ASOCIAŢIA ROMÂNĂ DE ARHEOLOGIE

S T U D I I D E P R E I S T O R I E

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SUMAR

CĂLĂTORII ARHEOLOGICE

RECENZIE

Studii de Preistorie: bilanţ după zece ani de apariţie

Radu-Alexandru DRAGOMAN*

În România, crearea şi tipărirea unor reviste tematice de arheologie este o raritate, spre deosebire de mediile academice şi universitare din alte părţi ale lumii unde apariţia unor astfel de reviste poate fi periodic constatată (de pildă, în anul 2011 în Federaţia Rusă a fost publicat primul număr din *Российский Археологический Ежегодник*, iar în anul 2014, la o editură din Marea Britanie, urmează să apară *Journal of Contemporary Archaeology*). Majoritatea revistelor din România, dedicate în întregime sau parţial arheologiei, este expresia instituţiilor de stat în care au fost fondate – muzee, institute de arheologie ale Academiei Române şi universităţi. Excepţii în acest peisaj editorial l-au reprezentat apariţia în anul 2000 a publicaţiei electronice private *European Archaeology-on line*, fără o periodicitate şi o tematică asumate, precum şi publicarea în acelaşi an de către Asociaţia Profesională a Arheologilor din România a primului şi singurului număr, până la data la care am scris aceste rânduri, din revista electronică *Romanian Journal of Archaeology* (*R.J.A.*). La scurtă vreme după aceea a fost tipărit primul volum dintr-o altă nouă revistă – *Studii de Preistorie*, creată tot de o asociaţie profesională, intitulată Asociaţia Română de Arheologie. În 2010 a apărut şi revista *Caiete ARA. Arhitectură. Restaurare. Arheologie*, editată de Asociaţia *Arhitectură. Restaurare. Arheologie*. Spre deosebire de *R.J.A.*, din 2001 şi până în anul 2012, au fost tipărite nouă volume *Studii de Preistorie* (inclusiv cel de faţă) şi trei *Caiete ARA*.

Ceea ce individualizează *Studii de Preistorie* de celelalte publicaţii de profil din România este faptul că reprezintă singura revistă românească de până acum dedicată exclusiv preistoriei, cu privire specială asupra sud-estului şi estului Europei, dar cu referiri şi la alte regiuni geografice. Totodată, începând cu cel de-al doilea volum (2/2003-2004), în paginile revistei a fost inaugurat un tip de texte neîntâlnit în cuprinsul altor reviste de arheologie din România, şi anume intervievarea unor personalităţi binecunoscute arheologiei contemporane, precum Victor Buchli, Ian Hodder, Kostas Kotsakis, Lynn Meskell, Bjørnar Olsen, Michael Shanks sau Ruth Tringham. De asemenea, în revistă, sub forma unor secţiuni distincte, au fost incluse şi o serie de subiecte ignorate de alte publicaţii, cum sunt activitatea şi/sau memoria unor arheologi care astăzi nu mai sunt printre noi (vol. 2/2003-2004; vol. 6/2009), (micro-)politica din jurul unor proiecte arheologice (vol. 8/2011) sau călătorii arheologice în afara României (volumul de faţă); în acelaşi spirit, pentru numărul următor intenţionăm să publicăm o secţiune cu poezii arheologice compuse de unul dintre cei mai cunoscuţi preistoricieni români, Constantin Nicolăescu-Plopşor, dar şi de alţii. Un aspect pozitiv este şi caracterul eterogen al articolelor publicate, acestea fiind produsul unor filosofii de cercetare diverse, de la arheologia cultural-istorică la post-procesualism; astfel, paginile revistei *Studii de Preistorie* sunt un indicator al manierelor de cercetare existente în cadrul câmpului arheologic din România. La fel de importantă este libertatea acordată autorilor de a publica în ce limbă doresc. Un alt element demn de apreciat este faptul că revista a găzduit un articol critic, care, din considerente ce ţin de politica instituţională, nu a fost acceptat spre publicare de o altă revistă: mai precis, un text despre proiectul româno-german de la Pietrele nu a fost acceptat de revista *Dacia*, principala publicaţie a Institutului de Arheologie „Vasile Pârvan" al Academiei Române (Bucureşti), datorită subcapitolului despre micro-politica academică, în schimb, în urma referatelor unor cercetători din ţară şi din străinătate, a fost publicat de revista *Studii de Preistorie* (vol. 4/2007). Nu în ultimul rând, trebuie menţionate şi unele scăderi ale revistei, legate de calitatea grafică (explicabilă în condiţiile în care revista este publicată cu bani din sponsorizări modeste şi din cotizaţii), de nivelul unora dintre traduceri (fie că este vorba de texte, fie de rezumate), de acurateţea corecturilor şi chiar de mesajul unora dintre articole.

În finalul acestor rânduri nu pot decât să sper că revista *Studii de Preistorie*, al cărei colaborator şi susţinător am fost în cei zece ani de la prima apariţie, îşi va păstra independenţa, va continua să încurajeze diversitatea – tematică, epistemologică, lingvistică – şi spiritul critic şi va încerca să devină mai bună în conţinut şi sub aspect grafic.

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Interview with Meg Conkey

Douglass W. BAILEY*

Margaret W. ("Meg") Conkey is Professor Emerita of the University of California at Berkeley, which she joined in 1987, after positions at the State University of New York at Binghamton and San Jose State University. Meg took her PhD from the University of Chicago and has made significant contributions to our understanding of the European Palaeolithic, prehistoric art and symbolism, and a feminist and gendered archaeology. Current fieldwork includes the *Between the Caves* project in the French Midi-Pyrenees. In 1997, she was awarded the 1960 Professor of Anthropology Endowed Chair at Berkeley. In 2009, Berkeley awarded her the Chancellor's Award for Advancing Institutional Excellence for her work to promote diversity and equal opportunity. Meg has also won the Distinguished Teaching Award (1996) and the Award for Educational Initiatives (2001). Meg has served widely and with distinction both locally as the Chair of the Department of Anthropology and as Director of Berkeley's Archaeological Research Facility, as well as being the President of the Society of American Archaeology. Her 1984 article, *Archaeology and the study of gender*, written with Janet Spector, and her 1991 book *Engendering the Past: Women and Prehistory* (co-edited with Joan Gero) are widely regarded as the seminal statements in the history of a gendered and feminist archaeology.

Douglass W. Bailey (DWB): Let's start with your interests in diffusing power and authority structures. Archaeology at Berkeley has had a history of doing things in a different way in terms of the hierarchy of power. What do you mean by diffusing power?

Meg Conkey (MC): It comes from Helen Longino, feminist epistemologist at Stanford. She has laid out what she sees as the virtues of doing epistemology as a feminist, and what it would look like. Out of the feminist movement comes a realization that there are power structures in operation and that if you are going to make it in whatever world you are in, you had better understand those power structures: how power is used, how it is abused, and how it works, so that you can navigate in the worlds that you inhabit. That ranges from everything in your community and your neighborhood to your academic department, and your job. What I like about the idea of a diffusion of power is the fact that traditionally archaeology has been simultaneously collaborative and hierarchically authoritarian, in the sense that there has always been the project or site director and that traditionally, of course, the director has been a male.

There have been many unsung women directors. It would be very interesting to look at these people, and I am thinking in the USA of somebody like Cynthia Irwin-Williams or Patty Jo Watson. Kathleen Kenyon on the other hand is someone who adopted the male authoritarian powers in order to get by; that may have had a lot to do with her personality and the part of the world she worked in as well as the era and time period in which she worked, when it was very different in terms of the number of women in archaeology. So, it would be interesting to go back and look at women as directors, to look at people like Marie Wormington or Cynthia Irwin-Williams or some of the others.

How does archaeology resolve this tension between employing (in one way or the other) paid, unpaid or exploited (or properly taken care of) students or workers, on the one hand and on the other hand having a need for everyone to collaborate and share their data and share their ideas? How does this compare with the present day archaeology which is so inter-disciplinary, so multi-disciplinary,

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where you cannot really do an excavation without a project geologist or palynologist or the many other types of specialists, and where there are issues of who gets access to the data? So here you are depending increasingly on a free exchange of information in a situation where, in order to run it you are relying on (as organizational people will tell you) someone at the top, someone making the decisions.

It is like team-teaching a class; in some ways, team-teaching a class is harder than teaching a class by yourself. Everyone thinks that it is easier, but you can't just make up your mind and just say that you will do "x". You have to consult who you are team-teaching with. In terms of diffusion of power, I think that it gets down to the basics, for example, of being on a project whether it is excavation, survey or lab work, and keeping everyone informed. It is an issue of communication. Rather than coming out and announcing, "this is what we are going to do". It's about inviting input, so that you have a diversity of opinions. Even if they are undergraduates, people on the project have ideas. For those of us who find ourselves getting unwittingly constrained in a box of "this is the way that we have always done it", we need to have an external voice that says, "why don't you try 'x'?", and you might say, "well I hadn't thought of that". So it starts with communication in a much more open situation, rather than this top down, "you do this and you do that". It is a case of your having to explain it, because in the course of having to explain it you learn something.

And then, of course, it all comes down to the whole decision making process, and it comes down to collaborating on papers, and it comes down to not taking other peoples' ideas without citing them. We have a number of figures in our discipline who are well known for taking other peoples' ideas and not citing them; in doing so they affect the power relations. Sometimes it is with people who are students who get abused. I think that there are entire cultures that train archaeologists that this is what you have to do to get ahead, whether it is a word, a concept, a way of doing something. I think that it would be much more interesting if we cited all of our sources and talked about where our ideas came from, because it makes for an intellectual history, rather than an individualist, signaled individual. It would be very interesting to sit down with a lot of people, to have a conference to talk about how do you diffuse power so that things still get done and get done effectively.

DWB: So how do you do this, particularly in a tradition where there are unavoidable traditions and laws about who can do what, and when and where they can do it: for example, whose name is on an excavation permit? How do you break through this? What are the examples of successes at diffusing power?

MC: I think that it plays out in a most challenging way where people are trying to generate truly collaborative projects with indigenous peoples. In the United States, it is working with Native Americans. There is a lot of tension about what they want to know and what an archaeologist wants to know: what they don't want to do, what I want to do, but I want to work with them. And this is the same in Australia and other, what some might call, "settler countries", like South Africa. So those folks are really working it out on the ground in many different instances.

DWB: Are the archaeologists doing this because they are forced to do this, because there is no option but to do so if they want to work in a specific area or with some particular material?

MC: In part, this is the case, and certainly there have been prescriptions that have come out of the Native American Graves Repatriation and Protection Act, though they have something different in Australia and they don't really have this in South Africa. I think that there has been a change in the building of conscience among archaeologists in many of these countries. Of course, not everyone is onboard this ship, setting sail to do a new type of archaeology, but there are enough archaeologists doing it and there are enough indigenous people who say "wow, look what we can get out of it, look what we have learned". There are a number of great examples, and I can think of a number of the Society of American Archaeology meetings where people have heralded some of these examples of collaborative kinds of negotiations. The really interesting examples didn't involve archaeology *per se*, but they have involved cultural heritage.

There is a great book by Michael Brown called *Who Owns Native Culture* (M. Brown 2003). In it, he has a chapter on a place called Devils Tower in Wyoming that is an incredible, geological, sort of

tectonic thing oozing out of the ground that has formed a huge natural tower. It is a place that has had long standing symbolic, religious, and spiritual significance for native groups, and it still does today. Devils Tower is also a favorite place for rock climbers, and it is also a place where a group of motorcyclists has decided that it is where they want to meet. Michael Brown reports how they took into account the Native American's religious concerns. When they go for their religious activities, they hear the rock climbers hammering *pitons* into the Tower, and they feel that that is an affront. Brown talks about the process of negotiation and how you come to a settlement where you can satisfy to a greater or lesser extent the different stakeholders. He talks about how they worked it out. There are many other examples where this is happening.

Another example is Kent Lightfoot's work at Fort Ross in California (K.G. Lightfoot *et alli* 1991, 1998; O. Parrish *et alli* 2000). They sat down with the native groups, the Kashaya Pomo, and they put out what they called a ritual blueprint for how to work. This had ramifications that one would never have expected. For example, the Pomo did not want the archaeologists to go right in and excavate, because penetrating the soil and going below the surface was considered to be a ritual act of pollution. In addition they did not want the archaeologists to take away the artefacts. They developed several archaeological methods to deal with this. They developed what they called the catch-and-release survey method; you take your survey area and you divide it into 1.0 m squares and you map out the survey area. You pick things up according to that 1.0 m grid, you bag the finds based on that grid, and you take the finds back to the laboratory. You look at the material, you make an inventory of it, and then you take it back out into the land and you put it back in the same general survey unit that you found it in. As everyone recognizes that everything on the surface is already out of place, you don't have to put things back exactly where you found them. In the excavation at Fort Ross, of course, they also took advantage of non-invasive geophysical techniques to see what the structure of the site was before they dug anything at all.

Next, as far as the Pomo Indians were concerned, menstruating women were not allowed on the site. In the US legal context, you cannot deny women differential access to a place or an activity. As Lightfoot's project was funded with federal money, they had to figure out what to do. Kent devised a system whereby everyone on the team, men and women, students and professionals, would rotate among different archaeological sites according to a calendar of menstruation. The students said, "wait a minute, this is a violation of my personal life". It was applied to other areas. Even in camp life, menstruating women could not handle dishes, could not serve food, and could not handle the food. They even had the director of the excavation, Professor Lightfoot, taking a meal for his wife where she was sitting at a different table, and then later collecting her dishes and bringing them back, and washing them.

DWB: I can see this concept of diffusing power, but aren't we just shifting the power structures somewhere else and saying that we are just replacing one system of authority with another, in this case saying that menstruating women cannot participate?

MC: What we are doing is recognizing that there are different parameters for how to run things, and that there are different ways of working. So, they may have been able to do some things that Kent brought to the table, such as doing a particular type of survey here or putting in an excavation unit there. In exchange, the native groups were saying yes, but we will do it this way. If you did not have this opportunity of working with indigenous peoples, but are only working with your own group (which may be the case in Romania as well as in my work in France), then you have to decide who is going to take responsibility for making certain decisions. So, it does create more complex decision-making processes. Everyone comes to the table. For example, one would say, "OK, if you are responsible for organizing the wet-sieving, then what is your plan, and how is that going to interface with my plan for having people numbering artefacts?" Sometimes there are so many things going on that a lot of site directors don't pay any adequate attention to all of them; things slip by the side and they don't get done. Then someone blows up about having 500 bags of wet sieving and they have different systems of numbering on them to the rest of the site's materials.

The call is for us to build-in some sort of sense of accountability, even for people who are farther down the line in the hierarchy, making them accountable and responsible for some part of the project, of spreading the responsibility around.

DWB: I can see how this would work in the field. How would it work in the classroom?

MC: Ruth Tringham and I have written about this (M. Conkey, R. Tringham 1996). There is the idea that when you teach you are standing up in front of the classroom and you adopt a "banking method" of teaching: you deposit knowledge in students' heads and later you withdraw that knowledge in some structured way, like an exam or a test. There are many other, more liberating, kinds of pedagogies and ways of teaching. In the way that we came up with at the undergraduate level, and the way that has been the most fun, we decided that we don't think that these students need to know all the names for all of the different culture periods. They need to know that we give names to culture periods, and that we recognize that there can be different constellations of artefacts that might look different one from another. Whether we call it the Vinča 1 or the DaDah 2 or whatever, and if we then test them on that knowledge, it is totally useless knowledge in terms of their future, unless, of course, they are going to go on and be a specialist.

DWB: I can see that this works very well where students are in a liberal arts education, where some of the students will become archaeologists, but most of them won't. I can understand that what you are teaching them is thinking and critical inquiry skills, but most students in an archaeology class in Bucureşti are either going to become archaeologists or museographers or teachers.

MC: Well, you just have to decide what is the knowledge that they have to have and how best to get at it. So, Ruth and I decided that instead of the two of us standing up at the front of the class and giving a series of lectures during which we deposited all of the knowledge into the students who had to write down and then to give back to us in some sort of way, we designed and developed something that we called Panels. At the beginning of the semester we decided on a list of topics. So, for a class on the prehistory of Europe, one of the topics might be "what do we mean by the diffusion of ceramic technologies?" Students would sign up a particular Panel topic. They might sign up together with a friend. Each Panel group would be responsible for the presentation of a particular topic. They could do it any way that they wanted to. They could decide what were the important features, and they would share them with the class. We have had students do short plays or skits. You will remember Ruth's famous radio show from her article in *Engendering Archaeology* (R. Tringham 1991); so the students could do a radio show for their Panel with students from the class arguing different positions on the topic.

In one of my classes on Palaeolithic Europe, I have had students working on the question of whether or not you could learn how to make a complicated object without language. So, the question becomes what was the role of language in the development of technology? The students divided up the class into several groups and they said, "OK, for this group, someone will use language to show you how to make one of these very fancy origami Japanese folded paper objects. Someone else will show other groups how to do it but they will not use language when they show that other group how to do it". In order to get them to think about it more, the questions became, what kinds of things are produced with a language and what kinds of things are produced without a language. It doesn't have to be about making stone tools, and it can be about making something like the origami objects.

Turning the class over to the students, and asking them to come up with what they want to know actually takes a lot more work for the professor. It is much easier to write your own lecture and stand up and give the lecture to the students. This is especially the case if you have been teaching the same subject for a while. In the alternative that we have used, the students come to our office and we give them some key references, and we may lend them some images or tell them where to go to find the images. You send the students off to work together, which is a part of what they will have to do regardless of what they will end up doing with their lives; they will end of having to work with people who they have never known before. They will have to deal with the dynamics of some people doing their fair share and other people not doing their fair share. It gives them another way of learning and another way of interacting. We assess students individually and as a group. Ruth and I have written about this process (M. Conkey, R. Tringham 1996) and there we have written more about where we found our inspiration.

DWB: Is it possible to inject this concept and practice of a dissolved authority into something that may be more traditional, at least in terms of the knowledge that needs to be acquired? For example, if a student is studying the Neolithic of Romania or southeastern Europe, he or she will need to know a series of patterns and trends in ceramic forms and types of surface decorations.

MC: Well, we didn't turn the entire class over to Panels, so there was time for us to do some presentation of information. However, I could imagine that you could have different groups of students that were responsible for communicating to the rest of the class what one series of formal pot shapes were or about the use of one type of temper. Students internalize information much more by learning this way. As professors, we know this; if I hadn't had to stand up in front of a class and talk about a specific subject, I would not know very much about that subject. Circulating the responsibility and the accountability works.

DWB: What are the obstacles and the challenges at our level (as professors who are people in authority) for practicing and teaching in this way, and how do we get past those obstacles?

MC: One issue is that there is basic fundamental knowledge that students need to have, and if they are in charge of it, we may not get all of that information. Another problem is that in a lot of institutions, team-teaching does not count in terms of a professor's contracted workload; one's colleagues and a department's accounting system may think that you are not carrying your full load when you team-teach. Because of this, you may need to team-teach two classes in order to get the credit that comes with teaching a single class. At Berkeley, we have managed to work on this not only in the Panel teaching but also in regular teaching. In the core courses that students are required to take, such as the history and theory of archaeology class (required of first year graduate students in their first fall term), and also in the archaeological research strategies class in the spring, we have told the Department, "this has to be taught by two people". The Department has accepted that as the way that it has to be.

In addition, team-teaching is great for the faculty. The pairings of faculty members have as much to do with whose particular schedule it is and when they want to teach, as it has to do with two people who want to teach together. I have taught it with people who I have never taught with before and with whom I do not share a lot with. You learn a lot from hearing their different perspectives. For the students, of course, it is fantastic. But, it is true, you do have to stand up to some of these structures if you can.

DWB: At Berkeley it seems that you have a critical mass of people who what to work this way. It might not be so easy if one person was on her or his own trying to do this.

MC: It is hard, that's true. Kent Lightfoot and I joined the Department in the same year. Ruth Tringham had been here before. When we arrived, there were no required courses for the graduate students in archaeology. The admissions' process was that each faculty member selected whoever he wanted; it was not a collaborative sort of thing. We changed all of that. We instituted these collaborative, team-taught, required courses. We instituted a double advisor system so that each student coming in to the program had two advisors. If one or the other of your advisors was not working out for whatever reason, or if you wanted to change your field area or your subject and someone else was suddenly more relevant, you could go with it. People did not get possessive about their graduate students.

DWB: People often become possessive out of fear, especially if they are insecure about their position. They accumulate hoards of graduate students, and they want to be directors of dozens of different field projects or excavations.

MC: What's interesting for me is that if you look at Professor Pat Kirch here at Berkeley, you will see that he has consistently had a core of students who have worked in the Pacific region. This makes senses. He has the Pacific students, and when he has parties at his house, he always invites his students. They have special seminars on Pacific archaeology. I have never had a core of just Palaeolithic Europe students, or even just Palaeolithic students. In the end, I have probably supervised more PhDs in historic archaeology than in the Palaeolithic. It happened because of the topics that people are interested in, especially as gender (for a long time) was something that a lot of

historic archaeology students were interested in. For a while, I was working a lot with Jim Deetz, who is a historical archaeologist, before he retired.

Then Laurie Wilkie, another historical archaeologist, joined the department, and she and I have been on a lot of dissertation committees together. Ruth Tringham has done this in working with many people who are working in the digital world or in household archaeology. Thus, Ruth has worked with a lot of people who are not focused on southeast Europe. Ruth's *cadre* of students may have had foci on lithics or southeastern European early on in her time here, but for a while now it has been broadening out to household archaeology and digital things. So, if you look at my students, I can only think of four or five who are specifically Palaeolithic archaeologists.

DWB: You have talked before about something called an archaeology of distributions. Will you tell me what that is?

MC: Jim Ebert wrote a book in the late 1980s called *Distributional Archaeology* (J. Ebert 1992). He was a student of Lewis Binford, and the book built on some of the ideas of Al Ammerman who was an early advocate for the centrality of field survey: that it was not just the hand maiden to "real" archaeology, which was excavating a site. There is a parallel to some of the self-critiques that ethnographers have done about their focus on the village and our focusing on the site as some sort of natural, inherently bounded unit: the problem of not thinking beyond the physical borders of the site, and not realizing that people were on the move (and not just hunters and gatherers but also agriculturalists, and not just those people in special roles, such as traders). So, what do we know about how to study distributions? What methodological or field-based practices do we have?

In our work in France (the *Between the Caves* project), we did what had been shunned for a century. We looked at what went on between the cave sites when the latter had always been seen as so attractive and so well preserved. The traditional understanding sounded as if people in the Palaeolithic just landed in a cave site (where they didn't live all year round), and then they suddenly showed up some other site. Of course, archaeologists had said that these people got their food from out in the open but they also seemed to feel that that activity wasn't going to be interesting and it wasn't going to be anything archaeological. In the *Between the Caves Project*, in our field surveys, of course, we have found that in our survey area (an area covering the 10-30 km between two caves with other caves in between), was that those Palaeolithic people were all of over the place. The work was just surface survey, though we eventually got into test trenching, and now are excavating a fairly intact open-air site. Everyone said that you won't find anything in your survey. In fact, they did not want to give me a permit, because they said that I would not find anything. And you have to ask them, "why hasn't anyone found anything, has anyone looked?" And they reply that no one has looked.

Suddenly you get into the issue of evidence. They then asked, what good is it if you have all of these artefacts from across the landscape, which are differentially distributed, sometimes more or less in a relationship with the source of flint or water. The question becomes, how do we deal with these objects and these patterns archaeologically. It is just too messy. It is not contained. It is not bounded. So, you have to start thinking that these are distributions of material culture across a landscape, and the possibility exists for you to make some inferences about where people went, and what they did. When you are out in the open and you find flint that comes from 200 km away, you are faced with the questions of why is it here. We are good at thinking about sites, but we have to stop and think about distributions of artefacts and sites. This is also the case at a higher level. It is not just the distributions of artefacts across a landscape, but it is the distributions of sites and the way that we depict them. Distributions of settlement system sites; I call them maps of caviar, because they look as if people have taken caviar and spilled it across a table. There are all of these little dots. What do people do with them other than the type of studies that were popular in the 1970s with geographic notions of different types of settlement systems, and the hierarchy of settlement systems based on a theoretical notion of the world being an undifferentiated plane. We have not learned how to think about these things; I do not know how to go about these things myself, except that I am confronting it right now.

One of the other things that I am doing is leaving most of the direction of the excavation site to my junior colleagues. This is part of my diffusion of power. So I say, "you are in your early 40s, early in your career, here is a site. Take it." You know that there are a lot of people who won't do that. There are a lot of senior scholars who will hold onto their sites, and then they won't do anything with them, because they have other things to do. Both here in the States and in France with my French colleagues, I have seen people retire and then spend all of their time writing what they probably should have written up earlier in their careers. My plan has been to get out of it sooner. It is not "my" site. It has never been "my" site. Also, I have intentionally not stayed at the excavation site the whole time. I will come either at the beginning or at the end. Usually at the beginning to get things set up, but then I just let them go. They do not need me. They tell me that they need me, and I think that this is very nice of them to say that, and of course, I will do things that they would like someone like me to do for them, but I don't want to be the mother who picks up all of the pieces or gets everyone going. They can handle it on their own. They can figure it out for themselves.

DWB: I can see this working in your project, and I can see this gradually happening over time. I can put this in the context the emergence of a feminist archaeology or of archaeology in the United States. What if we put this into another context, where there have been changes in education and in society (revolutions literally), but there has not been as great a shift in the authority structure of science or archaeology? It seems that change in methods and pedagogy can come from deep processes and patterns percolating through the system over long periods of time, or they can come from radical action and deviant behavior.

MC: I always say that one generation's solution is the next generation's problem. What happened in Spain is interesting between what was the situation under Franco at the end of the 1970s and then during the post-Franco period. Spanish archaeology really changed. It had been very traditional and very culture historical, and then post-Franco it spawned all kinds of people who were interested in social questions, in more symbolic issues. It did not give up on the culture historical questions. None of us can give up on culture history, because we need it as a foundation and a framework within which to work; but the Spanish began pushing culture history in different directions. Someone like Antonio Gilman, a Marxist who works in the Bronze Age, would have a very interesting take on how that could happen in Spain, whether or not it was primarily due to the political shift in the post-France era. My impression is that things were bubbling before that happened. The political change probably gave it impetus, but there must have been other things going on. Certainly there must have been entrenched senior archaeologists who would have been resistant. I have always thought that it would be a good project to go back to the pre-1970s articles and publications in the major Spanish journals and see what has happened since. The young Spanish archaeologists are extraordinarily dynamic. It would be interesting to compare, because it came from a more oppressive regime to a less oppressive one, though of course now they are really struggling with an economic crisis that is not good for archaeology. They also have different ethnic identities throughout the country, for example with the Basque.

Manuel González Morales has written a little bit about how some of the groups who were able to claim a certain kind of identity were getting much more government support for their archaeology than others were getting. Many of the decisions were being made about these identity conscious groups that were pushing their own particular agendas. This is unlike French archaeology, which is grindingly making really small, minuscule changes. With two colleagues there, I have been chasing the begrudgingly small recognition that maybe there were women in the past. I have watched the Spanish archaeologists of the 1980s come charging out of the gate in terms of really exciting ideas. By then I had switched to France, having done my dissertation in Spain. I made the switch after having nearly been blown up in one of the Basque separatists bombings. This is also why I am not in Jordan right now at the World Archaeological Congress. I really wanted to go back to Jordan, because that is where I did my first fieldwork. I did it while I was in college and I have not been there since. My family said that who knew what was going to happen, especially with what is going on in Syria. So, I didn't go.

DWB: Does your decision to work in France and not Spain and your choice not to attend the conference in Jordan link to what you were saying earlier about dissolving authority? You have given authority away or shared authority with other people in your life about your own personal and professional decisions.

MC: I think that this is very important. There has not been enough of that. When I read my contribution to a recent collection of interviews of archaeologists (W. Rathje *et alli* 2012), I said, oh gosh, did I really want to say those things about certain individuals about who had been helpful and then by implication who had not been.

DWB: If you were sitting down with a new cohort of graduate students, what advice would you give them?

MC: The most important thing for any of them is that when they think about a topic for their research, that topic has to be one in which they can really engage. If you cannot get behind a topic that you are supposed to study, then you had better find another topic, or do something else. It is not the end of the world if you decide that graduate school is not for you. Most people feel that they have to pursue it, that they have to stay in there. However, if they are not engaged, then they will not do a good job. It is not a failure if you decide after a year or two that this isn't going to work. You could go back to it later if you wanted to. There are plenty of ways for you to use your abilities and skills. Some people stay in it and shouldn't have, and then they become a burden to their professors, because their professors will have to write letters of recommendation for them and won't always be enthusiastic. That's another thing. When you are asking people for letters of recommendation, you have to say to them (and I know that it is very hard), "can you give me a *good* letter of recommendation?" Some people will say that they will write a letter of recommendation, but if the letter is not good, then this can do more damage than help.

So, the first thing is to pick a topic that you really want to work on, and then find the people and the support system that will help you do that. At Berkeley, we try to do some of that weeding out before students even come in. We have people who apply who have top grades, come from a great institution, have some fieldwork experience, and they look like they are wonderful students, but they want to work on a topic that none of us can really help them with. You just have to say, we are not the place for you, and you have to give them some suggestions of alternative places and people. In some instances for undergraduates who are not really focused yet, we suggest that they go somewhere and get a master's degree, and then reassess if this is really what they want to do. Have they found what they really want to work on?

DWB: Does this require that the professors let go of their egos, and stop saying that they want 50 students studying the Neolithic with them, and thus not accepting everyone who applies to study with them?

MC: That's right. I would tell new graduate students that they need to find a topic, and that they need to learn to manage their situation. Sometimes it will be a little dicey. Try to develop experiences that will give you the positive feedback that you will need. Get yourself involved in activities, in experiences, and in relationships with faculty or with other professionals that will be positive and that will lead to their positive support. You know that I am still writing letters for my students from the 1980s, and they are now getting prizes and awards, and I am also writing letters for colleagues. I have dozens to do this week. Make sure that you realize that no matter what field you are in, but certainly in archaeology, it is a network and people talk, people communicate, and people have opinions. You are in the field with people, and lots of young students don't realize that when they do silly, stupid things in the middle of the night when you are in the field, people will remember these things. They will sometimes probably never forgive you for some of those sorts of things. It is like having stupid email addresses that do not suggest that you are very professional. So, rather than thinking that a field opportunity is a time to let loose and do whatever you want, you need to realize that you are building impressions with people who you may have to come back to for their permission to analyze some data that they have, and they are not going to be very interested in doing that for you. One has to be *en garde* all the time, and I think that a lot of our youth do not realize that. Again, I think that one of the main things is to think carefully about the topic that you are going

to do. Becoming someone who is doing the same work as the main professor (or work that is subservient to that work) will make it very difficult for a student to develop his or her own identity.

DWB: How does a student who does not yet have any of this dissolved or shared authority that you are talking about succeed in carving out their niche without ruining their career or ruining their relationship with their supervisor?

MC: It is very difficult, and the solutions will vary with different personalities, not just of the student but also of the senior person as well. I remember the strategy that Clark Howell had. He had an imperial notion about understanding the Palaeolithic. In some ways it played out favorably for his students. He wanted each student to take a part of the world and a time period and then to do a summary of it so that he could have the information. Thus, Sally Binford did the Middle Palaeolithic of Middle East, and Richard Klein did the Middle and Upper Palaeolithic of Russia, and Maxine Kleindienst did the Lower Palaeolithic of Africa. Then each of them was able to have his or her own field, and his or her own success and area of accomplishment, even if it was subjected to being assigned by a professor.

When Clark Howell found out that Richard Klein spoke some Russian, he said, you are going to work on Russian material. At one level this may seem terribly authoritarian, but when one sits down and analyzes it, that may be okay, because the area might become your arena of expertise. What you have to do is think about how you can use your own skills and interests to advance the goals of your supervisor, but also make it enough of your own project so that you can carve out your own identity. It might take a lot of talking and consulting with people. Even making lists. What do I do? What can I do? I have these languages. I can do this kind of work. I can work in lithics. I can learn these new techniques, or I am really good in quantitative or digital skills. Think about what your particular skills are as a student, and try to think about how those skills can be best used even if it is to satisfy the goals of the head-honcho, while at the same time allowing you to develop your own identity. It is always good to say, "I need your help". Go to the superior person and say that you are trying to figure out what to do. It is always good to go and say, "I need your help, here are the kinds of things that I can do. What do you think would be good for the project and what you think should be done in the field". Go to them, but bring them your skills and the kind of things that you want to do.

DWB: Is there a positive role for the hypercritical graduate student, who aims to rip things apart? I can think of some Romanian archaeologists whose work is very critical especially of foreign scholars and teams. What advice would you have for them?

MC: If we take the example of Cambridge in the 1980s, it was a case of what people did and how they did it. But someone has to do something substantive, something more than just a criticism or critique. This is why, I think, someone like Chris Tilley has succeeded. He and Michael Shanks came in and did things that we now think were just completely over the top in the red and the black books (M. Shanks, C. Tilley 1987a, 1987b). People who think of themselves as processual archaeologists still point to things that were in those two books that they see as characteristic of post-processualism without realizing that it is not the be all and end all of post-processualism, and that they themselves are probably already doing things are that post-processualist without even realizing it.

I think that Tilley went on and did his work with rock art that was really empirically based (C. Tilley 1994; C. Tilley, W. Bennett 2004), as well as the work that he did with Barbara Bender about the landscape (B. Bender *et alli* 2007). So he made a big critique but at the same time he went on to show how doing things differently can be done working with "real" data. Shanks, I think, has fallen off the deep end by doing his archaeology-as-performance. His work on Greek amphora lasted just a year or two (M. Shanks 2004). So, in thinking about people who shook things up but then went on to continue to be a contributor, I think that Tilley pursued a path that is much more successful. Shanks may be much happier; he loves what he does, he is doing what he is doing, he got himself a much better paying job in the United States. I don't know what constitutes personal and professional rewards. He may be very happy, but in terms of archaeology, if he wanted to stay in an archaeology where you are engaged in and involved with people of that sort, I think that Tilley did the better job.

For better or worse, I think that there still is a preference or a bias for people who work with archaeological materials. I am not sure that that should always be unquestioned. It still is the case. I worry about people like Colleen Morgan who is very, very good with the digital world, but when push comes to shove, I am not sure how it will work out. Here is an example: Marcia-Ann Dobres has a Berkeley PhD. She did work with materials for her PhD dissertation. She worked with engraved bone; she worked with bone and antler artefacts from Magdalenian sites in the Pyrénées. She completed her dissertation, and she had a National Science Foundation grant to do her microscopy work and did all sorts of very interesting things. She got very involved in the social life of technology. It came time for getting a job and she did not have a field project. She said, and this is the case for many people working in the Palaeolithic, that she could place people on excavations. She said that she did not have to have a particular field based project, and that she had a research project that would involve a continuation of the things that she had done in her dissertation in handling real objects and artefacts. But it wasn't a field project where she directed students. She never got a job. She has an adjunct position in Maine and she has been teaching around.

DWB: Tell me about your career trajectory.

MC: I have a trajectory that (on paper at least) some of my senior colleagues at Berkeley might say I never should have gotten anywhere. I went to undergraduate school at Mount Holyoke, a women's college. I was an ancient history and art history double major, and I had an opportunity to go to Jordan and I did archaeology before the 1967 war. I was in what is now the West Bank, and I was doing biblical archaeology. It started as a joke in the dorm room. I decided that I was very interested in archaeology. I like the idea that it blended some of my intellectual interests with being out doors. Of course, being in Jordan in 1964 meant that I wasn't actually doing any digging, because they had hired workmen, and I couldn't even work with the workmen because I was a young female. I was in charge of the pottery and I had an older man who was in his 60s and a young boy who were working with me because they were the only categories of males to whom I could give any directions.

It was a very interesting experience. I traveled a lot; I went to Petra, and we stayed there for a week. Anyway, I liked it and I thought that this is what I wanted to do, and my area of interest was something in the Middle East. I wasn't really interested in biblical archaeology, or early agricultural settlements. I applied to graduate school. I applied to both the University of Chicago and the University of Pennsylvania. Both of them said the same thing. I had applied to the anthropology departments, but I had never had any anthropology. They did not have anthropology at Mount Holyoke at the time. They both said that I needed to take a year of undergraduate anthropology classes before they would give me a final admission. Also, I had managed to apply to the Oriental Institute in Chicago, and they accepted me.

Another crazy opportunistic thing happened. When I graduated in June, one of my friends and I decided that we want to go to New York for the summer and work. "Mother and Dad, you take our stuff how and we are independent. We are going to New York City." So, we went to New York, we found an apartment on the Lower West Side on 14th Street, and we got interviews based on ads in the *New York Times*. I got a job with an organization that I had never heard of before called the Wenner-Gren Foundation for Anthropological Research. They were looking for a librarian. I was hired by Wenner-Gren and my roommate started off at Time Magazine doing research; she was a history major. I worked at Wenner-Gren, and after a few weeks, they realized that I would probably be better as a help for analyzing grants, and so I became a grant analyst. Then, I found out that I had been accepted by the Oriental Institute, and I thought that I had better go there. The then Director of Wenner-Gren was very generous and she said "Meg, you will probably need a job when you get to Chicago." I said, you are right. I am the eldest of five siblings and my father had said, "you want to go to graduate school? Bye, have a nice life, and come home for Thanksgiving." Even though he had graduated from the University of Chicago. I couldn't even play on his alumni sensibilities. The Director said, "we publish a journal there called *Current Anthropology*, and I will contact Sol Tax, the then editor, and I am sure that he will hire you."

So, I arrived at Chicago, got some roommates and had this part-time job working as an editorial assistant at *Current Anthropology*. All of these flukes, these opportunities, you have to take advantage of. Somewhere along the line, in the spring of my first year in graduate school, Sol Tax

pulled me aside and asked how it was going over at the Oriental Institute. I said that I was a little disappointed, but that maybe it was just because it was my first year. He said that he bet that he knew what I was disappointed about, and I said that the work was all about languages and objects, and that there weren't any people. He said that I belonged in anthropology and told me to get my papers together, and he transferred me into the Anthropology Department. So, I started graduate school all over again.

When I took my first class, it was one that was required for all graduate students regardless of their field. The class was taught over three quarters; it was about social systems, cultural systems, and psychological systems. We were in the social systems class, and this was the fall of 1966, and I looked at the reading list and the only book that I could find in the library that was available was by Claude Lévi-Strauss. I read the chapter. It was something about kinship, and I had no background in this whatsoever. I could not figure out, for the life of me, who was "Ego". I thought Ego was a person. I knew that there was Plato, so I thought that maybe Ego was another classical Greek philosopher. It took me a while to get up to speed.

At Chicago I took courses with Bob Adams and Bob Braidwood who were team-teaching the archaeology sequence that was called *The Human Career*, with early humans, agricultural humans, and city humans or urban archaeology. I found this interesting but my interest in early agricultural societies was not sustained. In the next year, I got a job as a research assistant in a little cluster of Palaeolithic archaeologists with people like Les Freeman who was married to Sol Tax's daughter, Susan Tax Freeman who is a very well known socio-cultural anthropologist working in Spain. Also there was Clark Howell and Karl Butzer. It was a very strong group of Palaeolithic people. I started taking some classes, but what was really going on in Chicago at the time was that Fred Plog was there, John Fritz was there, and Chuck Redman came in the year after me. All were graduate students. One year, we found that we had no faculty at all, so we decided that we would teach our own courses. This was where the second generation of New Archaeology came in. Fritz and Plog wrote the famous article about hypothetico-deductive reasoning in archaeology. Chuck Redman started going off with all of his systematic sampling; he was working with Braidwood in the Middle East. The whole furor of the New Archaeology was going on then, and this is where I got the inspiration for doing my dissertation: trying to understand (and this is classic Binfordian archaeology) the nature and significance of variability of material in the archaeological record. Trying to use design and style in engraved bone and antler to see if I could make some inferences about social groups and social relations.

By then, 1967, John Fritz and I had gotten married. I did a Masters thesis under Les Freeman who had suggested that I review how people had interpreted Palaeolithic art. Les was always interested in it, and in his later years he wrote about it, but at this time he was doing all sorts of the new factor analysis and function versus style in stone tools. He was very supportive, and there were not very many Americans involved in Palaeolithic art who might bring a solid anthropological perspective to it. From there I moved into working on the Spanish materials on the Magdalenian for my PhD dissertation.

