as "a dynamic context of different transformations intelligible through time: cultural, historic, political, social, geomorphologic, geographic, anthropological" (Forte, 2005: 213) for which multi- and interdisciplinary approaches need to be adopted and a wide array of detection techniques need to be deployed, involving – among others – cultural, palaeo-environmental, anthropological and geomorphological studies, with all of them governed by advanced digital technologies.

Most remarkably, thanks mainly to contamination with the tenets of anthropology that primarily occurred in Anglo-Saxon scholarship, landscape archaeology acquired a cognitive dimension which removed the focus from the more materialistic themes of research (such as land use, resources exploitation management, production and trades) to an interest in the social, "emotional and spiritual" aspects of the interaction between man and environment (Renfrew & Bahn, 2000: 398-99). This shift is considered an outcome of the spreading of post-processual paradigms with the result that "the landscape and its monuments are seen not simply as reflecting the social structures of society but, by bringing into being new perceptions about the human place in the world, as facilitating the emergence of a new social order" (Renfrew & Bahn, 2000: 398-99, for a list of reference see p. 603).

Towards the turn of the millennium, a post-processual approach to landscapes as "socially constructed spaces, constitutive of social relations" rather than a passive "backdrop for action" (Robin & Rothschild, 2002: 161) broke in (Hincks & McAtackney, 2007: 13-14), paralleled with the more empirical and traditional approaches nursed in the British tradition of local studies (Aston, 1985).

In some schools with a long tradition of field survey, it has been necessary to discuss affinities and differences with the old-fashioned approaches of what was, and still is, termed 'ancient topography', a discipline for which, in turn, it had been necessary to state the conceptual and theoretical differences in respect to historical geography (Castagnoli, Mansuelli & Alfieri, 1957; see section XXX in this volume). In this more traditional interpretation, the study of territories and settlement patterns in post-classical phases has found fertile grounds, mainly in southern Europe, where most work in landscape archaeology adopted a geographical-historical approach (Corsi, in press a).

In spite of the advancements in field survey and excavation techniques, the developments in several types of material provenance identification and dating, the spectacular progression achieved in the fields of remote sensing, geophysical survey and visualisation tools, and the rise in sophisticated technological advancements with increasingly reliable results (Vermeulen & Corsi, 2015: 156-57), developments have been uneven across Europe.

The so-called 'New Archaeology' spread rapidly in the Anglo-Saxon world, finding echoes in countries traditionally more open to external stimuli, such as the Netherlands. The introduction of new survey methods promoted by Anglo-Saxon archaeological activities in the Mediterranean, however, generated a fast adoption of the new methodologies and approaches all over the Western world (Wallace-Hadrill, 1991: XI. For a short review of the state of the art until the 1970s in Germany, Great Britain, USA, France and Russia, see Clark, 1977: 5-9. For a brief comment about Byzantine Landscape Archaeology in Greece see Tsigonaki & Sarris in this volume). The focus shifted from monumental aspects to social, economic, political and cultural factors, and special attention was paid to the relationships between town and countryside (Corsi, in press b).

It is therefore incorrect to state that in Mediterranean countries "art historical approaches in archaeology, compounded with the strength of academic boundaries in other disciplines have mitigated against the development of an approach to landscape analysis and demographic modelling that by definition demands an inter-disciplinary framework linking the natural and social sciences" (Barker & Mattingly, 1999: III). On the other hand, it is undoubtedly true that the newest trends in

landscape archaeology filtered very slowly into the study of post-classical landscapes and that innovation in theoretical speculation and methodological debate can only be episodically intercepted in medieval landscape studies (Corsi, in press a).

At the same time, in addition to the effects of the contamination with anthropology previously discussed, mainly continental European archaeologists were engaged in testing the disciplinary boundaries (Hincks & McAtackney, 2007: 13-14) and were extending their interests to the more traditional fields of geography, natural and earth sciences (Layton & Ucko, 1999: 15). The 1990s saw the spread of geoarchaeology (De Dapper & Vermeulen, 2000; Fouache, 2013) and its many variations. Geoarchaeology can be paralleled with environmental archaeology but its origin is alien to new processual paradigms. Although not many projects in medieval landscapes adopted this methodology, a few examples can be listed. In most of these cases, however, the stress still remains on sociocultural factors rather than on those of an environmental nature (Corsi, in press a).

These excursions into the earth and natural sciences renewed substantially studies in demographic trends, which still kept the essential contributions by historical and social scholarship, and stimulated the adoption of the perspective of the *longue durée*. By bridging the gap between the humanities and hard sciences with the adoption of the widest array of techniques and instruments of research, it has been possible to determine and visualise long term demographic changes in both rural and urban contexts, thus providing new insight into the history of mankind and man's interaction with the natural environment (Barker & Mattingly, 1999: III). Finally, this radical change in the approach to landscape studies has been very favourable to post-classical studies, where a few seminal projects, like the *South Etruria Survey* started by the British School at Rome, opened the way to numerous enterprises focussed on the reconstruction of demographic trends from the *longue durée* perspective (see Patterson, 2010: 143-44).

