LANDSCAPE ARCHAEOLOGY OF NEOLITHIC SOUTHCENTRAL ROMANIA: AIMS, METHODS AND PRELIMINARY RESULTS OF THE SOUTHERN ROMANIA ARCHAEOLOGICAL PROJECT

DOUGLAS W. BAILEY, RADIAN ANDREESCU, LAURENS THISSEN, ANDY HOWARD, MARK MACKLIN, COSTEL HAITĂ, STEVE MILLS

Începând din 1998, în cadrul *Southern Romania Archaeological Project (SRAP)* este investigat modelul habitatului şi exploatării terenului în neolitic în valea râului Teleorman, la nord de Alexandria. Integrând experienţa locală cu noile tehnologii de cercetare în teren, cu geomorfologia şi cu studiul ceramicii, proiectul SRAP tinde să răspundă la întrebările: când, cum şi de ce, după 6000 a.Chr. oamenii au populat această regiune. Lucrarea de faţă prezintă scopurile, metodele şi rezultatele preliminare ale cercetărilor întreprinse, tratând în special trecerea de la locuirile temporare Boian la tellurile gumelniţene şi specificul producţiei ceramice de tip Boian.

INTRODUCTION

Since 1998, the Southern Romania Archaeological Project (SRAP) has been investigating the Neolithic landscape at Lăceni-Măgura, Teleorman County.[1] Originally attracted to investigate the unusual discovery of Boian Culture ceramics on the Teleorman Valley floor, the project has expanded to examine a range of critical questions about the local Neolithic. SRAP has produced annual reports for the national archaeological conferences (Andreescu and Bailey 1999b, 2000, 2001, 2002), two preliminary reports with a third in press (Bailey et al. 1999; 2001; in press), several articles (Andreescu and Bailey 1999a; Andreescu et al. 2002; Bailey et al. 2002; Howard et al. 2003) and a website (**www.cf.ac.uk/srap/**).[2] The present

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[2] Contributions include the following analyses: Bălăşeşcu (2001, 2002), Bălăşeşcu and Radu (2002), Radu (2001, 2002), Mills (2002, in press) and Trick (in press).

article sets out the research context in which SRAP is working and lists the project's aims, objectives, methods and results to date. The project is a long-term investigation; a detailed final report will appear soon after fieldwork is completed.

AIMS AND RESEARCH CONTEXTS

The fundamental aims of SRAP are to refine and deepen our knowledge of the record of settlement and landuse in the Neolithic of southcentral Romania. These aims emerged from a professional consensus that we need to expand and refine current understandings of where and how people lived between 6000–3800 BC in this region. As the project team explored the Neolithic record, specifically the Teleorman County, a series of important research questions emerged. While the first questions focused on understanding the Boian material in the valley bottom at Lăceni-Măgura, it soon became clear that a scientific understanding and explanation of the position of the Boian material at Lăceni would require a fuller reconstruction of the broader Neolithic sequence in the valley. Furthermore, it became clear that a fuller understanding of the bigger sequence would require the application of a multi-disciplinary approach that was able to work both at the site-specific scale (e.g., the excavation of individual habitations) as well as at the landscape scale (e.g., the investigation of sedimentation across a river catchment).

RESEARCH CONTEXT

What do we know about the Neolithic of southcentral Romania? On the one hand we have a considerable collection of published information about some parts of southern Romania and about some phases of the Neolithic. This is especially the case for the later part of the sequence, particularly the Gumelnița tell settlements of the fifth millennium BC. Large-scale excavations have been completed at Căscioarele (Dumitrescu 1986) and are underway in the region at Vitănești (Andreescu 1999, 2000, 2001, 2002) as well as further afield at Uivar[3], Pietrele[4], Borduşani (Marinescu-Bîlcu et al. 1997) and Hârşova[5] (Popovici and Rialland 1996; Popovici et al. 1998–2000).

At a broader scale, there is an older literature about the phases of the Neolithic that preceded the emergence of tell settlements. Thus, Comşa's volume on the Boian Culture (Comşa 1974a) remains the main text, though more recent contributions have opened up the study in new and exciting directions (e.g., see Neagu 1999b for a review, and Neagu 1999a for a map of Boian sites and short site reports). While Boian sites have been excavated, fewer have been published in detail (e.g., Zaharia 1967) and, most critically, little attention has been given to placing individual sites within their larger landscape and environmental contexts.

[3] See the project website: http://www.uni-wuerzburg.de/vfg/Uivar.html.
[4] See the project website: http://www.ruhr-uni-bochum.de/ufg/Forschung/ Pietrele/pietrele.html.
[5] See the project website: http://www.culture.gouv.fr/culture/arcnat/harsova/fr/.

Our understanding of the Dudeşti Culture is less complete, with a handful of sites and fewer detailed publications having to stand for the entire region (Comşa 1956, 1959, 1969, 1971, 1974b; Şerbănescu 1997; Neagu 2000) with complementary work referring to events further to the west in Oltenia (Nica 1976). Our understanding of the Criş Culture settlement and communities was even thinner.[6] While more work has been completed to the west (e.g., at Gura Baciului; Lazarovici 1979), only two Criş sites were known from the region of Muntenia (Târgşoru Vechi and Dulceanca) with the latter being the only one from Teleorman County (Teodorescu 1963; Comşa 1994). Indeed, the low number of earliest sites had led to theories of an absence of population; as well shall see, both ideas are incorrect and reflect, if anything, an absence of research and the limitations of what are now commonly recognized as outdated methods and theories.[7]

In almost all of these components of the Neolithic in southcentral Romania, the questions that had been asked and the research strategies that had been adopted had focused on retrieving a particular type of information. For example, our understanding of the Boian Culture and its proposed sub-phases was limited to discussions of the decoration and form of ceramics; an absence of radiocarbon dates[8] and lack of good stratigraphic sequences documenting physical relationships between Boian sub-phases made impossible the investigation of critical questions about causes of changes in material culture. It was time to ask new questions about the Neolithic in this region, questions that examined critical new categories of data such as the conditions and potential causes of the major cultural and social changes that the older work had succeeded in identifying.

RESEARCH QUESTIONS

In context of existing work and at the broad chronological scale of the Neolithic, SRAP has been asking the following questions. What happened just before the first appearance of the earliest settled, pottery-making, cultivating and breeding Neolithic communities in the region? What were the environmental and geomorpological conditions in which the pre-neolithic hunter-gatherer-fisher-herders lived? Were there significant differences between these conditions and those that prevailed after the start of the Neolithic? Indeed what is the absolute date for the earliest Neolithic communities in the region? What is the character of the earliest Neolithic in the region? Where did the people who made Criş pottery live? What did they do? Were they fully sedentary communities, or were they semi-sedentary, moving about the landscape, stopping here or there on a seasonal or annual basis? What is the character of their habitations? Indeed, are we correct in calling them habitations? Are they best defined as houses, as huts, as tents, or as

[6] But see Zaharia (1962).

[7] Since the start of our work in 1998, an excellent review of Neolithic archaeology in the Teleorman has been completed by Pavel Mirea (Mirea 2002). See also Spiru (1996).

[8] But see the important series from Căscioarele in Bem (1998–2000).

something else for which we have no clear modern analogy? Were all of the individual pit-features that make up a Criş site occupied at the same time? If so can we honestly talk about Criş villages? Alternatively, were the pit-features used sporadically, or were individual pit-features used in sequence, one after the other? Equally critically, what do the contents of individual pit-features tell us about the activities that took place there? What do the detailed records of micromorphologically-assessed, pit-structure stratigraphies inform us about the duration of pit- and site-use? Furthermore, what can we say about the long-accepted understandings of Criş ceramics? Does the typological entity that we now agree is 'Criş' represent a people or a set of activities or even a single, chronologically distinct phase of the Neolithic? Regardless of the form of the answers to these questions, each will refine our understanding of Criş life.