John Fritz then got hired at the University of California at Santa Cruz, and we moved out to California. Within a year, Alicechandra, our daughter was born, and I had gotten a job at San Jose State University without finishing my dissertation. If there is one thing to slow you from finishing your dissertation, it is starting teaching four courses a semester and having a little baby. So, it is kind of strange that I ever finished, but you have to finish if you wanted to keep going. The first two years I was at San Jose State, I was full time temporary lecturer; this is standard procedure in the California State University system. Then the university developed one the first environmental studies department in the country, and they wanted someone who could teach anthropology, someone to teach the long-term perspective on human relations with their environment and human ecology. This was in 1971 or 1972 and there was a lot of literature available, (for example, Roy Rappaport and *Pigs for the Ancestors*): all of these ways that humans could regulate their environmental relations. It was easy to move into some of that, and to do the long-term things. That was a tenure-track job in environmental studies, and I was the house anthropologist and I taught the required course in human ecology that all environmental studies majors had to take and a variety of other courses.

A student in one of my classes, Nancy Wilkinson, thought that I should meet another professor named Les Rowntree who taught in the Geography Department. Les and I were married to other people at the time that we met in 1975 and all four of us became friends. But, a job opportunity in anthropology/archaeology came along at the University of Binghamton (part of State University of New York) because Fred Plog was leaving that department. Chuck Redman was there already and Al Ammerman was there. They wanted to replace Fred Plog and they thought that they should get a southwestern US archaeologist. John Fritz and I interviewed for that job together. We worked out a position and a half with Binghamton, and this was pretty original at the time. One year one of us would teach full time, and one of us would be half time. They next year we would switch. However, on the way to Binghamton, John and I decided we would set up separate households. Although John soon left the teaching at Binghamton and set up a project in India. For a time, for one or two years, he happened to own a house two doors away from my house in Binghamton, which was just fine, especially for our shared daughter. He eventually moved and I stayed connected with Les Rowntree, who had also divorced his wife, but he was teaching still at San Jose State in California.

Les and I commuted for ten years, coast to coast. In the end, we counted those ten years as 20 semesters, and for ten of those 20 semesters we managed to be together, but we never really knew when or who was moving or what we were doing. Les' daughter Erica was living primarily with her mother Heidi in Los Gatos in California. My daughter Alicechandra was primarily with me, though spending some time with her father who was in New York and doing a lot of traveling; this was convenient for him and it was fine for me to have her with me. There wasn't much of the pull apart tension that sometimes happens in these situations. It was in this context that I developed the idea of doing the survey project in France.

So I developed the project in France with Les because we decided that since we were commuting during the year and if I was going to go off for fieldwork in the summer, we would be separated again. So, we decided to pick something that we could do together in an environment that had good stuff for him and for me. As a historical geographer, Les had done his dissertation in the Alps in Austria. So, I suggested a mountainous region and we decided on a survey project where someone who had a sense of historical landscape use in geography would fit in. So we decided to go and do this together. Our first season was in 1993. We had an exploratory grant from the National Science Foundation; they give small amounts of money to people for projects that they have no idea how they are going to turn out. No one had done any survey, no one had reported anything, and we decided to see if we could find anything. If we succeeded, then great; if not, then that is fine as well. NSF still has this program; they are called high-risk projects, and they allow people to do new and different things and to have a funding source. It was a small grant: $25,000-$30,000, enough to get a number of people going. I had to develop relationships with French colleagues, and get permission from the regional archaeological service and get a permit.

By then, by 1993, I had come to Berkeley. In 1986, they were looking for someone to come and teach for a semester. So I came out for the spring semester. Alicechandra was 15 at the time. She was so mad, she was furious: "Mom, you are taking me out of school for a semester. What am I going to do?" New York State has a very rigid set of Regent's exams that you have to take to qualify for college. "My life is going to be ruined." This wonderful teenage *sturm und drang*. So we came out to California, and we found a small private school here called the College Preparatory School in Oakland. If looks could kill, the day I dropped her off at that school I would have been dead on the spot. So we go through the spring semester and it was quite lively. Desmond Clarke was about to retire. There was a big festival and celebration in his honor. I taught a couple of courses including an undergraduate course on the history and theory of archaeology. It comes to be June and I say, "Ok, we had better sit down and plan the move back to Binghamton" and Alicechandra coolly told me that she was not going back to Binghamton, and I said, "what do you think that you are going to do, young lady?" She said, "I am staying here and Gina's mother said that I can stay with them". So, I moved back to Binghamton all by myself.

It was during that next year that Berkeley advertised the job that I eventually took. It was horribly controversial. Some of the Berkeley faculty wanted an Africanist. Desmond had retired, so he had no more say in it, though he understandably expressed a major concern that the Africa program was not continuing, even though there were some offers to researchers in Africa and elsewhere in the

Old World. Of course Glyn Isaac had left and unfortunately, tragically, died very prematurely. Clark Howell was still here. Tim White was still here. They wanted an Old World archaeologist who worked in the Palaeolithic. That was me (sort of) but it wasn't their idea.

DWB: After the hire of Ruth Tringham, was your hire the next building block in making the department what it was?

MC: Kent Lightfoot and I came in the same year. We came in the fall of 1987 and then in January of the next year we had another position in Old World, and the hire there was Pat Kirch. In the period of a year and a half we had Kent, me, and Pat. John Rowe had not yet retired, and Jim Deetz was still with us. John Graham, a Mesoamericanist was still there. Then Deetz and Graham retired and John Rowe had retired before them. In 1994, the entire University of California system had a big early retirement program: what was called a *very* early retirement program. So Howell retired, Vince Sarich retired. Deetz retired and then went to the University of Virginia, and next John Graham retired. That led the way for us to hire Laurie Wilkie to replace Jim Deetz. Deetz was a pioneer in historical archaeology, and by the mid-1990s it was becoming increasingly popular and there were many more people doing it. So Laurie Wilkie was hired and then Christine Hastorf.

DWB: It is interesting that the hires were all females.

MC: Yes, Kent Lightfoot once said, and I think it was after Laurie's job talk, "will you girls invite us out for a beer?" The other person we hired around the mid-1990s was Junko Habu, who does historical ecology, and she has done some very interesting work on identity and archaeology. Now she is working on a big multi-million dollar project funded in-part by the Japanese government about sustainability and how can the study of small-scale societies contribute to understanding small-scale societies today. We also hired Rosemary Joyce as the Director of the Hearst Museum of Anthropology.

DWB: This may sound like a sexist thing to say, but was there something about this influx of female academics who came out of a specific set of academic contexts to make the Department at Berkeley what it was? You all appear to have been producing important work on closely linked themes.

MC: Though she is more recent and has just been awarded tenure Sabrina Agarwal is a great example of how one's intellectual/scholarly culture can influence you in positive ways. She is a bioarchaeologist, a bone biologist. She did a dissertation on osteoporosis among men and women in historic England. She has recently formed a field called social bioarchaeology, and has published a big companion to social bioarchaeology with Wiley-Blackwell. She is someone who came into the program and hadn't thought much about the fact that she was actually doing things related to gender or the more social dimensions of what you could learn about from the embodied social experiences. It was the case that even before she arrived we recognized that when she got here she would change, that she would shift slightly. So yes, there is a dynamic of ideas and researchers and we all have been variably influenced and certainly enriched by each other.

DWB: You have now retired, Ruth Tringham has retired, Rosemary Joyce is working half time in the graduate dean's office as an Associate Dean.

MC: We have hired two new people. Jun Sunseri, who was a student of Diane Gifford-Gonzalez and Judith Haubicht -Mauch. His dissertation work was in the American Southwest, in New Mexico, doing a colonial context project. Jun is also an archaeozoologist, and he does a lot of ceramic analysis. In addition he has an ethnoarchaeology project in South Africa. His wife, Charlotte, is an historic archaeologist and has a tenure track job at San Jose State University. The other hire is a woman, Lisa Maher, and she works in the Middle East, in Jordan, on a huge, fantastic Epi-Palaeolithic site, an aggregation, hunter-gatherer site out in what is the desert today (though it was a fantastic landscape back then). She does landscape archaeology, but also micromorphology and lithics. She and I are giving a paper together at the Society for American Archaeology meetings; at her site she has these hunters' huts, and in France we have a structure that looks like a stone-slab house. We are doing a comparative study about how people treat structures for hunter-gatherers. People call them

huts or cabins, but as soon as you get to the Neolithic, they are called homes. She is a Toronto PhD, and she spent five years in Cambridge on a post-doctoral fellowship; she has an impressive publication record. So, we have some new skills for our graduate students, and they are skills that transcend wherever you work in the world. Ruth and I are very excited to have them "in our places" and we, at the same time, have our own projects, such as the Center for Digital Archaeology (CoDA).

DWB: Let's move from the past to the future. As with other interviews for *Studii de Preistorie* we ask that imagine that you are to be stranded on a desert island. What books would you take with you?

MC: I would take something by Ursula Le Guin, at least one book and maybe two. One that I might take is a book of short speeches and talks that she gave and which cover a whole range of subjects. It is a book that I go through often. I recently reread Le Guin's *Left Hand of Darkness*, which is an amazing book. Also, I would probably take something that I would need a lot of time with; there is so much in them that it might be one of Henrietta Moore's recent books about the nature of anthropology.

DWB: You also may take one luxury item with you on the island. What would that be?

MC: I would probably take family photographs. I suppose there wouldn't be any Internet connection, so I will take the family photographs, though I guess that they could be in electronic formats.

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The archaeological excavations at Grumăzești – Neamț County. Part 1 – refitting the puzzle

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Abstract: *The paper presents for the first time after 35 years, detailed information regarding the excavations of Grumăzești, an important Early Neolithic site in central Moldova. Seen as a first paper on a future series, it presents the methodology of excavation, careful rebuilding and interpretation of plans and fieldnotes in an aim to reconstruct the settlement architecture (dwellings, pit-features, burials) for the Early Neolithic-Starčevo-Criș site, the Bronze Age (Noua culture) and the III-IV centuries AD, vital for the study and the understanding of the collections of finds resulted from the excavation of the site.*

Rezumat: *Articolul de față aduce la lumină, după 35 de ani de la încetarea săpăturilor, informații detaliate privind rezultatele cercetărilor din situl arheologic de la Grumăzești, o importantă așezare neolitică timpurie din centrul Moldovei. Constituindu-se doar ca un început al unei viitoare serii de articole, lucrarea încearcă o reconstituire și interpretare a documentației de săpătură referitoare atât la locuirea neolitică timpurie Starčevo-Criș cât și la cea a culturii Noua și a celei datate în secolele III-IV AD. Un astfel de demers este esențial pentru studiul și interpretarea în viitor a materialului arheologic rezultat din săpătură.*

Keywords: *Early Neolithic, Bronze Age, III-IV centuries AD, settlement architecture.*

Cuvinte cheie: *neolitic timpuriu, epoca bronzului, secolelele III-IV AD, structura așezărilor.*

◈ The present paper proposes to be only the first in a series of articles, aiming towards a complete study of the Grumăzești excavations and collections of finds. It will thus now focus mainly on the methodology of the excavation, the stratigraphy of the site, the identification of various archaeological features, as well as on the location and borders of the three different settlements existing on the site (Early Neolithic, Bronze Age, III-IV AD), based on the interpretation of the field notes and the existing plans. A general review of the major category of finds will be briefly presented. Future articles will focus on the results of the study on specific collections (lithics, pottery, faunal remains) from the three main ages present on site, together with perhaps ^{14}C dates, studies for the provenance of the raw materials, use-wear analysis, etc.

My deepest gratitude and thanks go to dr. Silvia Marinescu-Bîlcu who allowed me to study the materials resulted from her excavations at Grumăzești and gave me full access to the original field documentation (plans and photographs). This first paper, focusing on the excavations proper, would have never been possible without her constant support and help.

The field documentation (nowadays part of the archive of the Institute of Archaeology "Vasile Pârvan") comprises:

- a notebook of fieldnotes for the five years of excavation;
- a series of plans:
  - general plan of SI-SVI;
  - general plan of SI and Caseta 1, squares 1-10 (dwelling L1);
  - plan of dwelling L2 in SII, squares 16-18;
  - southern section of SII;
  - general plan of SII and SIII (dwelling L2), squares 1-11;
  - general plan of SIV, squares 1-18;
  - plan of burial M1 in SIV and Caseta 5;
  - general plan of SVI, squares 12-15;
  - general plan of SVI, squares 6-9;
  - general plan of SVIII, squares 1-10;
  - general plan of SIX, squares 1-7;
- a black/white film from the excavations of 1971;
- a black and white film of some of the refitted Early Neolithic vessels;
- drawings of 5 stone axes and 16 Early Neolithic refitted pots.

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◈ Grumăzești - the excavation: methodology and field documentation

The archaeological site of Grumăzești (Neamț County) was identified by S. Marinescu-Bîlcu in 1966, while excavating the nearby site of Târpești. Field surveys along the left bank of the Netedu creek, a tributary of the Topolița River (an area known to the locals as Deleni-Joseni) yielded pottery fragments identified then as Criș.

The excavations started two years later, in 1968 and continued, with time gaps, until 1978 (1968: 10-19 September, 1971: 20 September- 2 October, 1972: 21-30 August, 1977: 28 July-12 August, 1978: 21-30 August). They were directed by S. Marinescu-Bîlcu (Institute of Archaeology "Vasile Pârvan") with the help of Al. Bolomey (Institute of Archaeology "Vasile Pârvan", Institute of Anthropology "Francisc Rainer").

During the 5 years of excavations nine trenches were investigated (SI - 20 x 2 m, SII, SIII – 45 x 1 m, SIV - 50 x 1 m, SV - 50 x 1 m , SVI - 42 x 1 m, SVII - 20 x 1 m, SVIII - 38 x 1 m, SIX - 38 x 1 m). They were all running from east to west, and were parallel to the slight natural sloping of the land. They were divided in squares of 2 x 2 m (SI) or 1 x 2 m (SII-SIX), their numbering advancing from east to west. Baulks of 2-3 m were left between the adjacent trenches (fig. 2).

Apart from these trenches, a number of extensions (named "caseta") were practiced, in order to better expose certain features when these were identified.

The trenches were so located as to determine the limits of the Early Neolithic settlement but this was possible within the tight bonds imposed by the existence annual agricultural crops and the availability of already harvested areas.

Excavating long narrow trenches was in accordance to the methodology of the time, but was also dictated by the limited funds allocated to the excavations each year. During the last two years of excavation, in order to recover information on the micro-stratigraphy and given the impossibility of opening new areas, transversal sectioning of certain Early Neolithic features was employed.

Digging was done in 15-20 cm spade spits, with trowelling employed when a feature was encountered (5-10 cm spits). Because of the lack of funds and the limited time allocated to the dig (an average of 10 days/year), dry sieving was not possible. Depths were measured both from the ground level and from a "0" point of origin, but in the fieldnotes is frequently quoted only the former.

Other than the remains of the Early Neolithic settlement, the excavations also exposed traces of habitation belonging to the Noua culture and to the III-IV centuries AD. Until now, little information regarding these excavations was ever published, and it only refers to the bone industry (S. Marinescu Bîlcu, C. Beldiman 1997), pottery (shapes and decoration), general chronology and links with other Neolithic cultural areas (S. Marinescu-Bîlcu 1975, 1993; Vl. Dumitrescu *et alii* 1983). This observation actually goes for the entire Early Neolithic of Moldova, where, with the exception of one site, there are no site monographs available (E. Popușoi 1995). Most of the papers dealing with Early Neolithic focus on the "major issues" of the period (relative chronology, links with other cultural groups, origins and influences, etc.) but without having a very solid material base, as most of the results of the excavations or field surveys had only been briefly published, if at all.

The Grumăzești archaeological material is nowadays located in the storing facilities of the Institute of Archaeology "Vasile Pârvan" in Bucharest, with a few of the most important artefacts (mainly Early Neolithic refitted pottery vessels) exhibited in the Piatra Neamţ County Museum (S. Marinescu-Bîlcu, pers. comm.).

The present day collection of archaeological finds comprises pottery (from all the above mentioned ages), polished stone tools, a few ground stone tools, selected chipped lithic industry (worked implements and flint cores mainly), a few bone tools (belonging to the Noua culture), two small bronze fragments, charcoal (collected for ^{14}C dating), Early Neolithic human remains. Until now it was not possible to locate the animal bone assemblage, the collection of obsidian implements and the Early Neolithic bone tools previously published (S. Marinescu-Bîlcu, C. Beldiman 1997).

◈ The general stratigraphy of the site

The excavated area comprised two zones: a flat one, towards the west (where absolute and relative depths were comparable) and a second one, towards east, sloping downwards towards the valley of the Netedu creek. Sediments were thicker in the flat area (the Early Neolithic layer had an average of 50-60 cm and a maximum thickness of 80 cm). On the slope, the upper sediments had

been washed off by erosion, and thus the archaeological remains had been affected not only by natural processes but by agricultural works as well.

This situation is well illustrated in figure 4, showing the southern section of trench SII. Based on this plan, the stratigraphy of the site was as follows:

1. Top vegetal soil with a thickness of maximum 30 cm, heavily affected by agricultural works, containing (mainly towards the eastern end of the trench) mixed archaeological artifacts;
2. Dark brown soil with very few finds, mostly dating to the III-IV centuries AD;
3. Light brown soil containing mostly Early Neolithic and some Noua culture finds;
4. Yellow clayish soil, archaeologically sterile.

◈ The archaeological features

For a better understanding of the existing information on the Grumăzești dig, a few things need to be made clear:

- Identification of features and feature numbers: generally the original feature names/numbers were preserved (L1, L2, L3 for the Early Neolithic dwellings, and G1-G6 for pit features excavated during the first two years of excavations). They also appeared on the markings of the finds. Additional F (feature) – numbers were given by the present author – based on the descriptions on the fieldnotes – to the features that were not assigned any names in the field documentation or that might have not been acknowledged as features. Where it was possible, this information was checked with the field plans. The description of each feature includes location (trench number, square, the depth where it was noticed). Base of features is stated separately – where known.
- Cultural assignation of features: the present paper focuses mainly on the field documentation issues and thus, until the collections of finds are carefully studied, the cultural attribution quoted here for the various archaeological features is the one resulting from the study of the fieldnotes.

As shown above, archaeological features were assigned to three periods: I: Early Neolithic (Starčevo-Criș culture), II: Bronze Age (the Noua culture), III: III-IV centuries AD and for the sake of chronology they will be presented as such:

I. The Early Neolithic features

While just a few comments are generally made on the Bronze Age and III-IV AD habitations, it is clearly stated in the fieldnotes (and in the published information, S. Marinescu-Bîlcu 1975, 1993) that, based mainly on the existence of only one dwelling type – the surface dwelling – Early Neolithic Grumăzești only developed during one habitation phase, like most Early Neolithic sites in Moldova (N. Ursulescu 1983, p. 261).

Twelve features were identified in all, out of which three (L1, L2, L3) were considered surface dwellings:

L1 (SI, sq. 3-6, fig. 3/1)

In order to expose a larger area of L1, an extension was practiced on the southern side of SI[1].

Located in the sloping (eastern) area of the site, the feature appeared as a concentrated agglomeration of pottery fragments, daub, stone (some burnt) and bone, noticed quite close to the surface, at a depth 0.40-0.50 m from the walking level (0.55-0.65 m from the "0" point of reference). Although affected by agricultural and animal disturbances, L1 showed a thickness of 20-30 cm of archaeological deposits.

On the plan, L1 seems to be rectangular, oriented NW-SE. The hearth of the dwelling was located towards the south, in Caseta 1. The daub of the hearth contained chaff and fine sand.

The daub fragments found were numerous, small in size, chaff tempered and relatively well burnt. Many fragments retained the imprints of the sticks and poles the daub had been plastered on,

[1] In order to completely expose dwelling L1, another extension was planned on the northern side of SI, but lacking funds this was not possible.

pointing towards a light wattle-and-daub structure. S. Marinescu-Bîlcu (in the fieldnotes) expressed the opinion that the dwelling had been destroyed by fire. Among the finds in L1 were mentioned polished stone tools (axes, chisels, and an adze), flint and obsidian implements, a weight made of fired clay and a large quantity of pottery.

Five broken ceramic vessels (refitted) were noticed inside and around the dwelling (fig. 3/1, fig. 11/1, 2, 4, 5).

After lifting the concentration of finds constituting L1, underneath it, in sq. 5, in the near proximity of the hearth, a pit (**G5**) was noted, with a base at 1.45 m. It contained a large number of pottery fragments (some refitting – fig. 11/3), stones and ashes. It was unclear whether the pit G5 and dwelling L1 were contemporaneous (thus making the pit a storage annex of the house) or whether the pit was anterior to L1.

L2 (SIII, sq. 3-7, 0.52-0.55 m, fig. 1/2, fig. 3/2, fig. 3/3, fig. 6/1)

In order to fully expose L2, two extensions were cut to the north (Caseta 4) and south (Caseta 2) of trench SIII.

L2 is described as an agglomeration of daub fragments, among which were scattered many pottery fragments and river pebbles of various sizes. It had been heavily disturbed by agricultural works and perhaps soil erosion, being also located in an area descending towards the Netedu creek. It also had a hearth and in figure 6/1 can be identified as the feature marked F23 – a concentration of daub in the south-east corner of the dwelling.

The daub fragments (part of the collapsed walls) were not very well fired but many of the stones found inside the feature were reddened by fire. Quite frequently the daub pieces preserved imprints of thin sticks, rarely of larger poles, suggesting that the wattle-and-daub walls were rather light and thin. Some of the daub fragments were also slightly "polished" on one side. The temper employed for the daub was chaff and sand in equal quantities.

From inside the dwelling came a few grinding stone fragments, clay-made spindles, clay-weights (fig. 12/a-c), obsidian and flint implements, polished axes (both complete and/or fragments, figure 13/1-4). S. Marinescu-Bîlcu noted the extremely interesting ornamentation of the pottery, organized in several registers, differently decorated. The predominant shapes appeared to be bowls, vessels with short necks and bulging bodies. The reddish-orange pottery predominated, but several fragments were of the black or gray variety.

L3 (SVIII, sq. 1-5, 0.60-0.70 m)[2]

The remains of L3 appeared as a scatter of stones, a few daub fragments, pottery, some bones and charcoal. It was exposed over a length of cca. 8-10 m but a width of only 1 m. It was extending further to the east, north and south, but lacking funds, extensions to completely uncover it were impossible. Instead, it was sectioned N-S and excavated in two halves.

The same as in the case of L2, the daub was tempered with chaff and sand, but this time the fragments appeared to be heavily fired. Most of the daub fragments preserved the imprints of the sticks they were plastered on, indicating an average diameter (for the sticks) of 2-3 cm. The thickness of the daub was cca. 6-7 cm. Differently from L1 and L2, the remains of the dwelling contained a surprisingly large quantity of stones.

From the area of L3 came large range of well fired pottery vessels (a fragment decorated with incised meanders, several sherds coming from large carinated vessels with long straight necks, smaller globular vessels with short necks, and Vinča-type bowls, vessels with ringed bases), a several axes made of siltstone, a loom/fishing weight (with many intrusions in the paste, poorly fired, brown on one side, black on the other), flint (blackish-gray) trapezes, Balkan-type flint flakes and a microlithic blade, obsidian bladelets and blade-like flakes and a very little quantity of animal bones.

In the close proximity of the dwelling an interesting and uniquely decorated loomweight was found (fig. 12/e): rectangular in shape and with a decoration made of oblique deep incisions, suggesting two "fir-trees". The clay was tempered with sand and the firing was rather poor (grayish on the inside).

[2] S. Marinescu-Bîlcu noted that possibly L3 was in fact the northern part of L1 (SI, 1968) but as seen in the general plan in figure 8, L1 and L3 is likely to have been two different structures, since the NE limit of L1 is quite well defined.

After the analysis of the fieldnotes and the plans, a few other features might suggest themselves as 'candidates' for dwellings:

G6 (SI, sq. 9-10, 0.75-0.90 m) was an unclear feature, possibly disturbed, appearing as a scatter of finds, both horizontally and vertically. It was impossible to determine at the time of the excavation whether it was a pit or perhaps a sunken dwelling, continuing in the unexcavated areas. The quantity of pottery coming from it was impressive.

F1 (SII, sq. 9-10, 0.90-0.95 m and SIII, sq. 9-10, 0.90-0.95 m, fig. 4, fig. 6/1, fig. 6/2) is made of two concentrations of daub fragments (black core, badly fired, with a temper consisting of some chaff and a lot of sand), pottery fragments and stones, within what was seen as the "Criș layer" (the light brown soil) in the two trenches. Given the short distance between the two, the depth they both occurred and their rather 'linear' arrangement, the two were considered part of the same feature – a possible surface dwelling. Lacking funds, the area in between the two was never excavated to clarify the matter.

Still, when looking at the profile in figure 4, F1 appears in SII as a pit-feature, dug approximately 50 cm (maximum) into the light brown soil. Its base was rounded and the archaeological material from the infill (mainly daub and pottery) was evenly distributed from the upper part to the lower one, starting from the bordering level between the dark brown and the light brown sediments. Thus, if the two agglomerations from SII and SIII were in fact one, it is in fact a **pit** feature, with a length of over 4 m (the width of the two trenches plus the distance between them) and a width of another 4 m, so, either a sunken-hut dwelling or a very large (and shallow!) storage/garbage pit.

F2 (SII, sq. 17-18, 1.20-1.40 m, fig. 3/3, fig. 4)

When cleaned, the feature appeared as a concentration of extremely many animal bones (as opposed to the cases of L1-L3), many pottery sherds, daub fragments, stones and fragments of human bones (among which was immediately remarked a fragmented human skull). No hearth or hearth fragments were noticed. The base of the feature was at 1.60-1.65 m. Unfortunately, opening new areas to the north and south was not possible. When excavating SIII, nothing was noted in the corresponding squares (fig. 8), indicating thus that this feature was not extending that much further north. Also, F2 – as concentration of finds shown in figure 3/3, seems to stop some 20 cm north from the southern profile of SII.

On the other hand, on the southern profile of SII, the feature observed seems to have been much larger (wider) than the one noticed while excavating (fig. 3/3), as it seems to stretch in both squares 16 and 19. Also a slight sloping down of layer III can be observed on the profile, suggesting the existence of a pit feature, with a western limit located perhaps in the area left unexcavated. Additionally, a large pot was found in sq. 19, half embedded in the northern section and fixed at the base in a shallow pit dug into the yellow clayish layer (1.70 m)[3]. Its context and the depth it was found strongly suggest a link with the feature identified in the southern profile of SII.

The question that poses itself at this point is whether the feature observed in the southern section of SII and F2 (as it appears in fig. 3/3) are one and the same. It is possible that there had been two different features (F2 and a second one with less finds in the infill), difficult to distinguish, with F2 – a garbage pit (which would account for the mixture and abundance of finds in the infill) and the second, a shallow pit – as seen in figure 4 – perhaps a disturbed sunken dwelling.

The opinion expressed in the fieldnotes by S. Marinescu-Bîlcu was that F2 (as in fig. 3/3) represented a surface dwelling containing the remains of a feast – given the large number of existing animal bones and pottery fragments, while the human remains were interpreted as a disturbed burial, located nearby the dwelling. But no disturbances were noticed in the upper geological layers (the fieldnotes clearly state the fact that the feature was covered by 1.20 m of archaeologically sterile soil) thus suggesting that the disturbance of the burial must have occurred during the Neolithic period. It follows that the burial was disturbed when the dwelling was built and human bones had been present in the house throughout its time of functioning...

When considering the second hypothesis – F2 as a garbage pit – analogies are many, as Early Neolithic human remains in non-funerary contexts are occur more frequent than the burials...

[3] In order to completely expose and lift it, a small extension (Caseta 3) was practiced into the northern section of SII. The pot was made of a poorly fired paste, orange-red in colour that was exfoliating when lifted.

Pit features

F21 (SVIII, sq. 9-10, 0.90 m)

Feature of unknown shape, with the infill containing a substantial number of pottery fragments, bones, daub fragments, ashes, charcoal and stone – suggesting its use – at least in the final phase, as a garbage pit. The pit was circular (diameter cca. 3 m) and rather deep, having the base at 1.75 m. The yellow clayish soil was reached at 1.40 m – also suggesting that perhaps the initial purpose of the pit was the exploitation of clay for pottery and daub.

For a better understanding of the filling process, the feature was sectioned on the N-S direction.

Among the artefacts in the infill were: a bone spatula (S. Marinescu-Bîlcu, C. Beldiman 1997), flint and (quite a few) obsidian tools, large daub fragments with the imprints of relatively thick poles (5-7 cm diameter). The pottery displayed Vinča-like shapes – carinated bowls with prominences on the maximum diameter line - but also classical Starčevo-Cris decoration patterns. No painted pottery was found.

F25 (SIX, sq. 4-5, 0.55-0.60 m, fig. 7/3) was a concentration of daub fragments, pottery sherds and stones. It had unfortunately been exposed over a very small area (cca. 1m^2). It seemed to have reached down to 0.80 m. Although some distance away, refitting fragments of a pot were found at the border of sq. 3 and 4, at 0.7 m.

The plan in figure 7/3 shows a rather compact structure of daub towards its eastern half, but with a functionality difficult to infer. The daub fragments of F25 showed the imprints of thick sticks (1.5-3 cm), while the thickness of the daub was of 5-10 cm. The temper contained more sand than chaff.

S. Marinescu-Bîlcu suggested in the fieldnotes that F25 could have represented the northern part of L3. But when looking at the general plan of the features (fig. 8), it seems that L3 developed towards the east, while F25 was rather too small and far north. A storage pit, later used for garbage is the present author's suggestion, until the finds in the infill of the features are studied.

F26 (SIX, sq. 6-7, 0.70-0.75 m) was a small E-N agglomeration of stone and pottery, but no other details are known.

Other types of features

F24 (SIX, sq. 11-13, 0.95-1 m)

The fieldnotes do not explicitly mention a feature in this area. But they note a large number of fragmented and complete axes, adzes and chisels discovered there. Their exact location and depth is given, in some cases, with a sketch of the implement. Comparing the notes and sketches with the collection of polished tools it is very likely that a workshop for manufacturing such tools existed in the area. Together with the axes there was also a lot of debitage debris. The axes found in the area were in various stages of manufacturing (some only shaped, some partially polished, completely polished, in the process of resharpening the active edge, etc., fig. 13/4-8).

In the same area, a special find is the one illustrated in figure 12 (i). It is hook-shaped, displaying a small shallow indentation where the upper inner part of the hook would have been. It is well polished and carefully worked. The main raw material, both for the polished tools and the hook-like object is a white-grayish siltstone[4].

Burials

F6 (SIV, sq. 7-8, 0.60 m) was a strangely shaped agglomeration of stones (mainly), pottery and a few daub fragments (fig. 5/1). The western part of F6 appears as almost a pavement of stones, having a rather straight western edge.

After the removal of the stones a skeleton (M1) was found (0.85-0.88 m, fig. 5/2). In order to fully expose the burial, an extension was made towards the south (Caseta 5).

The skeleton was crouched on the left side, arms bended and raised towards the head, hands under the head. The legs were tightly flexed. No grave goods were found. The skeleton itself was rather poorly preserved, with bones breaking when lifted.

In the fieldnotes S. Marinescu-Bîlcu expressed the opinion that F6 was actually a dwelling (hut) and the stones had been used for fixing and stabilizing either the rods/poles supporting the reed

[4] Diatomite, according to the fieldnotes.

roof or the walls (made of soil mixed with chaff, turning into daub when the dwelling caught fire). No connection was made between the stone structure and the skeleton.

But the overlapping of the two separate ground plans (that of F6 and that of M1) indicated that F6 was actually right over the skeleton (fig. 5/3). Thus, the present author would rather suggest that the stone feature was actually covering the burial. Early Neolithic skeletons covered by/associated with pottery sherds are known in Moldova at Trestiana (E. Popușoi 2003) and Suceava (N. Ursulescu 2000a) while burials covered with stones exist in the Early Neolithic of the Iron Gates area, on the Serbian bank (A. Boroneanț 2012).

Summerizing the data on the Early Neolithic settlement

As shown in figure 9, the Early Neolithic settlement is confined to the eastern half of the excavated area. Although it was probably extending further north and east, towards the south the limit is clearly defined by SV and SVI.

Also, dwellings only seem to appear towards the eastern end of the trenches, suggesting that that the more agglomerated area of the settlement was the one closer to the river. Three (perhaps five dwellings) were excavated, with the first three of the surface type and the last two possible semi-sunken huts. Based on the plans of L1 and L2, the surface dwellings appear to be rectangular, of medium size (cca. 4 x 4 m), with circular, simple hearths located in one of the corners. The structures were rather light – since the imprints in the daub suggest the use of sticks rather than poles.

All living structures appeared as concentrated agglomerations of pottery sherds (comprising at times vessels - refitted), daub fragments with the imprints of sticks – part of wattle and daub walls – fired stones, an important number of polished tools (axes, adzes, chisels), weights (fishing or loom), chipped lithic implements (made of flint, chert, obsidian, even quartzite), ground stone tools (grinders, punchers, handaxes).

The excavated pits were circular and some penetrated into the yellow clay layer, suggesting they were first dug for obtaining clay – necessary to build the huts or perhaps for pottery as well. Later they could have been used for storing food, or for throwing the garbage (including disarticulated human bones).

The burial uncovered is typical for the Early Neolithic: skeleton crouched on the right, limbs tightly flexed, no grave goods, apparently buried in a rather shallow grave. The novelty resides in the fact the grave appears to have been covered with stones.

Even before a detailed study, it is possible to claim that the Early Neolithic pottery from Grumăzești, when compared with other Moldavian sites, has certain distinct characteristics. It exhibits a large variety of shapes, from globular pots to carinated bowls, from large, almost flat plates to necked carinated vessels with buttons/handles on the carination line.

Despite the fact no painted pottery was found (but one must bear in mind the real excavated surface of the settlement was not very large), red slipped pots (on the interior and/or exterior) were not uncommon.

Decoration occurs quite frequently – and what is most striking is the association of different patterns/types of decoration on various parts or registers on the same pot: while the upper part displays wide deep incisions on a barbotine, the lower part of the pot is smoothened and red slipped. No burnished pottery has been detected so far.

Most of the pottery has good parallels in other Moldavian sites (geometric incised patterns, the linear incisions, nail impressions, wavy deep incised lines, barbotine – at Trestiana and Suceava), while others suggest imports from the Dudești cultural area (S. Marinescu-Bîlcu, C.E. Ștefan, pers. comm.). A future detailed pottery analyses will be able to shed more light into these matters.

The temper used for pottery was both chaff and sand. It is more likely that the chaff tempered pots display a red slip and decoration, rather than the sand tempered ones.

Two altar legs exist in the collection of pottery finds, but none of them has a secure context. For one of them though, there are good analogies at Trestiana.

Other items made of clay were few: the lower part of an anthropomorphic figurine (from SI), one small clay "ball", one flattened cylinder (from L1) and a rather amorphous clay lump.

The bone and antler industry is remarkably poor: one spatula, one spoon and one inferior canine from a wild boar (S. Marinescu-Bîlcu, C. Beldiman 1997).

The chipped lithic industry is characterized by medium sized blades (and fragments) and just a few small ones, most of them retouched. Trapezes were the second type present. There were very few flakes – suggesting a deliberate selection of the lithic industry during the excavation, given the fact that cores were also present. Some of the cores had been re-used as punchers.

The main raw material for the chipped lithic industry was flint, in a few well known varieties: the so called Balkan flint (both the yellow and gray) and the Prut flint also. Chert is the second raw material. One small blade is made of quartzite.

But the most remarkable category of finds are the polished stone tools (88 in total, 21 associated with the dwellings) – axes, adzes and chisels. Made of a rather porous, soft siltstone rock, they exhibit various stages of manufacturing. Very few were made of harder rocks – such as the only perforated axe found (fig. 13/9), or the large gritstone axes left unfinished (found inside L1).

II. The Bronze Age features (the Noua culture)

Very few features were assigned to the Final Bronze Age – based both on pottery and the occurrence of the decorated animal shoulder blades (3 pieces). The Bronze Age habitations seem to have been poor and covers only the southern part of the investigate area (trenches SVI and SVII).

These finds are probably linked to the Noua settlement from Târpeşti – Râpa lui Bodai (also excavations S. Marinescu-Bîlcu), attributed to the first phase of the culture (A.C. Florescu 1991, p. 131). The future study of the finds from the features mentioned below will help clarify the relative chronology of this "re-discovered" Noua settlement.

F10 (SVI, sq. 8-9, 0.70 m) and **F11** (SVI, sq. 12-13) represented two concentrations of pottery fragments and stones. Pottery was represented by bag-shaped vessels, with appliqué bands or horizontal prominences placed under the rim. Two decorated animal shoulder bones were also found, one in square 7 and the second in F11 (sq. 12).

F14 (SVI, sq. 14, 0.70-0.76 m, fig. 6/2) was a small agglomeration of stones (some burnt), many bones and a few small sherds. The Noua finds continued down to 0.80-0.85 m. Among them a few Monteoru sherds were also noticed.

F18 (SVII, sq. 7, 0.85 m, fig. 7/1, was a circular pit-feature (1.5 m diameter) containing many stones (small river boulders), daub fragments, charcoal, ashes, a few Early Neolithic sherds and more Noua pottery fragments. The pit, at 1.85 m, cut into the clay layer.

F20 (SVII, sq. 9, 0.70 m) represented an agglomeration of pottery fragments (and a spindle).

III. The III-IV AD features

There is little data on the III-IV AD settlement. Pottery was described as wheel-made, both reddish and gray in colour. Few other finds were mentioned.

From the plan in figure 10, the features appear both to the north and the south of the excavated areas, but they are conspicuously few in the central part. It is possible that in the sloping area of the trenches, the cultural layers and the features were destroyed by erosion and/or agricultural work. Few scattered pottery fragments appeared on the entire surface, though.

G1 (SI, sq. 9, near the northern section)

G2 (SI, sq. 8-9, on the southern side of SI, filled with black soil, fig. 3/1)

G3 (SI, sq. 6-7, near the northern section, fig. 3/1)

G6 (SII, sq. 11, 0.95 m, fig. 6/1). According to the plan in figure 6/1, the feature was circular and had 0.5 m in diameter (at 0.95 m). The infill contained yellow clayish soil (suggesting the pit was dug down into that layer) and some pottery sherds that dated it.

F8 (SV, 0.30 m) – scatter of IV century AD pottery fragments and disturbed remains of a hearth.

F9 (SVI, sq. 4, 0.30-0.40 m) represented the remains of a hearth, surrounded by a few stones, pottery fragments and bones. A small bronze unidentifiable item was also found. The hearth was extending in the southern section of SIV. It appeared to be 2-2.5 cm thick, gray on the surface and reddish-orange inside. Sand was used for tempering.

F13 (SVI, sq. 6-7) – agglomeration of pottery fragments (wheel made, fine paste, gray in colour), stones and complete pots. It was described as a pit-feature, possibly a dwelling.

F15 (SVI, sq. 15, 0.65 m, fig. 6/2) was a heavily disturbed hearth, oval in shape (0.55 x 0.70 m), with a crust of 0.10-0.12 m. Sand was used for tempering.

F16 (SVI, sq. 12, 0.63 m) – fragment of a hearth.

F17 (SVII, sq. 1, 0.20 m) – remains of large stone kiln, also extending further in the southern section. It was built using river boulders (0.25 x 0.15 m). The stones were heavily fired, acquiring a

reddish-orange colour. Fragments of daub coating (width 1.2 cm), having sand as temper, were found among the stones. As funds did not allow a further extension of the trench towards the south, the feature was sectioned N-S over a length of 0.95 m. The stone feature appeared to be 0.20-0.25 m thick, with the collapsed stones covering the crust of a hearth (2 cm thick), brown-reddish in colour. The base of the feature was reached at 0.40-0.45 m. It does not appear on the field plans.

F19 (SVII, sq. 9-10, 0.36-0.40 m) agglomeration of stones, daub, pottery and bones, assigned to the IV-V centuries AD (?). Lacking funds to extend the trench, the feature was sectioned N-S.

F22 (SIX, sq. 11-12, 0.80 m) – the remains of a small disturbed III-IV AD hearth (circular, 1 x 0.75 m).

IV. Features of indeterminate cultural attribution

G4 (SI, sq. 10, base at 1.35-1.40 m) – possibly Early Neolithic, based on location and depth reached at bottom.

F4 (SII, sq. 6-7) – a shallow pit is observable on the southern profile (fig. 4) – without being mentioned in the fieldnotes. The infill – in the profile – seems to have contained mainly stones.

F5 (SII, sq. 22-23) – a shallow pit, no cultural determination, having its base at 2.45 m.

F7 (SIV, sq. 1-2, 0.35 m) was a concentration of numerous daub fragments. Around it the soil was heavily pigmented. Judging by the plan in figure 5/1, the shape uncovered in the trench is rather regular (triangular), suggesting some sort of intentional arrangement. No cultural assignation was indicated.