In summary, we could say that the reasons behind the attractiveness of landscape archaeology in contemporary scholarship probably lie principally in this vibrant diversification of paradigms, tenets, practices and methodologies, as well as in the fact that after decades of sometimes fierce debate, landscape archaeologists reached an agreement on the lack of agreement and consistency of the set of objectives and approaches (David & Thomas, 2008: 25). There are, of course, already many shared aims among the different interpretations of landscape archaeology:

"they employ a range of (mainly non-intrusive) methods, operate at multiple scales of analysis and seek to move beyond a focus upon apparently bounded entities like monument or "sites". Our point of departure [...] is that diversity – of methods, field location, disciplinary influences and contemporary voices – is a principal characteristic of Landscape Archaeology (Hincks & McAtackney, 2007: 14)".

A "Wind of Change" in Post-Classical Landscape Studies?

In the session entitled *The wind of change: town, country, land-use and settlement patterns between the fourth and the seventh century AD*, speakers were invited to present the newest data about settlement patterns in a wide array of geographical contexts during the four centuries of incubation of the changes that would announce the new world of Medieval Europe. The time span that we delimited is probably the first choice that we need to explain. Without delving into the intricacies of a discussion that is still open and that has to accept the diverse opinions of individual scholars and orientations of structured scholarships, we can say that we did consider the fourth century as the threshold of Late Antiquity, even if for the fourth and the first part of the fifth century the definition of Late Roman or Late Imperial is preferable. The lower limit of the time range has been fixed at the seventh century, as the seventh century can be consid-

ered the borderline between Late Antiquity and the Early Middle Ages. Obviously, this delimitation cannot take into account the peculiarities of geo-historical compartments, but just one of the most appreciable results of the session was the fact that we could compare synchronic historical trends in very different regions. From Atlantic Lusitania to the Ural mountain range, down south until Sicily and the Anatolian coast, a spectacular overview of case studies adopting different methodologies and targeting different goals, has materialised before our eyes.

Contributors were asked to present regional case studies in light of the newest acquisitions in our knowledge on trade and productions and, with support of the geosciences, on changes in ecological conditions. Our intention was to focus the discussion on topics such as the relationship between town and country, settlement patterns, the transformations in land use and communication networks, different forms of land division and reclamation or water regimentation activities attributable to Late Antiquity and the Early Middle Ages.

We were pleased by the large number of proposals, from which we selected those that appeared to cover the widest range of fields and approaches. With respect to the newest knowledge in the discipline, different examples of diachronic investigations, such as those on Crete (C. Tsigonaki & A. Sarris) and in the Contessa Entellina region in Sicily (A. Facella), were presented. Pertaining to the latter, we would like to stress how the presentation of the most significant issues concerning pottery distribution and interpretation of rural sites goes beyond the traditional diachronic presentation of site numbers and distributions and extends to the transformations detected in the distribution of certain categories of finds. The paper points out some biases in the survey data and enlightens some methodological issues.

Also, the paper by C. Tsigonaki and A. Sarris dwells on the disputable matter of the definition of functions and typology of settlements. The snapshot we have of Early Byzantine Crete is a composite picture and a noteworthy example of a wide spectrum research project that aims to exploit every type of source without neglecting the most traditional ones such as written texts, epigraphical documents and any kind of legacy data. The GIS data processing eventually allows sophisticated spatial analysis and interesting studies of the network system. The geographical perspective, however, is balanced by the introduction of more social and historical factor analyses which explore the nature of the relationship between man and space, thus humanising the relational processing.

The above mentioned spatial approach also characterises the contribution of Dmitry Korobov who defines the introduction of GIS processing in archaeology as one of the most influential events in landscape archaeology, marked by the adoption of spatial GIS modelling. In this pioneering work on the Northern Caucasus, the methodology of data processing acquires a central role, paralleled with the identification and classification of the settlement typology. The processing of a large amount of new and legacy data, integrated with palaeo-environmental studies, has allowed light to be shed on the Alanic settlement patterns over the course of time. As a result, it has extended our understanding to now include geographical, historical, economic cultural, social and anthropological factors.

As anticipated,

> "landscape can also be understood as an aggregation of resources, affording both opportunities and limitation for human development. In this strand of Landscape Archaeology, it is the spatial relationship among people, soils, raw materials, and water sources that demand attention (David & Thomas, 2008: 25)".

This approach has been applied to landscapes mainly concerning pastoralism and transhumance, for mineral exploitation and metal mining at the end of the Middle Ages and the beginning of the Modern Age. Here we can present a very interesting example of the study of sulphur mining (L. Zambito). In spite of the difficulties of collecting in-

formation about the earliest phases of these activities and of the problematic dating of the traces left by mining, 'minescapes' can be identified as some of the most interesting contexts where human and natural action interact heavily. The importance of minescapes is connected to the challenging condition of instability (termed as "liquidity" by L. Zambito) due to the continuity of use through time and the conservatism of exploitation techniques. Again, the socio-economic transformations that seem to have taken place between the fourth and the sixth centuries, with the clustering of sparse settlements into a village and the casting down of the town of Agrigento's role as fiscal centre for these activities (while its role as hub for trade seems to last until the beginning of the ninth century), are magnified when investigated by means of an approach that uses environmental and spatial data to design the historical processes and build a narrative.