SRAP is posing the same questions about the Dudeşti and Boian uses of the Teleorman landscapes. What are the true archaeological and functional characters of these distinct cultural phenomena? Beyond chronological sequence and ceramic definition, what are the important distinctions and, no less importantly, the similarities among Criş, Dudeşti and Boian sites? How are we to understand the differences among them and the transitions from one to the other? Are the long-accepted explanations of population migration still adequate? What alternatives might there be for a better understanding of the changes that we accept as defining the Neolithic sequence in the region? For example, why, in the fifth millennium BC, did communities settle down into villages that grew into the monumental tells of the Gumelniţa culture? Again, are existing culture-historical interpretations still satisfactory? What new perspective can we gain from recent advances in environmental and geomorphological sciences and how might these new categories of data help us to understand in a more rigorous and scientific manner the emergence of tell settlements as well as the other, earlier, inter-cultural changes of the Neolithic?

These are all big questions and we suggest that the answers to them will come only from archaeological investigation that spreads well beyond the spatial limits of a single excavation or the individual methodologies of one specialist's energies or expertise. SRAP is attacking these questions with a multi-disciplinary team working in a variety of contexts at a range of sites across the well-defined Neolithic landscape at Lăceni-Măgura. SRAP's plan-of-attack against the big research questions blends the large-scale information of the environment, landscape, river-valley and river-catchment with the specifics of highly detailed work at individual sites within the broader landscape. Indeed, since we started our work, we now know that our almost randomly chosen research zone contains sites of all of the Neolithic sub-phases, Criş to Gumelniţa.

PROJECT OBJECTIVES AND METHODOLOGY

In order to reach its aims and in order to answer its research questions, SRAP is meeting the following objectives: 1) to carry-out a multi-disciplinary investigation of Neolithic settlement patterns and related environmental contexts in an area large enough to allow comparison of diverse topography, soils and sedimentation, yet

small enough to allow intensive study; 2) to document, reconstruct and interpret the paleo-history of the Teleorman River valley at Lăceni-Măgura from before 6000 BC to after 3800 BC; 3) to document, reconstruct and interpret the pattern of Neolithic land-use in the research area; 4) to excavate with a high-resolution strategy a significant portion of a pre-Neolithic site, a Criş site, a Dudeşti site, and a Boian site; 5) to propose explanations for the different choices that people made in the Neolithic concerning the location and permanence of habitation in the research area; and 6) to suggest how the result of SRAP-work might contribute to answering similar questions in other parts of the lower Danube basin in Romania and Bulgaria as well as further afield in southern Europe, the circum-pontic region and the Aegean.

Methodology

SRAP employs a multi-disciplinary methodology that combines environmental, geomorphological, topographic, and traditional archaeological practices. The project is set-up within a Geographic Information System (GIS)[9] that provides both a spatial data-base and archive for mapping results and a coordinating centre to which the many different strands of research are connected and inter-linked.[10]

Fieldwalking

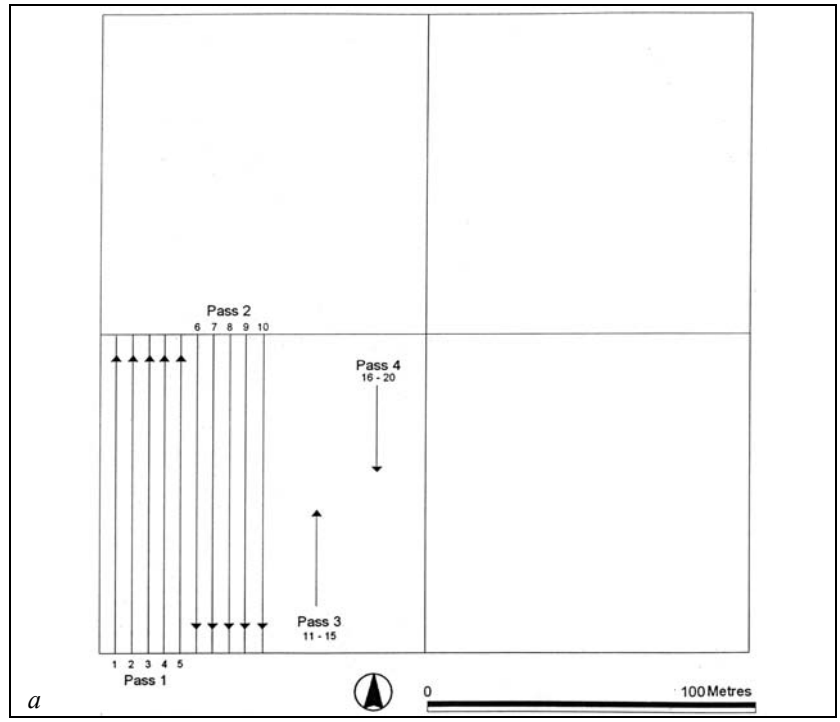
At the largest scale, sites are mapped onto the GIS as they are discovered or as the team visits, documents and defines them: sites are logged with a hand-held Global Positioning System (GPS) and preliminary details of site-size and chronological/cultural identification are noted. In order to produce scientifically accurate records of the distribution of sites and of the sizes and concentrations within individual sites, the project carries out intensive field-waking (fig. 1/a)(see Mills 1999a for methods). Field-walking teams record the densities of surface material across the landscape. Areas with high densities of Neolithic material are identified as sites and given a unique identification based on their location in particular river valleys: thus, Teleor 008 is site number 8 in the Teleorman Valley; Ved 003 is site number 3 in the Vedea Valley.[11] Following preliminary identification and logging with the GPS, the field-walking team re-visits each site that has been identified and carries out an intensive surface-grab (fig. 1/b): a 10 × 10 m grid is laid out over the area and all cultural material in each grid square is collected, taken to the project labs at the Teleorman Museum, washed, sorted, weighed and counted (see Mills 1999b).[12]

[9] See Mills (2001).

[10] Individual project specialist responsibilities are as follows: GIS and fieldwalking (Steve Mills); excavation and sondaging (Radian Andreescu, Douglass Bailey, Pavel Mirea); geomorphology (Mark Macklin, Andy Howard); micromorphology and geology (Costel Haită); ceramics (Laurens Thissen); lithics (Ivan Gatsov); fauna (Adrian Bălăşeşcu, Vali Radu); micro-flora (Amy Bogaard); team logistics (Eduard Florea).

[11] The intention is to avoid the confusion that comes from naming several different sites with the same local village name.

[12] The methodology employed is derived from that developed by John Cherry and colleagues for sites in Greece (Cherry et al. 1991).



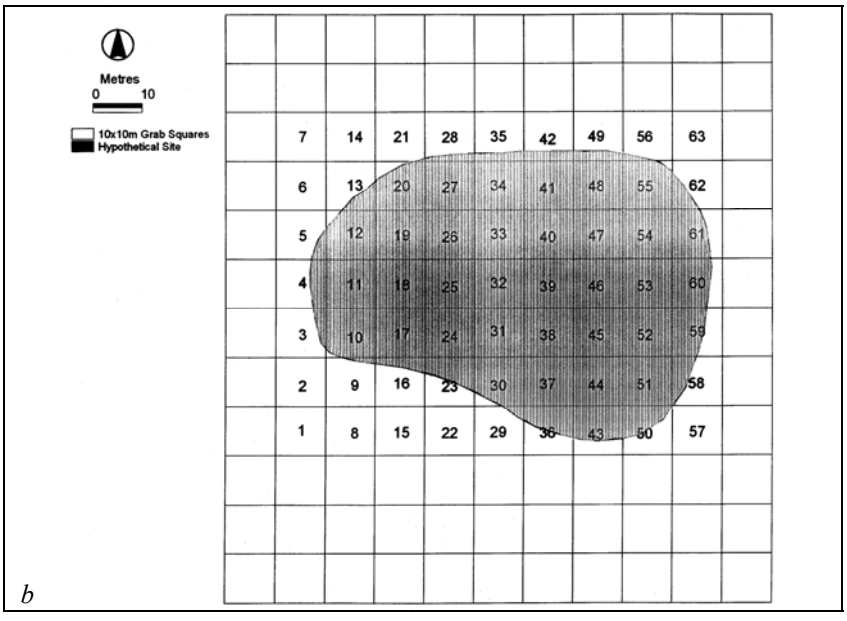


Fig. 1. *a* Four 100 × 100 m grids showing the method of fieldwalking using successive passes of fieldwalkers; *b* Hypothetical example showing the distribution of material found during fieldwalking and the 10 × 10 m grid positioned and numbered in preparation for intensive surface-grab.