***

Piecing together archaeological puzzles is never an easy job. The image proposed above for the site of Grumăzești may not be complete but hopefully it is one step closer to a clearer image of the development of the Early Neolithic societies in the area of Moldova. We can only hope that the proposed course of the research on the collections of the archaeological materials resulted from this site will get us even closer.

◈ Acknowledgements

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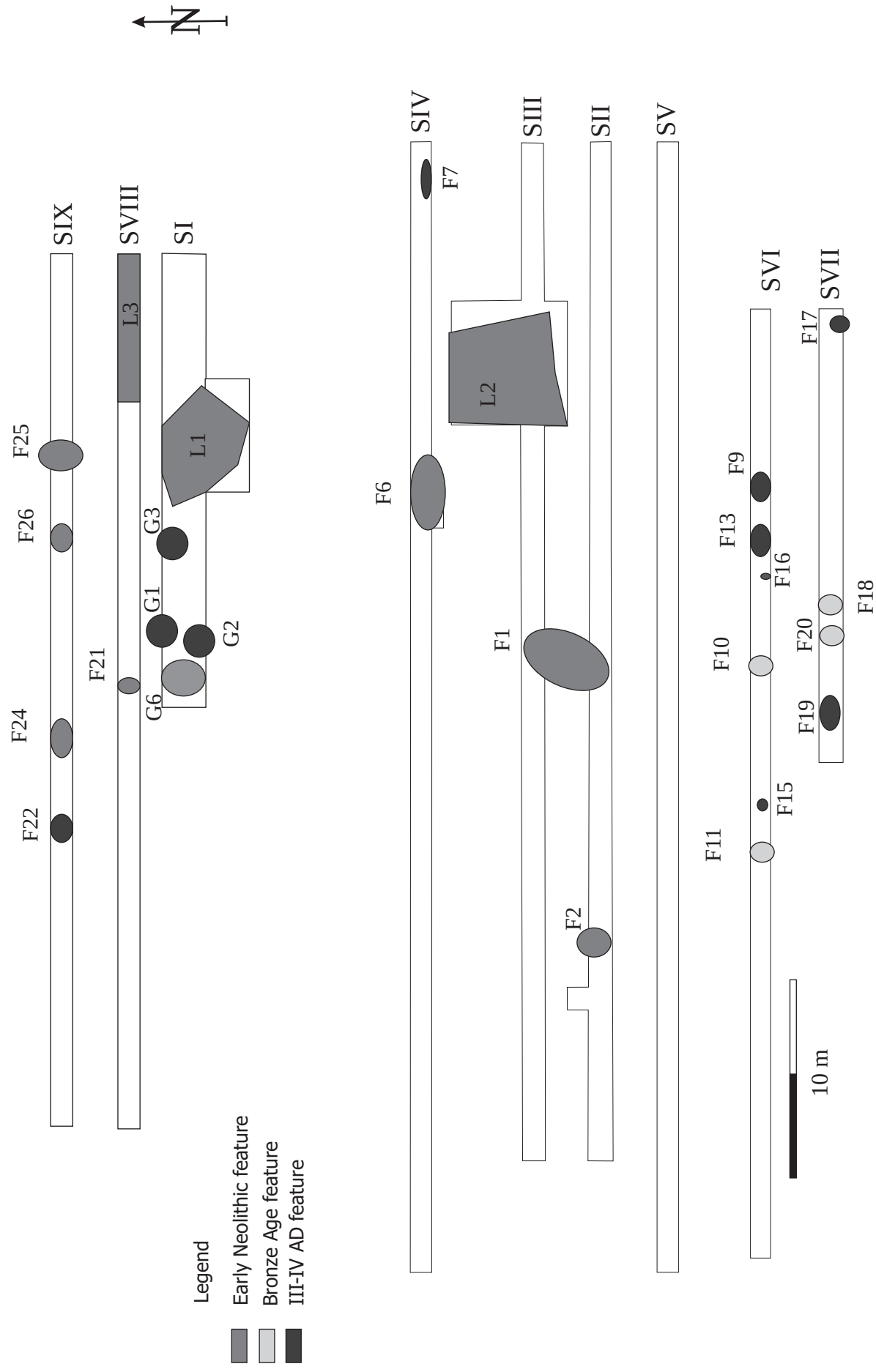

Fig. 9. The approximate mapping of the archaeological features by cultural age.
Cartarea aproximativă a tuturor complexelor arheologice identificate.

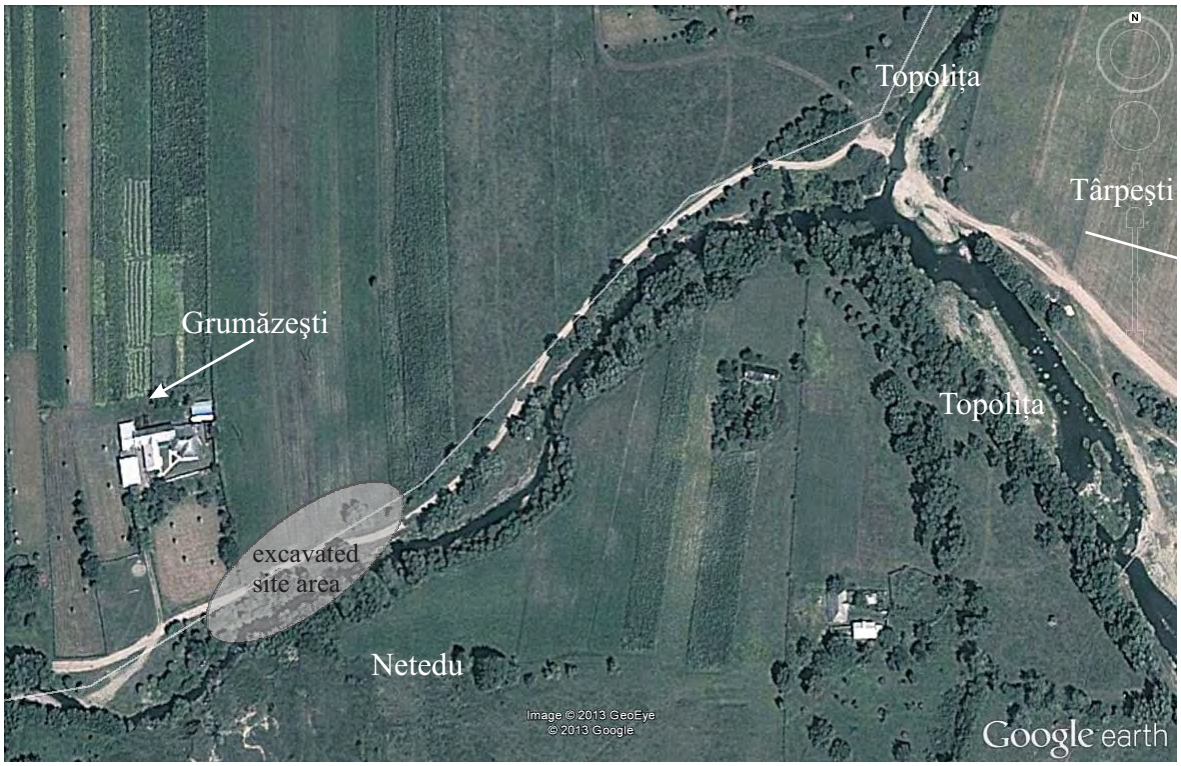

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Fig. 1. 1: Satellite image of the Grumăzești site and the adjacent areas (Google 2012); 2: General view of the site during the excavations in 1968 (photo S. Marinescu-Bîlcu). 1: Imagine din satelit a zonei cercetate din situl arheologic de la Grumăzești (Google 2012); 2: Vedere generală asupra sitului în 1968 (foto S. Marinescu-Bîlcu).

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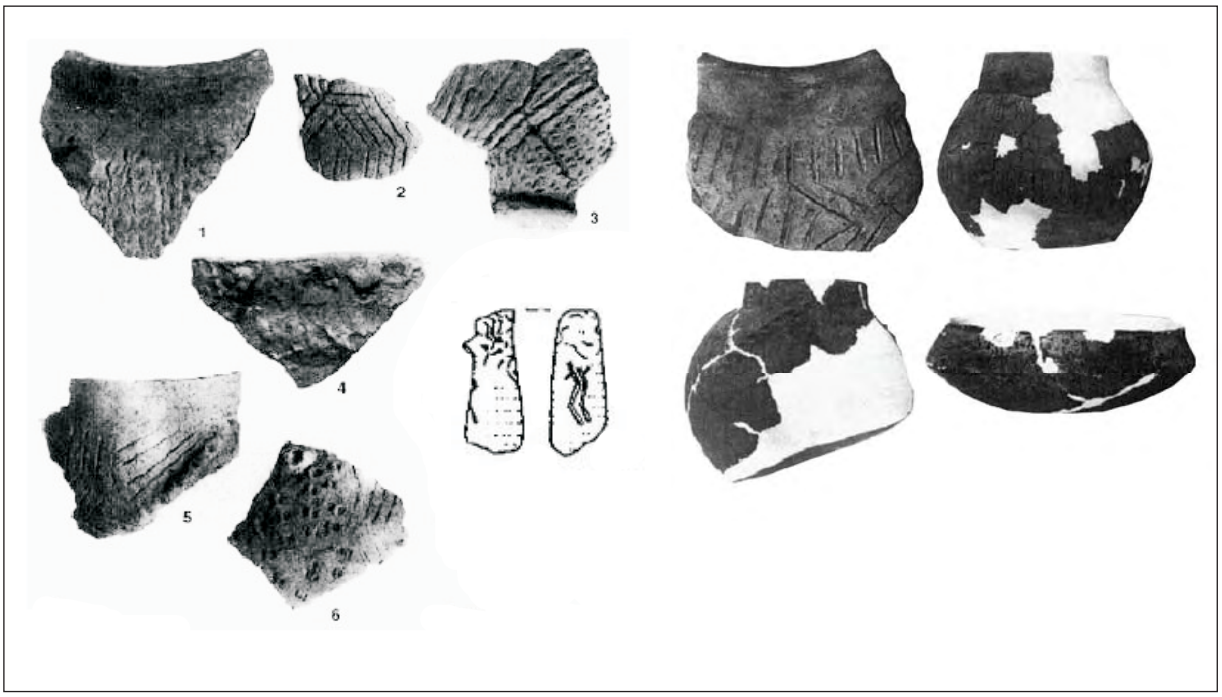

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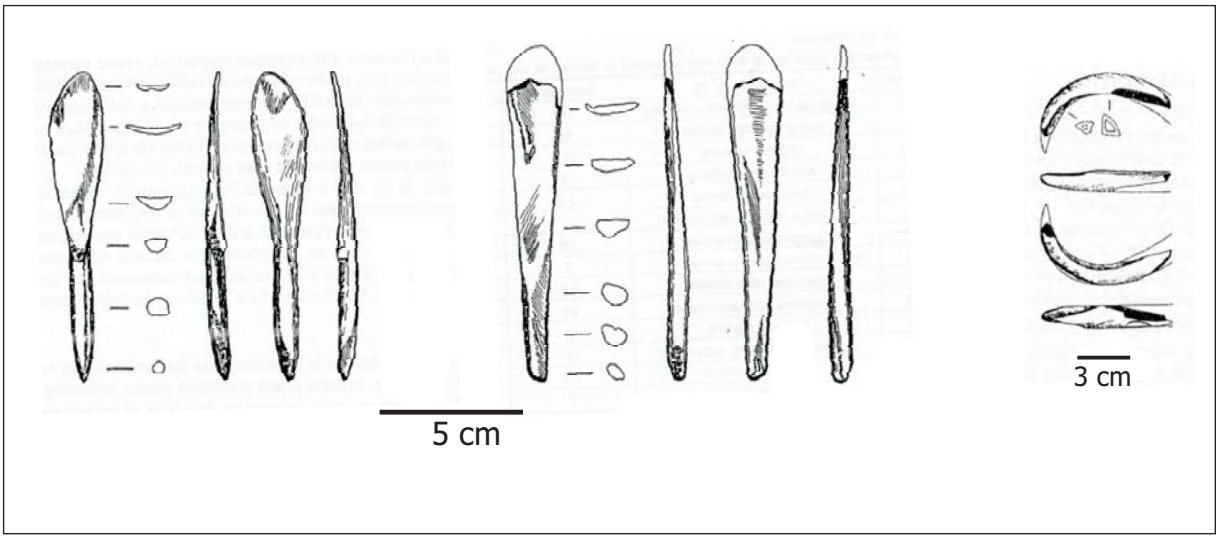

Fig. 10. Early Neolithic published finds from Grumăzeşti: 1. Pottery sherds, refitted vessels and antropomorphic figurine (after S. Marinescu-Bîlcu 1993; pl. 1-3); 2. Bone spoon, bone spatula and wild boar tusk (after S. Marinescu-Bîlcu, C. Beldiman 1997, fig. 3, 8).
Materialul arheologic publicat (neolitic timpuriu) din situl de la Grumăzești: 1. Fragmente ceramice, vase reîntregite, statuetă antropomorfă (după S. Marinescu-Bîlcu 1993; pl. 1-3); 2. Obiecte de os şi colț de mistreț (după S. Marinescu-Bîlcu, C. Beldiman 1997, fig. 3, 8).

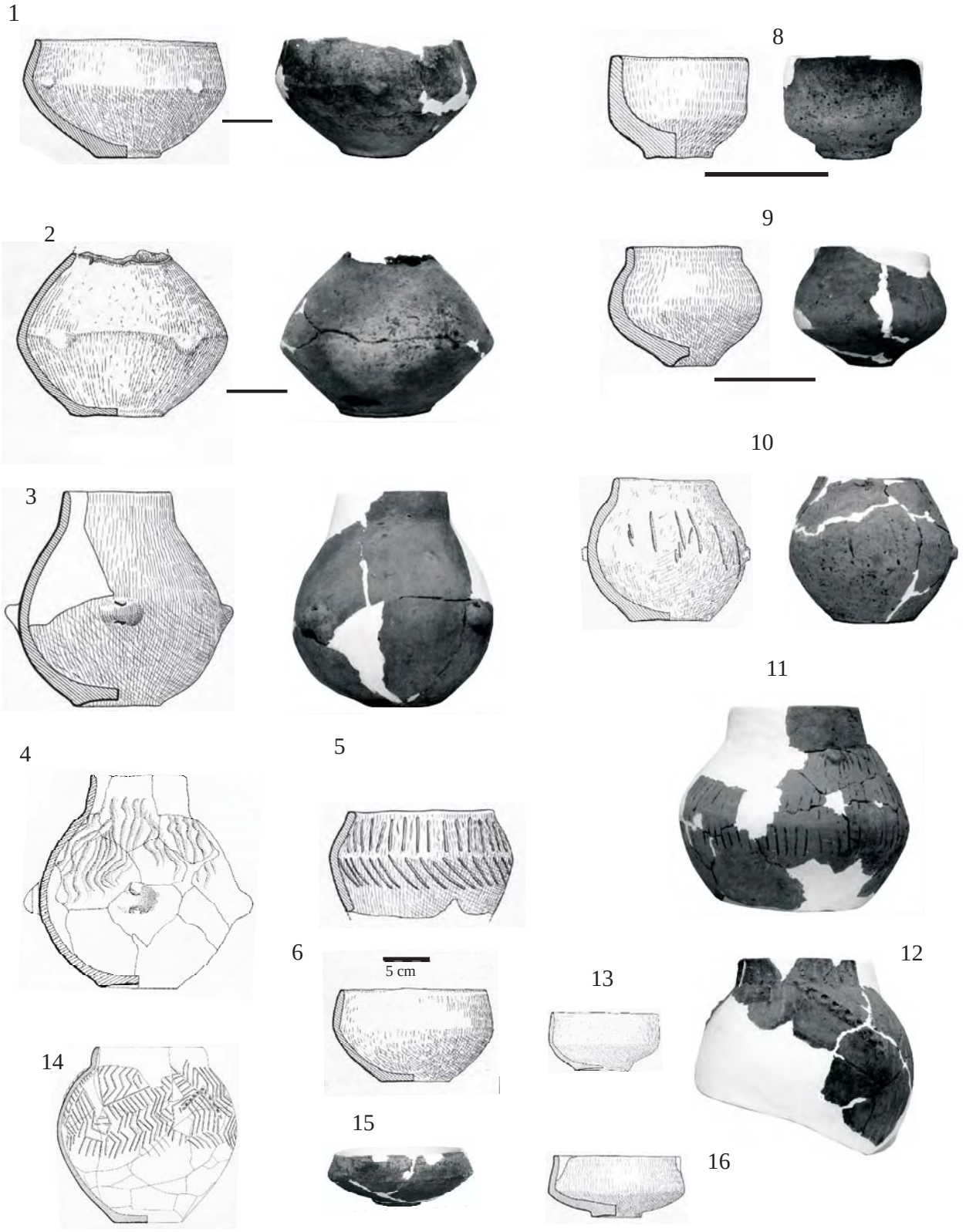

Fig. 11. Refitted pots from dwelling L1 (1, 2, 4-6), G5 (3) and the Early Neolithic cultural layer (7-16). Vase ceramice reîntregite din locuința L1 (1, 2, 4-6), groapa G5 (3) și nivelul cultural neolitic timpuriu (7-16).

Fig. 12. Clay weights, spindles (a- h) and stone hook (i). a, b, c (L2); d (in the proximity of L3), e-h from the Early Neolithic cultural layer (photo A. Boroneanţ).
Greutăți și fusaiole de lut (a-h), cârlig de piatră (h). a, b, c din L2; d (din apropierea lui L3), e-h din stratul neolitic timpuriu (foto A. Boroneanț).

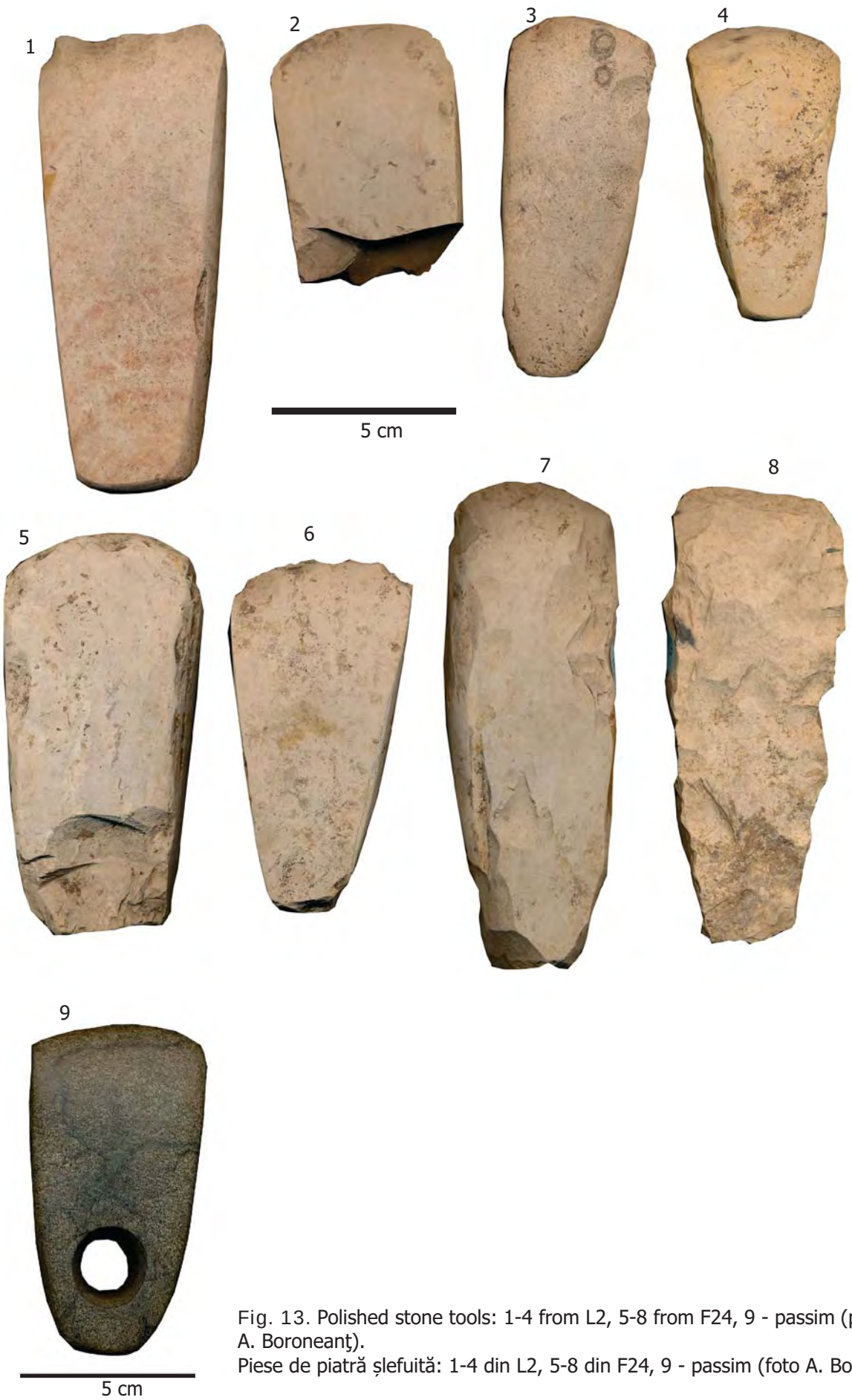

Fig. 13. Polished stone tools: 1-4 from L2, 5-8 from F24, 9 - passim (photo A. Boroneanţ).
Piese de piatră șlefuită: 1-4 din L2, 5-8 din F24, 9 - passim (foto A. Boroneanţ).

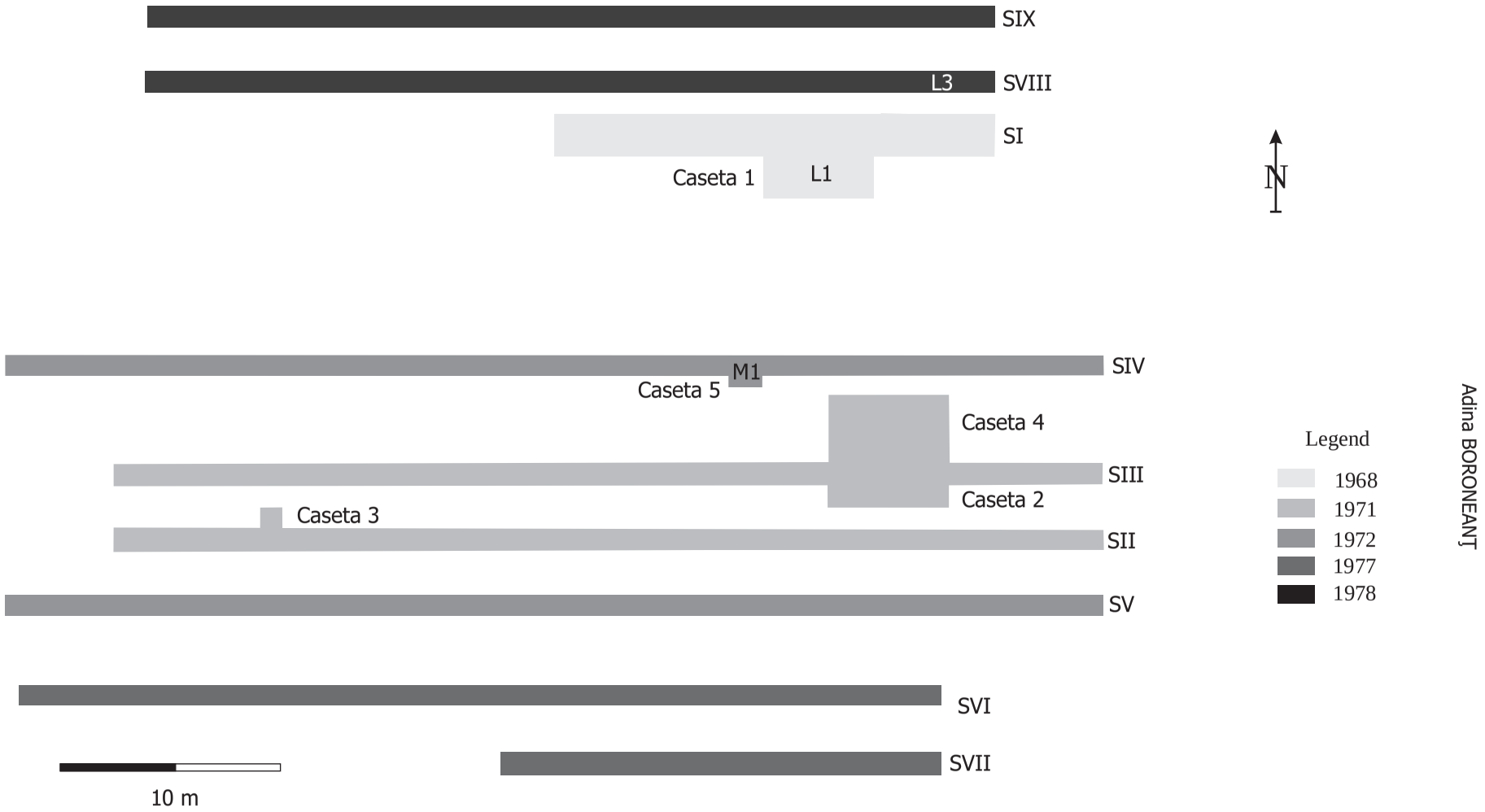

Fig. 2. General plan of the excavations (redrawn and adapted after the original field plans drawn by S. Marinescu-Bîlcu).
Planul general al secțiunilor (redesenat și adaptat după planul de șantier realizat de S. Marinescu-Bîlcu).

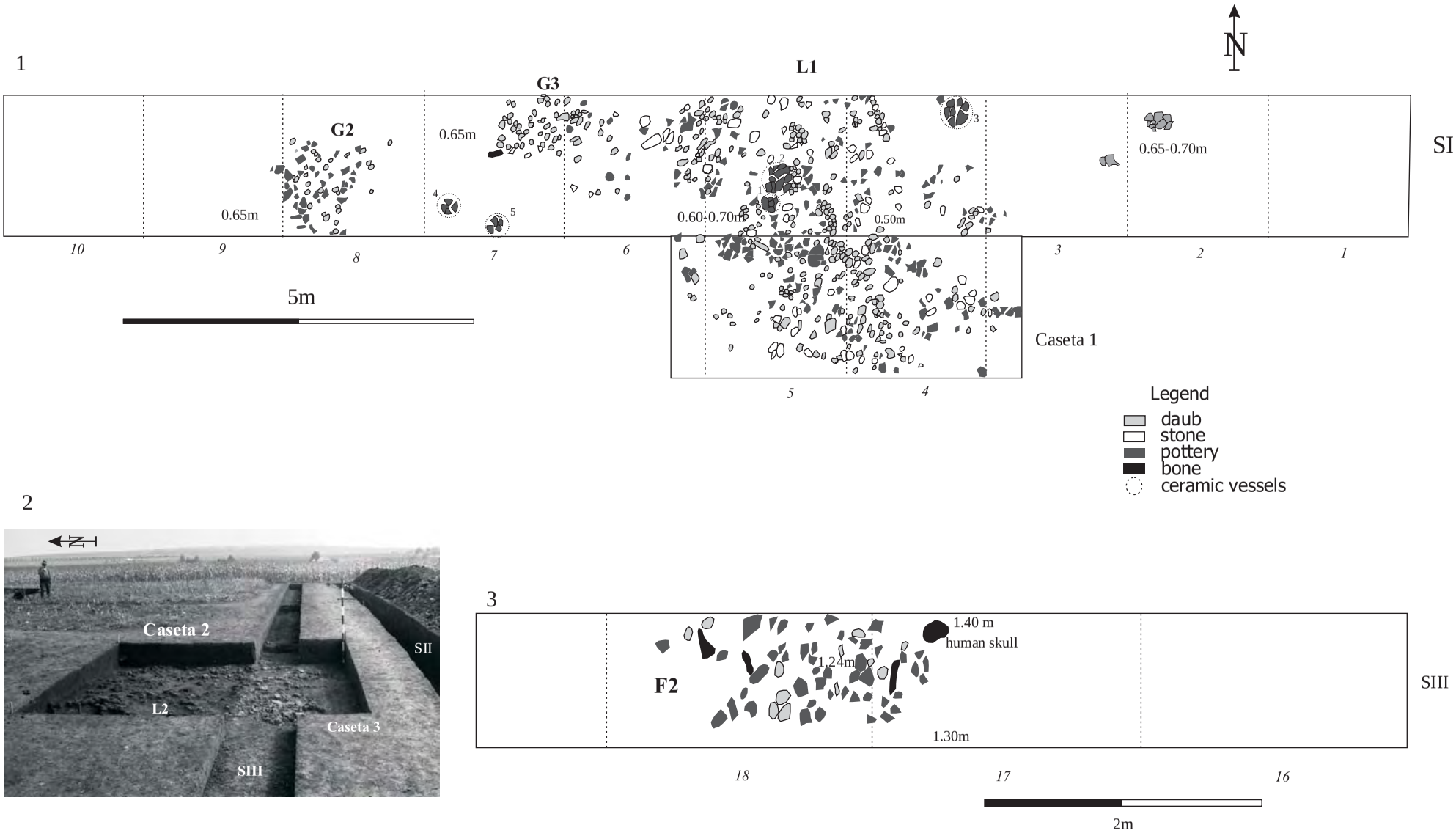

Fig. 3. 1: General plan of trench SI with dwelling L1 (Early Neolithic) and pits G2 (III-IV AD) and G3 (III-IV AD) (adapted and redrawn after the original plan of S. Marinescu-Bîlcu); 2: Dwelling L2 (photo S. Marinescu-Bîlcu; 3: Partial plan of feature F1 in SIII (redrawn after the original plan of S. Marinescu-Bîlcu). 1: Planul general al secțiunii SI: locuința L1 (neolitic timpuriu) și gropile G2 (sec. III-IV AD) și G3 (sec. III-IV AD) (redesenat și adaptat după planul de șantier realizat de S. Marinescu-Bîlcu; 2: Locuinţa L2 (foto S. Marinescu-Bîlcu); 3: Planul locuinţei F2 (surprins în secţiunea SIII - redesenat şi adaptat după planul de şantier realizat de S. Marinescu-Bîlcu).

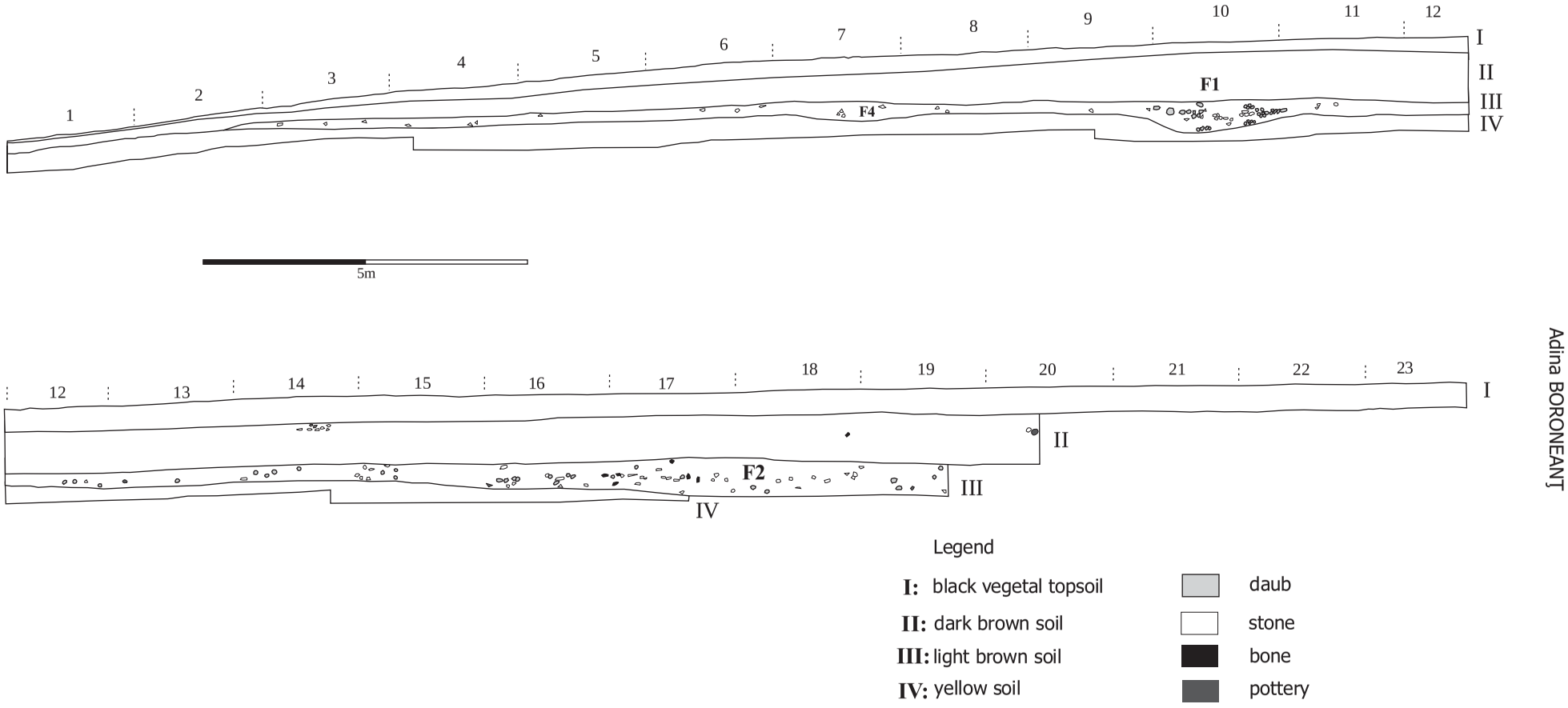

Fig. 4. Southern section of trench SII (redrawn and adapted after the field plan of S. Marinescu-Bîlcu).
Profilul de sud al secțiunii SII (redesenat și adaptat după planul de șantier realizat de S. Marinescu-Bîlcu).

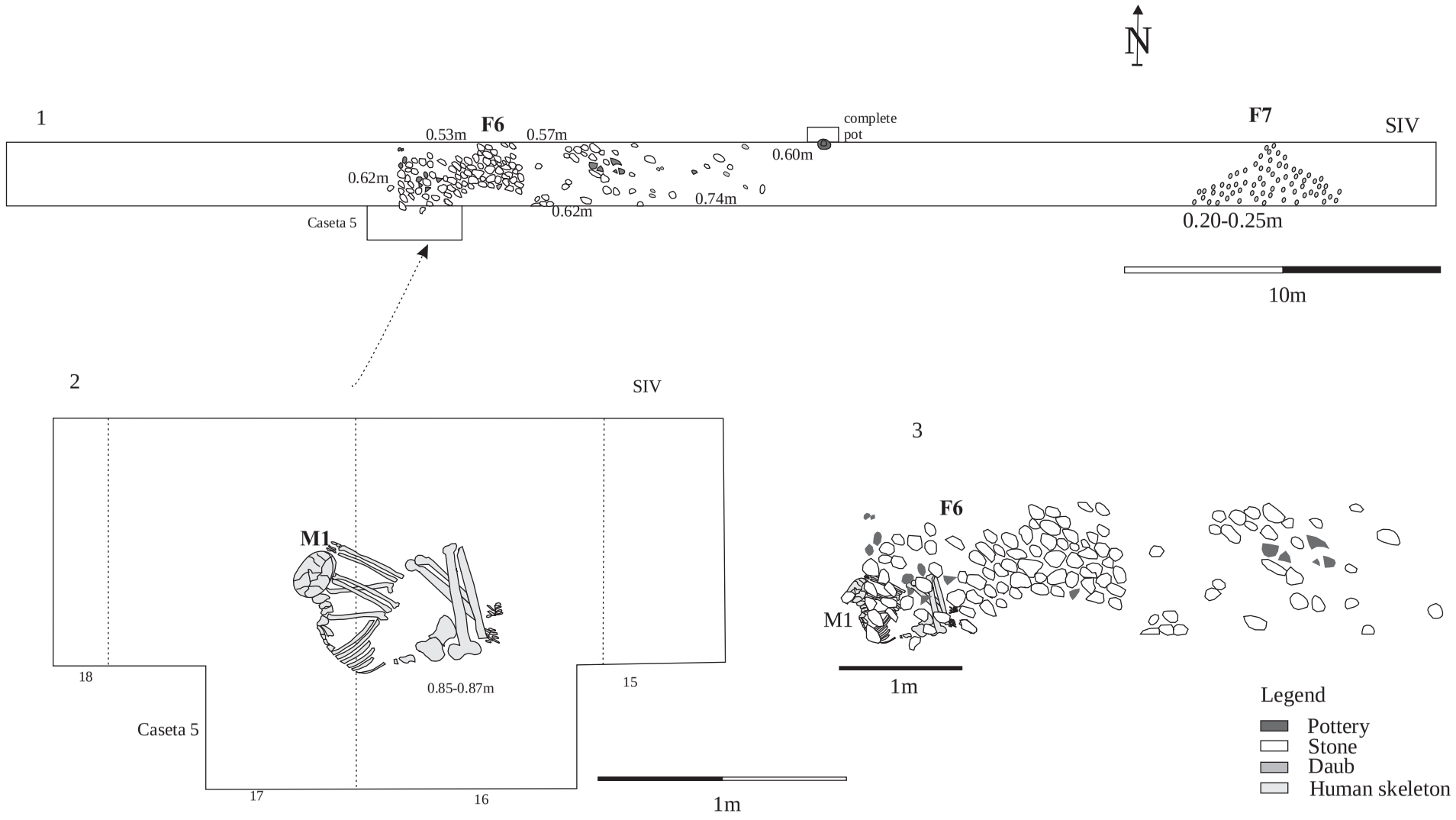

Fig. 5. 1: General plan of SIV; 2: Burial M1 from SIV; 3: Position of M1 in relation to the stone feature F6 (redrawn and adapted after the original plan of S. Marinescu-Bîlcu).
1: Planul general al secțiunii SIV; 2: Mormântul M1 din SIV; 3: Poziționarea lui M1 relativ la structura de pietre F6 (redesenate și adaptate după planurile de de șantier realizate de S. Marinescu-Bîlcu).

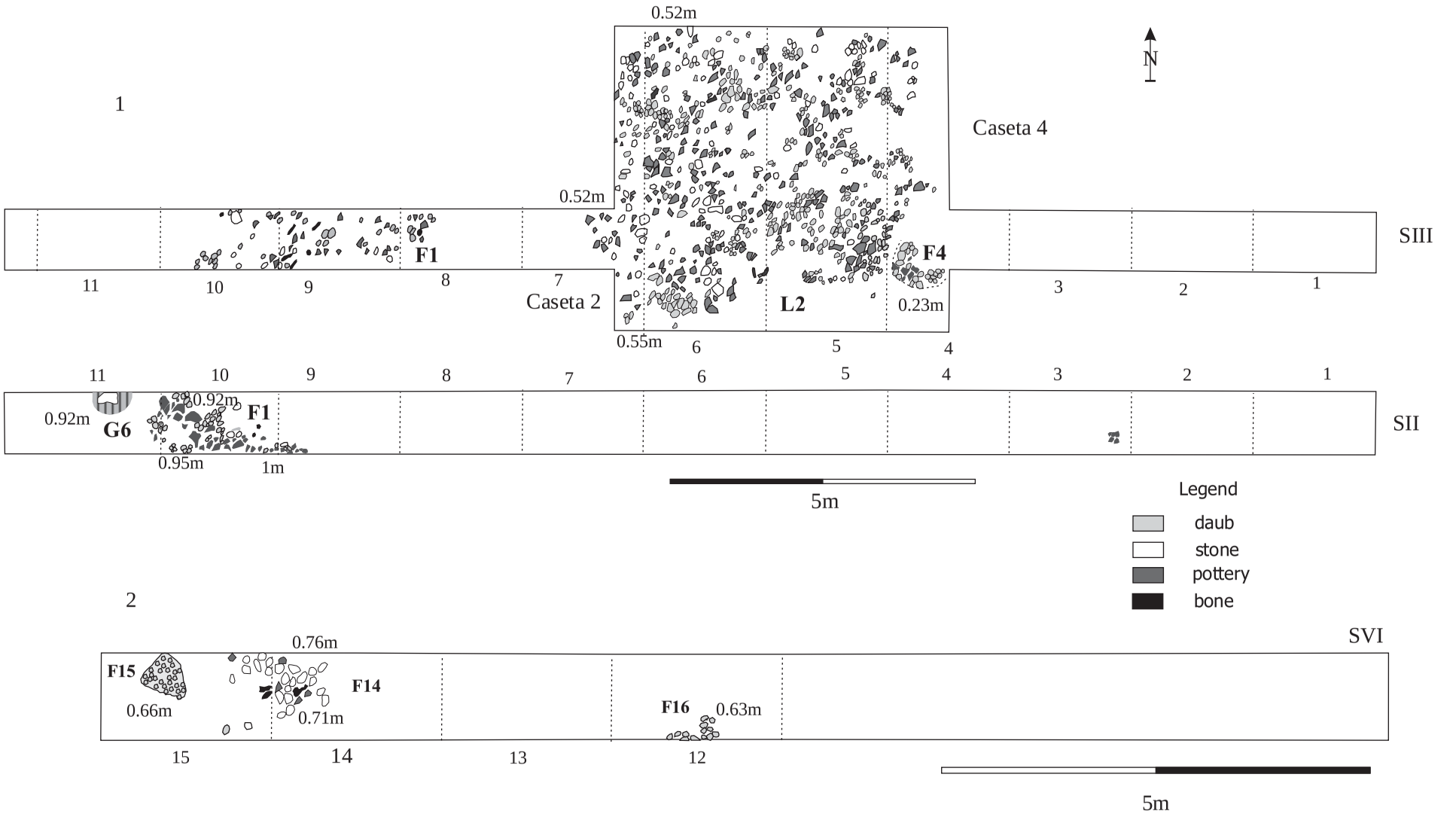

Fig. 6. 1: Plan of features in trenches SII and SIII- F1, L2 and F23 (Early Neolithic); 2: Trench SVI - F14 (Bronze Age -the Noua culture the the Noua culture) and F15, F16 - hearths (III-IV centuries AD) (adapted and redrawn after original plans of S. Marinescu-Bîlcu). 1: Planul complexelor din SII și SIII - F1, L2, F23, (neolitic timpuriu); 2: Secțiunea SVI - F14 (cultura Noua) și F15, F16 - vetre (sec. III-IV AD) (redesenate şi adaptate după planurile de șantier realizate de S. Marinescu-Bîlcu).