Issues related to the transformation of urban space and the suburbs, as well as the dynamics of expansion, reduction or abandonment of towns were addressed in the paper by V. Cassiani and V. Iacomi and were well integrated into the broader evaluation of the surrounding landscape and catchment areas. Here the perspective is orientated mainly towards the economic implications and the territorial fallouts of production activities and trades. At the same time, some transformations of the inhabited space are read from the perspective of symbolic-ideological parameters, stretching the interpretation of material elements to the immaterial aspects of perception of the surrounding landscape (*supra*).

To this topic of town and country relationships, we can connect the two papers from our collection that discuss the phenomenon of Christianisation of urban and suburban landscapes in central Lusitania (E. Gallo) and Italy (A. Luciano). Italian scholarship, like Spanish and French, has a long tradition in this approach and as is proven here, the study of Christian topography is progressively enriched by new data coming from excavations carried out in deserted towns as well as in those that endured continuous occupation. The two Portuguese case studies and the many examples from Italy show how immaterial factors like religion and worship influenced the material aspects of settlements with the emergence of preferred paths (urban or suburban), the development or the shrinking of specific areas, the increasingly frequent piercing of the city walls in connection with suburban sanctuaries and the changes in polarisation of urban assets following the construction of cathedrals or important churches.

Many contributions in post-classical landscape archaeology rely upon data from traditional urban excavations. The paper by F. Redi, therefore, provides us the occasion to analyse how the study of towns in Late Antiquity and the Early Middle Ages has removed itself from the more traditional historical approach largely based on written sources and is shifting toward a stand-alone urban archaeology which is only partially rooted in urban historical geography.

The archaeology of towns during these transitional phases has engaged several generations of archaeologists. Far from being closed, a thirty year long and articulated debate has shown that many parameters have to be taken into account when analysing the evolution and transformation of classical towns. Archaeology has indirectly inherited the approaches of both urban history and urban geography, aiming at the study of the humanistic and functional elements comprising the urban scene (Dyos, 1973: 25). If it is true that "history is about chaps, geography about maps", then urban archaeology deals "with urban life and townspeople and their formal and informal institutions" as it is "concerned with patterning and spatial distribution" (Carter, 1983: XIV).

The newest trends and paradigms of environmental and geoarchaeology, characterised by the entry of earth and natural sciences into the domain of humanities and geohistorical disciplines, have inspired several of the contributions collected here. The townscape of Byzantine Caričin Grad, an artificial imperial city archaeologically frozen in the short time span between its foundation and its abandonment, is not analysed here in its spatial connotations, but in its social and economic fea-

tures as revealed by the botanical and zoological finds (C. Röhl et al in this volume). In the attempt to study 'Households, consumption and everyday life', aspects of production and consumption are investigated in relation to activity zones; "tasks-capes" are here intended more in their economic and environmental than in their anthropological reading (*supra*).

The latter reading is central in the paper by C. Bassi & V. Amoretti, where osteological analyses of human and animal remains prove that many individuals of the human group buried in San Cassiano were engaged in craftsmanship related to the wool production cycle. Additional social features can be brought to light by studying the gender and age parameters and the markers of osteological stress, pointing in this case to horse riding activities of a group of men with a possible familial link and showing interpersonal violence that occurred among other individuals. It is noteworthy that by crossing data derived from archaeological and physical anthropological studies, we are able to infer social and even ethnic changes in the structuring of society and transformations that are typical of this transitional era.

Indeed, the use of human skeletal remains in landscape archaeology has been increasingly significant (Pate, 2008, with broad reference list). Human bones can be considered as archives retaining important information concerning the use of past landscapes by human populations. As human remains retain traces of the physical, chemical, climatological and societal environments in which they lived, the analysis of human skeletal remains produces valuable spatio-temporal information and can contribute substantially 'to an improved understanding of past human relationships within and between various natural and cultural environments' (Pate, 2008: 502). Apart from the obvious inferences about diet, health and the main economic activities (sedentary, nomadic, agricultural versus hunter-gatherer lifestyles, strenuous productive activities, etc.), the skeletal remains, when available in an ample and well-distributed sampling, provide information about age, gender and social groups. Cemeteries are a principal test ground for detection of social organisation and complexity. In this way, as stressed above, anthropological study concurs in understanding the history of economy versus landscape and adds a holistic component to landscape archaeology.

Epilogue

The geographical and methodological heterogeneity of the contributions that we have assembled here could be 'disturbing' for those who advocate for a greater uniformity of purposes, methodologies and practices with the prime goal of achieving a standardisation of procedures that would facilitate comparative research (Barker & Mattingly, 1999: IV; Anschuetz, Wilshusen & Scheick, 2001: 157). Contrary to this, these proceedings demonstrate the great variety of approaches and offer an open assessment of the results achieved so far. This diversity in starting and ending points suggests an extraordinary richness for the future of the discipline, in which post-classical studies will finally find their acknowledgement and will further shape their identity.

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