Sondages

Based on the results of analyzing the grab material, the project excavates small sondages in order to clarify the sub-surface archaeological record. Sondages are usually no larger than 1.0 × 2.0 m though they can easily and quickly be extended in any direction if required. Excavation proceeds with shovels, trowels and other hand-tools; digging is by set unit depths (or 'spits') bounded within larger depositions archaeological contexts where the latter are obvious.[13] Material from each numbered context is kept apart from material from other contexts. Within individual sites, context numbers run from 1 to infinity: each context at each site thus has a unique number. All soil from the sondages is sieved through a 1.0 × 1.0 cm wire mesh at the site and all cultural material (including coarse-ware ceramics and bits of building material) is retained for cleaning and laboratory analysis. Where available, samples for dating are taken (preference is for animal bone or cereal grain for Accelerator Mass Spectrometry analyses). Exposed sections are drawn in elevation and plans are completed of contexts and features. Soil samples are taken from the exposed sections for micromorphological analysis. The philosophy behind this strategy is to recover and record the maximum information as quickly as possible. The aim is to provide quantified data about the density of material (e.g., weights and counts of ceramics per cubic meter) so that SRAP can compare and contrast the character of different contexts within individual sites and among different sites across the landscape. Based on the results of sondages, the project decides whether or not to excavate larger areas at particular sites.

Geomorphology

The geomorphology team carries out its own set of topographic investigations, also tied into the project GIS. SRAP geomorphologists use handheld GPS units to map the terrain according to subtle variations in the surface elevation of the landscape. Based on these maps and field-observations of vegetation and surface soils, the geomorphologists propose reconstructions for the alluvial and sedimentilogical (pre)history of the landscape. To refine and confirm these reconstructions, SRAP digs large and deep test-pits. Geomorphological pits are positioned where surface topography suggests important paleo-events might have had an impact on the formation of the landscape or where one sub-surface sedimentary or alluvial feature meets another one. Usually located well away from sites and surface-scatters of cultural material, the pits are excavated with a mechanized back-hoe digger. Pits are c. 3.0 × 3.0 m and up to 4.0 m deep. Records are made of the soils and sediments exposed in pit section; samples (if material is present) are taken for dating and for micromorphological study. Logged in with a hand-held GPS, these pits are quickly filled-in.

[13] Here the term context is understood as any natural or anthropogenic feature in the soil and thus includes both obvious archaeological elements such as floors or pits but also less easily understood depositional units such as cuts from later natural events such as flooding.

In order to uncover and record the sedimentological and geomorphological histories of individual sites as efficiently as possible, the team also cuts thin slit-sondages at the edges of sites. Dug by pick, shovel and trowel, slit-sondages run outwards from the perimeter of each site and reveal the stratigraphic and geomorphological connections between the cultural and the natural features. Slit-sondage profiles are drawn and sampled for micromorphology and (where possible) dating.

Post-excavation analyses

One of the most important components of the project is the contemporary, laboratory-based analysis of materials collected from field-walking and sondage excavation. In the laboratory[14] material from surveys and sondages is washed and dried, then sorted by type (e.g., bone, ceramic, stone, building material). Each type of material for each context is counted, weighed and sized; counts, weights and sizes are entered into a computer spreadsheet (MS Excel). It is immediately possible to have a rough comparative index for each part of each sondage or for each grid within a field-walked site.[15] Individual categories of material then go to specialists who carry out their own analyses.

Ceramics are studied during the field-season with particular attention towards determining technology (clay sources, fabric identities and categories, forming techniques, surface-finishing, firing procedures, motor-habit patterns), morphology and categorisation (typologies, use-functions and use-lives), social and economic contexts (organic residues, domestic versus centralised production, discard patterns, refitting), and post-depositional processes (abrasion, erosion, secondary-burning and sherd-sizing).

Micromorphological samples are taken to Bucureşti for sectioning and microscopic analysis. During excavation, SRAP takes regular samples of soil for flotation analysis. Soils removed for flotation, are placed in large, heavy duty plastic bags, labeled with the relevant context or unit number and are taken straight to the museum for processing (i.e., they are not sieved at site nor are cultural materials removed). At the museum, the flotation team processes the soil samples in the flotation machine, and extracts minute organic and cultural remains (e.g.,

[14] SRAP is fortunate to have the facilities and laboratory space of the Muzeul Județean Teleorman in which to carry out analyses.

[15] Counts and weights of material allow rough calculations of densities of material per cubic metre for level of each site. It is thus possible to get an idea of the character of each context or unit within one site or between different sites. All ceramics and building material are also sized with a standard template; information about size of ceramics and building material is entered into spreadsheets and provides comparative data that can be used in examination of depositional and post-depositional processes such as discard, erosion, and trampling.

fish and rodent bones, lithic flakes, carbonized cereal and weed grains, carbonized wood) and then sends them to the relevant specialists for analysis.[16]

PRELIMINARY RESULTS

While fieldwork continues, preliminary results are encouraging and we have been able to make progress to answering some of the project's main research questions. Initial fieldwalking covered a large area centred around the original location of Boian sherds eroding out of the drainage channels (later designated site Teleor 001). Mapping of frequency of ceramic material across the valley-bottom revealed clear concentrations (fig. 2/a). Analysis of the material allowed the designation of several separate sites (fig. 2/b). Here we present significant preliminary results about the geomorphology of the river valley and the ceramics from one of these sites Teleor 008.[17]

Geomorphology at Lăceni-Măgura

In the 2000 and 2001 seasons, SRAP geomorphologists focused their attention on reconstructing the Neolithic condition of the Teleorman River Valley at Lăceni-Măgura (i.e., the part of the Teleorman Valley in which were located both the Boian material (Teleor 008) and the Gumelnița settlement tell at Măgura (Cla 001)).[18] Work by Howard and Macklin and others in Britain and western Europe had shown that with time, the landscapes around rivers (i.e., alluvial landscapes) can change frequently and dramatically (Howard and Macklin 1999; Macklin 1999). Work in western and central Europe had also shown that during the fifth millennium BC there occurred important changes in the character of rivers over a geographically wide-spread area. Specifically, the fifth millennium BC was a period during which river activity settled down: river-flow was reduced and the location of river courses did not change frequently or dramatically. Archaeologically, the fifth millennium BC is a period of great local significance for Neolithic southcentral Romania: it encompasses the emergence of monumental tell settlements and thus the shift from Boian to Gumelnița patterns of land-use. One of Howard and Macklin's tasks was to reconstruct the alluvial landscape at Lăceni-Măgura and to place the newly discovered Boian sites (Teleor 001, 008, 009, 010, 011, 012) into that context. Basically, SRAP wanted to know, did a settling down of the physical environment play a role in a contemporary settling down of local populations into the permanent villages that became tells?

[16] Further details about the flotation machine and the process can be found in the second preliminary report (Bogaard 2001).

[17] Fuller details of these and other results can be found in Bailey et al. 2002; Bailey et al. in press; Howard and Macklin 2001, in press; Howard et al. 2003.

[18] Howard and Macklin benefited from the earlier SRAP work of Costel Haită and Heike Neumann (Neumann and Haită 1999).