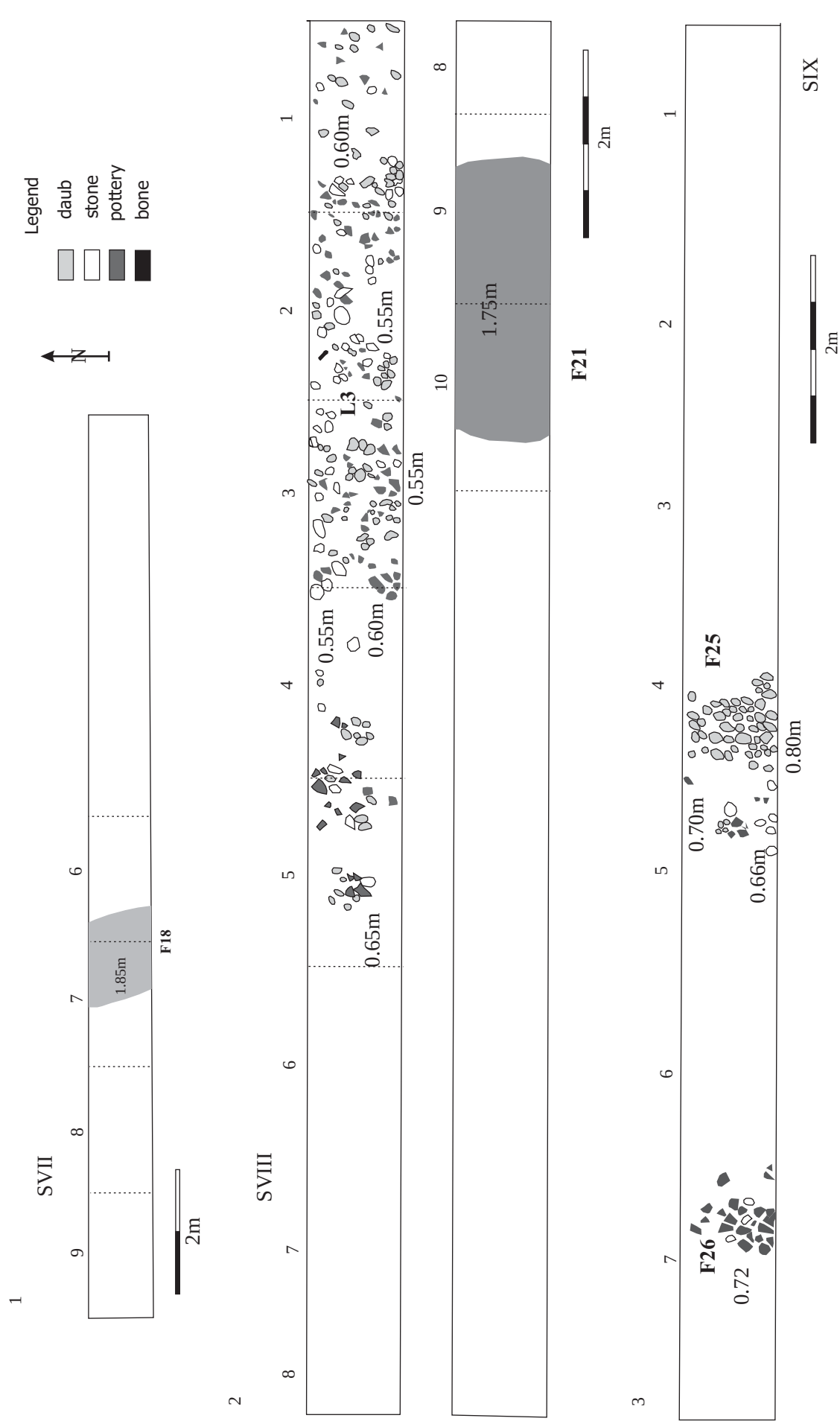

Fig. 7. 1: Pit F18 (Bronze Age - the Noua culture) in SVII; 2: Dwelling L3 and pit F21 (Early Neolithic) in trench SVIII; 3: Features in trench SIX: F25 and F26 - Early Neolithic (redrawn and adapted after the original plans of S. Marinescu-Bîlcu.
1: Groapa F18 (cultura Noua) din SVII; 2: Locuința L3 și groapa F21 (neolitic timpuriu) din SVIII; 3: Complexele din secțiunea SIX: F25 și F26 - neolitic timpuriu (redesenate și adaptate după planurile de șantier realizate de S. Marinescu-Bîlcu).

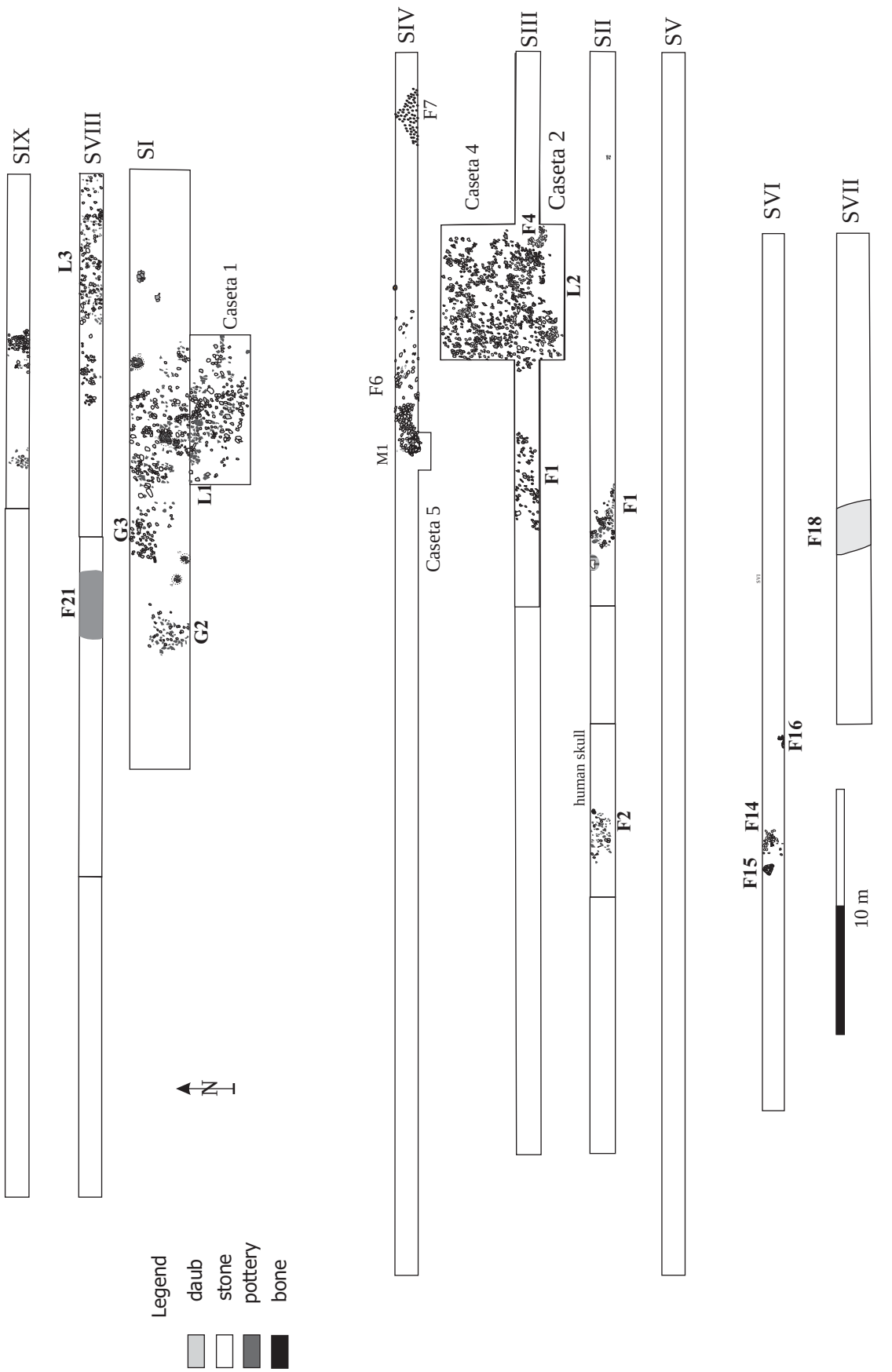

Fig. 8. General plan of the main archaeological features (redrawn and compiled after the original field plans of S. Marinescu-Bîlcu).
Planul general al complexelor figurate în planurile originale ale lui S. Marinescu-Bîlcu.

Exploatarea resurselor animale în cultura Dudești pe teritoriul României. Studiu de caz: Măgura-*Buduiasca*

Adrian BĂLĂŞESCU*

Abstract: *The faunal material belonging to the Dudești culture, although it is not very large, only about 3000 animal remains, shows us that these Neolithic communities dealt primarily with herding, especially of cattle, sheep, and goats. It should be noted that swine are highly underrepresented in the animal paleo-economy. The dog was consumed and its fur was taken. The number of species of wild animals is very low, and its share is extremely small, which illustrates the subsidiary interest of these populations to exploitation of the environment.*

Rezumat: *Materialul faunistic al culturii Dudești, cu toate că nu este foarte numeros, de doar circa 3000 de resturi, ne arată că respectivele comunități neolitice se ocupau în principal cu activitatea de creștere a animalelor, în special a bovinelor și a ovicaprinelor. Remarcăm că porcinele sunt extrem de slab reprezentate în cadrul paleoeconomiei animaliere. Câinele era consumat și blana sa era prelevată. Vânatul este foarte redus reprezentat ca număr de specii, iar ponderea sa este extrem de mică, ceea ce ilustrează slabul interes al acestor populații pentru exploatarea mediului înconjurător.*

Keyswords: *zooarchaeology, Neolithic, Dudești culture, exploitation of animals, Măgura-Buduiasca.*

Cuvinte cheie: *arheozoologie, neolitic, cultura Dudești, exploatarea animalelelor, Măgura-Buduiasca.*

◈ Introducere

Cultura Dudeşti este denumită astfel după descoperirile realizate în cartierul din Bucureşti cu același nume. Această cultură reprezintă corespondenta răsăriteană a culturii Vinča, cu care se interferează de altfel în zona Olteniei, dând naştere unui aspect cultural mixt. Comunităţile Dudeşti au cuprins aproape întreg teritoriul Munteniei, unde au asimilat comunităţile Starčevo-Criş, iar în Oltenia pe cele ale grupului Cârcea târziu. Punctul de plecare al comunităţilor Dudeşti se află în nord-vestul Anatoliei, în aşezări de tip Demircihüyük, răspândirea făcându-se prin estul Bulgariei, prin zona Varna. Această cultură prezintă trei faze: Malu Roşu, Fundeni şi Cernica (N. Ursulescu 2001, p. 143).

Majoritatea elementelor culturii Dudeşti reprezintă fondul pe care s-a dezvoltat cultura Boian (E. Comșa 1996).

Din nefericire, cultura Dudeşti este foarte puţin studiată din punct de vedere arheozoologic, până în prezent, doar patru așezări beneficiind de astfel de analize. Prima stațiune studiată este cea de la Fărcaşu de Sus, com. Fărcașele, jud. Olt (Al. Bolomey 1979). De asemenea, în ultimii ani au mai fost analizate resturi faunistice care provin din aşezările preistorice: Beciu (com. Beciu, jud. Teleorman), Brăneşti-*Vadu Anei* (com. Brăneşti, jud. Ilfov) şi Măgura-*Buduiasca* (com. Măgura, jud. Teleorman) (A. Bălăşescu *et alii* 2005) (fig. 1).

◈ Fauna de la Măgura-*Buduiasca*

În cele ce urmează vom prezenta noi date arheozoologice rezultate din studiul faunei de la Măgura-*Buduiasca* și care preiau și completează informațiile publicate anterior (A. Bălăşescu *et alii* 2005).

Stațiunea de la Măgura, punctul *Buduiasca*, judeţul Teleorman este situată în zona joasă a Câmpiei Burnasului, la confluenţa râului Teleorman cu pârâul Clăniţa, la 15 km nord-est de municipiul Alexandria. În acest punct notat de arheologi cu sigla TELEOR 003 (R. Andreescu, D.W. Bailey 1999) în cadrul programului SRAP (Southern Romania Archaeological Project), s-au identificat o serie de complexe care au fost atribuite culturii Dudeşti: bordeiele 3 şi 4 - B3 şi B4; complexul 2 - C2 care reprezintă resturile unei locuinţe de suprafaţă; complexele C7, C25 şi C26 – gropi de resturi menajere și locuinţa 1 - L1 (P. Mirea, in press).

* Muzeul Național de Istorie a României, Centrul Național de Cercetări Pluridisciplinare, Calea Victoriei, 12, sector 3, cod poștal 030026, București, abalasescu2005@yahoo.fr

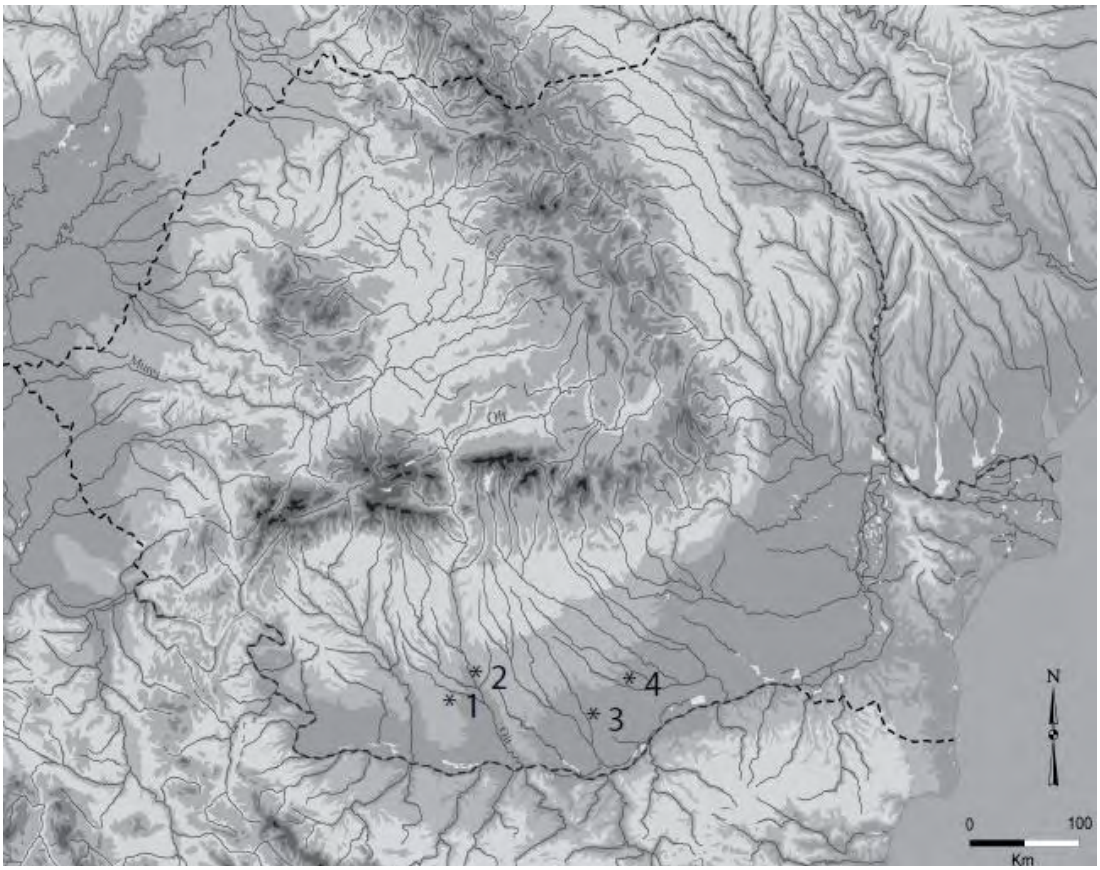

Fig. 1. Distribuţia geografică a aşezărilor Dudeşti din România care au beneficiat de analize arheozoologice: 1. Fărcaşu de Sus; 2. Beciu; 3. Măgura *Buduiasca*; 4. Brăneşti-*Vadu Anei*.
Geographical distribution of Dudeşti settlements in Romania who have benefited from zooarchaeological analysis: 1. Fărcaşu de Sus; 2. Beciu; 3. Măgura *Buduiasca*; 4. Brăneşti-*Vadu Anei*.

Fauna analizată prezintă toate caracteristicile unor resturi menajere: o puternică fragmentare, urme de tăiere grosiere (de dezarticulare), urme de dinți - de carnivore în special (posibil şi de suine domestice) şi foarte rar de rozătoare şi de ardere.

Determinările anatomice şi taxonomice au fost realizate cu ajutorul colecţiilor osteologice de referinţă ale Laboratorului de Arheozoologie din cadrul Centrului Naţional de Cercetări Pluridisciplinare din Muzeul Naţional de Istorie a României. De asemenea, au fost consultate lucrările metodologice ale lui R. Barone (1986) şi E. Schmid (1972). Discriminarea dintre oaie şi capră a fost făcută pe baza scheletul post-cranian, după criterile lui J. Boesneck *et alii* (1964), testate de J. Clutton-Brock *et alii* (1990) şi W. Prummel şi H.J. Frisch (1986); pentru resturile dentare, s-au utilizat lucrările lui S. Payne (1985), D. Helmer (2000), P. Halstead *et alii* (2003), M. Balasse şi S.H. Ambrose (2005).

Estimarea vârstelor de abataj (de sacrificare) a fost realizată și după erupţiile dentare apelând la lucrarea lui E. Schmid (1972), iar pentru uzurile dentare am consultat lucrările lui P. Ducos (1968) şi A. Grant (1982) pentru bovine, respectiv, S. Payne (1973) şi D. Helmer (2000) pentru ovicaprine şi M.-P. Horard-Herbin (1997) pentru suine.

Corelarea datelor biologice cu cele zootehnice s-a realizat după V. Forest (1997).

Majoritatea materialului faunistic studiat (2367 resturi) aparţine clasei mamiferelor (99,4%); de aceea în cele ce urmează o să ne referim cu preponderenţă la aceşti taxoni (tab. 1, 2). Cu toate că fauna de mamifere analizată este într-o cantitate foarte mare, numai un procent de 27,6% a fost determinată până la nivel specific, o cauză a acestui fapt fiind fragmentaritatea accentuată a resturilor osteologice.

Cu toate că sedimentele care provin din diferite complexe arheologice de la Măgura au fost sitate la uscat, printr-o sită de 10 mm şi uneori chiar flotate, cantitatea de resturi care provine de la alţi taxoni (moluşte, reptile, păsări etc.) este extrem de redusă, ceea ce ar sugera că activităţi, precum pescuitul şi culesul, au o importanţă redusă, aproape neglijabilă în paleoeconomia acestor comunităţi. Astfel, moluştele sunt reprezentate doar de resturi de *Unio* sp. (scoica de râu), reptilele sunt certificate

de *Emys orbicularis* (ţestoasa de apă), iar păsările sunt prezente prin fragmente osoase de dimensiuni considerabile, ceea ce ar sugera specii de talie mare (din păcate indeterminabile) (V. Radu 2011).

Clase de animale	**NR**	**%**
Bivalvia	5	0,21
Reptilia	1	0,04
Aves	7	0,30
Mammalia	2354	99,45
Total Fauna	**2367**	**100,00**

Tab. 1. Repartiţia numerică (NR - număr de resturi) şi procentuală (%) pe clase de animale a resturilor faunistice descoperite la Măgura-*Buduiasca* (cultura Dudeşti).
Numerical (NR - number of remains) and percentage (%) distribution on animal classes of the faunal remains found at the Măgura-*Buduiasca* (Dudeşti culture).

Specificăm că un număr relativ redus de resturi din categoria *Bos taurus/Bos primigenius* şi *Sus domesticus/Sus scrofa* nu au putut fi determinate precis până la nivel de specie, din cauza fragmentarităţii accentuate a materialului faunistic. La aceasta se adaugă şi faptul că numeroase astfel de fragmente provin de la animale tinere sau foarte tinere și de aceea nu s-a putut da o diagnoză specifică precisă. Aceste resturi se regăsesc în general în statisticile noastre separat, ele nefiind incluse în cele două categorii de animale (domestice sau sălbatice) care definesc activităţi comportamentale extrem de importante pentru înţelegerea evoluţiei paleoeconomiei animaliere.

Cantitatea de mamifere descoperită în diferitele complexe este extrem de variată, de la 133 resturi în locuința L1, la 681 resturi în complexul 7, în total analizându-se 2354 resturi (tab. 2). În strânsă legatură cu aceasta este şi cantitatea de material faunistic determinat până la nivel de specie care variază şi ea în limite foarte largi. Astfel se evidenţiază complexele C2 şi C7 care au în jur de 200 de oase determinate (tab. 2).

	L1		**B3**		**B4**		**C2**		**C7**		**C24**		**C25**		**Total**	
Specii	**NR**	**%**	**NR**	**%**	**NR**	**%**	**NR**	**%**	**NR**	**%**	NR	%	**NR**	**%**	**NR**	
Bos taurus	32	82,1	28	62,2	38	70,4	176	75,2	179	80,6	5	71,4	34	68,0	492	75,6
Ovicaprine	1	2,6	10	22,2	8	14,8	23	9,8	27	12,2	1	14,3	12	24,0	82	12,6
Ovis aries	1	2,6		0,0		0,0	2	0,9	3	1,4		0,0		0,0	6	0,9
Capra hircus	1	2,6		0,0		0,0		0,0		0,0		0,0		0,0	1	0,2
Sus domesticus	3	7,7	3	6,7	3	5,6	2	0,9	1	0,5		0,0		0,0	12	1,8
Canis familiaris		0,0	2	4,4	2	3,7	3	1,3	3	1,4		0,0		0,0	10	1,5
Domestice	**38**	**97,4**	**43**	**95,6**	**51**	**94,4**	**206**	**88,0**	**213**	**95,9**	**6**	**85,7**	**46**	**92,0**	**603**	**92,6**
Carnivor mic		0,0		0,0		0,0	1	0,4		0,0	1	14,3		0,0	2	0,3
Canis lupus		0,0		0,0		0,0	4	1,7		0,0		0,0		0,0	4	0,6
Bos primigenius		0,0	2	4,4		0,0	8	3,4	3	1,4		0,0	4	8,0	17	2,6
Cervus elaphus		0,0		0,0	2	3,7	7	3,0	4	1,8		0,0		0,0	13	2,0
Capreolus capreolus	1	2,6		0,0		0,0	3	1,3		0,0		0,0		0,0	4	0,6
Sus scrofa		0,0		0,0	1	1,9	3	1,3	2	0,9		0,0		0,0	6	0,9
Lepus europaeus		0,0		0,0		0,0	2	0,9		0,0		0,0		0,0	2	0,3
Sălbatice	**1**	**2,6**	**2**	**4,4**	**3**	**5,6**	**28**	**12,0**	**9**	**4,1**	**1**	**14,3**	**4**	**8,0**	**48**	**7,4**
Total determinate	**39**	**100**	**45**	**100**	**54**	**100**	**234**	**100**	**222**	**100**	**7**	**100**	**50**	**100**	**651**	**100**
Bos taurus/Bos primigenius	5		2				8		21				6		42	
Bos/Cervus	2				1		19		18		4		2		46	
Ovicaprine/Capreolus	2						19		4		1		2		28	
Sus domesticus/Sus scrofa	4		1		1		7		6		3		1		23	
Canis /Vulpes	1														1	
Indeterminate	80		90		108		380		410		311		184		1563	
Total Mammalia	**133**		**138**		**164**		**667**		**681**		**326**		**245**		**2354**	

Tab. 2. Distribuţia numerică (NR - număr de resturi) şi procentuală (%) a materialului faunistic descoperit în complexele Dudeşti de la Măgura-*Buduiasca*.
The numerical (NR - number of remains) and percentage (%) distribution of the faunal material discovered within the Dudeşti contexts at Măgura-*Buduiasca*.

În cele ce urmează vom prezenta materialul faunistic pe complexe. Astfel, ca număr de resturi (NR), în toate structurile arheologice analizate se observă că mamiferele domestice sunt predominante, cu procentaje între 85,7% (C24) şi 97,5% (L1), cu o medie de circa 92,6% (fig. 2).

Procentele crescute ale animalelor domestice sugerează că activitatea de creştere a acestora era extrem de importantă pentru comunitatea de la Măgura. În cadrul acesteia, vita este cea mai bine reprezentată din punct de vedere numeric. Astfel, ca NR avem procentaje care variază între 62,2% (B3) şi 82,1% (L1) cu o medie de 75,6% (fig. 3). Ovicaprinele ocupă locul doi, la mare distanţă de vita domestică, ele prezentând, de asemenea, o mare variabilitate procentuală care merge de la 7,7% (L1), până la 24% (C25), media fiind de 13,7%. Porcul şi câinele sunt specii slab reprezentate, media lor fiind în jur de 1,8%, respectiv 1,5%.

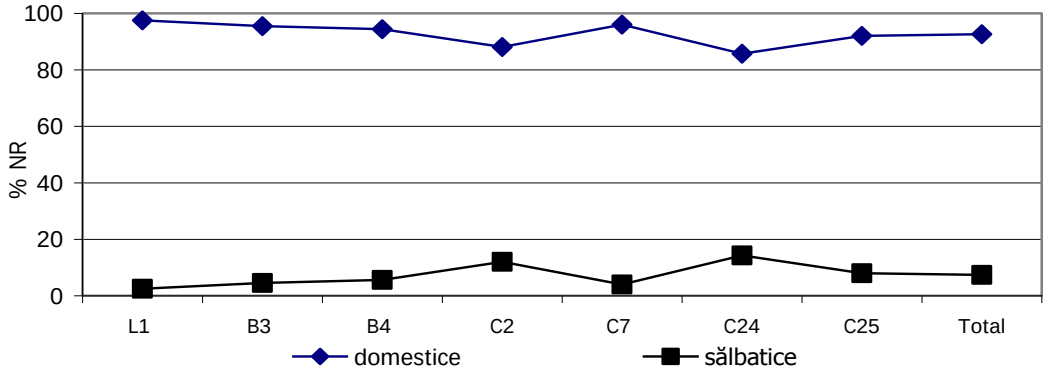

Fig. 2. Repartiţia procentuală a numărului de resturi (NR) de mamifere domestice și sălbatice în diferite complexe arheologice Dudeşti descoperite la Măgura-*Buduiasca*.
The percentage distribution of the number of mammal remains (NR) domestic and wild discovered in different Dudeşti archaeological contexts at Măgura-*Buduiasca*.

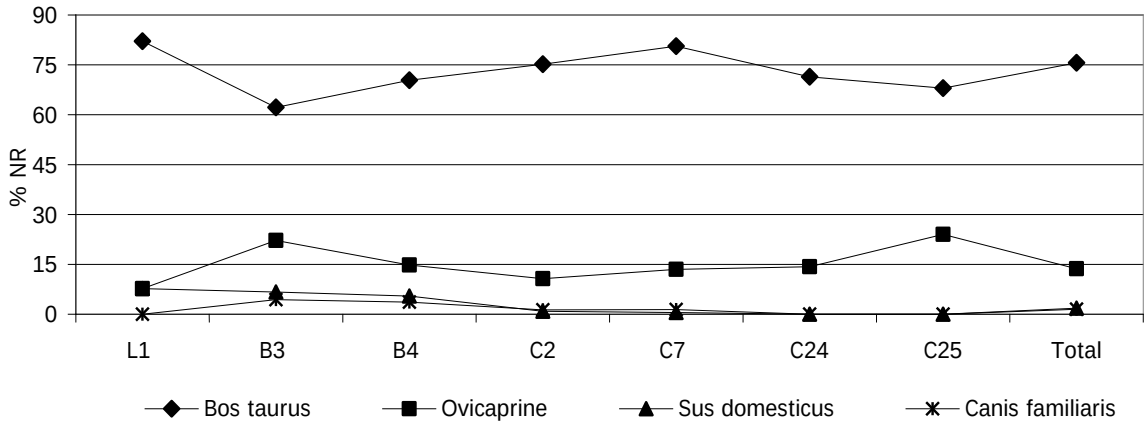

Fig. 3. Repartiţia procentuală a numărului de resturi (NR) de animale domestice în diferite complexe arheologice Dudeşti descoperite la Măgura-*Buduiasca*.
The percentage distribution of the number of domestic animal remains (NR) discovered in different Dudeşti archaeological contexts at Măgura-*Buduiasca*.

Studiul vârstelor de sacrificare a bovinelor domestice ne arată că aceste animale erau exploatate în special pentru producția de lapte și secundar, pentru producția de carne. În ceea ce privește ovicaprinele, acestea erau crescute în special pentru producția de carne și secundar pentru lapte și derivatele lor. Porcinele sunt reprezentate, majoritatea, prin animale tinere, cu vârste până într-un an.

În ceea ce privește câinele, ponderea sa este extrem de redusă, doar 10 resturi (1,5%). Cu toate acestea pe două dintre fragmente s-au descoperit urme de tăiere. Astfel, s-a identificat un rest de scapulă care prezintă pe corp urme de descărnare, iar pe faţa laterală a unei mandibule se disting urme fine de tăiere care atestă jupuirea animalului (fig. 4, 5).

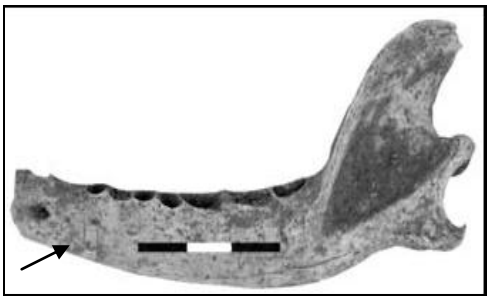

Fig. 4 - *Canis familiaris*, mandibulă stânga cu urme de jupuire[1] (normă laterală).
Canis familiaris, left mandible with skinning marks (lateral view; scale in centimeters).

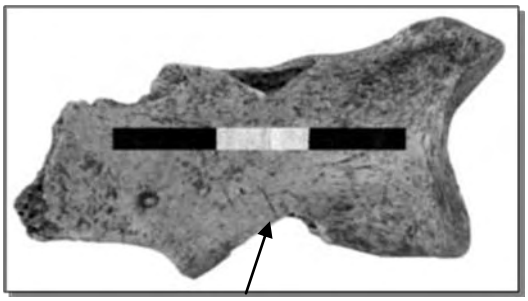

Fig. 5 - *Canis familiaris*, scapulă stânga cu urme de descărnare (normă medială).
Canis familiaris, left scapula with traces of excarnation (medial view, scale in centimeters).

Vânatul este slab reprezentat ca număr de specii (7 taxoni) şi ca NR (media este de 7,4%), aportul său la paleoeconomia animalieră fiind extrem de redus. Numărul de specii vânate şi identificate în fiecare complex arheologic studiat variază între limite destul de largi, fiind direct proporţional cu cantitatea de faună descoperită. Astfel, avem o singură specie sălbatică descoperită în L1, B3, C24 şi C25 (complexe cu un număr relativ mic de resturi faunistice), la polul opus găsindu-se C7 cu şapte specii de mamifere sălbatice (tab. 2).

Printre speciile sălbatice predomină animalele care au o talie mare şi foarte mare, cum ar fi cerbul, bourul şi mistreţul, ceea ce ar ilustra interesul pentru carne, piei, coarne şi alte produse animaliere al comunității de la Măgura-*Buduiasca*.

◈ Exploatarea resurselor animale în cultura Dudești

Materialul faunistic al culturii Dudeşti este reprezentat doar de 3051 resturi care provin din patru aşezări preistorice: Beciu, Brăneşti, Fărcaşu de Sus şi Măgura-*Buduiasca*. Cantitatea de material paleofaunistic analizat variază între limite foarte mari, de la 37 de resturi la Brăneşti, până la 2367 de resturi la Măgura-*Buduiasca* (tab. 1-4).

	Beciu		**Brăneşti**		**Fărcaşu de Sus**	
Clasa	**NR**	**%**	**NR**	**%**	**NR**	**%**
Bivalvia	11	3,64				
Pisces	1	0,33				
Aves	1	0,33				
Mammalia	289	95,70	37	100,00	345	100,00
Total	**302**	**100,00**	**37**	**100,00**	**345**	**100,00**

Tab. 3. Repartiţia numerică (NR) şi procentuală (%) a resturilor faunistice (NR) pe clase de animale descoperite în diferite aşezări ale culturii Dudeşti din România.
The numerical (NR) and percentage (%) distribution on animal classes of the faunal remains discovered in different Dudeşti sites in Romania.

În această analiză comparativă a eşantioanelor faunistice am eliminat lotul de la Brăneşti pe care îl considerăm insuficient din punct de vedere numeric. De asemenea, specificăm că în cadrul lotului de la Fărcaşu de Sus (Al. Bolomey 1979), bovinele şi suinele sunt prezentate împreună, numeric şi statistic, cu speciile înrudite (domestice şi sălbatice). Din analiza resturilor faunistice şi din textul dedicat acestei staţiuni reiese totuşi că speciile sălbatice (*Bos primigenius* şi *Sus scrofa*) au o pondere redusă în cadrul vânatului. De aceea, în diferitele reprezentări grafice (figuri) le-am considerat ca făcând parte din categoria animalelor domestice, lucru ce ne-a permis să nu neglijăm şi acest lot faunistic extrem de important pentru înţelegerea paleoeconomiei animaliere a culturii Dudeşti.

[1] Scara utilizată pentru fotografii este exprimată în centimetri.

Cantitatea mică a materialului arheozoologic luată în discuţie și distribuția sa extrem de variată, în diferitele așezări arheologice, face relativ dificilă caracterizarea paleoeconomică a acestei culturi. Cu toate acestea ne-am asumat această sarcină, în condițiile în care, în viitor, studiul altor eşantioane faunistice ce provin din alte staţiuni Dudeşti vor aduce noi completări asupra acestui subiect.

	Beciu	**Brăneşti**	**Fărcaşu de Sus**
Specia	**NR**	**NR**	**NR**
Bos taurus	73	15	+
Bovine			264
Ovis aries	1		
Capra hircus	1	1	
Ovicaprine	28	3	30
Sus domesticus	11	1	+
Suine			38
Canis familiaris	3		4
Total domestice	117	20	336
Canis lupus			
Vulpes vulpes	1		1
Sus scrofa			1
Cervus elaphus	3		6
Capreolus capreolus	2		1
Bos primigenius	4		+
Lepus europaeus	2		
Total sălbatice	12		9
Total determinate	129	20	345
Bos taurus/Bos primigenius	6		
Sus domesticus/Sus scrofa	12	1	
Total Mammalia indet	**142**	**16**	**0**
Total Mammalia	**289**	**37**	**345**

Tab. 4. Repartiţia numerică (NR) şi procentuală (%) a resturilor faunistice pe specii de mamifere descoperite în diferite aşezări ale culturii Dudeşti din România.
The numerical (NR) and percentage (%) distribution on mammal species of the faunal remains discovered in different Dudeşti sites in Romania.

Cea mai mare parte din fauna analizată provine de la mamifere (99,10%), restul fiind reprezentat de resturile de scoici, peşti, reptile şi păsări. În cadrul mamiferelor se observă că din cele 2980 fragmente descoperite au fost determinate până la nivel specific doar 1347 (45,2%).

În ceea ce priveşte taxonii care ne dau informaţii asupra culesului moluştelor şi pescuitului, menţionăm că aceştia sunt extrem de puţini şi nu putem face observaţii în acest sens. Menţionăm că doar la Măgura-*Buduiasca* s-a realizat cernerea şi/sau flotarea sedimentului arheologic, dar, chiar și în aceste condiții, cantitatea de moluște și pești este extrem de redusă.

Mamiferele sunt reprezentate atât de specii domestice (5), cât şi sălbatice (7), ele fiind rezultatul unor activităţi precum: creşterea animalelor şi vânătoarea.

Creşterea animalelor pare să fie o activitate extrem de importantă în cadrul paleoeconomiei, mai ales dacă avem în vedere că resturile mamiferelor domestice sunt cele mai numeroase, ele reprezentând peste 90% din eşantioanele determinate. Dintre animalele domestice, cea mai mare pondere ca NR o au bovinele, cu procente ce variază între 56,7% (Beciu) şi 76,5% (Fărcaşu de Sus). Acestea sunt urmate de ovicaprine, ce prezintă procentaje cu valori între 8,7% (Fărcaşu de Sus) şi 23,2% (Beciu). Suinele domestice sunt reprezentate prin relativ puţine resturi, ce variază între 1,8% (Măgura-*Buduiasca*) şi 11% (Fărcaşu de Sus).

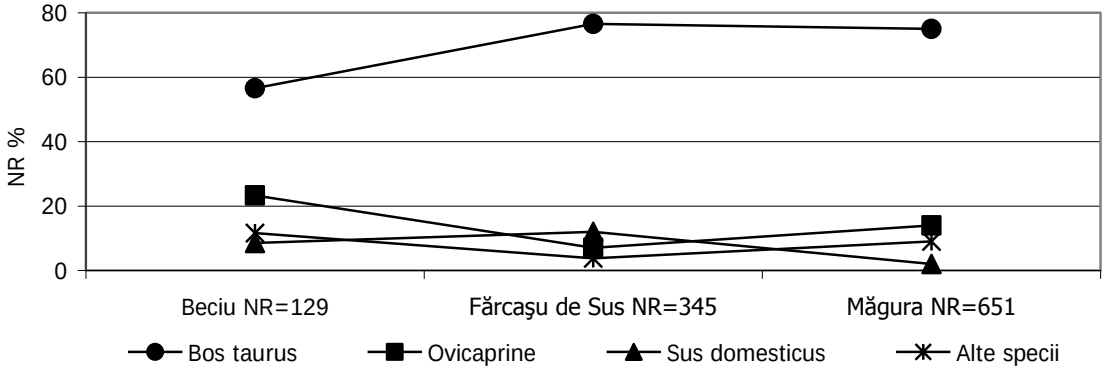

Fig. 6. Repartiţia procentuală a numărului de resturi (NR) în diferite aşezări Dudeşti din România. Alte specii: *Canis familiaris,* carnivor mic, *Canis lupus, Vulpes vulpes, Sus scrofa, Cervus elaphus, Capreolus capreolus, Bos primigenius, Lepus europaeus*.
The percentage distribution of the number of remains (NR) in different Dudeşti settlements in Romania. Other species: *Canis familiaris,* small carnivore, *Canis lupus, Vulpes vulpes, Sus scrofa, Cervus elaphus, Capreolus capreolus, Bos primigenius, Lepus europaeus*.

Vârstele de sacrificare ale bovinelor ne arată tipuri de exploatare diferite în aşezările de la Fărcaşu de Sus şi Măgura-*Buduiasca* (fig. 7). Astfel, la Fărcaşu de Sus, bovinele erau crescute mai ales pentru carne, 80% dintre ele fiind sacrificate în stadiul juvenil şi subadult; la Măgura-*Buduiasca*, 60% dintre indivizii tăiaţi sunt juvenili (sub 2 ani), 30% sunt subadulţi, restul fiind adulţi (10 %). Producţia de lapte şi a derivatelor sale este ilustrată mai ales la Măgura-*Buduiasca* prin abatajul postlactaţional identificat pe baza dentiţiei. Acest fapt este întărit şi de analizele de reziduri organice realizate pe fragmente ceramice Dudeşti de la Măgura-*Buduiasca* (R. Evershed *et alii* 2008), care arată că în vasele ceramice se găseau lapte sau derivate ale acestuia.

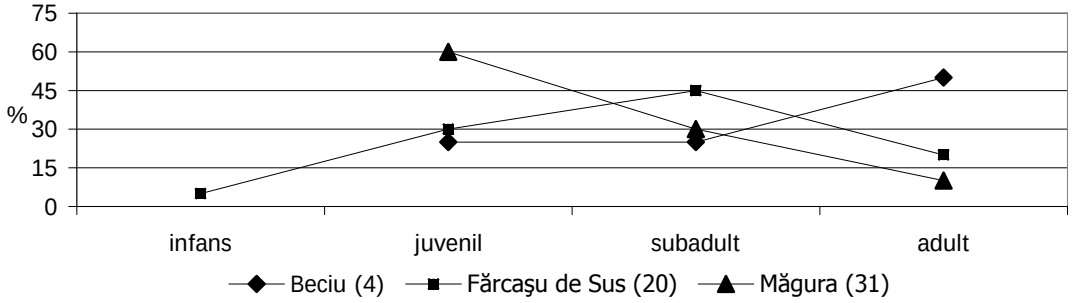

Fig. 7. Diagrame de reprezentare a vârstelor biologice a bovinelor domestice stabilite pe baza NMI (în paranteză) în diferite aşezări Dudeşti.
Diagram of biological ages of the domestic bovine based on NMI (minimum number of individuals - in brackets) in different Dudeşti settlements.

În ceea ce priveşte vârstele de sacrificare ale ovicaprinelor se observă situaţii diferite (fig. 8). Astfel, la Beciu, cornutele mici erau utilizate mai ales ca furnizoare de carne (predominare a juvenililor), în timp ce la Fărcaşu de Sus şi Măgura-*Buduiasca* ele erau exploatate şi pentru produsele lor secundare, lapte şi posibil lână. Interesantă ni se pare situaţia de la Fărcaşu de Sus, în care bovinele erau crescute pentru a furniza carne, iar ovicaprinele pentru produsele lor secundare, lucru evident prin prisma faptului că 75% dintre indivizi sunt de vârstă adultă (peste 3 ani şi jumătate). În aceeaşi situaţie este şi aşezarea de la Măgura-*Buduiasca*, cu diferenţa că doar 37,5% dintre indivizi sunt de vârstă adultă.

În cazul porcului, vârstele de sacrificare ne sugerează, deasemenea, abordări diferite în exploatarea acestui mamifer. Astfel, la Măgura-*Buduiasca*, cinci indivizi (dintr-un total de şase) sunt sacrificaţi înainte de 1 an, în timp ce la Beciu toate exemplarele sunt sacrificate după ce au atins

vârsta de 1 an. Cauzele unei astfel de exploatări sunt greu de explicat, dar este posibil ca ele să ţină cont de fluctuaţiile sezoniere ale cantităţii de hrană consumată de aceste animale, fapt care influenţează vârsta de sacrificare a porcinelor domestice.

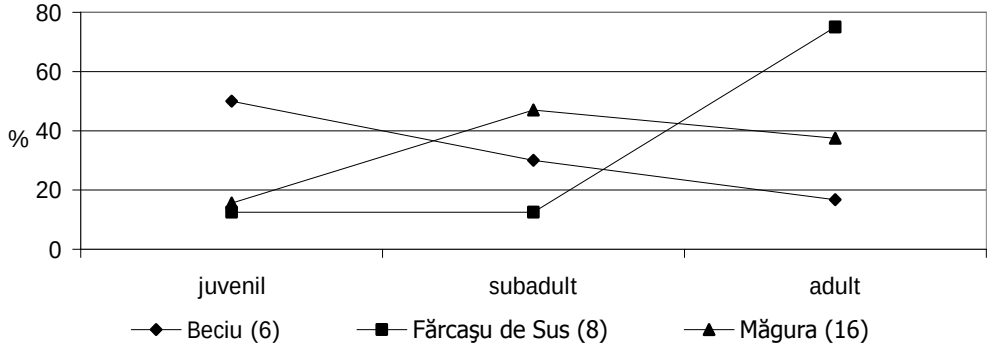

Fig. 8. Diagrame de reprezentare a vârstelor biologice a ovicaprinelor stabilite pe baza NMI (în paranteză) în diferite aşezări Dudeşti.
Diagrams of sheep/goat biological ages based on NMI (minimum number of individuals - in brackets) in different Dudeşti settlements.

Câinele este slab reprezentat (în jur de 2% ca NR), dar chiar şi în aceste condiţii, el a oferit o serie de surprize. Pe lângă aşezarea de la Măgura-*Buduiasca* unde s-au descoperit două resturi cu urme de tăiere (fig. 4 şi 5), mai avem și stațiunea de la Beciu, în care s-au identificat urme de dezarticulare pe faţa posterioară a extremității distale a unui humerus. De asemenea, la nivelul unui corp mandibular, s-au pus în evidenţă urme fine de jupuire a blănii animalului. După cum se observă, câinele, pe lângă funcţiile sale utilitare, paza locuinţelor și a turmelor, în anumite împrejurări era folosit şi în alimentaţie, iar uneori blana sa era prelevată de oamenii preistorici.

Acest fenomen nu este singular, deoarece el a mai fost pus în evidență și în alte așezări neo-eneolitice din sudul României care aparțin următoarelor culturii: Vinča (Liubcova-*Orniţa*), Boian (Isaccea-*Suhat*, Siliştea-*Conac*, Hârşova-*tell*, Izvoarele) şi Gumelniţa (Hârşova-*tell*, Borduşani-*Popină*, Măriuţa, Vităneşti, Taraschina) (A. Bălășescu *et alii* 2005; A. Bălășescu, V. Radu 2011).

Vânatul este reprezentat de un număr redus de specii (*Canis lupus, Vulpes vulpes, Sus scrofa, Cervus elaphus, Capreolus capreolus, Bos primigenius, Lepus europaeus*) şi număr de resturi (NR), de aceea nu se pot face aprecieri asupra unor strategii de exploatare a acestuia. Dintre taxonii vânaţi, ca număr de resturi ies în evidenţă, cerbul şi bourul, care sunt urmaţi de căprior şi mistreţ (fig. 9).

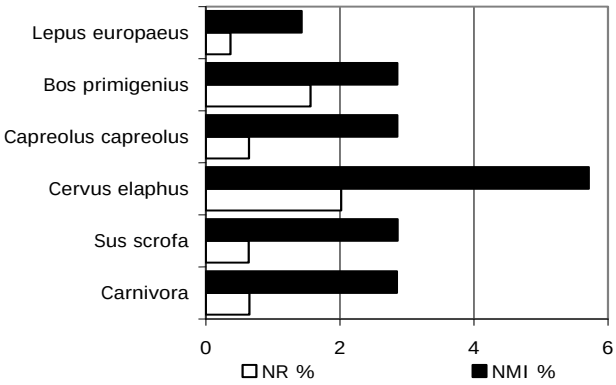

Fig. 9. Repartiţia procentuală a numărului de resturi (NR) şi a numărului minim de indivizi (NMI) de mamifere sălbatice descoperite în diferite aşezări Dudeşti din România. Legendă - Carnivora*: Canis lupus, Vulpes vulpes*, carnivor mic.
The percentage distribution of the number of animal remains (NR) and the minimum number of individuals (NMI) of wild mammals found in different Dudeşti settlements in Romania. Legend - Carnivora*: Canis lupus, Vulpes vulpes*, small carnivore.

Astfel putem considera că vânatul reprezenta pentru comunităţile Dudeşti o sursă alternativă, de suplimentare a alimentaţiei carnate, care însă nu avea un rol foarte important în cadrul paleoeconomiei animaliere. Vârstele animalelor sălbatice ne indică vânarea cu predilecţie a unor indivizi adulţi.

◈ Concluzii

Materialul faunistic al culturii Dudești, cu toate că nu este foarte numeros, doar circa 3000 de resturi, ne arată că aceste comunități neolitice se ocupau în principal cu activitatea de creștere a animalelor, în special a bovinelor și a ovicaprinelor. Remarcăm că porcinele sunt extrem de slab reprezentate. De asemenea, câinele era utilizat în alimentație și blana sa era prelevată.

Vânatul este foarte puțin reprezentat ca număr de specii, iar ponderea sa este extrem de redusă, ceea ce ilustrează slabul interes al acestor populații pentru exploatarea acestor resurse ale mediului înconjurător.

În ceea ce privește culesul moluștelor și pescuitul, datele avute la dispoziție, ne arată, în acest moment al studiului, un interes redus pentru valorificarea acestor resurse, care se găseau probabil din abundență în preajma așezărilor preistorice.

Exploatarea resurselor animale de către comunitățile Dudești este asemănătoare cu cea din cultura Starčevo-Criș (anterioară cronologic) și Vădastra (posterioară cronologic) din sudul României. Astfel, studiile arheozoologice ale acestor culturi, au relevat o pondere foarte mare a animalelor domestice, în special bovine și ovicaprine, ceea ce sugerează importanța activității de creștere a animalelor în cadrul paleoeconomiei animaliere; porcinele au o pondere redusă, iar vânatul este slab reprezentat.

◈ Mulţumiri

Studiul faunei de la Măgura-*Buduiasca* a fost realizat în cadrul programului româno-britanic SRAP (Southern Romania Archeological Project), derulat între 1998-2005 și coordonat de către arheologii Radian Andreescu (Muzeul Național de Istorie a României, București) și Douglass W. Bailey (San Francisco State University), cărora le mulțumim și pe această cale.

De asemenea, dorim să-i mulțumim arheologului Pavel Mirea (Muzeul Județean Teleorman, Alexandria) pentru sprijinul său în înțelegerea neoliticului din sudul României.

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Considerații privind un complex aparținând culturii Boian descoperit în necropola de la Sultana-*Malu Roșu*, jud. Călărași

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Abstract: *During the archaeological campaign of 2012 in the area of the Sultana-Malu Roşu cemetery, Mânăstirea commune, Călăraşi County, a large pit (C3/2012) was discovered. What caught our attention in particular was the stratigraphic relation and also the unusual size of the pit as compared to other complexes discovered in necropolis. Pit contained pottery, animal and human bones, burnt clay fragments, flint and polished stone artefacts. From de chrono-cultural point of view C3/2012 belongs to Vidra phase of the Boian culture. Contextual observations and complex analysis of ceramics, bone and lithic material from the filling of the pit allowed us to extract information regarding the chrono-cultural placement and functionality of the pit mentioned above.*

Rezumat: *În timpul campaniei arheologice din anul 2012, în perimetrul necropolei de la Sultana-Malu Roşu, comuna Mânăstirea, jud. Călăraşi, a fost descoperită o groapă de mari dimensiuni (C3/2012). Ceea ce ne-a atras atenţia în mod deosebit au fost relaţiile stratigrafice precum şi dimensiunile neobişnuite ale gropii, comparativ cu alte complexe descoperite în necropolă. Groapa conţinea ceramică, oase de animale şi umane, fragmente de chirpici ars, utilaj de piatră şlefuită şi silex. Din punct de vedere crono-cultural C3/2012 aparţine fazei Vidra a culturii Boian. Observaţiile contextuale şi analiza complexă a ceramicii, a faunei şi a materialului litic din umplutura gropii ne-au permis să punctăm o serie de informaţii privind încadrarea crono-culturală şi funcţionalitatea gropii amintite.*

Keywords: *Eneolithic, Boian culture, necropolis, pit, pottery, animal and human bones.*
Cuvinte cheie: *eneolitic, cultura Boian, necropolă, groapă, ceramică, oase de animale și umane.*

◈ Introducere

Situl arheologic Sultana-*Malu Roșu* se află în sud-estul României, la cca. 7 km de Dunăre. Din punct de vedere administrativ acesta se află pe teritoriul comunei Mânăstirea, județul Călărași (fig. 1). El este alcătuit dintr-o așezare de tip *tell* și necropola corespunzătoare, bine cunoscute datorită mai ales cercetărilor din ultimii ani (R. Andreescu, C. Lazăr 2008; C. Lazăr *et alii* 2008, 2009, 2012; R. Andreescu *et alii* 2011).

Necropola eneolitică este amplasată pe terasa înaltă a lacului Mostiștea, la 150 m (±1 m) vest de *tell*-ul gumelniţean de la Sultana-*Malu Roșu* și 320 m (±1 m) est de așezarea plană de la Sultana-*Gheţărie*, atribuită culturii Boian. Din punct de vedere crono-cultural, spațiul funerar a fost utilizat de comunitățile din ambele așezări menționate anterior, fapt demonstrat atât de unele dintre obiectele de inventar funerar, cât și de datele radiocarbon AMS, ce indică un interval cuprins între 5071 – 4450 cal. BC (probabilitate 91,8% - 95,4%). Din punct de vedere cultural-istoric aceasta însemnă că necropola a fost utilizată de către comunitățile culturii Gumelnița, fazele A1 și A2, precum și de cele din fazele Vidra și Spanțov ale culturii Boian (C. Lazăr *et alii* 2012).

Până în prezent, în perimetrul necropolei au fost cercetate 67 de morminte de inhumație[1], la care se adaugă o serie de gropi, în număr de peste 30. Acestea, din punct de vedere crono-cultural, aparțin unor etape diferite (eneolitic, sec. IV p. Chr., cultura Dridu, perioada contemporană). Cele mai multe aparțin perioadei eneolitice, mai precis culturilor Boian și Gumelnița, fiind caracterizate, în general, de dimensiuni reduse și materiale arheologice specifice celor două culturi. Despre unul dintre

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[1] Dintre acestea, majoritatea aparțin perioadei eneolitice, doar unul dintre morminte putând fi atribuit epocii bronzului (M41), pe baza vasului ceramic din inventarul funerar (R. Andreescu *et alii* 2012; C. Lazăr *et alii* 2012).

aceste complexe eneolitice, care prin dimensiuni se diferențiază de celelalte gropi cercetate până în prezent, ne vom ocupa în cadrul prezentului studiu. De asemenea, prin relațiile stratigrafice surprinse, acest complex vine să aducă unele lămuriri suplimentare privind modul de utilizare a spațiului funerar.

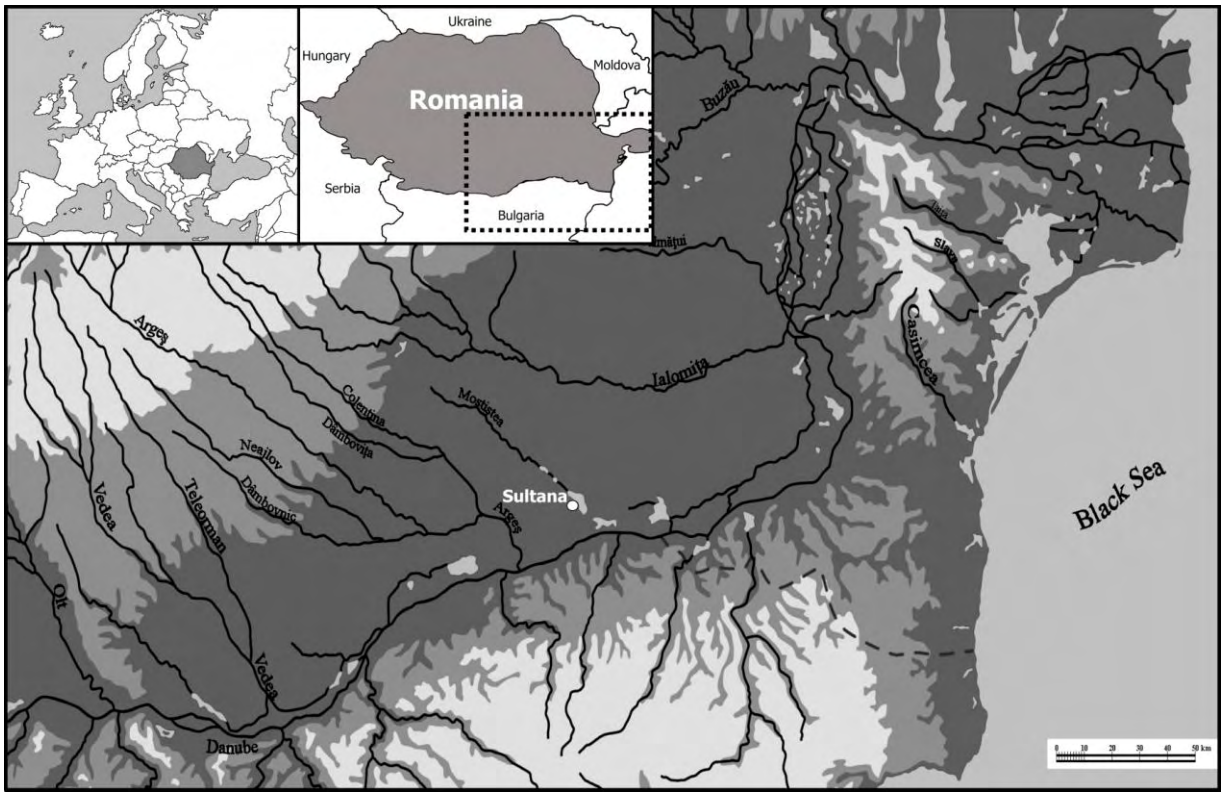

Fig. 1. Localizarea sitului arheologic Sultana-*Malu Roșu*.
Location of Sultana-*Malu Roșu* archaeological site.

◈ Aspecte metodologice

Pentru cercetarea complexului C3/2012 s-a utilizat metoda de săpătură și înregistrare microstratigrafică, prin intermediul unităților stratigrafice (u.s.), la fel ca și în cazul celorlalte complexe din necropolă. Pentru cercetarea complexului și înregistrarea limitelor orizontale și verticale s-au utilizat două microprofile. Trebuie precizat că în identificarea limitelor complexului în teren au fost întâmpinate anumite dificultăți, datorită solului loessoid, precum şi bioturbațiilor (C. Haită 2003, p. 102), datorate mai ales activității micromamiferelor. Totodată, având în vedere numărul mare de bioturbații ce afectau perimetrul complexului, s-a decis ca din umplutura gropii să nu fie recoltat sediment pentru cernere. De asemenea, în procesul de recoltare a diverselor materiale arheologice din teren, s-a avut în vedere această situație, motiv pentru care piesele descoperite în astfel de contexte nu au fost incluse în analiza de față.

Planimetria şi altimetria au fost realizate cu ajutorul unei stații totale Leica TCR 410, a unei nivele optice Leica NA 724, la care s-a adăugat un receptor GPS GNSS ASHTECH Mobile Mapper 10. Pentru prelucrarea datelor geospațiale, integrarea informațiilor arheologice și realizarea unui suport de gestiune GIS/SIG au fost utilizate programele Inkscape, Global Mapper și Quantum GIS. Toate măsurătorile altimetrice au fost realizate de la un punct zero (P0), a cărui elevație față de nivelul mării este de 45,17 m (C. Lazăr *et alii* 2008, 2009).

Pentru studierea ceramicii din complexul C3/2012 s-a avut în vedere o analiză macroscopică a materialelor, ce a vizat cuantificarea datelor tehnologice, tipologice, contextuale, cantitative și funcționale, conform sistemului definit și aplicat pentru alte complexe din situl Sultana-*Malu Roșu* (T. Ignat *et alii* 2012).

Analizarea materialelor litice s-a realizat din punct de vedere tehnologic și tipologic, dublată de o analiză petrografică a materiilor prime din care au fost confecționate respectivele unelte. Cromatica

pieselor a fost atribuită pe baza culorilor stabilite în Munsell Soil Color Chart. În cazul unora dintre piese, datorită depunerilor de calcar, a fost dificilă stabilirea cromaticii exacte.

Determinările anatomice şi taxonomice ale resturilor faunistice au fost realizate cu ajutorul colecțiilor osteologice de referință ale Laboratorului de Arheozoologie din cadrul Centrului Național de Cercetări Pluridisciplinare din Muzeul Național de Istorie a României, dublate de consultarea unor lucrări metodologice pentru mamifere (E. Schmid 1972; R. Barone 1986). Estimarea vârstelor de abataj (de sacrificare) s-a raportat la erupțiile dentare și gradul de epifizare al oaselor (E. Schmid 1972). Pentru stabilirea gradului de uzură dentară s-a apelat la lucrările lui P. Ducos (1968) şi A. Grant (1982) pentru bovine, respectiv S. Payne (1973) şi D. Helmer (2000) pentru ovicaprine. Măsurătorile resturilor osteologice au fost realizate cu un șubler care prezintă o precizie instrumentală de 1/10 milimetri, în conformitate cu recomandările lui A. von den Driesch (1976).

◈ Contextul descoperirii

Groapa notată C3/2012 a fost descoperită în suprafața Son 1/2012 (40 x 2,5 m), carourile 16 - 18 și caseta C (3 x 2 m), la o altitudine de 44,24 m deasupra nivelului mării, având coordonatele geografice 44° 15' 39.4761" N, respectiv 26° 52' 2.4419" E.

Forma acestui complex era concavă în profil și circulară în plan (fig. 2-4), dimensiunile maxime surprinse în suprafață fiind de 3,44 x 3,18 m. Precizăm de la început că, din cauza unor condiții obiective, nu a fost posibilă cercetarea întregului complex[2].

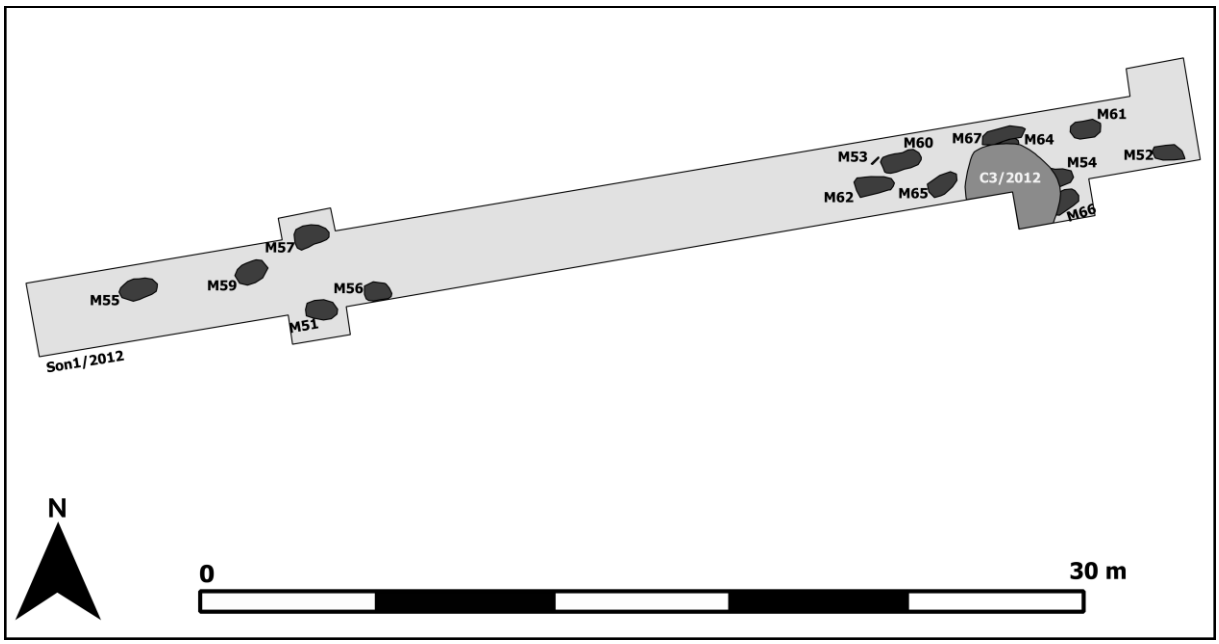

Fig. 2. Suprafața Son 1/2012 și complexele arheologice identificate în aceasta.
The surface Son 1/2012 and the archaeological complexes identified here.

Din perspectivă altimetrică, C3/2012 a fost surprins la o adâncime de 0,20 m față de P0 și coboară până la – 0,77 metri[3]. Planimetric, groapa avea o suprafață de cca. 5,840 m^2 la partea inferioară, volumul estimat fiind de cca. 4,4 m^3.

[2] După cum arătam și anterior, pentru cercetarea acestui complex, dar și a mormântului M54, s-a realizat o casetă de 3 x 2 m. La momentul proiectării planimetrice a acesteia, pe baza informațiilor rezultate din desenarea profilului gropii și a formei în plan pe suprafața surprinsă în Son 1/2012, s-a considerat că respectiva casetă va surprinde întregul complex. Din păcate acest lucru nu a fost posibil, groapa continuând și în profilul de est al casetei. Pe baza datelor planimetrice înregistrate estimăm că a fost cercetat cca. 80% din complexul C3/2012.

[3] Diferența aparentă a cotelor altimetrice, comparativ cu cele publicate anterior, pentru alte complexe din cadrul necropolei (C. Lazăr *et alii* 2008, 2009, 2012), rezultă din zona în care a fost amplasată suprafața de lucru a Son1/2012, adică o zonă mai înaltă decât cele în care am efectuat săpături anterior. Astfel, s-a ajuns la situația ca anumite cote altimetrice, în special cele pentru nivelurile superioare, să fie cu "+" față de P0.

Din punct de vedere stratigrafic, nivelul de săpare al gropii începea cel mai probabil din partea inferioară a u.s. T1002, dar din păcate, limita clară nu a fost surprinsă. Respectiva unitate este suprapusă de u.s. T1001 (un nivel diferențiat cromatic și structural, ce corespunde unei perioade cronologice post-eneolitice) și suprapune u.s. T1003. Limita superioară a gropii a fost surprinsă clar din această unitate (u.s. T1003), acesta fiind nivelul corespunzător secvenței eneolitice, partea inferioară a gropii ajungând până în u.s. T1004 (nivel natural – loess) (fig. 4, 5).

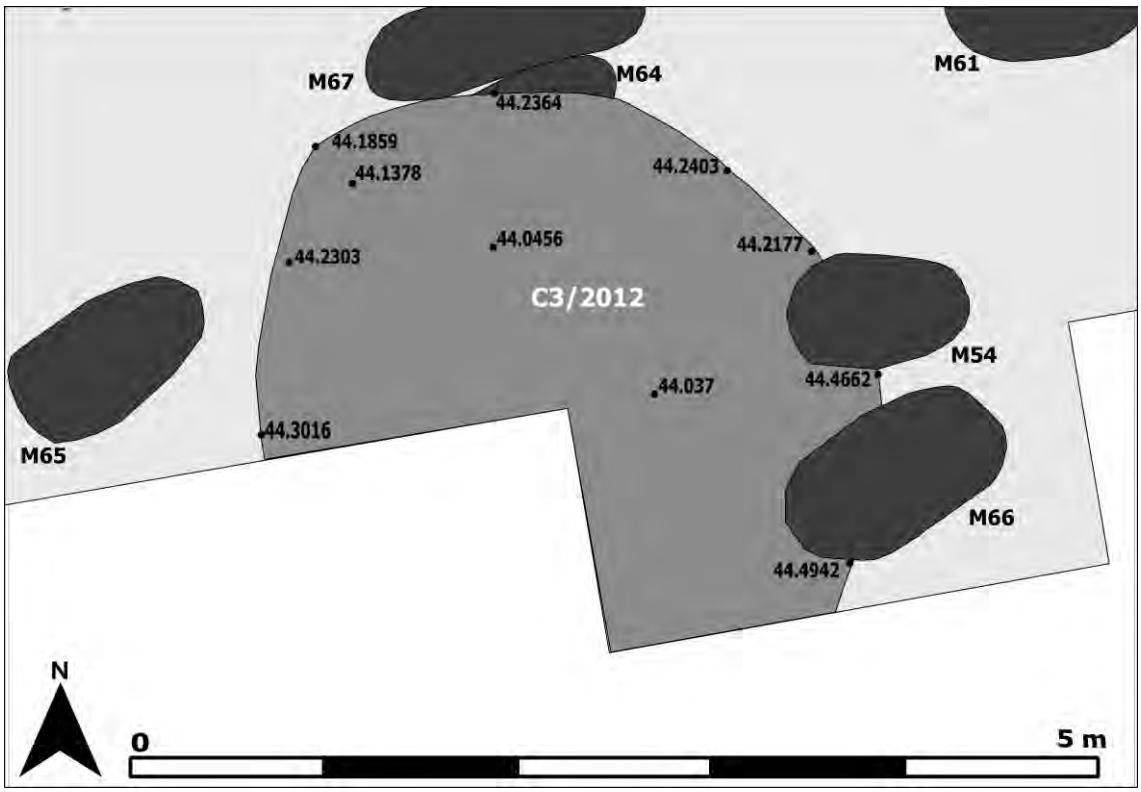

Fig. 3. Planul lui C3/2012 și relația cu celelalte complexe arheologice din zonă.
The plan of C3/2012 and the relationship with others archaeological complexes from area.

În ceea ce privește relația gropii C3/2012 cu alte complexe, situația este deosebit de interesantă. Astfel, complexul în discuție era tăiat de gropile mormintelor M54 (în partea de nord-est) și M66 (în partea de sud-est) (fig. 3). De asemenea, C3/2012 suprapunea partea superioară a gropii mormântului M64, pe care-l deranja parțial, în partea de vest (fig. 3). Relația de anterioritate/posterioritate dintre aceste complexe este reflectată de diagrama stratigrafică a complexului (fig. 5).

Pe baza datelor înregistrate în teren complexul C3/2012 a avut un singur nivel de umplere (u.s. T1139), ce prezintă o compoziție relativ eterogenă, alcătuită din sediment siltic, fin, slab compactat, de culoare cenușie, deranjat de numeroase bioturbații, datorate diverselor animale care sapă galerii.

Complexul C3/2012 prezintă o structură simplă, specifică unei gropi, fără amenajări speciale. Singurul element ce o deosebește de alte gropi cercetate în perimetrul necropolei de la Sultana-*Malu Roșu* sunt dimensiunile, relativ mai mari decât al celorlalte structuri de acest tip.

Inventarul recoltat nu este spectaculos, constând în ceramică fragmentară, piese litice, resturi faunistice, oase umane, bucăți de chirpici ars și mici lentile de cărbune. Pe baza acestuia, în special a materialului ceramic, complexul C3/2012 a fost atribuit fazei Vidra a culturii Boian.

Pentru o prezentare coerentă a acestui complex vom trece în revistă, în continuare, separat, fiecare categorie de materiale arheologice recoltate, urmată de o interpretare a rezultatelor.

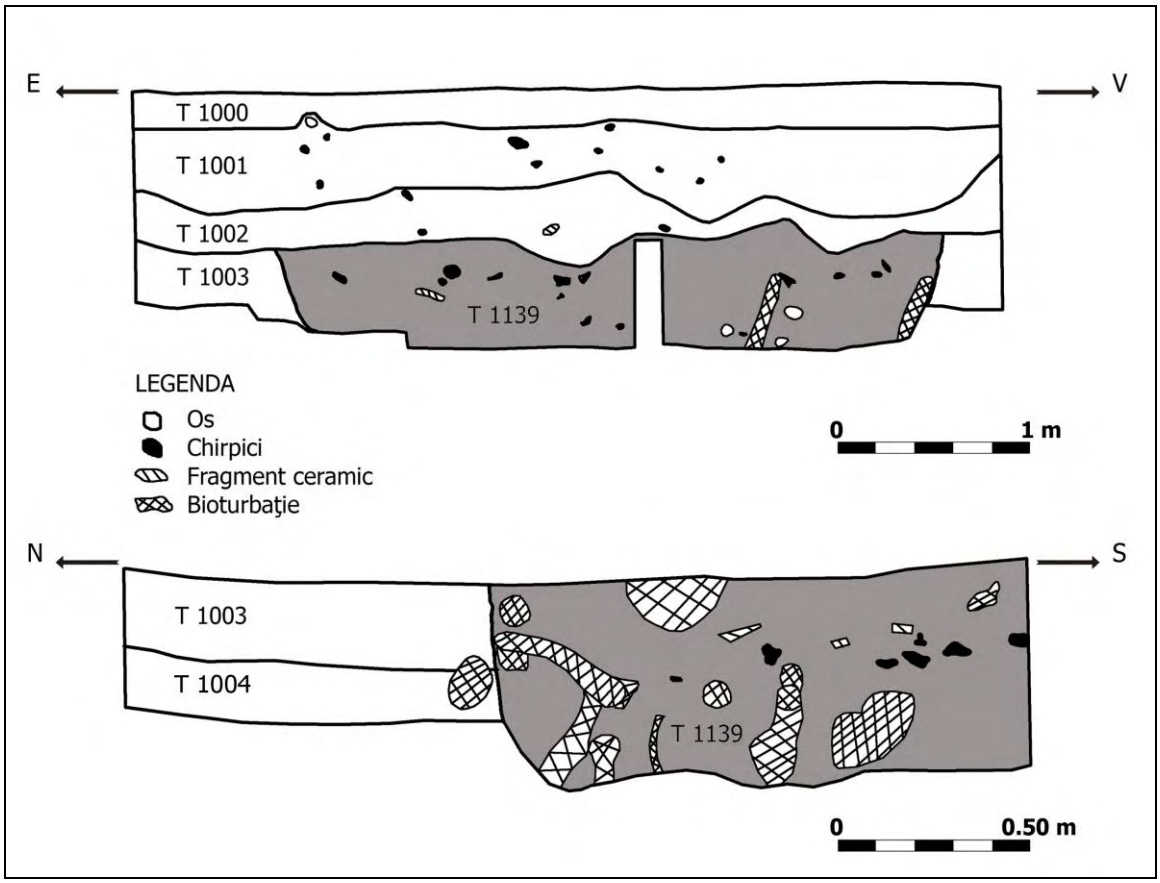

Fig. 4. Complexul C3/2012 – profilul de sud (sus) și cel de est (jos).
The C3/2012 complexe – South profile (up) and East profile (down).

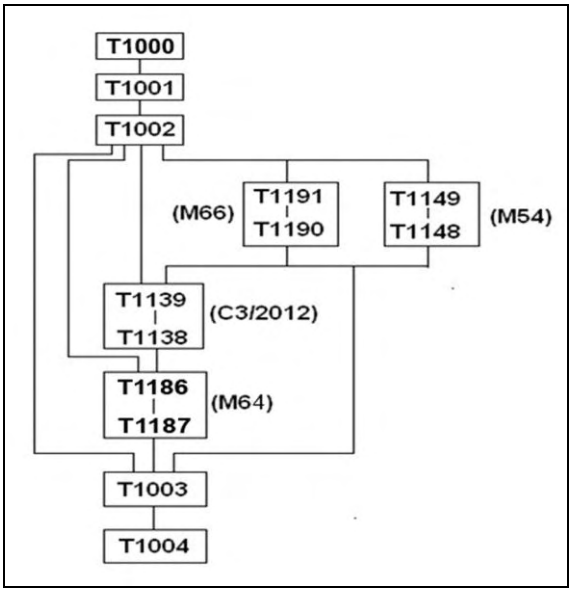

Fig. 5. Diagrama stratigrafică a complexului C3/2012.
The stratigraphic matrix of C3/2012.

◈ Ceramica

Materialul ceramic descoperit în groapa C3/2012 a fost puternic fragmentat. Din punct de vedere cantitativ acesta constă dintr-un număr de 278 de fragmente ceramice, cu o masă totală de 6791 g. Majoritatea fragmentelor ceramice aveau pe suprafeţe şi în spărturi depuneri carbonatice. Trebuie menţionat că fragmentele care au putut fi lipite au fost considerate ca făcând parte din acelaşi vas şi drept urmare au fost cuantificate ca un singur fragment. Din nefericire, în cadrul lotului analizat nu au fost identificate mai mult de patru fragmente care să poată fi atribuite aceluiaşi vas. Deşi, statistic, putem considera fiecare fragment ceramic ca fiind reprezentantul unui singur individ (ceramic), datorită fragmentarităţii ridicate vom face referiri în decursul analizei la fragmente şi nu la vase ceramice.

Analiza pastei. Pe baza analizei macroscopice au fost identificate tipurile de pastă fină, semifină şi grosieră (tab. 1). În general, această împărțire s-a realizat pe criterii ce au vizat în principal mărimea granulelor de degresanţi şi omogenitatea/eterogenitatea pastei, la care s-au adăugat grosimea pereţilor şi modul de tratare a suprafeţelor[4].

Degresantul majoritar pentru toate categoriile de pastă, este reprezentat de cioburi pisate. Fac excepţie două fragmente din pastă fină, în compoziţia cărora nu a fost identificat nici un fel de degresant, precum şi un fragment din categoria semifină ce avea în pastă pe lângă cioburi pisate şi granule de nisip cu diametrul de 1-2 mm. Un fragment din pastă grosieră cu pereţi groşi de până la 25 mm şi cu suprafeţe slab netezite avea în compoziţie cioburi pisate de dimensiuni mari, cuprinse între 5 şi 10 mm (fig. 7/a). De asemenea, la majoritatea fragmentelor analizate (n = 278) a fost observată mică pe ambele suprafețe, în slipul de lut fin și în spărturile proaspete. Prezenţa acesteia poate fi pusă în legătură cu sursa de materie primă utilizată, probabil o sursă aluvială (G. Gâță 1994).

	TIP DE PASTĂ			**Total**
	fină	**semifină**	**grosieră**	
Număr de fragmente	39	103	136	278
Procentaj de fragmente	14%	37%	49%	100%

Tab. 1. Repartizarea statistică a categoriior de pastă.
Statistical distribution of the paste categories.

Realizarea vaselor. Vasele din care provin fragmentele amintite au fost modelate cu mâna. La unele fragmente se poate observa modul de realizare prin metoda colacilor, în rupturile care apar în zona de legătură a lor sau când aceștia sunt vizibili în secțiunea fragmentelor. În alte situații aceste elemente, care indică tehnica modelării colacilor, nu apar în rupturi, fapt ce demonstrează ori o plasticitate foarte bună a lutului folosit, ori că au fost utilizate alte metode de realizare a vaselor, precum modelarea dintr-o singură bucată de lut, prin tăiere, ciupire sau adaos de material (L. Thissen 2012, p. 9).

Toate bazele de vase descoperite (n = 15) sunt drepte și cel mai probabil au servit ca suport pentru ridicarea pereților vaselor. Nu au fost identificate urme de rogojină sau alte materiale. Una dintre baze prezintă o perforație centrală realizată după uscarea lutului, dar înaintea procesului de ardere (fig.6/k). Nu au fost identificate vase cu picior, picioare de la vase de acest tip sau zone de legătură între vas și picior, deși acest tip este bine documentat în faza Vidra a culturii Boian (D. Berciu 1961, p. 392; E. Comşa 1974, p. 108-109).

Buzele (n = 42) sunt de obicei rotunjite la toate tipurile de vase, indiferent de categoria de pastă. Există însă şi cazuri de buze tăiate drept sau oblic. De exemplu un număr de patru fragmente din pastă fină au buza tăiată drept și prezintă crestături (fig. 6/c).

Tratarea suprafețelor. S-a putut observa că după realizarea primară a vaselor, pe baza datelor furnizate de fragmentele analizate, a existat un proces de netezire, sub diferite forme, pe ambele suprafețe. Tratarea diferențiată a suprafețelor este în strânsă legătură cu forma vasului și tipul de

[4] Ne referim la fragmentele cu pereţi subţiri, pe care le-am încadrat în categoria de pastă fină, chiar dacă mărimea granulelor de degresant depăşea 1 mm (nu mai mare de 1,5 mm).

decor ce urma să fie executat, care la rândul lor sunt în relație cu tipul de pastă din care a fost confecționat.

Datorită depunerilor carbonatice, din nefericire, pentru puține fragmente s-a reușit identificarea modului de tratare a suprafețelor.

Astfel, pentru cele din pastă fină, partea interioară este atent netezită, iar cea exterioară este lustruită în tehnica canelurilor orizontale, verticale sau/și "în zig zag".

Fragmentele din pastă semifină sunt doar netezite pe ambele suprafețe, iar unele dintre ele prezintă la exterior decor plastic, sub forma barbotinei organizată în vârci orizontale. Un singur fragment este decorat prin tehnica inciziei şi a impresiunilor (fig. 6/d).

Toate fragmentele din pastă grosieră sunt slab netezite la interior, astfel încât se pot observa cioburile pisate din pastă. La exterior netezirea este mai bine sau mai puțin executată, în funcție de decorul ce urma a fi aplicat. Fragmentele nedecorate, cât și cele cu decor plastic, sub forma barbotinei organizată în vârci orizontale sau cu brâuri alveolare sub buză, sunt insuficient netezite la exterior (fig. 7/b-i).