The Boian landscape

The first major result of the geomorphological mapping of the Lăceni-Măgura landscape was the recognition that the Boian sites in the valley-bottom were not randomly distributed across the landscape. In fact, they sat on top of sandy islands (fig. 3). Barely visible across the current terrain, these slightly raised islands are the keys to understanding the Boian landscape. During Boian times, the occupied islands would have been separated by wetter, probably marshy areas. It became

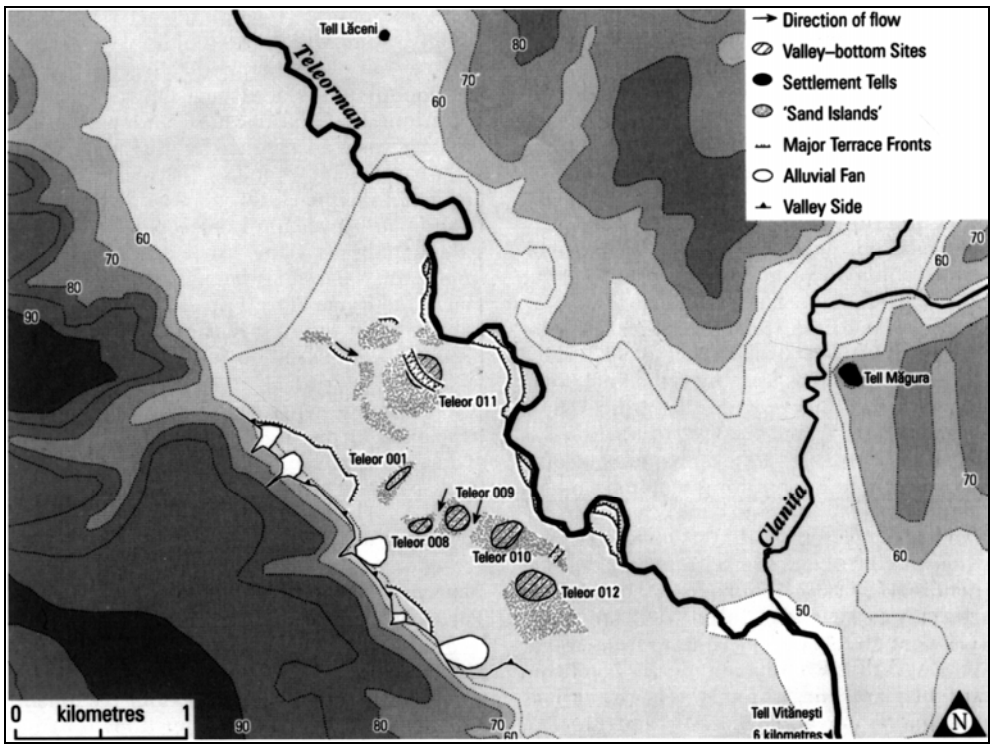


Fig. 3. Plan of the research zone at Lăceni-Măgura in the Teleorman Valley showing Boian Culture sites in the valley bottom and their relationship to sandy islands.

clear that the Boian landscape at Lăceni-Măgura was very different from the one that survives today. Not only was the landscape probably much wetter, but in terms of the river's character and its location, the Boian version of the Teleorman River was probably very different from its current manifestation. It is not yet possible to precisely reconstruct the river-type: was it single- or multi-channeled?; did the channel(s) remain in one place or did it/they move back and forth across the valley bottom from one season to the next? However, it is possible to conclude that, most probably, the Boian landscape (fig. 4/a) would have been a very unstable place, with conditions that would not have permitted long-term occupations of settlement or long-term investments of labour into the large-scale, field-based agriculture that characterises the later Gumelnița settlements. It is not surprising therefore, that the

Boian sites at Lăceni-Măgura were very ephemeral, representing little more than temporary occupations of the sandy islands, occupations that may have lasted no longer than one or perhaps two seasons (Haită 2002).

The Gumelnița landscape

If that was the Boian-phase of the Lăceni-Măgura reach of the Teleorman Valley, how did it compare to the succeeding Gumelnița-phase of the valley? One of the striking patterns of difference between these two phases of the Neolithic is in the location of settlement. Boian sites are on the valley-bottom or on the terrace tops, overlooking the river valley (a nearby site of the latter type was studied in the 1950s; Mitrea and Preda 1959). Gumelnița tells are located on the edges of the valley-bottoms, tucked up against the base of the rising terraces.[19] Work carried out by Costel Haită and Heike Neumann in 1998 (Neumann and Haită 1999) and by Haită in 1999–2002 (Haită 2001a, 2001b, 2002) has shown that the later tell settlements sit on top of slightly raised gravel-bars. It is highly likely that tells developed in locations in the valley-bottoms that were the first to stay unflooded when river-activity settled down in the fifth millenium BC; the gravel bars at the edges of the valley-bottoms would have been such places. In this reconstruction, during the Gumelnița-phase, the landscape of the valley-bottom at Lăceni-Măgura would not have been wet and marshy and the Teleorman would not have been changing its course frequently (fig. 4/b). The Gumelnița-phase valley would have supported larger-scale, field-based agriculture and long-term investment of labour and committment to settlement space. The research zone at Lăceni-Măgura contains two Gumelnița tells at the edge of the valley bottom: Măgura and Vităneşti.

Therefore, by mapping local variations in geomorphology, by matching that to larger trends in river activities across Europe during the sixth, fifth and fourth millennia BC, and by studying the sediments, soils and alluvial units under both Gumelnița tells and Boian temporary sites, SRAP has been able to propose a new model for explaining the emergence of tell settlements in this area: a settling down of the riverine landscape allowed a settling down of the human landscape. We hope that future work will elaborate and refine this model; even in its present form it moves forward the on-going debate over the shift from relatively impermanent Boian communities to permanent Gumelnița villages.[20]

Analysis of Boian ceramics at Teleor 008[21]

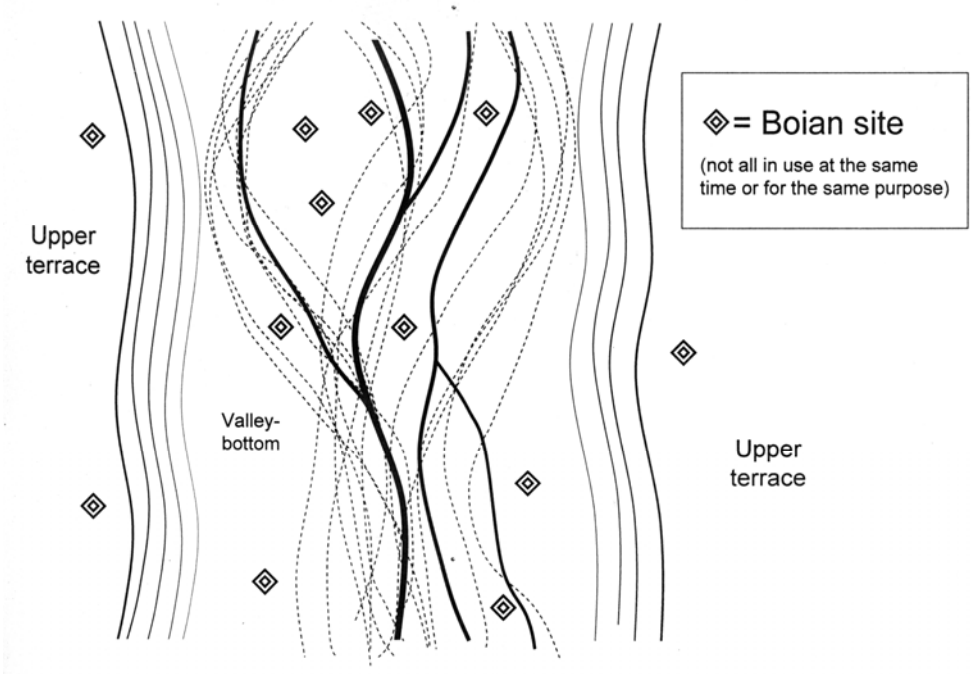
In the 2001 and 2002 seasons, SRAP ceramics analysis concentrated on material from several sondages of the valley-bottom Boian site Teleor 008.[22] Examination centred on material from separate sondages representing two of the traditional Boian

[19] As with any pattern, there are of course exceptions: in the neighbouring Vedea valley, the Țigăneşti tell sites up on top of the terrace edge.

[20] There is also the issue of what happened at the end of the Gumelnița phase. See Bailey et al. (1998) for one possibility based on work at Podgoritsa in northeastern Bulgaria.