La toate vasele care prezintă decor excizat (n = 20) a fost observat un slip din lut fin, aplicat pe suprafața exterioară (fig. 8/a-e). Acesta avea o grosime de 1-2 mm și apare atât pe fragmentele din pastă semifină, cât și pe cele din pastă grosieră. De asemenea, acest slip a mai putut fi observat pe un singur fragment, realizat din pastă semifină, care însă nu avea decor excizat, fiind decorat în tehnica inciziei şi a impresiunilor (fig. 6/d). Astfel, pentru lotul ceramic analizat, putem considera că prezenţa slipului exterior este strict legată de decorarea ulterioară a vasului.

Arderea. În funcţie de distribuţia culorilor roşu, cărămiziu, brun, gri şi negru în secţiunea pereţilor fragmentelor ceramice am identificat tipurile de ardere *oxidant complet (OC), oxidant incomplet (OI), reducător complet (RC)* şi *reducător incomplet (RI)* (T. Ignat *et alii* 2012, p. 106). Din punct de vedere statistic (tab. 2) s-a putut observa că ponderea cea mai mare o reprezentau fragmentele arse oxidant incomplet (32% – n = 89), respectiv cele arse reducător complet (35% – n = 98).

	TIP DE ARDERE				**Total**
	OC	**OI**	**RC**	**RI**	
Număr de fragmente	34	89	98	57	278
Procentaj de fragmente	12%	32%	35%	21%	100%

Tab. 2. Repartizarea statistică a tipurilor de ardere.
Statistical distribution of the combustion types.

O primă concluzie care se desprinde, pe baza acestui criteriu de analiză, este aceea că majoritatea fragmentelor prezintă o ardere neuniformă. La suprafaţa fragmentelor apar, adesea, pete roşii, mai ales la cele de culoare neagră sau cenuşie, respectiv pete negre/brune pe cele de culoare roşie/cărămizie. Datorită acestui fapt, este dificil de precizat dacă tipul de ardere specific unui fragment este caracteristic pentru întregul vas din care a provenit sau nu.

Raportat la categoriile de pastă, toate fragmentele din pastă fină au fost arse *RC* sau *RI*, cu diferite nuanţe de brun sau gri la marginile secţiunii. Aceste diferenţe cromatice pot fi puse în legătură cu mediul de răcire al vaselor, indicând dacă acest proces s-a realizat în mediu deschis sau închis (O. Rye 1981, p. 118). La fragmentele din pastă semifină şi grosieră nu s-au putut identifica tipuri de ardere „preferenţiale". Astfel, pentru 82% din totalul fragmentelor, secţiunea este de culoare neagră sau miezul este negru și bine delimitat de margini, indicând o ardere într-un mediu reducător (O. Rye 1981, p. 116).

În general, pe baza datelor decelate, se poate conchide că procesul de ardere a implicat temperaturi joase pentru majoritatea fragmentelor analizate. Acestea nu au fost supuse unor analize de laborator care să confirme această ipoteză, însă arderea neuniformă a miezului și friabilitatea la contactul cu apa sunt indicatori ai acestei ipoteze.

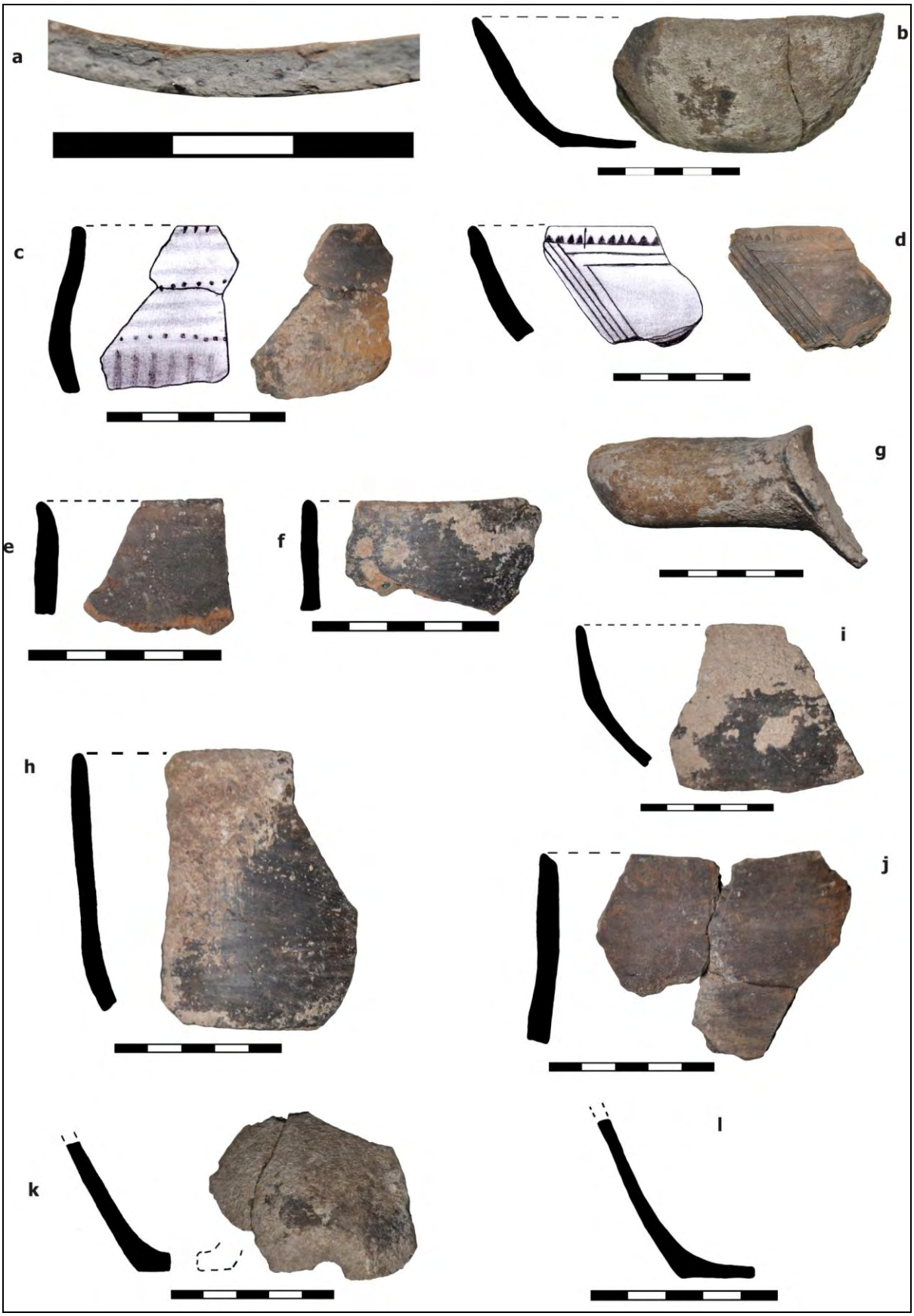

Fig. 6. Fragmente ceramice din complexul C3/2012. Scară în centimetri.
Ceramic fragments from C3/2012 complexe. Scale in centimeters.

Tipologia formelor şi a decorului. Fragmentaritatea ridicată a lotului provenit din C3/2012 reprezintă principalul inconvenient în stabilirea formelor ceramice. Din păcate, din tot lotul s-a reușit obținerea unui singur profil întreg (fig. 6/a). În aceste circumstanțe, a fost necesar să luăm în considerare toate fragmentele care prezentau caracteristici ce pot delimita forma vasului din care au provenit, încadrarea propusă, pentru una sau alta dintre categoriile de forme, nefiind una ce poate fi absolutizată. Încercând o împărțire cât mai verosimilă, având în vedere și lotul de fragmente redus, în cadrul căruia reprezentativitatea diverselor elemente constructive nu este una optimă, am decis să analizăm doar fragmentele de buze. Nu am putut introduce criterii de genul „forme închise/deschise" (L. Thissen 2012, p. 13-14) sau „vase tronconice/bitronconice" (T. Ignat *et alii* 2012, p. 105), deoarece cea mai mare parte dintre fragmente proveneau de la vase cu corp și/sau gât cilindric. Raportat tot la acest aspect, a fost necesară excluderea bazelor din categoria fragmentelor reprezentative pentru formă. Astfel, din cele 15 baze identificate, un număr de 13 provin de la vase din pastă semifină sau grosieră, cu partea inferioară tronconică (fig. 7/j, k). Însă, numeroase tipuri de vase, prezentate în literatura de specialitate ca fiind specifice pentru faza Vidra a culturii Boian, prezintă această caracteristică[5]. Bazele ce provin de la vase din pastă fină, două la număr (fig. 6/k, l), este posibil să fi aparţinut unor pahare înalte. Această ipoteză se bazează pe caracteristicile acestora, mai precis pe pereţii subţiri şi unghiului pereţilor inferiori faţă de orizontală (de 56°, respectiv 62°).
Din păcate, în România, doar D. Berciu şi E. Comşa au încercat o descriere sistematică a ceramicii fazei Vidra a culturii Boian. Împărțirea în trei mari categorii este asemănătoare pentru ambii autori, aceasta fiind realizată exclusiv pe baza unor criterii funcţionale[6] sau/şi tipologice[7], celelalte caracteristici fiind amintite la modul general sau doar acolo unde autorii le-au dat o anumită importanță. Formele identificate sunt descrise sub aspectul asemănărilor cu forme contemporane (D. Berciu 1961, p. 390-391) sau folosind descrieri geometrice detaliate (E. Comșa 1974, p. 108-112).

În cazul lotului ceramic provenit din C3/2012 s-a reușit identificarea unui număr redus de forme ceramice, toate regăsindu-se și în lucrările celor doi autori amintiți anterior, sub diferite descrieri. Acestea au însă un caracter subiectiv şi nu prezintă aceeaşi serie repetitivă de elemente caracteristice, elemente care să poată delimita o tipologie universal aplicabilă. Datorită acestui aspect am fost nevoiţi să coroborăm informaţiile din literatura de specialitate, cu cele extrase din analiza particulară a lotului nostru ceramic, în vederea unei redefiniri a tipologiei formelor ceramice posibile. Astfel, s-a considerat că descrierea formei în termeni geometrici, raportarea la tipurile de pastă caracteristice, precum şi specificarea tipului decorativ, sunt, de cele mai multe ori, suficiente pentru a observa recurenţe în modul oamenilor preistorici de a realiza ceramica (tab. 3). În acest sens, tipurile ceramice propuse sunt următoarele:

Tipul I. Vase de dimensiuni mici de formă tronconică simplă. Acest tip este reprezentat prin trei exemplare în lotul ceramic analizat şi este caracteristic pentru tipurile de pastă fină şi semifină (tab. 3). Singurul profil întreg din lotul amintit aparţine acestei categorii. Confecţionat din pastă fină, are baza dreaptă, pereţii scunzi, buza rotunjită şi nu prezintă nici un tip de decor (fig. 6/b). Un fragment dintr-un vas tronconic din pastă semifină prezintă un slip fin la exterior în care au fost trasate linii incizate oblic şi orizontal, iar sub buză a fost realizat un şir de triunghiuri în tehnica impresiunilor (fig. 6/d).

Tipul II. Vase cu corp tronconic şi gât scurt cilindric. Întâlnite sub denumirea clasică de „castroane" sau „castronaşe" în funcţie de dimensiunile acestora (E. Comșa 1974, p. 109, 113). Au fost confecţionate din pastă fină sau semifină (tab. 3) şi au ca element decorativ caracteristic canelurile dispuse orizontal şi paralel pe suprafaţa exterioară a gâtului. Un fragment de buză dintr-un vas de acest tip prezintă şi două şiruri orizontale de împunsături (fig. 6/c).

[5] Unghiurile pereţilor inferiori faţă de orizontală sunt cuprinse între 35° şi 51°, iar gama formelor de vase cu aceste caracteristici este foarte variată (tronconice simple, castroane, vase borcan, boluri etc.) (D. Berciu 1961, p. 390-392; E. Comșa 1974, p. 107-114).

[6] Autorii amintiți folosesc categorisiri de formă gen „*vase de uz comun*" (E. Comșa 1974, p. 107-108), expresie ce face trimitere, într-o manieră subiectivă, către modul de utilizare al acestora. În fapt, această expresie defineşte vasele lucrate grosier sau într-o „*tehnică primitivă*" (D. Berciu 1961, p. 384, 390).

[7] Pentru fiecare categorie mare, autorii respectivi definesc formele vaselor şi decorul specific. Descrierea decorului este detaliată. Se insistă asupra tehnicilor utilizate şi asupra organizării acestora pe suprafaţa vaselor, în încercarea de a surprinde evoluţii, caracteristici şi aspecte locale ale ceramicii fazei Vidra (D. Berciu 1961, p. 390-392; E. Comșa 1974, p. 107-114).

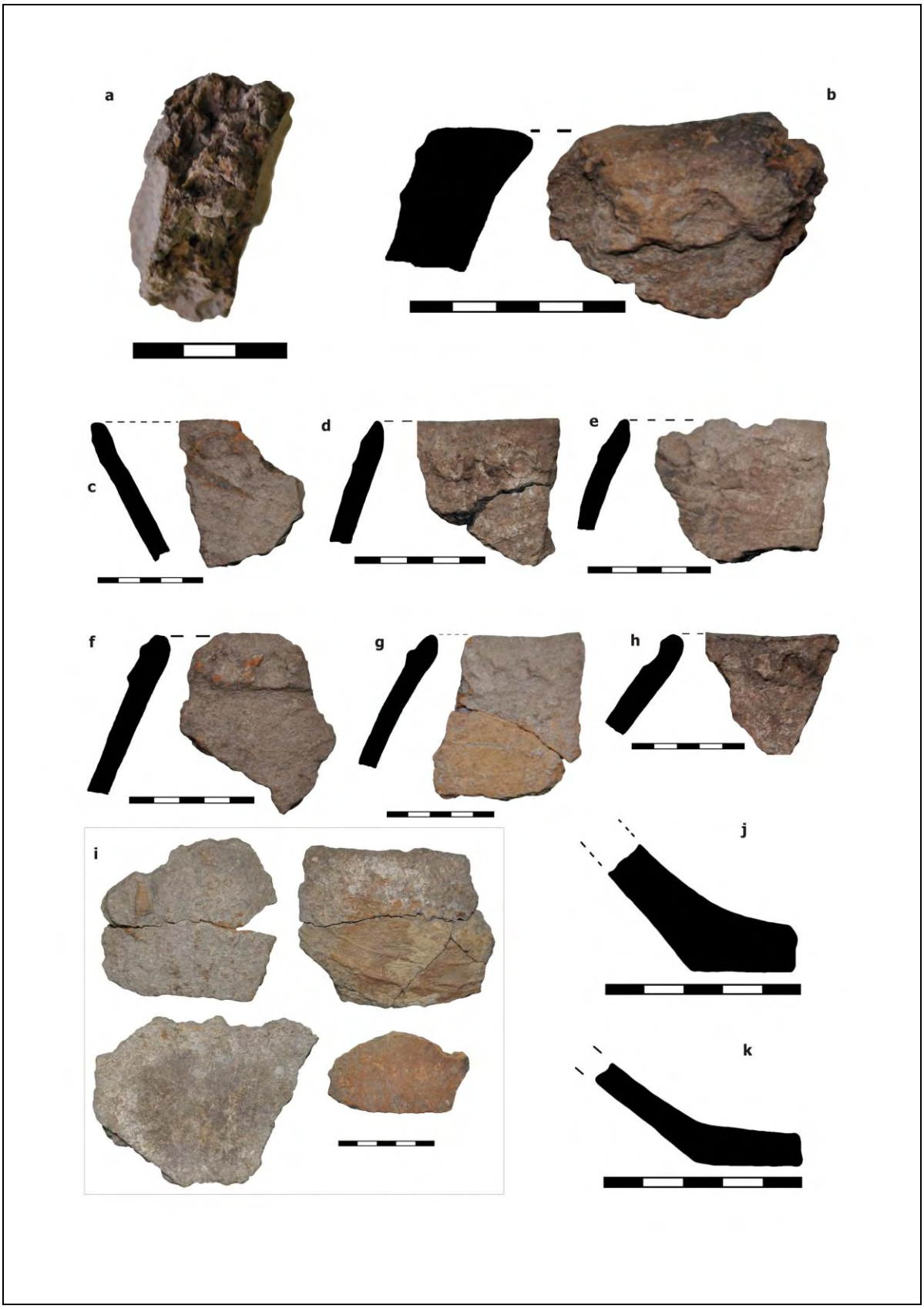

Fig. 7. Fragmente ceramice din complexul C3/2012. Scară în centimetri.
Ceramic fragments from C3/2012 complexe. Scale in centimeters.

Tipul III. Vase cu corp tronconic, gât lung cilindric şi zona de legătură puţin bombată spre exterior. Apar în literatură fie sub această descriere (E. Comșa 1974, p. 113), fie sub denumirea generală de „pahare" (D. Berciu 1961, p. 391). Au dimensiuni reduse şi sunt caracteristice pentru tipurile de pastă fină şi semifină (tab. 3). Toate fragmentele de buză analizate sunt decorate cu caneluri fine dispuse orizontal, vertical sau în „zig-zag", uneori aceste modele fiind prezente simultan pe acelaşi fragment, dar pe părţi diferite ale vasului (fig. 6/h, j).

Tipul IV. Vase de formă tronconică, înalte, cu pereţii puţin convecşi. Mai apar şi sub denumirea generală de „oale" sau „borcane" şi sunt reprezentative pentru „ceramica de uz comun" din faza Vidra (E. Comșa 1974, p. 107-108). Pasta din care au fost confecţionate aceste vase este predominant grosieră (tab. 3). Toate prezintă decor plastic, aplicat sub forma barbotinei organizate în vârci orizontale (fig. 7/i) sau , cel mai frecvent, cu brâu alveolar aplicat sub buză (fig. 7/b-h).

Tipul V. Vase cu corp cilindric. Seria formelor care prezintă această caracteristică este foarte variată și cuprinde vase de dimensiuni medii sau mari (E. Comșa 1974, p. 108-109; D. Berciu 1961, p. 391). Din nefericire, este dificil de stabilit o formă exactă a întregului vas prin raportarea doar la partea superioară. În lotul analizat au fost descoperite doar două fragmente de acest tip (tab. 3); ele sunt confecţionate din pastă grosieră şi au ca decor specific excizia încrustată cu pastă albă (fig. 8/c).

Pastă	**Formă**						**Decor**			
	Tip I	Tip II	Tip III	Tip IV	Tip V	Indet	Plastic	Incizat	Excizat	Pictat
Fină	2	5	7	0	0	25	18	6	0	0
Semifină	1	4	6	2	0	90	6	1	2	0
Grosieră	0	0	0	13	2	121	13	2	17	0
Total	**3**	**9**	**13**	**15**	**2**	**236**	**38**	**9**	**19**	**0**
Diametru la gură (cm)	12-15	12-23	9-17	19-30	21-32	-				

Tab. 3. Repartizarea statistică a tipurilor de forme și decor identificate în C3/2012.
Statistical distribution of the shape and decoration typology identified in C3/2012.

Toate fragmentele ceramice care nu au păstrat părţi din buze (*n* = 237) au fost considerate ca fiind *indeterminabile* ca formă (tab. 3). Însă, o parte dintre ele prezintă elemente decorative relevante pentru analiza noastră şi care trebuie menţionate. Astfel, un număr de şapte fragmente din pastă fină prezintă decor plastic sub forma canelurilor fine, dispuse orizontal sau în „zig-zag". Pentru pasta semifină merită amintit un fragment decorat complex, în tehnica exciziei, modelul reprezentat fiind compus din triunghiuri, benzi paralele şi oblice, cârlige meandrice, spaţiile excizate fiind umplute cu pastă albă (fig. 8/a). Decorul excizat, considerat de altfel elementul definitoriu al fazei Vidra, apare într-o proporţie mai mare pe fragmentele din pastă grosieră (*n* = 15). Toate fragmentele au pereţi groşi, foarte puţin curbaţi, şi provin cel mai probabil de la vase mari cu corp cilindric (D. Berciu 1961, p. 391; E. Comşa 1974, p. 108-109). Spaţiile cruţate sunt late, iar suprafeţele excizate sunt brăzdate de şanţuri şi dungi foarte înguste. Încrustaţia cu pastă albă este prezentă pe toate fragmentele amintite. Alternanţa spaţiilor cruţate cu cele excizat-încrustate creează forme geometrice unghiulare, sub forma triunghiului, pătratului, rombului etc. (fig. 8/a-d).

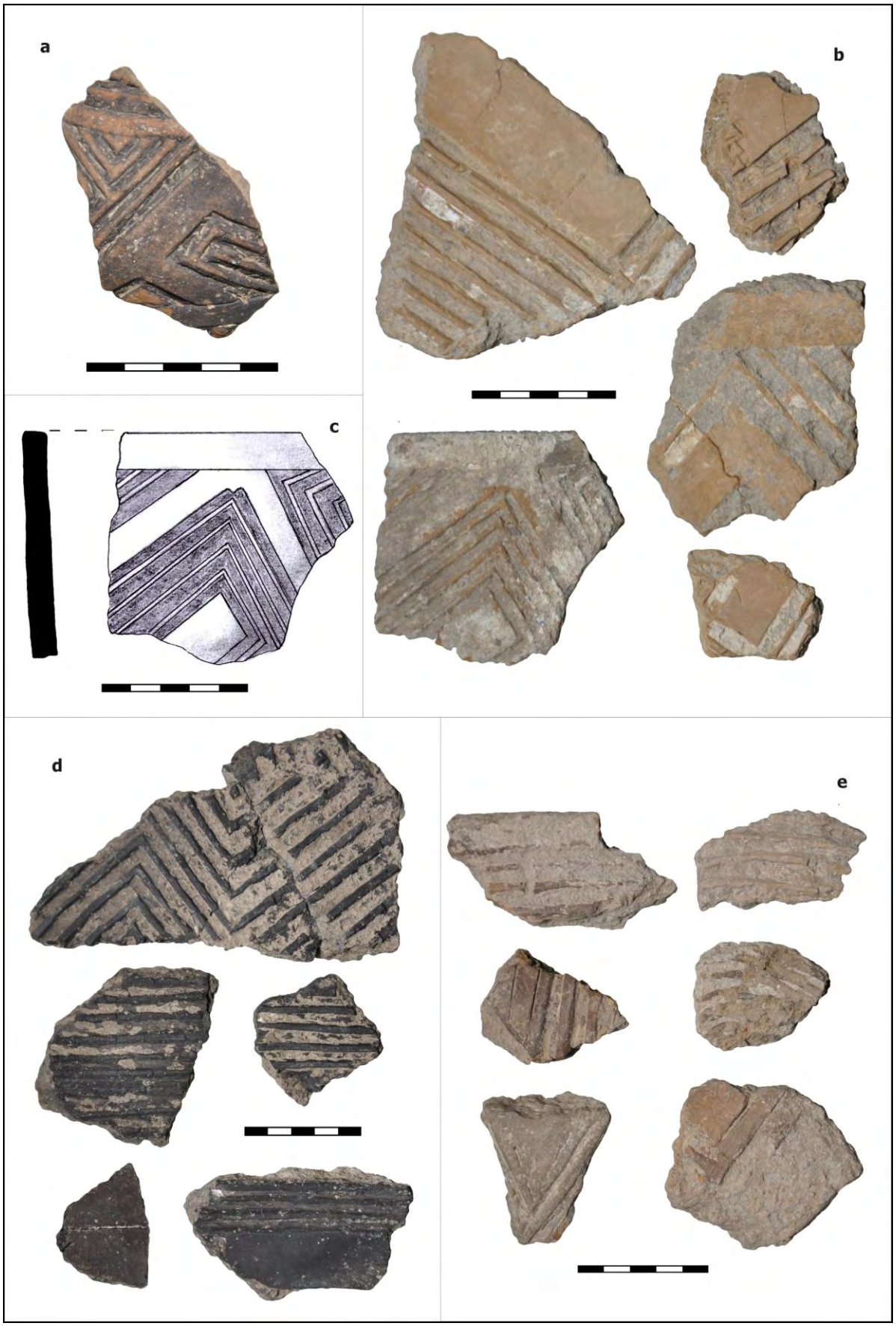

Fig. 8. Fragmente ceramice din complexul C3/2012. Scară în centimetri.
Ceramic fragments from C3/2012 complexe. Scale in centimeters.

* * *

Materialul ceramic descoperit în groapa C3/2012 prezintă toate caracteristicile specifice fazei Vidra a culturii Boian. Deşi eşantionul analizat este unul redus ca număr, s-a putut identifica trăsături definitorii în acest sens. În ordinea importanţei date de autorii ce au definit caracteristicile ceramicii Vidra, amintim în primul rând elementele decorative. În timp ce decorul plastic nu suferă schimbări considerabile de la o etapă evolutivă la alta, decorul excizat, prin complexitatea lui, este cel mai sensibil la schimbările de idei şi generaţii, deşi nu neapărat de populaţii. O serie de tehnici de realizare şi organizare ale decorului excizat, considerate ca fiind caracteristice fazei Vidra (D. Berciu 1961, p. 391-392; E. Comşa 1974, p. 109-111), sunt întâlnite pe fragmentele analizate. Amintim ca tehnici de realizare spaţiile largi cruţate şi suprafeţele excizat-încrustate brăzdate de şanţuri şi dungi înguste (fig. 8/b-e), cârligele meandrice (fig. 8/a) şi „scăriţele" în pătrăţele cu triunghiuri înscrise (fig. 8/b). Ca tehnică de organizare considerăm elocvent decorul organizat în „V"-uri cu romb în mijloc (fig. 8/c-d). Formele ceramice identificate îşi găsesc corespondent în cele descoperite şi descrise anterior de autorii amintiţi, însă fragmentaritatea ridicată nu ne permite aprofundări comparative. Rezultatele obţinute pentru procesul de ardere, tratarea suprafeţelor şi modul de realizare a vaselor nu pot fi utilizate pentru o încadrare crono-culturală exactă, acestea fiind specifice pentru o perioadă îndelungată a neoliticului şi eneoliticului dunărean. În schimb, pasta cu frecvente cioburi pisate din care au fost confecţionate fragmentele analizate este considerată un element de diferențiere între fazele Giuleşti şi Vidra ale culturii Boian[8] (E. Comşa 1974, p. 107).

Privită într-un cadru cultural mai extins, ceramica specifică fazei Vidra descoperită la Sultana-*Malu Roșu* îşi găseşte corespondent atât la nord, cât şi la sud de Dunăre. În zona de sud-est a Munteniei, precum şi în vestul Dobrogei au fost descoperite materiale asemănătoare, în special în baza *tell*-urilor (Hârşova, Tangâru, Vidra, Vlădicească etc.) (S. Pandrea 2000, p. 40-41; E. Naydenova 2010, p. 79). La sud de Dunăre, echivalentul fazei Vidra este cultura Polyanitsa cu fazele evolutive I, II şi III, atestată prin descoperiri mai vechi tot în baza *tell*-urilor (Polyanitsa, Radingrad, Lilyak, Smyadovo, Ovcharovo etc.) (H. Todorova 1995, p. 86). Săpături mai noi, din regiunile Veliko Tarnovo şi Shumen, au dus la descoperirea de noi materiale specifice fazelor amintite şi în aşezări deschise, puse însă în legătură cu locuirea unor *tell*-uri din apropiere (E. Naydenova 2010, p. 73).

◈ Materialele litice

Această categorie de materiale nu este foarte numeroasă, fiind destul de slab reprezentată în cadrul complexului C3/2012, printr-un eșantion de 15 piese (fig. 9, tab. 4).

Din punct de vedere tehnologic, 4 dintre piese sunt din categoria uneltelor obținute prin șlefuire (fig. 9/b, l, n), iar restul (*n*=11) din categoria pieselor cioplite (fig. 9/a, c-j, m).

Din perspectivă tipologică (tab. 4), în categoria pieselor șlefuite, constatăm prezența unui topor plat, neperforat, un topor rotunjit, neperforat (fig. 9/l, n), precum și două piese ce pot fi incluse în clasa râșnițelor (fig. 9/b). În ceea ce privește piesele cioplite, lotul analizat cuprinde numeroase aşchii (*n*=5) (fig. 9/a, e, f, g, k), lame (*n*=3) (fig. 9/ h, i, j), nuclee (*n*=2) (fig. 9/m) și un burin pe lamă (*n*=1) (fig. 9/c).

Dimensiunile pieselor se încadrează în limitele specifice perioadei eneolitice (tab. 4), unele dintre piese fiind fragmentare (*n*=7), altele fiind complete (*n*=8).

Analiza petrografică realizată aupra acestui lot (tab. 4), ne indică faptul că materiile prime utilizate pentru realizarea pieselor sunt destul de diverse. Astfel, în cazul obiectelor obținute prin șlefuire, au fost utilizate gresiile (*n*=3) sau calcarele (*n*=1). În cazul pieselor cioplite s-au folosit silicolitul format atât din calcedonie, cât și din cuarț microcristalin și criptocristalin (*n*=7), precum și gresiile (*n*=4). De obicei, această ultimă categorie de materii prime este mai puțin utilizată de către comunitățile preistorice în confecționarea de unelte cioplite, acestea constituind un element inedit și interesant în inventarul complexului C3/2012.

[8] Pentru toate etapele evolutive ale fazei Giuleşti (Greaca, Aldeni, Feldioara), E. Comşa identifică pleava ca fiind principalul tip de degresant utilizat în pregătirea pastei pentru ceramică (E. Comşa 1974, p. 97-106).

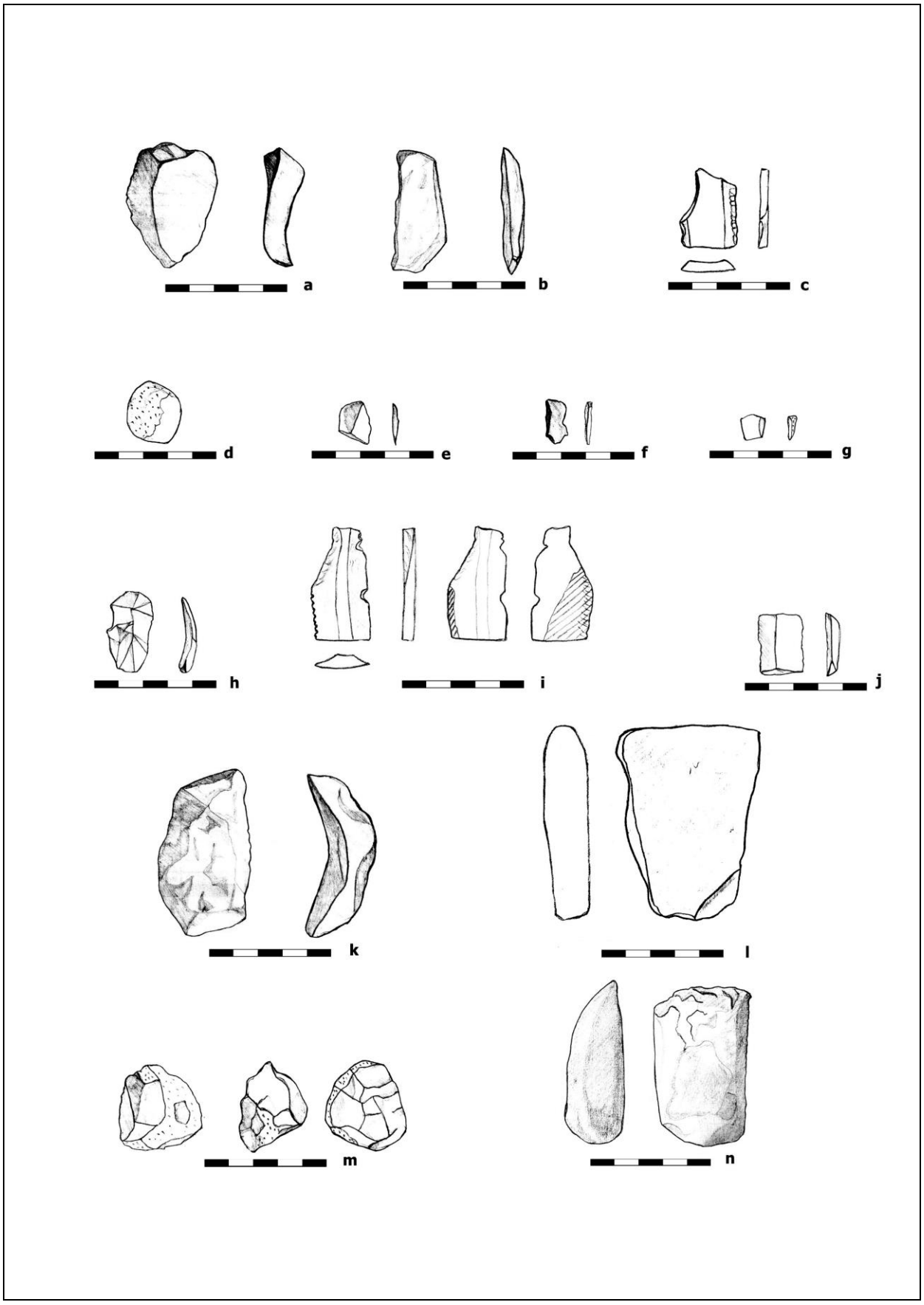

Fig. 9. Materialul litic din complexul C3/2012. Scară în centimetri.
The lithic materials from C3/2012 complexe. Scale in centimeters.

Nr. Crt.	Tip	Dimensiuni (cm)			Greutate (g)	Culoare[9]	Materie primă
		L	l	gr			
1	topor	6,6	3,6-3,8	0,5-2,3	100	7,5YR-7/3	calcar micritic laminat (?)
2	topor	8,0	3,6-5.9	1,4-1,6	121	N8	gresie cu structură izotropă, alcătuită din claste poliminerale (cuarț, muscovit, biotit etc.), liate cu ciment carbonatic
3	râșniță	8,2 - 10,2	6,1-8,6	1,8	258	N8	gresie micacee (cu muscovit) cu ciment carbonatic
4	râșniță	4,9	1,6-2,0	0,8	100	5YR-4/4	gresie roșie, alcătuită din siliciclaste, predominant cuarțoase și ciment silicios
5	burin pe lamă	3,1	1,5-2,2	0,4	4	10YR-5/4	silicolit format atât din calcedonie cât și din cuarț microcristalin și criptocristalin
6	lamă	2,4	1,7	0,5	3	10YR-5/4	
7	lamă	4,6	10,5-23,5	0,5	6,5	10YR-5/6	
8	lamă	3,3	2,0	0,5	0,3	10YR-6/3	
9	așchie	6,3	3,6	1,7-2,2	5,5	10YR-8/1	gresie fin granulară, alcătuită din claste poliminerale și ciment carbonatic
10	așchie	5,1	2,2-3,5	1,1	18	10YR-8/1	gresie calcaroasă, foarte fin granulară, alcătuită din siliciclaste poliminerale cu diametrul mai mic de 0,5 mm, cimentate de o masă carbonatică
11	așchie	1,5	1,2-1,3	0,2-0,3	0,2	10YR-4/4	silicolit format atât din calcedonie cât și din cuarț microcristalin și criptocristalin
12	așchie	1,5	0,6-0,8	0,2	0,1	10YR-6/4	
13	așchie	1,0	1,0	0,3	0,1	10YR-5/4	
14	nucleu	3,5	3,3-3,4	2,8	37	10YR-5/2	silicolit format atât din calcedonie cât și din cuarț microcristalin și criptocristalin
15	nucleu	5,3	5,0	-	113	-	gresie fin granulară alcătuită din claste poliminerale, cu diametrul mai mic de 0,8 mm, cimentate cu calcit

Tab. 4. Materialul litic din complexul C3/2012.
The lithic material from C3/2012 complexe.

◈ Alte materiale

Pe lângă categoriile prezentate anterior, în umplutura complexului C3/2012 (u.s. T1139) s-au descoperit și alte materiale arheologice.

Cele mai numeroase sunt fragmentele de chirpici ars, cu o masă de 5386 g. Fragmentele prezentau dimensiuni variabile, cel mai mare fragment fiind de 12 x 8 x 4,5 cm, iar cele mai mici având dimensiuni milimetrice. Toate fragmentele prezintă pleavă în compoziție și sunt arse la roșu-cărămiziu. Interesant este faptul că unele dintre ele păstrează amprente de nuiele cu diametrul maxim de 3 cm. Deși, pe suprafețele fragmentelor nu au fost observate urme de fățuială sau lipituri succesive, cel mai probabil ele provin de la pereți construiți în sistem paiantă. Printre fragmentele de chirpici ars a fost descoperită și o plăcuță de vatră din lut fin arsă la roșu.

Tot din interiorul complexului C3/2012 provine și o „bilă" de lut ars, de culoare cărămiziu pal, de formă neregulată, dar cu suprafețele moderat rotunjite. Dimensiunile acestei piese sunt de 5,4 x 4,5 cm, iar greutate este de 92 g. Nu cunoaștem analogii pentru această piesă.

În aceasta categorie intră și o piatră de râu, de formă rotundă, cu dimensiuni de 2,5 x 2,4 cm și greutate de 14 g, ce prezintă pe una dintre fețe o depunere carbonatică. Din punct de vedere

[9] Coduri atribuite conform Munsell Soil Color Chart 2009.

funcțional, această piatră de râu, cu toate că nu prezintă urme de prelucrare, putea fi folosită la diverse operațiuni de șlefuire sau lustruire.

La toate acestea se mai adaugă un calcar de culoare alb-gălbuie și o gresie slab stratificată, fără urme de prelucrare.

◈ Oase umane

Interesant este faptul că în complexul C3/2012 au fost identificate și două resturi osteologice umane, ce nu provin de la indivizii din mormintele (M54, M64, M66) care au relații stratigrafice de anterioritate/posterioritate cu groapa în discuție.

Primul element determinat este un incisiv medial, probabil inferior (acesta prezinta o spărtură coronală ce nu permite o determinare exactă), ce a aparținut unui individ adult. Al doilea fragment osteologic uman constă într-un fragment de diafiză femurală stânga, din extremitatea proximală (L = 93 mm, G = 30,9 g), ce a aparținut unui individ din categoria *Infans* (fig. 10). Din perspectivă tafonomică, acesta prezintă un orificiu pe parte interioară, cu dimensiuni de 5,9 x 4,5 mm, datorat cel mai probabil acțiunii fenomenelor post-depoziționale.

Fig. 10. Femurul uman din complexul C3/2012.
The human femur from C3/2012 complexe.

◈ Resturile faunistice

Lotul faunistic provenit din complexul C3/2012 este alcătuit din 158 de resturi osteologice. Datorită unor condiții obiective, fragmentele faunistice au fost recoltate în mod direct, fără cernerea sedimentului arheologic, activitate ce prezintă o serie de avantaje și dezavantaje (D. Popovici *et alii* 2002, p. 55-56).

Resturile faunistice care nu sunt foarte numeroase, aparțin moluștelor (clasa Mollusca) și mamiferelor (clasa Mammalia) (tab. 5). Preponderente sunt resturile de mamifere cu 101 resturi (63,9%).

Moluștele sunt prezente în cadrul spectrului faunistic cu 57 de resturi (36,1%) care aparțin genului *Unio* sp. (scoica de râu).

Dintre cele 101 resturi de mamifere au fost determinate specific doar 49 de resturi (48,5%). A fost identificat un număr limitat de specii (4), printre care predomină resturile de domestice: vita (*Bos taurus*), ovicaprinele (*Ovis/Capra*) și câinele (*Canis familiaris*). În material a fost descoperit un singur fragment de mamifer sălbatic și anume de cal (*Equus ferus*).

Specia	**NR**	**%**	**G**	**%**
Bos taurus	31	63,3	2180	90,2
Ovis aries/Capra hircus	14	28,6	139	5,8
Canis familiaris	2	4,1	2	0,1
Bos sp.	1	2,0	37	1,5
Equus ferus	1	2,0	58	2,4
Total fragmente determinate	49	100,0	2416	100,0
Total fragmente indeterminate	52		241	
Total mamifere	**101**	**63,9**	**2657**	**97,9**
Unio sp.	57	36,1	57	2,1
Total faună	**158**	**100,0**	**2714**	**100,0**

Tab. 5. Repartiția numerică și procentuală a resturilor faunistice descoperite în C3/2012 (NR – număr de resturi și G – greutate).
Numerical and percentage distribution of faunal remains discovered in C3/2012 (NR – number of remains and G – weight).

Repartiția resturilor de mamifere pe elemente anatomice ne arată o distribuție normală, toate regiunile scheletice (cap, coloană vertebrală, membre și extremități) fiind reprezentate, lucru care se observă mai ales în cazul bovinelor care au ceea mai mare pondere (tab. 6).

Vita domestică (*Bos taurus*) este atestată prin 31 de resturi care provin de la cel puțin doi indivizi: un subadult identificat pe baza unui radius și un adult de 4-6 ani determinat pe baza uzurii dentare. Descoperirea unui metatarsian întreg ne-a permis estimarea taliei animalului subadult/adult la 133,8 cm (indice Matolcsi; tab. 7), animalul fiind unul castrat (fig. 11). Această valoare a înălțimii la greabăn este apropiată de cea calculată la Vlădiceasca (nivelul Boian Vidra) cu o medie de 135 cm pentru castrați (n = 2) (A. Bălășescu, V. Radu 2004).

Element anatomic	**Taxon**				
	Bos taurus	*Ovis/Capra*	*Canis familiaris*	*Bos* sp.	*Equus ferus*
Dentes sup.		2			
Mandibula	1				
Dentes inf.	1	1			
Epistropheus	2	2			
et Vert. cv.	2				
Vert. thor.	1	1			
Vert. lumb.	2				
Costae	5				
Humerus	1	1			
Radius	2	1	2	1	
Ulna	1				
Carpalia	1				
Pelvis	1	1			1
Femur	3	1			
Tibia		1			
Talus	1				
Tarsalia	2				
Metatarsus	1	1			
Metapodalia		2			
Phalanx 1	2				
Phalanx 2	2				
Total	**31**	**14**	**2**	**1**	**1**

Tab. 6. Repartiția resturilor de mamifere pe elemente anatomice.
Distribution of faunal remains on anatomical elements.

Prezenţa unor indivizi castraţi de *Bos taurus,* determinaţi pe baza studiului metapodiilor a fost pusă în evidenţă în România meridională în mai multe culturi neo-eneolitice: Vinča (Parţa I şi II, Foeni, Sânandrei), Boian (Ciulniţa şi Vlădicească), Gumelniţa (Vlădicească) şi Cernavodă I (staţiunea eponimă) (A. Bălăşescu et *alii* 2005). Astfel de bovine castrate s-au mai identificat şi în aşezarea vinčiană de la Zău de Câmpie, dar şi la Divostin (S. Bökönу 1988) şi Obre II (S. Bökönу 1977). Descoperirea de animale castrate demonstrează că această tehnică era cunoscută populaţiilor preistorice încă din perioada neolitică. Este dificil de estimat, în acest stadiu al cercetării, dacă această operațiune (castrarea) se efectua în scopul obţinerii de animale mai docile care să se preteze la diferite munci sau aceasta era făcută doar în scopul de a avea animale mai grase cu un surplus de carne mai mare după vârsta de 2 ani.

Metatarsian	milimetri
GL	234
Bp	49
Dp	49,2
SD	29,1
DD	27,4
Bd	59
Dd	33,1
I2	20,94
I3	12,44
I4	25,21
Talie (indice Matolcsi)	1338,48

Tab 7. Dimensiunile biometrice ale metatarsianului de *Bos taurus* din C3/2012.
Biometric dimensions of *Bos taurus* metatarsus from C3/2012.

Fig. 11. Metatarsian de *Bos taurus* descoperit în complexul C3/2012:
față dorsală – stânga; față plantară – dreapta.
The *Bos taurus* metatarsus from C3/2012 complexe:
dorsal view – left; plantar view – right.

Ovicaprinele (*Ovis aries/Capra hircus*) sunt reprezentate doar prin 14 resturi care provin de la cel puțin doi indivizi: unul de 1-2 ani (după dentiție) și unul de circa 3 ani (după un femur în curs de epifizare proximal).

Câinele (*Canis familiaris*) este prezent prin două resturi de radius care provin de la un singur exemplar de vârstă relativ mică, sub 1,5 ani (epifiză distală neepifizată).

Calul sălbatic (*Equus ferus*) este reprezentat printr-un rest de ischion ce provine de la un animal subadult/adult.

Printre resturile studiate s-a identificat și un rest diafizar de bovideu de dimensiuni masive care este posibil să aparțină bourului (*Bos primigenius*), dar având în vedere vârsta sa juvenilă este dificil de încadrat din punct de vedere taxonomic și de aceea am preferat să-l includem la rubrica *Bos* sp.

Lotul de faună studiat este redus numeric (doar 158 de resturi) dar el ne permite să ne facem o idee asupra exploatării resurselor animale de către comunitatea umană care a locuit în aceste zone. Astfel ponderea relativ crescută a resturilor de bivalve sugerează că activitatea de cules a acestor animale juca un rol relativ important în timpul sezonului cald, când acestea sunt ușor de găsit și de recoltat pe malul râului Mostiștea, cu precădere în perioadele secetoase.

Piesele osteologice fragmentare de mamifere descoperite ne arată o predominare a animalelor domestice, în principal bovine și ovicaprine care erau exploatate ca furnizoare de carne și lapte. La categoria animalelor domestice se mai adaugă prezența câinelui, dar remarcăm absența porcului.

Vânatul este reprezentat doar de calul sălbatic, care este un mamifer de talie mare ce aducea o cantitate relativ importantă de carne, dar și alte produse: piei, oase etc. Ponderea sa redusă în cadrul spectrului faunistic ne demonstrează că vânătoarea este o activitate secundară de suplimentare a resurselor carnate.

* * *

Alte așezări Boian Vidra care au beneficiat de studii arheozoologice sunt: Bogata (O. Necrasov, S. Haimovici 1959), Vărăști (A. Bolomey 1966) și Vlădiceasca (A. Bălășescu, M. Udrescu 2005), toate situate pe teritoriul județului Călărași. Numărul de stațiuni Boian Vidra este limitat şi de aceea este dificil să comparăm loturi de faună care au între 100 și 200 de resturi faunistice (Bogata și Sultana-*Malu Roșu*), cu unul care are circa 400 (Vărăști) sau peste 3000 de fragmente (Vlădiceasca).

Remarcăm faptul că în așezările de la Vărăști, Bogata și Sultana-*Malu Roșu* resturile de moluște și pești (resurse acavatice) au o pondere relativ importantă. Acestea pot atinge valori de 27,5% la Vărăști (din 366 de fragmente), de 36% la Sultana-*Malu Roșu* (din 158) sau chiar 70% la Bogata (din 109). La polul opus se găsește situl de la Vlădiceasca care are doar 0,02% (din 3236 resturi).

Comunitățile Boian Vidra se ocupau în principal cu creșterea animalelor și în special a bovinelor (peste 50% din numărul total de resturi determinate) care sunt urmate la mare distanță de către ovicaprine. Suinele domestice sunt absente la Bogata și Sultana-*Malu Roșu*, dar prezente în număr redus la Vlădiceasca (3%) și Vărăști (10%).

În ceea ce privește vânatul, acesta are o pondere redusă (sub 10%) în majoritatea așezărilor studiate. Astfel s-au identificat doar un taxon la Sultana-*Malu Roșu* (cal sălbatic), doi taxoni la Bogata (vulpe și iepure de câmp), patru la Vărăști (cal sălbatic, mistreț, căprior și bour). Excepție face situl de la Vlădiceasca unde s-au identificat zece specii: lup, vulpe, bursuc, cal sălbatic, mistreț, cerb, căprior, bour, castor și iepure de câmp și ale căror resturi ating peste 13% din ponderea mamiferelor.

După cum se observă situațiile întâlnite în diferitele situri Boian Vidra sunt extrem de variate, ele fiind influențate cu siguranță de strategiile de exploatare a resurselor animale de către aceste comunități la care se mai adaugă în prezent, tehnicile de săpătură, de prelevare, precum și metodologia arheozoologică aplicată.

◈ Discuții și concluzii

În necropola de la Sultana-*Malu Roșu*, pe lângă complexele funerare propriu-zise, au fost descoperite și o serie de gropi contemporane cu mormintele, ce pot fi atribuite pe baza inventarului și a relațiilor stratigrafice secvenței eneolitice (C. Lazăr *et alii* 2009, 2012). Asemenea complexe s-au descoperit şi în alte cimitire eneolitice din Bulgaria (Viniča) sau România (Măriuţa-*La Movilă*), ele fiind interpretate ca „gropi de jertfe" (A. Radunčeva 1976), în directă relație cu anumite etape ale

ceremonialului funerar sau a ritualurilor comemorative (C. Lazăr *et alii* 2009, 2011).

După cum arătam și la începutul acestui studiu, groapa notată C3/2012 reprezintă un caz aparte în cadrul complexelor eneolitice cercetate până în prezent în necropola de la Sultana-*Malu Roșu*. Aceasta se datorează, în principal, relațiilor stratigrafice de anterioritate/posterioritate pe care acest complex le implică (fig. 5), ele constituindu-se în elemente suport la definirea secvențelor de utilizare a spațiului funerar, atât din perspectivă crono-culturală, cât și comportamentală. Pe de altă parte, C3/2012 se deosebește de alte gropi eneolitice, cercetate în cadrul necropolei, în principal datorită dimensiunilor sale mari.

Din perspectivă interpretativă, acest fapt ridică unele probleme. Situația se datorează, în principal, dimensiunilor complexului C3/2012, neobișnuite comparativ cu celelalte gropi cercetate în perimetrul necropolei (de exemplu C6/2007 sau C1/2009), puse în relație cu complexele funerare și diverse etape ale ceremonialului funerar sau comemorativ (C. Lazăr *et alii* 2009, p. 170-171). De asemenea, în cazul respectivelor gropi, puținele materiale arheologice recoltate se aflau în baza complexelor, situație ce nu poate fi aplicată în cazul lui C3/2012. Aici, majoritatea pieselor arheologice au fost prelevate din umplutura gropii (u.s. T1139). De asemenea, prezența unei singure unități stratigrafice (u.s. T1139), precum și caracterul unitar al acesteia, indică existența unui singur moment de umplere, cel mai probabil la foarte scurt timp după săpare. Acest fapt este demonstrat și de absența la bază, a unui nivel sedimentar fin, cu structura lamelară, care să ateste fenomenul de băltire a apei acumulate în urma precipitațiilor sau a unor elemente sedimentare care să dovedească prăbușirea marginilor gropii în interior.

În altă ordine de idei, dimensiunile complexului C3/2012 ar putea pleda în favoarea unei locuințe de tip bordei. Dar, această ipoteză nu poate fi susținută în lipsa unei amenajări de tip podea în bază, a unor elemente de construcție (gropi de pari) sau a unei structuri de combustie. De asemenea, absența unui nivel ocupațional la bază, sub forma unui sediment fin, datorat utilizării respectivei structurii, care ar fi putut măcar să pledeze pentru un caracter sezonier al acestei structuri, confirmă aserțiunea anterioară. De altfel, trebuie menționat că, până în prezent, din punct de vedere stratigrafic, în perimetrul necropolei de la Sultana-*Malu Roșu*, nu a fost identificată o unitatea stratigrafică distinctă, care să indice existența unui nivel ocupațional, conform accepțiuni clasice a termenului (*nivel cultural*), care să marcheze o eventuală locuire în zonă. Acestă observație reprezintă un alt element edificator, care, alături de celelalte date prezentate anterior, nu face viabilă ipoteza de lucru propusă.

Totodata, plecând de la dimensiunile lui C3/2012, s-ar putea considera că respectiva groapă ar avea o funcție practică, legată de anumite necesități ale comunităților preistorice din zonă (de exemplu extragerea lutului). Nici această ipoteză nu poate fi susținută, mai ales datorită morfologiei pereților și bazei gropii în discuție, dar și datorită caracteristicilor sedimentare ale umpluturii.

Revenind la diversele categorii de materiale descoperite în această groapă, datele rezultate par a indica o altă interpretare. Astfel, resturile faunistice descoperite în C3/2012 prezintă toate caracteristicile unor deșeuri menajere: o puternică fragmentare, urme de tăiere grosiere (de dezarticulare), urme de dinți – de carnivore în special (posibil şi de suine) şi foarte rar de rozătoare. Același lucru poate fi extrapolat și în ceea ce privește materialul ceramic, reprezentat doar prin fragmente, în majoritatea cazurilor care nu pot fi restaurate, ceea ce ne indică proveniența lor de la mai multe vase. Totodată, 50% dintre materialele litice recoltate din groapă sunt tot fragmentare, iar piesele complete, de cele mai multe ori, din perspectivă tipologică, sunt reprezentate de așchii sau piese al căror proces de fabricare nu a fost finalizat (unul dintre topoare – nr. 2, tab. 4 și fig. 9/l). Și aceste date pledează tot spre un caracter menajer. Așadar, coroborând informațiile legate de cele trei categorii de materiale arheologice majoritare din cadrul complexului C3/2012, se poate creiona ipoteza unei gropi menajere. Însă, nici această ipoteză nu poate fi susținută datorită aspectului cantitativ. Astfel, dacă raportăm cantitatea reprezentată de totalitatea materialelor arheologice recoltate (15931,2 g = 0,015931 m^3), la volumul estimat al gropii (4,4 m^3), constatăm că acestea reprezintă sub 0,2% din total. În aceste circumstanțe, având în vedere reprezentativitatea extrem de scăzută a materialelor arheologice, considerăm că nu este posibilă interpretarea complexului C3/2012 drept o groapă menajeră.

Cu toate acestea, ipoteza caracterului menajer al umpluturii, postulată strict pe analiza diverselor categorii de materiale arheologice, pare a avea ponderea cea mai mare. În mod cert, indivizii ce au realizat groapa în discuție, în momentul umplerii acesteia, au aruncat și o serie de resturi, constituite din elemente neperisabile. Ipotetic, putem presupune că, pe lângă acestea, au existat și materiale degradabile, cel mai probabil de natură organică (plante, lemn, piei etc.), ce nu s-au conservat. Însă, în absența unor dovezi concrete, care ar fi trebuit, măcar indirect, să marcheze

degradarea respectivelor resturi organice (lentile de cărbune sau de sediment diferențiate cromatic de restul umpluturii), această aserțiune nu este decât una pur speculativă.

Dincolo de aceste discuții, indiferent de caracterul menajer sau nemenajer al materialelor din umplutură, acestea se leagă de un moment cronologic posterior celui de realizare al respectivei gropi. În aceste condiții, apare întrebarea logică: care a fost scopul inițial al acestei gropi de dimensiuni mari? Din păcate, după cum arătam și anterior, nici una dintre ipotezele interpretative care ar fi putut explica acest complex, nu poate fi susținută. Totuși, pe baza datelor înregistrate în teren, a caracteristicilor morfologice ale gropii, dar și a particularității materialelor recoltate din u.s. T1139, considerăm că C3/2012 se apropie mai mult de un complex specific așezărilor, decât de unul specific zonelor funerare. Aparent, în contextul stratigrafiei orizontale și verticale a necropolei, un complex de acest tip nici nu putea fi prezent în acest perimetru. Însă, pe suprafața terasei (46856 m^2) pe care se află și necropola eneolitică, au fost semnalate urme de locuiri din aceași perioadă. Astfel, la marginea de vest a terasei, în punctul *Ghețărie*, este atestată o așezare din faza Vidra a culturii Boian (D. Șerbănescu, G. Trohani 1978). Distanța dintre C3/2012 și această zonă de locuire este de peste 320 m, motiv pentru care avem rezerve în a lega acest complex de așezarea din acel punct. În schimb, la cca. 85 m est de C3/2012, nu departe de *tell*, în anul 2004, într-unul dintre sondajele realizate, au fost surprinse urmele unei locuințe de suprafață[10], atribuită tot fazei Vidra a culturii Boian (R. Andreescu *et alii* 2005). Prezența unei structuri de locuire în zona respectivă poate fi dovada existenței unei eventuale așezări, de care, cel mai probabil, se leagă și complexul C3/2012.

Problema acestei gropi ce a făcut obiectul studiului de față rămâne deschisă, urmând ca cercetările viitoare din cadrul sitului de la Sultana-*Malu Roșu*, să ofere date noi care, poate, vor aduce lămuriri în privința acestui tip complex.

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[10] Din nefericire, datorită unor cauze obiective, locuința respectivă nu a fost cercetată, ea fiind descoperită într-un sondaj de verificare, cu dimensiuni de 2 x 1 m. Astfel, la -0,90 m a fost identificată o groapă de tip „sac" (groapa nr. 9), care pe baza materialelor ceramice recuperate din umplutură a fost datată în sec. IV p. Chr. Această groapă cobora până la -1,94 m, cotă la care a fost găsită locuința Boian, parțial afectată de respectiva groapă (R. Andreescu *et alii* 2005).

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Management of animal resources by Precucutenian communities and their impact on the environment based on recent research in sites from eastern Romania

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Abstract: Based on 33,693 animal bones from seven Precucutenian settlements (tab. 1, 2) the main features of the animal management and its impact on the environment have been established. A large scale of animal resources as cattle, sheep, goat, pig, small and big game, fish, mollusks would have been exploited. Considering the wild/domestic species report, relative to biotope, the statistics reveal some interesting aspects. The sample from Costişa individualizes by its high percentage of hunting, about 70.1%, of which 41.1% is assigned to red deer. Târpeşti site is placed on the opposite, with a rate of hunting of 5.34%. The settlements from Isaiia, Andrieşeni, Mândrişca and Târgu Frumos occupy an intermediate position with 14-30% participation of game. Related to domestic segment, a higher cattle rate is registered at Traian "Dealul Viei" - 79.89%, Andrieşeni - 71.92%, and a reduced one, around 55-66% at Târpeşti, Târgu Frumos and Isaiia. Costişa registers the lowest percentage of 20.6%. The Precucutenian communities were cattle breeders, less clear to Costişa. To mention that in all the above sites, management of sheep, goats and pigs was practiced on a small scale, their weight ranging from 0.4-11% for small ruminants and pigs 0.4-13%. Insignificant differences were recorded between sites about the strategy of mammals exploitation. Specifically, a similar cattle management, with an emphasis on meat and byproducts is evident in almost all cases. In small ruminants, published data are not sufficient for a proper statistical processing.

Rezumat: Pe baza a 33693 oase de animale din şapte aşezări Precucuteni (tab. 1, 2), au fost stabilite principalele caracteristici ale gestionării animalelor şi impactul acesteia asupra mediului. O gamă largă de resurse de origine animală, incluzând bovine, ovine, caprine, porcine, vânat mic şi mare, peşti, moluşte au fost exploatate. Având în vedere raportul de specii sălbatice/domestice, în raport cu biotopul, statisticile relevă o serie de aspecte interesante. Eşantionul de la Costişa se individualizează prin procentul ridicat de vânătoare, aproximativ 70,1%, din care 41,1% este atribuit cerbului. Situl de la Târpeşti se plasează la polul opus, cu o rată a vânătorii de 5,34%. Aşezările de la Isaiia, Andrieşeni, Mândrişca şi Târgu Frumos ocupă o poziţie intermediară, cu o rată de 14-30% a speciilor vânate. Referitor la segmentul domestic, o rată mai mare a bovinelor este înregistrată la Traian "Dealul Viei" – 79,89%, Andrieşeni – 71,92% şi o cotă mai mică, de 55-66% la Târpeşti, Târgu Frumos şi Isaiia. Costişa înregistrează cel mai mic procent, de 20.6%. Comunităţile precucuteniene erau crescătoare de vite, mai puţin cele de la Costişa. Să mai amintim că, în toate site-urile de mai sus, creşterea ovinelor, caprinelor şi porcului a fost practicată la scară redusă, ponderea acestora variind între 0,4-11%, în cazul rumegătoarelor mici şi 0,4-13% a porcinelor. Asupra strategiei de exploatare a mamiferelor au fost identificate diferenţe nesemnificative de la caz la caz. Concret, o gestionare similară a vitei, cu accent pe carne şi produse secundare este evidentă în aproape toate cazurile. În privinţa rumegătoarelor mici, datele publicate nu sunt suficiente pentru o prelucrare statistică adecvată.

Keywords: *Precucuteni culture, animal management, age profiles, selective hunting, landscape.*

Cuvinte cheie: *Cultura Precucuteni, gospodărirea animalelor, profile de sacrificare, vânătoare selectivă, mediu.*

Precucuteni culture (about 5100-4500 cal. BC) "gradually unveiled with an important role in the formation of the main features of the Eneolithic in Eastern Carpathians, reached the maximum development in the following period that of the splendid Cucuteni civilization" (N. Ursulescu 2008, p. 207). Evolving over a period of 1500 years it occupies an important place in the Southeast and Eastern European Neo-Eneolithic by opening the lasting evolution of the Cucuteni-Ariuşd-Tripolje cultural complex. This culture has gradually spread from West to East, but its presence in each region requires, at the same time, specific characteristics and different evolutionary patterns (N. Ursulescu *et alii* 2005, p. 217). In terms of archaeological excavations, many settlements have been investigated, but in terms of fauna their number is limited. Based on about 34,000 bones harvested from seven

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Precucutenian settlements in Moldavia, some common features of animal exploitation and its impact on the environment will be presented below (tab. 1, 2). The settlements developed in the extra-Carpathian regions of Moldavia, on floodplains of rivers, or on high terraces, but necessarily near a water source (fig. 1). The sector located westward of Siret river is well documented in archaeological terms, but relative to fauna only four sites are concerned: Costişa (G. El Susi 2009), Traian "Dealul Viei", Tîrpeşti (O. Necrasov, M. Ştirbu 1981) and Mândrişca-Valea Seacă (A. Coroliuc, S. Haimovici, 2005). By and large, they are located in Moldavia sub-Carpathian hills, altitudes of 200-300 meters dominating the surroundings. Costişa commune is located to the south-eastern limit of Neamţ County, inside Cracău-Neamţ Depression. The term "Cetăţuia" designates two plateaus, A and B; the first one is higher (the "Cetăţuia" itself), oval-shaped (70×36 m), visible from all directions, 3-4 km away. The second sector is shorter and measures 56×52 m, making connection with Bistriţa terrace. West, south and eastern sides of the promontory are steeply, the northern slope is smoother (A.D. Popescu, R. Băjenaru 2008, p. 6). The landscape is dominated by altitude with terraces, alluvial plains and deciduous forests, particularly sessile oak and beech. Much of the forests have been cut over time, replaced by grassland, secondary meadows and crops (G. Posea *et alii* 1982, p. 609-615). About 3,038 bones from the Precucuteni- Phase III were collected during 2001-2008s campaigns.

Taxa (%NR)	**Precucuteni II-III**			**Precucuteni III**			
	Isaiia			**Târgu Frumos**			**Andrieşeni**
	2002	2003	2005	pit 26	2003-04	2005	
Bos taurus	65.98	52.61	70.26	55.59	65.4	60.08	71.92
Ovis/Capra	5.48	12.75	10.77	11.08	11.03	15.46	0.43
Sus scrofa domesticus	6.12	8.65	7.81	2.28	4.26	5.24	0.43
Canis familiaris	0.38	0.22		1.94	0.11	0	
Cervus elaphus	10.07	8.86	5.52	6.73	6.58	6.85	8.65
Sus scrofa ferrus	7	8.86	0.94	5.75	5.01	5.51	5.4
Capreolus capreolus	1.78	3.45	1.08	7.36	3.98	1.75	0.86
Bos primigenius	1.27	3.45	1.61	7.86	2.48	3.63	11.24
Lepus sp.	0.13		0.27		0.04		
Castor fiber			0.4	0.32	0.04		
Ursus arctos	0.38	0.23		0.4	0.06		
Felis silvestris			0.13				
Martes martes					0.02		
Meles meles					0.02		
Vulpes vulpes					0.02		
Canis lupus				0.08			
Erinacaeus sp.		0.23					
Alces alces							0.21
Domestics	77.96	74.23	88.84	70.9	80.8	80.78	73.16
Wilds	20.63	25.09	9.95	28.52	18.25	17.74	25.98
*Equus caballus**	1.41	0.68	1.21	0.58	0.95	1.48	0.86
Total sample	***1050***	***981***	***895***	***1312***	***6743***	***772***	***463***

*not included in wild species group

Tab. 1. Taxa distribution in Precucutenian sites from lowlands.
Distribuţia taxonilor în situri precucuteniene din zonele joase.

The single sites dated in the first phase of the Precucuteni culture (N. Ursulescu 2008, p. 225) is that from Traian – "Dealul Viei" (commune Zăneşti), located in Cracău-Bistriţa Depression, on the middle terrace of Bistriţa River, in an area rich in springs that feed the Bahna stream. Prehistoric habitation developed on a plateau, naturally defended by steeply slopes on two sides and an artificial ditch barring the access from the plateau. Bio-geographically conditions are similarities with Costişa site, southward located, in the same valley. A substantial sample counting for 7650 bones, collected during 1956-1960s campaigns was published long ago (O. Necrasov, M. Bulai-Ştirbu

1965). Subsequently, another sample of 5,533 bones from 1960-1961s campaigns was introduced into scientific circulation (O. Necrasov, S. Haimovici 1970). The settlement at Tîrpeşti (commune Petricani) is positioned in Neamţ depression, on the middle terrace of Topolniţa River, in a named point "Râpa lui Bodai", 500 meters east of the village. Heights of 300-500 meters dominate the landscape, the agricultural lands substituting the ancient oak forests over time. The occupants of the terrace seriatim belonged to Linear Pottery, Precucuteni III and Cucuteni Cultures (S. Marinescu-Bîlcu 1981). A summary study about fauna from Precucuteni layer referring to a consistent sample of 4320 pieces (O. Necrasov, M. Ştirbu 1981, p. 174) was published some time ago. The settlement at Mândrişca-Valea Seacă is dated in Precucuteni II, beginning of Precucuteni III (S. Marinescu-Bîlcu 1974, p. 63), its faunal sample counting for 703 bones. Mândrişca is a village in the south of Bacău County, near the Valea Seacă stream, a tributary on the right side of Siret River. The archaeological site is located on a hill, pertaining to the last extension of Culmea Pietricicăi (Moldavia Subcarpathians), altitudes above 200 m dominating the landscape. Current vegetation includes secondary meadows, patches of floodplain forest (*Quercus petraea* in particular), agricultural lands (A. Coroliuc, S. Haimovici 2005a, p. 343).

Taxa (%NR)	Precucuteni III		Precucuteni II-III	Precucuteni I	
	Costişa	Târpeşti	Mândrişca	Traian 1956-60	Traian 1960-61
Bos taurus	20.6	69.84	69.72	79.89	78.58
Ovis/Capra	7.2	10.58	8.48	3.42	3.93
Sus scrofa domesticus	1.8	13.77	10.66	1.51	1.74
Canis familiaris	0.3	0.46	0.33	0.33	0.38
Cervus elaphus	41.1	3.33	6.32	8.86	9.28
Sus scrofa ferrus	15.8	0.332	2.66	4.37	4.06
Capreolus capreolus	2.8	1.11	0.83	0.84	0.69
Bos primigenius	4.4	0.28		0.23	0.16
Castor fiber	3.1	0.11		0.4	0.4
Ursus arctos	0.6	0.09		0.01	0.07
Martes martes	0.1				0.02
Vulpes vulpes				0.02	
Canis lupus	0.04	0.02		0.09	0.11
Domestics	29.9	94.65	89.19	85.15	84.63
Wilds	67.9	5.28	9.81	14.8	14.79
Equus caballus*	2.2	0.07	1	0.05	0.07
Total sample	***3038***	***4550***	***703***	***7650***	***5533***

*not included in wild species group

Tab. 2. Taxa distribution in Precucutenian sites from hilly regions.
Distribuţia taxonilor în situri precucuteniene din zonele deluroase.

The second group includes settlements at Isaiia, Târgu Frumos, Andrieşeni, located to the East of Siret River, in the lower extra-Carpathian regions. Isaiia "Balta Popii" (Răducăneni commune) habitation is located about three kilometers northeast of Isaiia village, on the right Jijia River terrace, nearby the confluence with Prut, in southeastern part of Iaşi County. Geographically it is about midway among the eastern boundary of the Central Moldavian Plateau and the Jijia-Prut plain. Altitudes of 50 m characterize the landscape and chernozem soils with brown spots are evidence of a forested area in the past. The vegetation is dominated by "Quercetum mixtum" type with tartar maple, a thermophilic element. About one km away there is a salted place, "Gârla Sărăturii", important source of salt for community and livestock (N. Ursulescu, A.-F. Tencariu 2006, p. 12). In our approach we used information provided by 2,926 animal bones from 2002, 2003 and 2005s campaigns (S. Haimovici, A.-F. Tencariu 2004, p 301; S. Haimovici, F.-A. Tencariu, 2003, p. 152-153; S. Haimovici, A. Vornicu 2006, p. 190-191), dated in Precucuteni II-III (N. Ursulescu 2008, p. 225). The settlement Târgu Frumos – "Baza Pătule" is located in the south-western part of the Moldavian Plain in "Şaua Ruginoasa-Strunga" subunit that connects the Siret corridor to Jijia-Bahlui basin. The Precucutenian site developed on a

fragment of high cuesta, in the north-est of Târgu Frumos town, on the right side of Adâncata stream, a tributary of Bahluieţ River. The site covers an area of ten hectares across and it entered the archaeological literature as "the vastest habitat by now in the area of the Precucuteni Culture" (N. Ursulescu *et alii* 2002, p. 29). It is dating in the third phase of the culture, different levels providing rich faunal samples throughout the research. An interesting material totalling 1,312 fragments was collected from the ritual pit no. 26, during 1998-1999 campaigns (S. Haimovici, A. Coroliuc 2000). Another large sample counting for 6,743 bones was brought to light during 2004-2005s campaigns. It comes from several waste pits and dwellings (A. Coroliuc, S. Haimovici 2005b, p. 289-290). Overall, 8,055 fragments will be taken into consideration in the following. The site at Andrieşeni is located to the east from Jijia River, in the sector where it just flows from high to low plain. Currently, the vegetation consists of soft trees as willow and poplar, nearby salted soils also existing. The sample of bones includes 463 pieces, exclusively from mammals, dated in Precucuteni III (A. Coroliuc 2005, p. 8). The listed settlements together have provided about 33,963 bones, the figure is relative, and some samples have not yet been published. Far and away, the material is more than suffice for the proposed approach.

Given the frequency of wild taxa relative to various biotopes, some interesting aspects have been revealed by statistics. Already the usual distribution of wild mammals according to their major requirements[1] for a particular biotope in: stenoecious - forest[2] taxa (red deer, boar, bear, wild cat in our case), stenoecious - forest-steppe/steppe (roe deer, hare, aurochs, horse), stenoecious - aquatic medium (beaver) or euryoecious taxa (wolf, fox, badger, marten), put forward some interesting aspects. Everywhere, the report among these groups shows the prevalence of species, pointing out a forested environment, despite location, uplands or lowlands. Sometimes, there are some oscillations, even within the same site. The sites from lowlands show a rather constant proportion of the game, ranging among moderate limits: 18.7% in Isaiia (three samples' average), 21.51% in Târgu Frumos, and a maximum of 26% in Andrieşeni (fig. 2, 6). Hunting rate significantly varies from one sample to another in case of Isaiia, with a maximum of 20.63% in 2004s sample, and a minimum of 9.96% in 2005s sample. In parallel the "forest" grouping noticeable decreases from 17.45% in 2002s sample to 6.6% in 2005s sample (fig. 3, 6). According to the authors, the surrounding landscape was forested and given the site altitude, it was composed of oak and other hardwood species. Beaver also lived about the same environment: meadow forest, consisting of softwood on "dead channels" of Jijia and Prut rivers. "The inhabitants used to clear the area for agriculture, and the wooden vegetation was redoing over time" (S. Haimovici, A. Vornicu 2006, p. 192).

The sample from Târgu Frumos is more homogenous. The wilds' share decreases from 28.53% to 17.74%, in consonance, about 11-12% is the share of the "forest" item opposite 6-7% that of forest-steppe (fig. 4). Just the pit 26 gives a different image, namely an increase of opened-landscape taxa frequency (aurochs and roe deer) up to 16%. Taking into account its special character "worship pit, at least in a stage of its filling" (S. Haimovici, A. Coroliuc 2000, p. 169), it would provide a certain explanation. The faunal analysis also suggests "the area around the settlement was heavily forested; the steppe which are lying over the region at present was not yet developed. At the same time, the hydrographical network was far richer compared with the present, the rivers and streams would have had larger floodplains, with softwood trees, favorable conditions for beaver" (Coroliuc, Haimovici 2006, p. 367).

A lower percentage (14%) of wooden biotope mammals is found in Andrieşeni (fig. 5, 6). Instead, the other grupment reaches a close value, 13%. Aurochs itself sum up 11.24% compared to 8.65% - the rate of red deer. A fragment from an elk antler was found in the sample. The animal to whom belonged it, being probably a specimen wandered through the area. "It came accidentally during winter migration from north to south. Even today, specimens of elk, wanders sometimes longer Jijia Valley or in the Danube Delta". Anyway the elk identification, a taxon of wet forest or wetlands suggests such conditions in the surroundings of Andrieşeni (A. Coroliuc 2005, p. 10). At present the landscape has changed a lot, compared to Eneolithic epoch due to intense human activities. Over extra-Carpathian region, the decrease in forest areas has led to steppisation. Zooarchaeological observations confirm these data. In the osteological materials there were identified a lot of wild taxa,

[1] The distribution is somewhat arbitrary, for example red deer entered into "stenoecious – forest" grouping was widespread both in open deciduous and mixed woodland and in grasslands, meadows, river valleys and flood plains.

[2] Woodlands like form of patches, not necessarily compact.

characteristic for forest-steppe with large hardwoods; the forests, both primary and secondary with brush and many clearings, margins and many shrubs and lees.

On the other group of settlements located in the sub-Carpathian hilly regions, the share of the game varies between wide limits, 5.28% in Tîrpeşti, 9.81% in Mândrişca, 14.8% in Traian "Dealul Viei" and 67.9% in Costişa (fig. 7). In this context, red deer reaches a minimum of 3.3% in Tîrpeşti, 6.3% in Mândrişca, 8-9% in Traian, and maximum of 41.1% in Costişa. The small rate of the game in Tîrpeşti may be correlated with some sporo-pollinic data. According them, the tree pollen consistently reduced from 43.5% to 21.2%, starting with Precucuteni phase in the habitation, suggesting important clearings. "Reducing forest areas are correlated with progressive highlighting of grain, which in turn are consistent with periods of intense habitation". A significant decrease in arboreal pollen and grain, possibly due to climatic deterioration, meaning aridity, is visible at the end of Precucutenian and beginning of Cucutenian levels. The forest regains ground along the Cucuteni inhabiting, but not on a large surface as before. As a significant fact, there is a balance between forest and cultivated areas, throughout habitation, resulting from the ratio of arboreal pollen (slightly varying between 16.7 - 23.2%) and cereals (11.3 - 12.3%) (M. Cârciumaru 1996, p. 120).

Related to Costişa, it astonishes the unusual rate of hunting, more than two thirds of bones originating in wild species. It may suggest that Costişa community was specialised in hunting and secondly, in husbandry. Hunting was focused on red deer exploitation, which share is 41% in Costişa. According to present data, hunting was practicing mostly at the end of autumn (rather becoming winter) and in spring - late spring. His capture was little done in summer, the mammal migrating to the highlands. It could suppose a seasonal hunting, inferring a certain strategy adapted to its behaviour. The unexpectedly high rate of young/ sub-adult exemplars probably suggests either a preference for meat of good quality or points toward certain difficulties appeared at a moment, in the community food supplying. Anyway the statistics reflect a higher density of red deer in the area, as a result of propitious living conditions, suggesting less deforestation as well. The wild boar has a significant participation in the game by 15%. An important share of beaver of 3.1% in contrast with a reduction below 0.5% in other samples it is worth mentioning. Overall, the grouping of "forest" mammals accounts for 57.5%, the highest value of all listed sites (fig. 7). Certainly the proportion of hunting not only reflects a certain type of biotope but rather an obvious occupational structure of the community. Certainly a well-defined segment of the community was specialized in game capture. But one cannot ignore the large number of remains from red deer, wild boar, which reflects a more wooden environment than present. Remember that, horse' frequencies are separately inserted into statistics, hereby I'm complying with authors' decision and therefore we used this system everywhere.

Horse contribution in the diet was minor, its bones accounting less than 2% in all settlements, excepting Costişa with 2.2%. Its frequency is too low, even for an element of wildlife. Domestication problem is thorny, with pros and cons. The taxon is considered under domestication/ timing or wild, in the mentioned settlements, according authors. Incidentally, I think the horse bones from Costişa, rather come from captured animals than domestics. About 38% of its remainder originates in meaty regions of legs, as well one third from horse bones come from immature exemplars, most part of them originating in exemplars that reached the complete body maturity. An individual of small stature - 132 cm and „half-massive" extremities (metatarsal slenderness index - 12.8) was found (G. El Susi 2009, p. 120). The horses' metacarpals-the cannon bones on domestic horses are thinner, more gracile than those of wild horses. A.K. Outram and his stuff describe the shin bones from Botai as being closer in shape and size to those of the Bronze Age (domestic) horses. According to A.K. Outram and his stuff, "three independent lines of evidence demonstrating domestication in the Eneolithic Botai Culture of Kazakhstan, dating to about 3500 B.C. Metrical analysis of horse metapodials shows that Botai horses resemble to Bronze Age domestic horses rather than Palaeolithic wild horses from the same region. The leg bones of the Botai horses are thinner than those of wild horses. Pathological characteristics show that some Botai horses were bridled, perhaps ridden". Evidence of horse milk was found in Botai as fatty lipid residues insides of ceramic vessels, as well evidence for the consumption of horse meat in rider burials (A.K. Outram *et alii* 2009, p. 1332-1335). These data support domestication of the horse among about 3500-3000 BC sites in today Kazakhstan. Corresponding with some views, after the domestication in the North Pontic steppes, about 1000 years later the horse would have reached the Central and Eastern Europe, and probably our regions. According to some archaeozoological data, published some time ago, bones of horse, sporadically appear in the lowlands of northern Balkans during Eneolithic (Baden culture, *c.* 3300 BC). For the first time, domesticated horse bones came to light in pits, dating from the Early Bronze Age, from Novačka

Ćuprija and Crkvina, at around 2800 BC (J.H. Greenfield 2006, p. 230). However, from the beginning of the Bronze Age the bones become more numerous (J.H. Greenfield 2006, p. 230). In the central Balkan horse bones do not appear earlier than Early Bronze Age, so the Eneolithic levels at Petnica, Novačka Ćuprija and Vinča did not include domestic or wild horse bones. In Hungary, numerous remains appear in the lower levels from Tószeg and in the Early Bronze settlement from Tiszaluc-Dankadomb, not to mention the Bell Beaker type site from Csepel-Haros focused on "horse keeping" (S. Bökönyi 1974, p. 241). In sites across Romania, fully domesticated horse materials occasionally appear in some Early Bronze Age settlements from Transylvania, for instance in habitation of Schneckenberg type at Hărman-"Dealul Lempeş" (S. Haimovici, G. Gheorghiu-Dardan 1970, p. 501), or of Iernut group from Zoltan (D. Moise 1997, p. 239). In the South-West Romania only three bones (impossible to tell if domestic) were identified in the Late Sălcuţa level at Ostrovul Corbului (personnel data). In the lower regions of the Romanian Banat, domestic horse bones earliest were found only in Gornea-Orleşti type settlement from Foeni – "Cimitirul Ortodox" (G. El Susi 2001, p. 224).

Domestic segment prevails in almost all cases, regardless of site location, lowlands or uplands. Costişa is an exception as will be seen further along. Constantly in all settlements on the plain, the share of domestics little varies, between 71-88%. The rule partially applies to the other group of settlements, which the variation is broad, 30-95%. In lowland sites, cattle reach the maximum rate in Andrieşeni, 71.92%, somewhat lower in Isaiia, 62.95%[3] and 60.36% in Târgu Frumos (fig. 8). In the upland, in terms of numbers of fragments, there are sites with a much higher rate of cattle, on average 80% in Traian, around 69% in Tîrpeşti and Mândrişca. Costişa is an exception by its 20.6% cattle rate. It is obvious that Precucuteni communities widely practiced cattle breeding, regardless of geographical location. In fact, it is one of the defining features of the husbandry. Invariably, they were practicing a proper management of food resources and their maintenance as well. Certainly, the climate situation and environment were conducive to management of numerous herds, probably they were the subject of an active intertribal trade. Breeding of small-sized mammals, i.e., sheep, goat and pig was less important for precucutenian tribes. Usually ovicaprids rank the second in almost all samples, their share ranges from 0.43% in Andrieşeni[4], and 9.66% in Isaiia (mean of the three samples). Târgu Frumos contrary to exception records 12.5%. Small ruminants do not reach large values, even in hilly regions. About 3.6% records in Traian sample, 7.2% in Costişa, 8.5% in Mândrişca and 10.58% in Tîrpeşti (fig. 9). Perhaps the environment, less soughty, was not befitted for their breeding. In terms of pig exploitation the percentages are reduced like those of ovicaprids. If so there were plenty of oak forests thereabout, proper for feeding, pig breeding would have been little practiced in most part of settlements. The species records reduced rates in Andrieşeni (0.43%) Târgu Frumos, Traian, Costişa (between 1-4%), something more in Isaiia (7.5%) and Mândrişca (10,6%). The taxon outnumbers the small ruminants in frequency by 13.77% in Târpeşti (fig. 6, 7). It seems that, beef and venison would have been able to cover the needs of communities, in terms of meat requirements, along this epoch.