[21] For an earlier attempt to understand Boian fabrics see Stoicovici (1974).

[22] A full report on these ceramics is included in the most recent SRAP preliminary report (Thissen in press).



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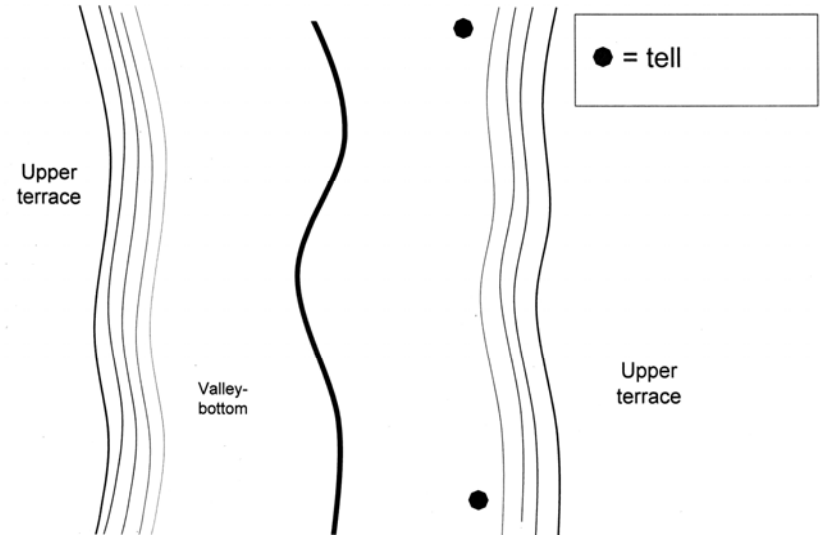

b

Fig. 4. Teleorman Valley at Lăceni-Măgura*: a.* Proposed scenario for Boian phase. *b.* Proposed scenario for Gumelnița phase.

sub-phases: Boian-Giuleşti (Sondage 39/41/44) and Boian-Spanţov (Sondage 24/48). The research aims were to document the development of Boian ceramics over time by identifying and describing different fabrics and vessel shapes, by reconstructing production methods and firing techniques, and bysuggesting patterns of usage. A total of 2,941 sherds (amounting to almost 29 kg) was studied. All of the sherds were studied by breaking the sherd to reveal a fresh fracture and then examining the characteristics of the fracture under a 20x microscope.

Fabric analysis

Fabric analysis followed standard procedures of recording information about inclusions (frequency, size, sorting, rounding, type), core and surface colours, fractures (zoning and fracture type), surface hardness (using Moh's scale) and surface feel. Dr Thissen identified seven different Boian fabrics from Teleor 008, although ninety percent of the ceramics were made of two fabrics (Chaff Ware and Untempered Ware) and of these the vast majority was made of Chaff Ware. The proportion of fabrics used remained constant through the phases represented, although Chaff Ware increased and Untempered Ware decreased in the Boian-Spanţov contexts.

Chaff Ware consists of abundant, well-sorted, chaff (3-4 mm in size) that has left black carbonized voids which are shiny and appear black against the core of the sherd. In addition this ware contains sparse-moderate, subangular-subrounded, fairly-well sorted, medium-sized (≤ 1.0 mm), glistening whitish-grey quartz. Occasionally there are also present, ill-sorted, sparse, medium-sized, soft and scratchable, limestone particles. The fractures are irregular and reveal zoning with velvety-black cores and brown-black margins and surfaces. Surface hardness is 2.5 on the Moh's scale; surfaces feel rough or smooth to the touch, depending on surface treatment. As was observed in all of the Teleor 008 fabrics, Chaff Ware contained well-sorted, fine-sized, mica particles which can be seen as a 'mica-shimmer' on the inside and outside surfaces of the vessels.

Untempered Ware contains sparse, well-sorted, fine-sized (and occasionally medium-sized), slightly glistening, subangular-subrounded, quartz/quartzite inclusions. The fractures reveal dark brown-black cores; interior and exterior surfaces are grey-brown, grey-black and, rarely, ochre-brown. Surfaces can be scratched with a finger-nail (Moh's scale 2-3), are well burnished, and often decorated with fine fluting (i.e., *plissé).* Surfaces and fractures feel smooth to the touch. Untempered Ware is the only Teleor 008 fabric that does not contain chaff.

The remaining 10 percent of the ceramics are made from the following fabrics. Fine Chaff Ware is very similar to the Untempered Ware though it contains moderately frequent inclusions of well-sorted fine chaff. Fractures are more irregular than with Untempered Ware; fracture zonation also is similar (brown-black-brown) with very small margins. Surfaces are burnished. Shell Ware is similar to Chaff Ware except that it includes very sparse, small fragments of crushed shell. Grog Ware contains abundant, badly-sorted, coarse-sized fragments of crushed pottery sherds. Fractures reveal a grey-black core; surfaces are ochre-

coloured and rough feeling with a Moh's scale of 2.5. Quartz Ware may be a variant of Chaff Ware. It contains very little chaff, very dense, moderately sorted, subrounded grit and white quartz sand. It is soft, and surfaces feel irregular. Limestone Ware contains the following inclusions: badly-sorted, subangular-subrounded, medium-coarse sized (up to 3.0 mm) quartz: badly-sorted, subrounded, medium-sized (1.0-2.0 mm) limestone granules; well-sorted, finely chopped chaff; and mica. Fractures are smooth-irregular and zoned (brown-black-brown with 1.0 mm margins). Interior and exterior surfaces are light-brown. Surfaces are smoothed and slightly burnished in the interiors; exteriors are usually roughened.

Vessel morphology and use

Three main categories of vessels are represented at Teleor 008: open forms, closed forms and special forms. Open forms include cups, beakers, dishes and three varieties of bowls (fig. 5/I-IV). Cups, beakers and dishes are distinguished as follows: cups have rim-diameters of 12.0 cm or less and their height is less than their diameter (fig. 5/I); beakers also have rim-diameters of 12.0 cm or less but have heights that are greater than or equal to their diameters (fig. 5/II); dishes have diameters between 15.0-30.0 cm and have heights that are equal to or less than their half of their diameters (fig. 5/III). Bowls are hemispherical, carinated or shouldered (fig. 5/IV). Closed forms include pots (with hole-mouths or off-set necks; fig. 5/Va-b) and larger vessels of unknown form. Special shapes include lids, sieves and excised vessels of unknown shapes.

The three most frequent forms are beakers made from Untempered Ware, hole-mouth pots with roughened exteriors made from Chaff Ware, and thick-walled vessels made from Chaff Ware and having excised decoration which is often filled with white paste. If, as is assumed, the beakers were used for drinking then their weight (when full) and lack of handles suggests that they would have been used by adults and not children. Beakers are carefully made and finished, usually decorated with fluting (i.e., *plissé*) and have small indentations on their rims. There is almost no change in the shape, proportion or decoration of beakers between the Giuleşti and the Spanţov phases at Teleor 008. Cups are similar to beakers in character and use, though they have different proportions and are less frequent.

More frequent than beakers are the hole-mouth pots which have surface-roughened exteriors (i.e., barbotine) and which, most probably, were used for cooking. The thick-walled, Chaff Ware, vessels with excised decoration would have been large with intricate designs and impressive appearance (especially the contrast between black surface and white infilling on the exteriors). Interiors were not burnished. Most probably, these vessels were used for storage of dry-goods (the slightly porous and unburnished interiors would not have retained liquids); most likely they were kept on permanent display perhaps serving to express the status of the particular household. The following functions can be suggested for different shapes: cups and beakers (drinking); dishes and bowls (eating/serving); hole-mouth pots (cooking); and excised vessels (storage).

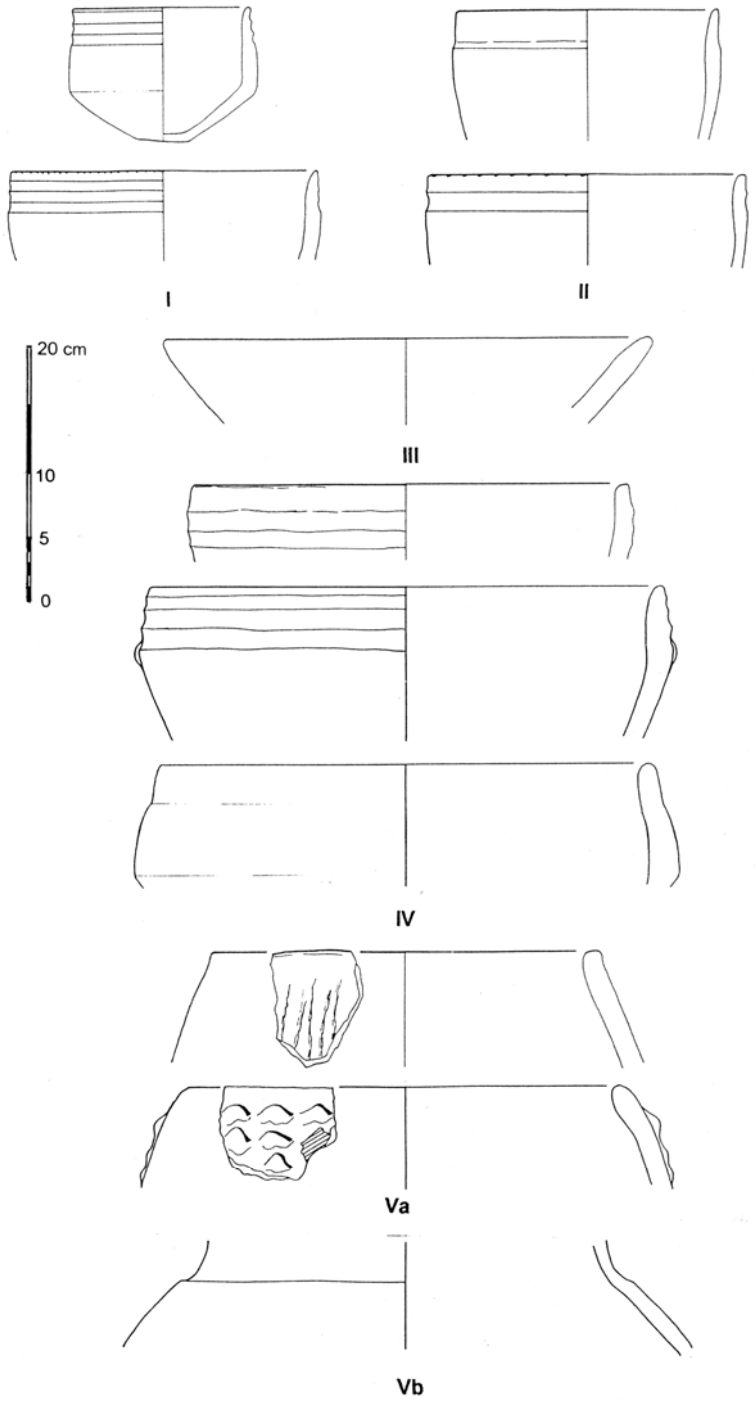

Fig. 5. Common Boian vessel shapes from Teleor 008.

Production and firing

All fabrics were made from clays available from the silty deposits in the valley-bottom. The addition of chaff to all of the fabrics (except for Untempered Ware) may have been intended to increase the strength of the pot as it increases vessel-resistance to thermal shock (Rye 1981: 34). Vessels were formed with a variety of methods: the coil-method was used for hole-mouth vessels; beakers and cups were made by pinching a ball or slab of clay into the desired shape; dishes and bowls were made by pinching, coiling or both methods.

Although the Boian pottery from Teleor 008 was not fired to a high temperature, people exerted a high degree of control over firing and cooling procedures. The thin, sharp margins of cores revealed in the factures of Untempered and Chaff Ware sherds prove that these pots were fired in the open and cooled rapidly. Very different was the firing of the thicker-walled, excision-decorated pottery (also made from Chaff Ware) which had black exterior surfaces and brown or reddish interiors. The fractures of these sherds reveal no zoning; probably, pots were placed upside down in the fire and fired in an oxidizing atmosphere. At the end of firing, the oxygen flow to the vessels was cut off, perhaps by covering the pots with sand.[23] The result is the vessel's black exterior surface, the excisions of which could be filled with highly-contrasting white paste. It is clear that the people who made Boian pottery did so with particular outcomes in mind (especially of surface colour); they manipulated firing and cooling conditions in order to achieve these outcomes.

Pottery conclusions

The ceramics from the different Boian phases at Teleor 008 reveal no significant shifts in the daily practices of processing, presenting and storing foods. The Giuleşti to Spanţov shift that can be documented for decorative style among the excised Chaff Ware vessels does not correspond to any contemporary changes in the two dominant categories of vessels: the Untempered beakers and the Chaff Ware cooking pots. The care and attention that Boian people expended on making the intricately decorated black-surfaced, excised vessels and the expressive, social value thus implied suggests that these pots functioned to display the act of storage; public display must have played a significant part in Boian daily life. Much more work remains to be done to expand and refine these patterns and conclusions; future work will focus not only on Boian material but also on ceramics from other phases of the Neolithic in the Teleorman Valley.

[23] For a similar case, see the technical analysis of pottery from the Chalcolithic site at Dündartepe, Turkey (Thissen 1993: 215).

SIGNIFICANCE AND CONTINUING WORK

The preliminary results reported here begin to move us towards answering the project's big research questions. The geomorphological work has proposed a possible explanation for the shift to permanent tell settlement in the fifth millennium BC. The ceramics work on the Boian material from Teleor 008 provides us with important suggestions for understanding better how pottery was made as well as how it was used and perceived by the people who lived in the Teleorman Valley in that phase of the Neolithic. All of this preliminary work requires expansion and refinement. Especially critical will be a series of absolute dates with which we can inter-relate the many different and dislocated cultural and natural features that constitute the Neolithic landscapes at Lăceni-Măgura.[24] As important will be the larger-scale excavation of a newly discovered site, Teleor 003, an agglomeration of pit-structures with Criş and Dudeşti material. A detailed pollen study, based on new pollen cores, will take place soon.[25] Furthermore, new sub-projects need to locate and reconstruct the pre-Neolithic landscapes and human activities in the research area.

All of these objectives are set for the next phase of SRAP. The project has choosen to publish the preliminary results contained in this article as one part of our shared philosophy promoting frequent dissemination of information as work goes-on, almost in real-time. Our preliminary reports and project website are complementary parts of this strategy as are informal symposia held in Alexandria. The SRAP philosophy is inclusive and open – the more discussion that can accompany the fieldwork the stronger will be the final conclusions.

AUTHORS

D.W. Bailey, School of History and Archaeology, Cardiff University, PO Box 909, Cardiff CF10 3XU United Kingdom; baileydw@cardiff.ac.uk

R. Andreescu and *C. Haită*, Muzeul Naţional de Istorie a României, calea Victoriei nr 12, Bucureşti radian_romus@yahoo.com

L. Thissen, 2e Jan v/d Heydenstraat 86, 1074 XZ Amsterdam, Netherlands; lthissen@freeler.nl

A. Howard, School of Geography, Politics and Sociology,Geography,University of Newcastle Upon Tyne, Newcastle Upon Tyne, NE1 7RU, United Kingdom; A.J.Howard@newcastle.ac.uk.

M. Macklin, Institute of Geography and Earth Sciences, University of Wales at Aberystwyth, Aberystwyth SY23 3DB, United Kingdom; mvm@aber.ac.uk

S. Mills, Historic Environment Service, Percuil Building, Old County Hall, Station Road, Truro, TR1 3AY, United Kingdom; smills@cornwall.gov.uk

[24] We have one date for a Boian-Giuleşti context at Teleor 008: 4710-4550 cal BC at one sigma (Beta 148762; 5790 +/- 40 BP).

[25] Initial assessment of the potential for pollen work in the area has been carried out by Mihai Tomescu (Tomescu 1999, 2001).

BIBLIOGRAPHY

Andreescu, R. 1999. *Vităneşti, com. Purani, jud. Teleorman,* in: *Cronica cercetărilor arheologice din România. Campania 1998*, Bucureşti, p. 130.

Andreescu, R. 2000. *Vităneşti, com. Purani, jud. Teleorman,* in: *Cronica cercetărilor arheologice din România. Campania 1999*, Bucureşti, p. 113.

Andreescu, R. 2001. *Vităneşti, com. Purani, jud. Teleorman,* in: *Cronica cercetărilor arheologice din România. Campania 2000*, Bucureşti, p. 271.

Andreescu, R. 2002. *Vităneşti, com. Purani, jud. Teleorman*, in *Cronica cercetărilor arheologice din România. Campania 2001*, Bucureşti, p. 197.

Andreescu, R. and Bailey, D.W. 1999a. *Obervații preliminare privind locuirea neo-eneolitică pe Valea Teleormanului*, in: *Civilizația Boian pe teritoriul României*, M. Neagu (ed.), Călăraşi, p. 11–13, 55–57.

Andreescu, R. and Bailey, D.W. 1999b. *Lăceni-Măgura, jud. Teleorman,* in: *Cronica Cercetărilor Arheologice din România. Campania 1998*, Bucureşti, p. 64.

Andreescu, R. and Bailey, D.W. 2000. *Lăceni-Măgura, jud. Teleorman,* in: *Cronica Cercetărilor Arheologice din România. Campania 1999*, Bucureşti, p. 52–53.

Andreescu, R. and Bailey, D.W. 2001. *Lăceni-Măgura, jud. Teleorman,* in: *Cronica Cercetărilor Arheologice din România. Campania 2000*, Bucureşti, p. 127–130.

Andreescu, R. and Bailey, D.W. 2002. *Lăceni-Măgura, jud. Teleorman,* in: *Cronica Cercetărilor Arheologice din România. Campania 2001*, Bucureşti, p. 195–199.

Andrescu, R., Bailey, D.W., Mills, S., Trick, S. and Mirea, P. 2002. *Locuirea neo-eneolitică din valea Teleormanului, zona Lăceni-Măgura*, Studii de Preistorie 1, p. 33–46.

Bailey, D.W., Tringham, R.E., Bass, J., Hamilton, M., Neumann, H., Stevanović, M., Angelova, I. and Raduncheva, A. 1998. *Expanding the dimensions of early agricultural tells: the Podgoritsa Archaeological Project, Bulgaria*, Journal of Field Archaeology 25(4), p. 373–396.

Bailey, D.W., Andreescu, R. and Mills, S. (eds.) 1999. *The Southern Romania Archaeological Project: Preliminary Report 1998*, Cardiff Studies in Archaeology, Cardiff.

Bailey, D.W., Andreescu, R., Mills, S and Trick, S. (eds.) 2001. *The Southern Romania Archaeological Project: Second Preliminary Report*, Cardiff Studies in Archaeology, Cardiff.

Bailey, D.W., Andreescu, R., Howard, A.J., Macklin, M.G. and Mills, S. 2002. *Alluvial landscapes in the temperate Balkan Neolithic: transitions to tells*, Antiquity 76, p. 349–355.

Bailey, D.W., Andreescu, R., Mills, S. and Jones, G. (eds.) in press. *The Southern Romania Archaeological Project: Third Preliminary Report*, Cardiff Studies in Archaeology, Cardiff.

Bălăşescu, A. 2001. *Preliminary archaeozoological study of mammalian fauna,* in: Bailey et al., p. 131–144.

Bălăşescu, A. 2002. *Studiu arheozoologic preliminar al faunei de mamifere descoperite pe valea Teleormanului*, Studii de Preistorie 1, p. 59–70.

Bălăşescu, A. and Radu, V. 2002. *Culesul, pescuitul şi vânătoare în cultura Boian pe teritoriul României*, Studii de Preistorie 1, p. 73–94.

Bem, C. 1998–2000. *Elemente de cronologie radiocarbon. Ariile culturale Boian, Gumelniţa, Cernavoda I şi Precucuteni-Cucuteni/Tripolie*, CAMNI 11, 1, p. 337–359.

Bogaard, A. 2001. *Charred plant remains from flotation in 2000*, in: Bailey et al., p. 115–130.

Cherry, J.F., Davis, J.L. and Mantzourani, E. 1991. *Landscape Archaeology as Long-term History: Northern Keos in the Cycladic Islands*, Los Angeles.

Comşa, E. 1956. *Rezultatele sondajelor de la Dudeşti şi unele probleme ale neoliticului de la sud de Carpaţi*, SCIV 7, 1–2, p. 41–49.

Comşa, E. 1959. *Săpăturile de salvare de la Bogata şi Boian*, Materiale 5, p. 115–123.

Comşa, E. 1969. *Date noi privire la relaţiile dintre cultura Dudeşti şi cultura Ceramicii Liniare*. SCIV 20, 4, p. 567–573.

Comşa, E. 1971. *Données sur la civilisation de Dudeşti*, PZ 46, 2, p. 195–249.

Comşa, E. 1974a. *Istoria comunităţilor culturii Boian*, Bucureşti.

Comşa, E. 1974b. *Nouvelles données sur l'évolution de la culture Dudeşti (phase Cernica)*, Dacia N.S. 18, p. 9–18.

Comşa, E. 1994. *Aşezarea Starčevo-Criş de la Dulceanca*, Analele Banatului 3, p. 13–40.

Dumitrescu, V. 1986. *Stratigrafia asezării-tell de pe Ostrovelul de la Căscioarele*, CCDJ 2, p. 73–81.

Haită, C. 2001a. *Micromorphological study 2000*, in: Bailey et al., p. 61–80.

Haită, C. 2001b. *Soils and sediments: report for the 2000 season*, in: Bailey et al., p. 81–98.

Haită, C. 2002. *Studiu sedimentologic preliminary asupra locurii neo-eneolitice din valea Teleormanului, zona Lăceni-Măgura*, Studii de Preistorie 1, p. 47–58.

Howard, A. and Macklin, M.G. 1999. *A generic geomorphological approach to archaeological interpretation and prospection in British river valleys: a guide for archaeologists investigating Holocene landscapes*, Antiquity 73, p. 527–541.

Howard, A. and Macklin, M.G. 2001. *Geomorphological development and archaeological potential of the Teleorman Valley: report of the 2000 season*, in: Bailey et al., p. 21–30.

Howard, A. and Macklin, M.G. in press. *Report of geomorphological sondaging in the Teleorman Valley*, in: Bailey et al., p. 20–39.

Howard, R., Macklin, M., Bailey, D.W., Andreescu, R. and Mills, S. 2003. *The origins of villages in the Balkan Neolithic and the alluvial history of a Danube tributary*, in: *Alluvial Archaeology*, (A. Howard, D. Passmore and M. Macklin eds.), Rotterdam, p. 24–43.

Lazarovici, Gh. 1979. *Neoliticul Banatului*, Cluj-Napoca.

Macklin, M. 1999. *Holocene river environments in prehistoric Britian: human interaction and impact*, Journal of Quaternary Science 14, p. 123–145.

Marinescu-Bîlcu, S., Popovici, D., Trohani, G., Andreescu, R., Bălăşeşcu, A., Bălteanu, A., Bem, C., Gàl, E., Haită, C., Kessler, E., Moise, D., Radu, V., Tomescu, M., Venczel, M., Vlad, F. and Voinea, V. 1997. *Archaeological researches at Borduşani-Popină (Ialomiţa County). Preliminary report*, CAMNI 10, p. 35–143.

Mills, S. 1999a. *Fieldwalking*, in: Bailey et al., p. 35–44.

Mills, S. 1999b. *Surface collections: grab techniques*, in: Bailey et al., p. 45–52.

Mills, S. 2001. *The SRAP GIS project*, in: Bailey et al., p. 31–40.

Mills, S. 2002. *The Significance of Sound in Fifth Millennium BC in Southern Romania: Auditory Archaeology in the Teleorman River Valley*, unpublished PhD dissertation, School of History and Archaeology, Cardiff University.

Mills, S. (in press), *Studying the sound of the Neolithic landscape*, in: Bailey et al. (eds.), Cardiff Studies in Archaeology, Cardiff, p. 40–59.

Mirea, P. 2002. *Contribuţii la cunoaşterea neo-eneoliticului în sud-vestul Munteniei*, unpublished dissertation, Universitatea Hyperion, Bucureşti.

Mitrea, B. and Preda, C., p. 175–176.

Neagu, M. (ed.) 1999a. *Civilizaţia Boian pe teritoriul României*, Călăraşi.

Neagu, M. 1999b. *Cultura Boian*, in: *Civilizaţia Boian pe teritoriul României*, (M. Neagu ed.), Călăraşi, p. 5–7.

Neagu, M. 2000. *Comunităţile Dudeşti-Cernica din centrul şi sud-estul Câmpiei Române*, in: *Istro-Pontica. Muzeul tulcean la a 50-a aniversare 1950-2000,* Tulcea, p. 53–66.

Neumann, H. and Haită, C. 1999. *Soils and geomorphology*, in: Bailey et al., p. 5–24.

Nica, M. 1976. *La culture Dudeşti en Olténie*, Dacia N.S. 20, p. 123–145.

Popovici, D. and Rialland, Y. 1996. *Vivre au bord de Danube il y a 6500 ans*, Paris.

Popovici, D., Randoin, B., Rialland, Y., Voinea, V., Vlad, F., Bem, C., Haită, G. 1998–2000. *Les recherches archéologiques du tell de Hârşova (dép. de Constanza) 1997–1998*, CAMNI 11, 1, p. 13–124.

Radu, V. 2001. *Preliminary archaeozoological study (Bivalvia, Gastropoda and Reptilia)*, in: Bailey et al., p. 145–146.

Radu, V. 2002. *Studiu arheozoologic preliminar al materialului prelevat din siturile de pe valea Teleormanului (Bivalvia, Gastropoda şi Reptilia),* Studii de Preistorie 1, p. 71–73.

Rye, O.S. 1981. *Pottery Technology. Principles and Reconstruction*. Washington.

Şerbănescu, D. 1997. *Contribuţii la răspândirea civilizaţiei Dudeşti*, CCDJ 15, p. 81–96.

Spiru, I. 1996. *File de istorie teleormăneană*, Alexandria.

Stoicovici, E. 1974. *Analiza mineralogică a unor fragmente ceramice de tip Boian*, in: E. Comşa, *Istoria comunităţilor culturii Boian*, Bucureşti, p. 259–260.

Teodorescu, V. 1963. *Cultura Criş in centrul Munteniei (pe baza săpăturilor de la Tîrgşorul Vechi)*, SCIV 14, 2, p. 251–274.

Thissen, L.C. 1993. *New insights in Balkan-Anatolian connections in the Late Chalcolithic: old evidence from the Turkish Black Sea littoral*, Anatolian Studies 43, p. 207–237.

Thissen, L.C. (in press). *The ceramics of Teleor 008, a Boian period site in S. Romania,* in: Bailey et al. (eds.), Cardiff Studies in Archaeology, Cardiff, p. 60–79.

Tomescu, M. 1999. *Palynological investigations in the Teleorman River Valley*, in: Bailey et al., p. 25–34.

Tomescu, M. 2001. *Palynological investigations: preliminary results*, in: Bailey et al., p. 99–114.

Trick, S. (in press). *View-shed analysis in the Teleorman Landscape*, in: Bailey et al. (eds.), Cardiff Studies in Archaeology, Cardiff, p. 80–99.

Zaharia, E. 1962. *Considérations sur la civilisation de Criş à la lumière des sondages de Leţ*, Dacia NS. 6, p. 5–51.

Zaharia, E. 1967. *Angaben über die Boian-Giuleşti-Kultur. Die Siedlung von Leţ*, Dacia NS. 11, p. 5–38.

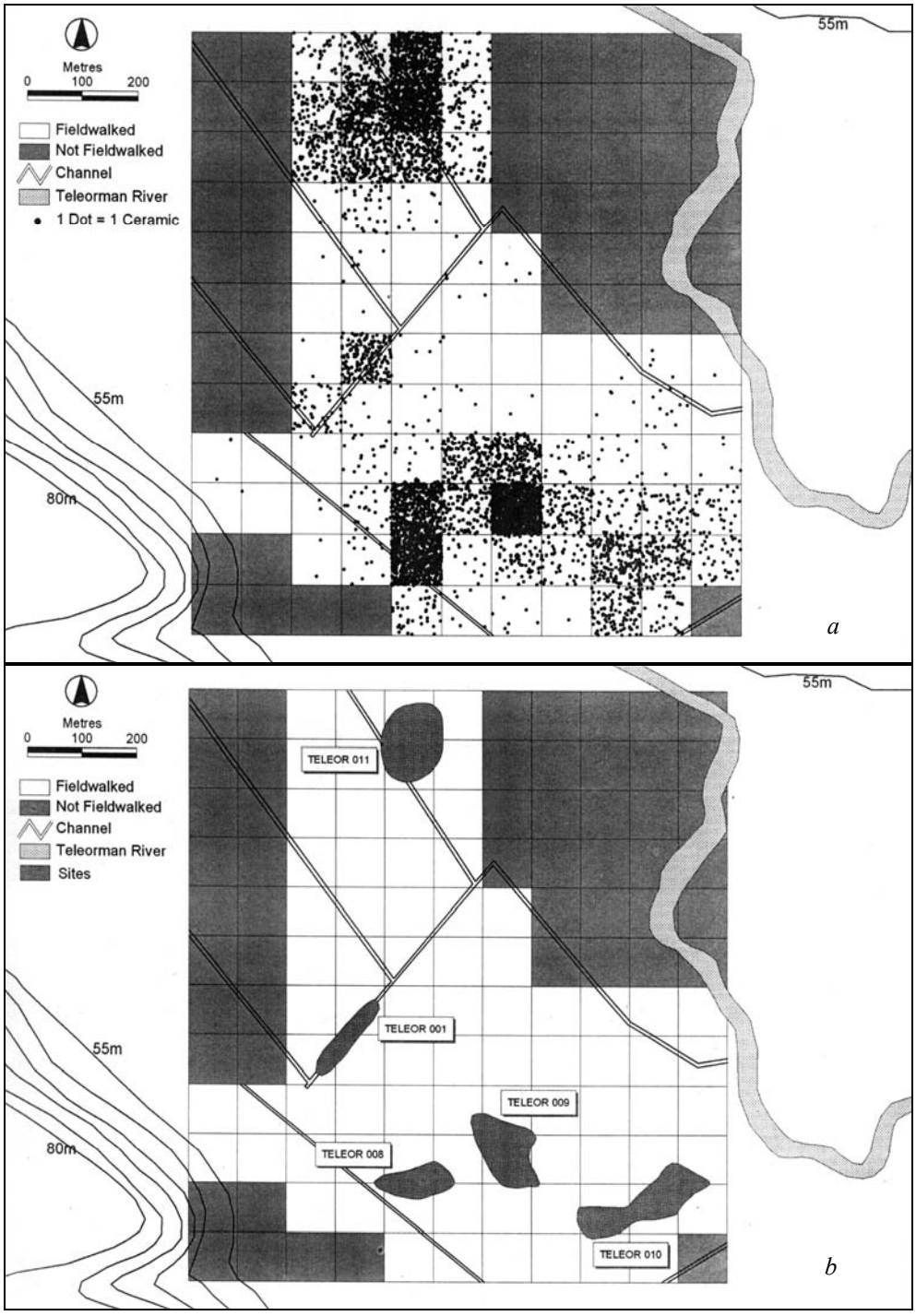

Fig. 2. *a* Distribution of ceramic material over the Teleorman Valley bottom at Lăceni-Măgura; *b* Designation and surface-extent of sites based on density of ceramics.