With regard to mammals' exploitation, the "strategies" little differ from case to case. In almost all cases the slaughter of cattle took account of keeping an important stock for by-products (about 30%). As regards the proportion of animals kept for meat, over a year old specimens, usually sub-adults, were selected for slaughter. When interpreting the faunal remains from cattle one cannot compulsive suggest that the large number of their bones everywhere shows the using exclusively as meat source. About age of slaughter, in some articles one specifies like that: "the presence of females kept to an old age for milk, castration of males (sometimes indirectly proven), the shortage of youth, many adults especially mature, so at the optimal age for the economical activity, but lesser individuals between 5-7 and 7-10 years showing of very similar curve to the one of Târgu Frumos" (Haimovici, A.-F. Tencariu 2004, p. 302; S. Haimovici 2004, p. 100), or "regarding the age of slaughter of cattle, the determined fragments are only from adults and matures, probably keeping the youth"[5] (A. Coroliuc 2005, p. 9). In Traian and Târpeşti the cumulative share of cattle slaughtered over two years is about 67.9% (O. Necrasov, M. Bulai-Ştirbu 1965, p. 26). Distribution by age classes is presented in the following way to Costişa. There is a small proportion of individuals culled in their first year, 5.26%. The share increases up to 36.84% between 1–3 years. 26.3% is recorded between 3-4.5 years and 26.3% over limit. Also slaughters occured mainly during warm season, starting with late

[3] Average of three samples.
[4] Reduced sample would provide an explanation for this small value.
[5] Talking about Andrieşeni.

spring. The proportion decreases towards the end of autumn, two individuals are concerned in our case. The ratio sub-adult/ adult is 1/1.25, suggesting cattle employment for beef, dairying, working and breeding. A similar management of cattle, focused on meat and by-products is found in Mândrişca (fig. 10). No animals under one year, a percentage of 34.37% up to three years, 37.5% to 4.5 years, and 28.13% over. Were also identified, bones from animals 7-10 years old (S. Haimovici 2005, p. 345). About castration in cattle, information are scattered and evidence is indirectly. For instance, two broad proximal phalanges, slightly deformed from Costişa sample would suggest cattle using at traction. Also, five horn-cores from gelds individuals are ascertained in Târgu Frumos (S. Haimovici, A. Coroliuc 2000, p. 176). Unfortunately metapodials from gelds have not yet been identified nowhere, the evidence about that practice being, we keep repeating, indirect. Obviously, the scanty samples from small ruminants have not provided sufficient data on age-class distribution. Let us remind that, out of five specimens, one is a lamb and four reached 3-4 years at death in Isaiia (S. Haimovici 2004, p. 100).

The mortality profiles in sheep/goat suggest an exploitation of milk (goat + sheep) and meat in equivalent proportions at Costişa. One goat killed between 2-3 years and two over 3-4 years were identified at the site. Sheep sample provided bones from two exemplars 6-10 months old, one between 12-18 months, two between 18-24 months and another two by 3-4 years (G. El Susi 2009, p. 117). Almost an identical age-class distribution was found in Târgu Frumos. The graph from fig. 11 shows two peaks, between 1-2 years, and over 3-4 years, suggesting an equal proportion between immature and mature presumed specimens. That is, only 13.3% individuals under one year, 40% between 1-2 years, about 10% between 2-3 years, and 36.7% over 3-4 years. Even four exemplars, over 5-7 years were presumed (S. Haimovici, A. Coroliuc, 2000, p. 201). In the other sites, the published data are not sufficient for detailed considerations.

	Isaiia				Tg. Frumos		
	2002	2003	2004	2005	pit 26	2003-04	2005
Mammals	74.77	44.75	64.59	83.02	99.52	96.7	96.37
Birds, Reptiles	0.09	0.4	0.24	0.22	0	0.02	3.63
Fish		22.32	1.13	0.45	0	0.01	0
Molluscs	25.14	32.51	34.03	16.31	0.48	3.24	0

	Andrieşeni	Costişa	Târpeşti	Traian, 1960-61	Mândrişca
Mammals	100	99.11	94.32	99.73	100
Birds, Reptiles	0	0	0	0.02	0
Fish	0				0
Molluscs	0	0.89	5.68	0.25	0

Tab. 3. Distribution of animal groups in Precucuteni sites.
Distribuţia grupelor de animale în situri Precucuteni.

In case of the pig, data are non-itemized for an appropriate statistical processing. Let recall the results of the sample at Costişa. One third of pig specimens were slaughtered in their first year of life, especially between 6-12 months, 20% in the second year, (mainly in the first half) and one third after two years. Only two animals were heavily worn dentitions, the others medium, light. Likely, the animals were kept for feeding in the adjacent forests during warm season. In this context interbreeding with the boar (numerous in the zone) happened. A different use of the pig is noted in the case of Isaiia (fig. 12). That is, a maximum slaughter of animals under a year (27.6%), and another between 2-4 years, 55.56% (S. Haimovici 2004, p. 100). If the site Târgu Frumos, it has also retained a rate of 50% meaning adult and mature specimens (S. Haimovici, A. Coroliuc 2000, p. 185). Only in the case of Costişa, the percentage of individuals kept for reproduction is reduced, 15.39%. The same prevalence of young people and adults (87.5%) were also found at Mândrişca (A. Coroliuc, S. Haimovici 2005a, p. 346). Anyway, the pig breeding was focused on meat and lard, as usual.

About the exploitation of animal resources other than mammals, the statistics set forth the following. At Isaiia the shells were collected, possibly for human consumption, though their gathering was a predatory (valves originate in very young specimens, useless as food), of course, as raw

limestone material, for pottery "industry". Mollusks' share ranges between 16.31%-34.03% in Isaiia, in various campaigns (tab. 3). It is the highest value recorded in Precucuteni settlements, the other ones reaching below 5.6% (Târpeşti). About the shellfish sample from Târgu Frumos one supposed they were used, only as source of calcium for ceramics, due to valves' size variability and small quantity. Fishing was occasionally practiced, the sites being located in the rivers' proximity. Unfortunately the fish remains were not preserved in all cases. They record a maximum in Isaiia, 22.32%, campaign 2004. According to the authors "although fish are relatively numerous, they are small specimens, one summer old, which were caught in early autumn. The question is why the fish bone remains belong to the category-minnow, knowing that Jijia and Prut rivers have been providing optimal conditions. Does the inhabitants of the settlement were not able to catch large individuals"? (S. Haimovici 2004, p. 154), or simply, for various reasons fishery production was weak. Reptiles (turtles) and birds occasionally appear in our contexts. A percentage of 3.63% - birds is noted in Târgu Frumos, campaign 2005. In point of fact, there were few big-sized specimens that could be edible in the vicinity of the settlement. From the outset, researchers highlighted that, Precucuteni tribes exploited a large scale of animal resources, produced by husbandry, hunting, fishing, gathering of molluscs. First and foremost they were cattle breeders, covering in excess of 60% the food requirement. Hunting was practiced in the alternative, and occasionally in several cases. But only the faunal analysis at Costişa sketched a new type of animal economy for the Precucutenian milieu, modulated on management of natural resources in a profitable way: it is based on high contribution of hunting to meet the needs, substituting to domestic stocks, mainly kept for secondary purposes. Forasmuch the archaeological investigations in mentioned sites carry on, for sure the new campaigns of excavations will complete the database with other interesting information.

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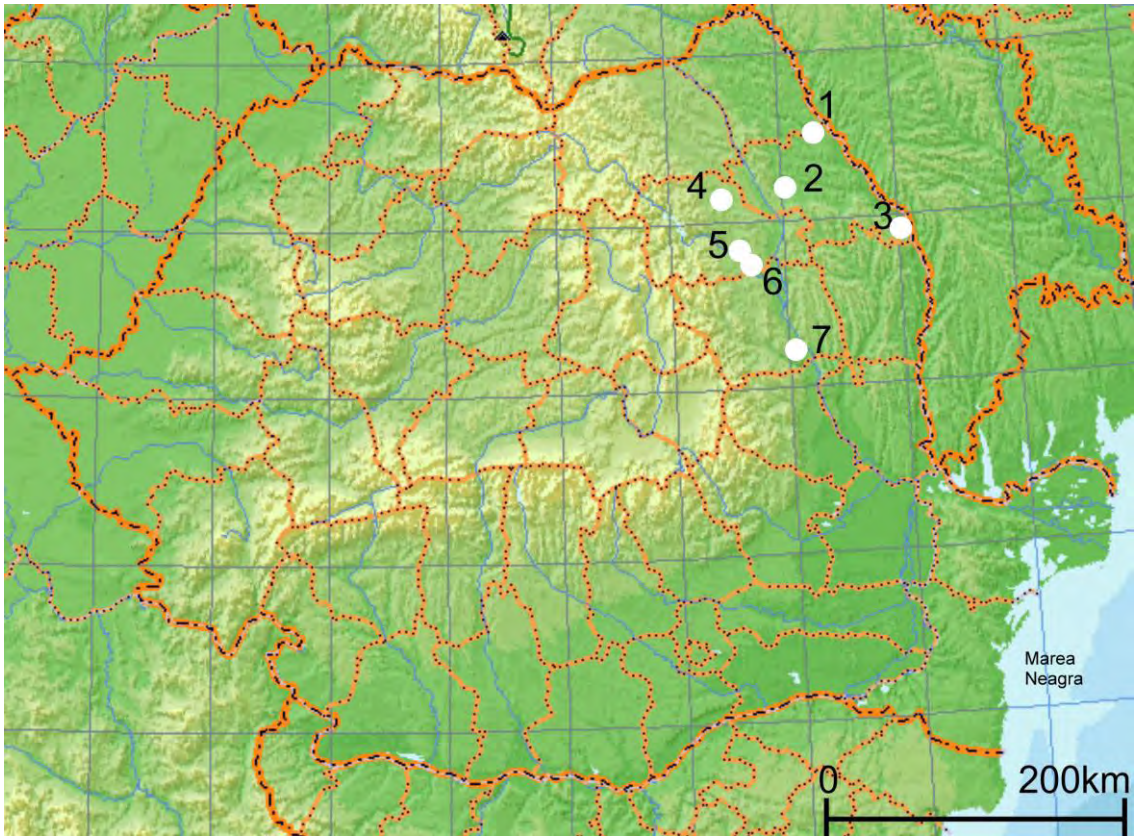

Fig. 1. Map of investigated sites / Harta cu siturile analizate: 1- Andrieşeni; 2- Târgu Frumos; 3- Isaiia; 4- Târpeşti; 5-Traian; 6- Costişa; 7- Mândrişca.

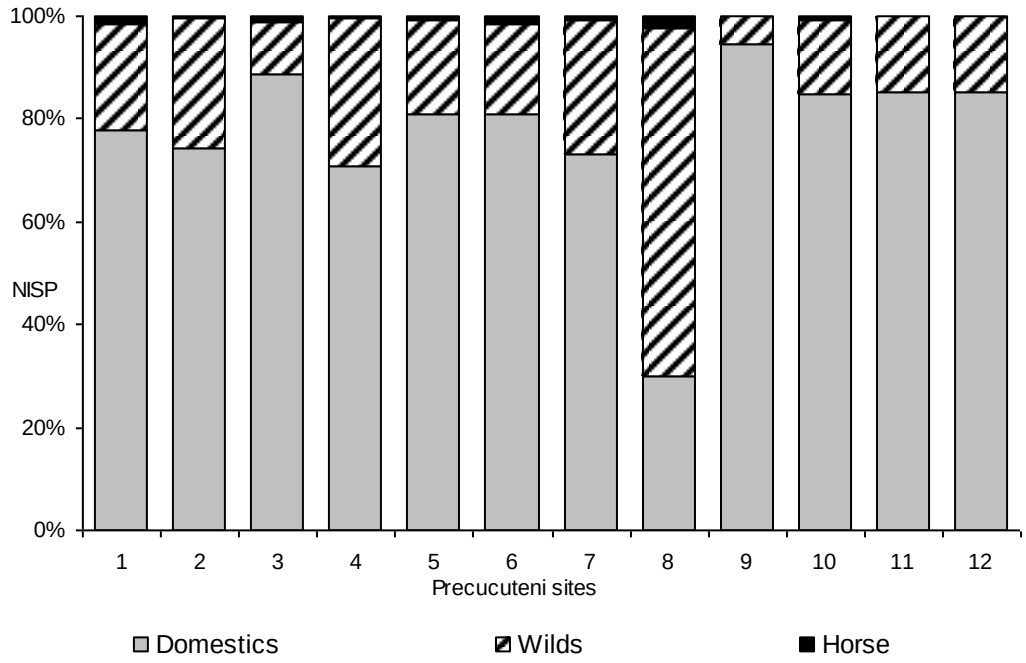

Fig. 2. Domestic/wild report in Precucuteni sites / Raportul specii domestice/ sălbatice în situri Precucuteni: 1 - Isaiia 2002; 2 - Isaiia 2004; 3 - Isaiia 2005; 4 - Târgu Frumos pit. 26; 5 - Târgu Frumos 2003-2004; 6 - Târgu Frumos 2005; 7 - Andrieşeni; 8 - Costişa; 9 - Târpeşti; 10 - Mândrişca; 11 - Traian 1956-1959; 12 - Traian 1960-1961.

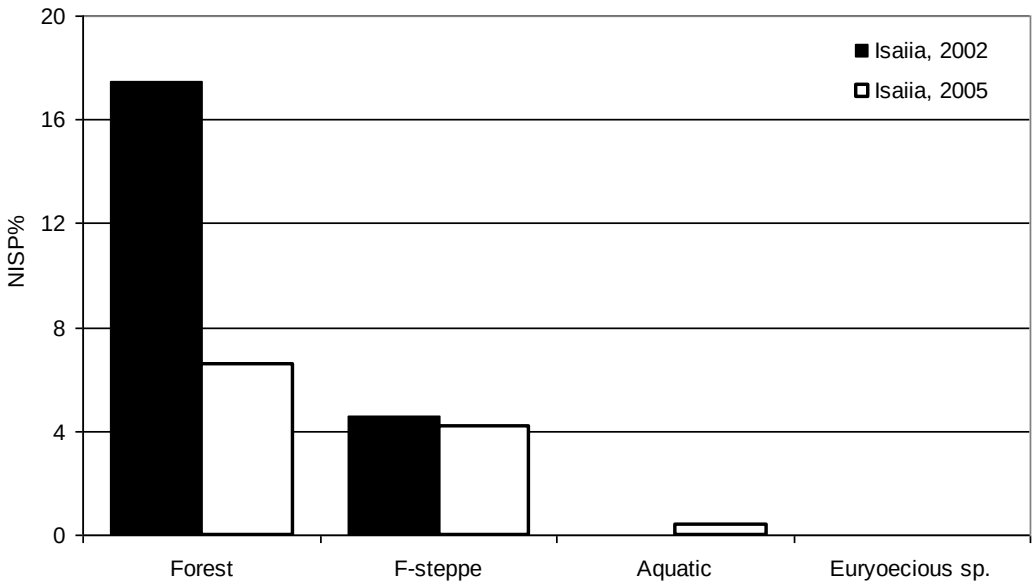

Fig. 3. Distribution of ecological groups in lowland sites (Isaiia).
Distribuţia grupelor ecologice în aşezări din zonele joase (Isaiia).

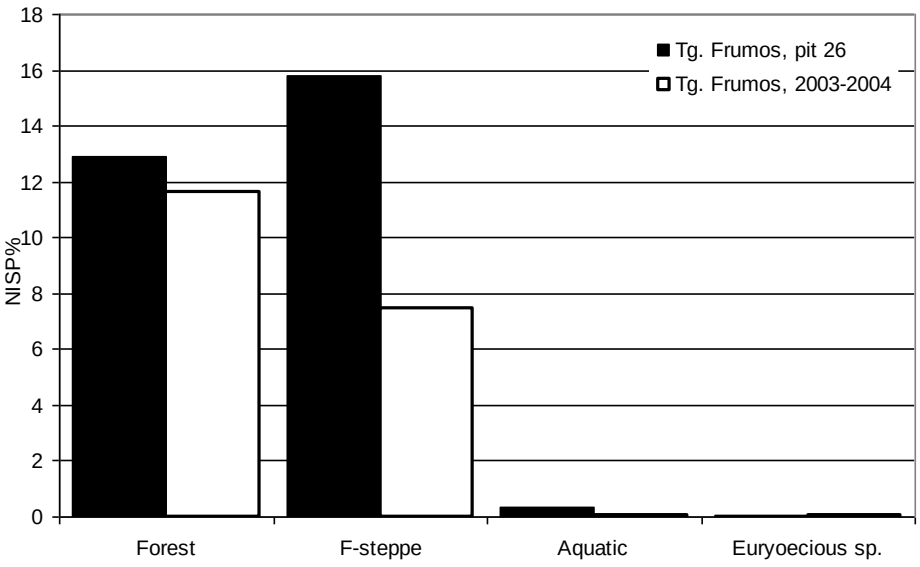

Fig. 4. Distribution of ecological groups in lowland sites (Târgu Frumos).
Distribuţia grupelor ecologice în aşezări din zonele joase (Târgu Frumos).

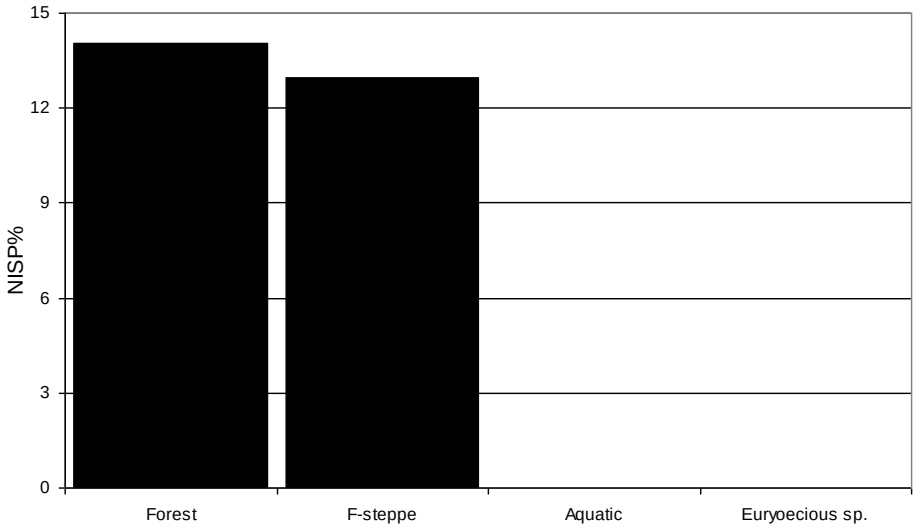

Fig. 5. Distribution of ecological groups in lowland sites (Andrieseni).
Distribuţia grupelor ecologice în aşezări din zonele joase (Andrieşeni).

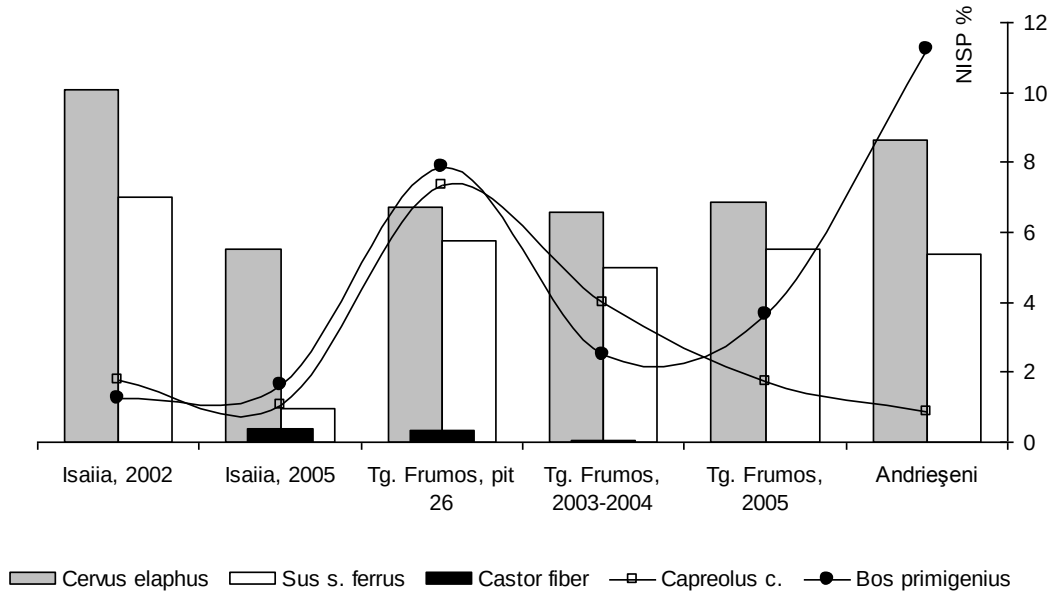

Fig. 6. Distribution of wild taxa in lowland sites.
Distribuţia speciilor sălbatice în aşezări din zonele joase.

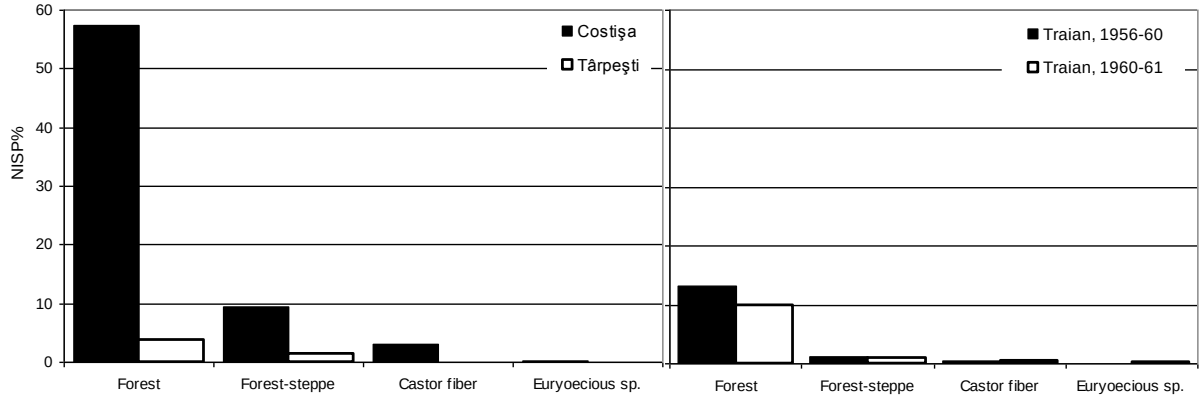

Fig. 7. Distribution of ecological groups in upland sites.
Distribuţia grupelor ecologice în aşezări din zonele înalte.

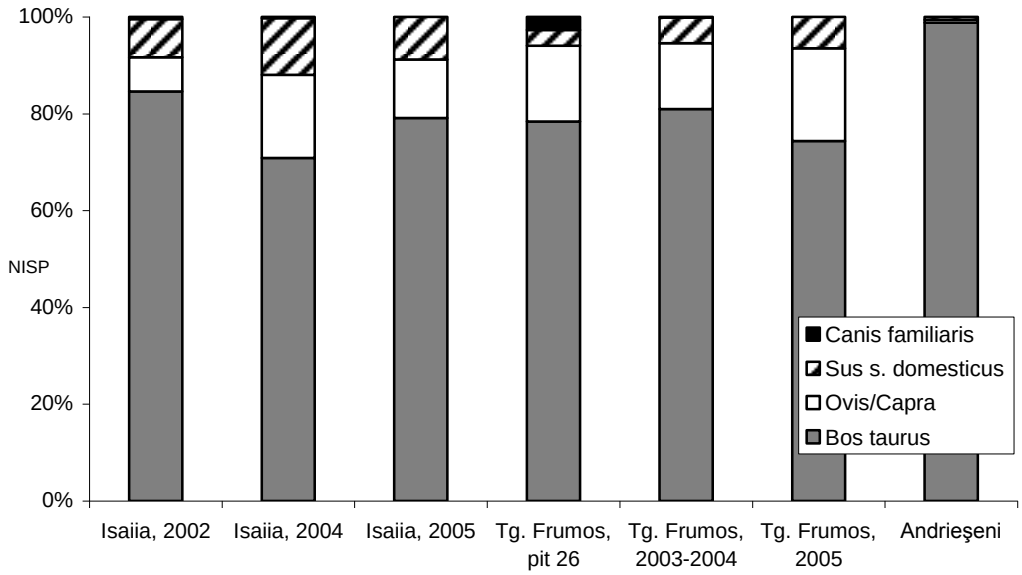

Fig. 8. Domestic species frequencies in lowland sites.
Frecvenţele speciilor domestice în aşezări din zonele joase.

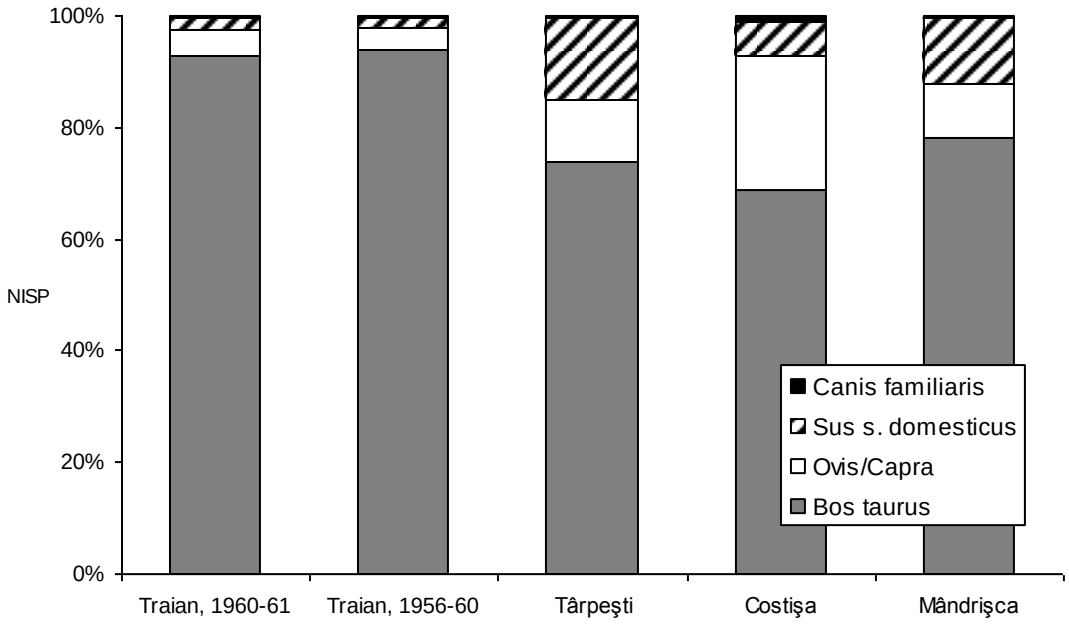

Fig. 9. Domestic species frequencies in upland sites.
Frecvenţele speciilor domestice în aşezări din zonele înalte.

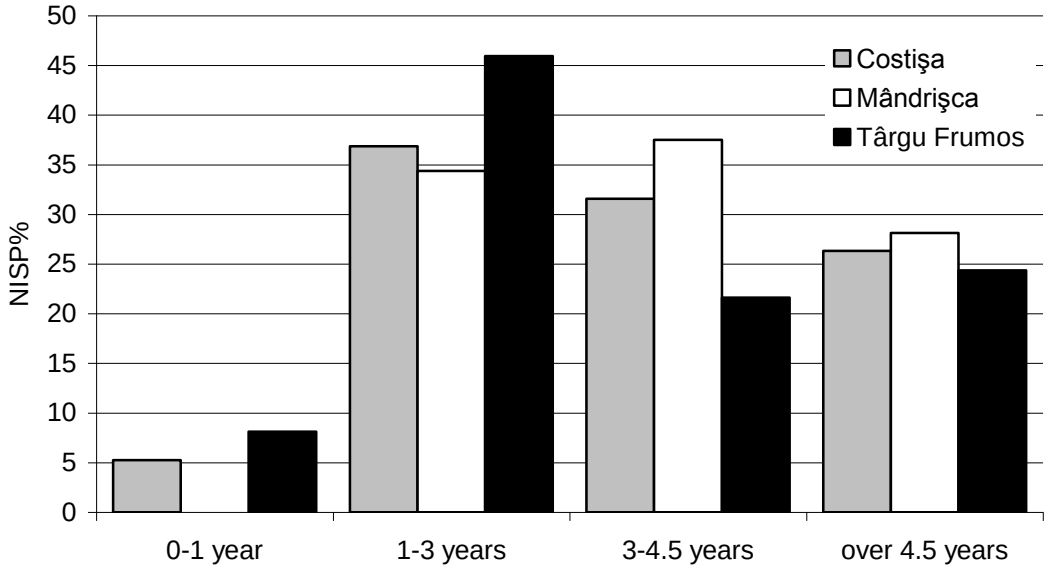

Fig. 10. Cattle, mortality profiles.
Profile de sacrificare la vită.

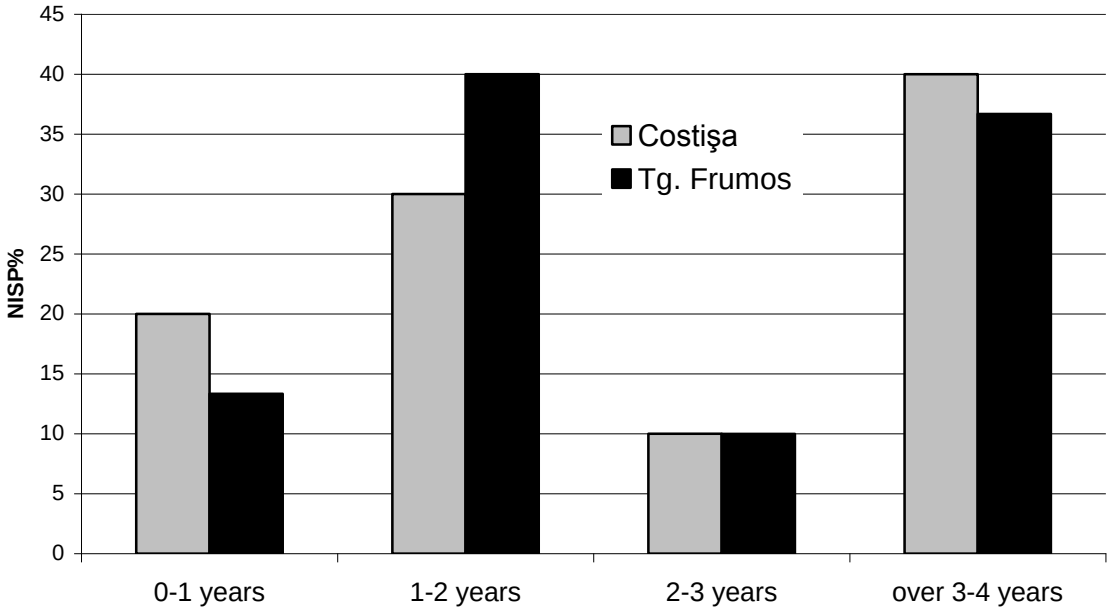

Fig. 11. Small ruminants, mortality profiles.
Profile de sacrificare la rumegătoare mici.

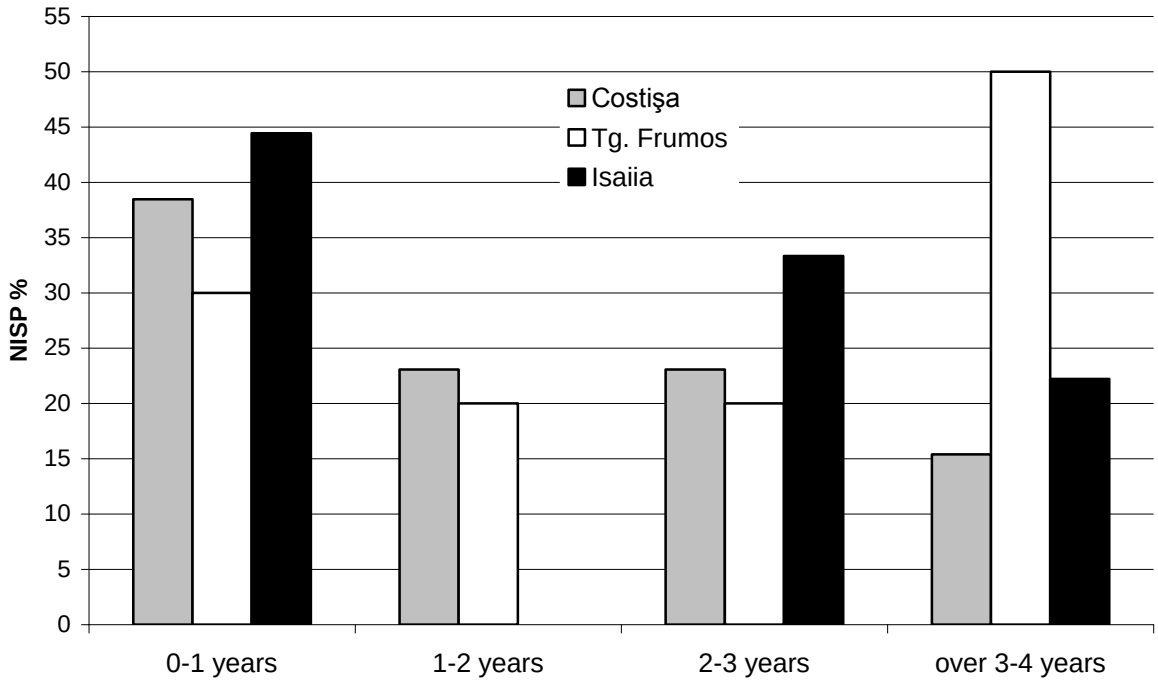

Fig. 12. Pig, mortality profiles.
Profile de sacrificare la porc.

Some considerations about a new grave discovered at Sultana-*Gheţărie* (Southeastern Romania)

Cătălin LAZĂR[*]
Gabriel VASILE[*]
Monica MĂRGĂRIT[**]

Abstract: *During the archaeological campaign of 2012 in the area of the Sultana-*Gheţărie *flat settlement, Mânăstirea commune, Călăraşi county, an inhumation grave belonging to the Gumelniţa culture was discovered. The grave contained the skeleton in anatomical connection and moderate state of preservation, laid in a lateral foetal position, on the left side, oriented E – W. The legs were accentuated flexed. The both arms were bent with the hand towards the skull. The funerary inventory consists in a bi-lobed needle and a stone axe. The unusual location of this isolated grave will be discussed in this article.*

Rezumat: *În timpul campaniei arheologice din anul 2012, în perimetrul aşezării plane de la Sultana-*Gheţărie*, com. Mânăstirea, jud. Călăraşi, a fost descoperit un mormânt de inhumaţie atribuit culturii Gumelniţa. Mormântul conţinea un schelet în conexiune anatomică, cu o stare de conservare medie, depus în poziţie chircită, pe partea stângă, orientat E-V. Inventarul funerar consta într-un ac de os bilobat şi un topor de piatră şlefuită. Localizarea neobişnuită a acestui mormânt izolat o vom discuta în acest articol.*

Keywords: *Eneolithic, Boian and Gumelniţa cultures, isolated grave, bi-lobed needle, stone axe*.
Cuvinte cheie: *eneolitic, culturile Boian şi Gumelniţa, mormânt izolat, ac bilobat, topor de piatră.*

◈ Introduction

The flat settlement from Sultana-*Gheţărie* belonging to the Boian culture, Vidra phase. It is located in the southeast of Romania, on the right bank of the old Mostiştea River (which has been converted into several artificial lakes), about 7 km from the Danube river, near the border with Bulgaria (fig. 1). From an administrative point of view the site is located in the Sultana village, Călăraşi County.

From topographical point of view the settlement is placed on a promontory at the western limit of the high terrace of the Mostiştea Lake (fig. 2), at 320 m (±1 m) west from the Sultana-*Malu Roşu* cemetery (C. Lazăr *et alii* 2012). The geographic coordinates of the Sultana-*Gheţărie* flat settlement are 44°15'37.83072" N / 26°51'47.93720" E and the corresponding absolute altitude of this area is at least 44.891 m and maximum 46.399 m. All data are reported in the STEREO-70 projecting system of coordinates and 1975 Black Sea elevation system reference.

This settlement is known from the archaeological literature for a long time (D. Şerbănescu, G Trohani 1978), however, unfortunately, systematic excavations have not been made. Due to the continuous degradation of the site as result of clay exploitations by local people, in 2008 were realized two test pits (R. Andreescu *et alii* 2009) and in 2012 systematic excavations were started. Thus, more surfaces have been opened as well as the profiles of some of the pits excavated by locals for clay extraction have been cleaned and straightened. The research led to the discovery of more Boian pits, as well three inhumation graves. Of these, two graves are from a later chronological sequence than the Eneolithic (graves no. 2 and 3), but one (grave no. 1) was assigned to the Gumelniţa culture. This grave forms the subject of the present article.

◈ Context and stratigraphy

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Studii de Preistorie 9, 2012, p. 101-111.

Grave no. 1 was discovered in Son 2/2012, A4 Square, at the altitude of 44.81 m.a.s.l. The geographical coordinates of the grave are 26° 51' 47.8033" E and 44° 15' 37.8363" N.

From stratigraphic point of view the grave was identified in the stratigraphic unit (s.u.) 1005, which is a yellow, compact and homogenous sediment containing numerous pieces of white carbonates and few archaeological materials.

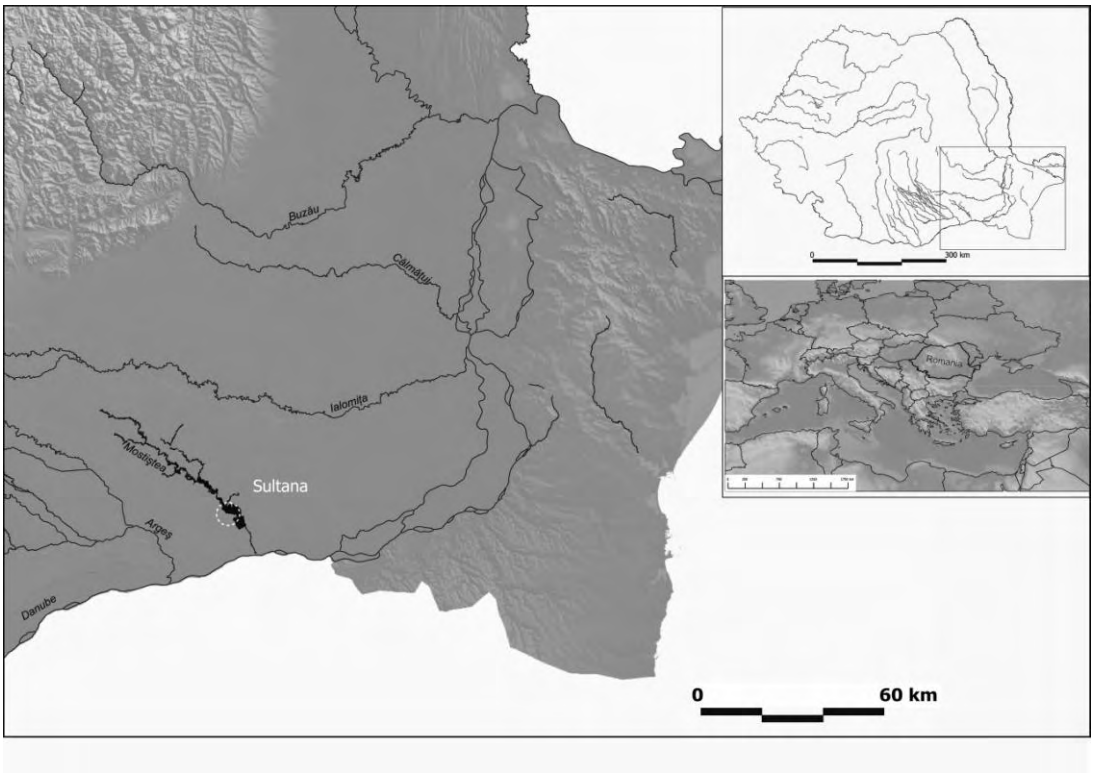

Fig. 1. Location of Sultana-*Gheţărie* archaeological site.
Localizarea sitului arheologic Sultana-*Gheţărie.*

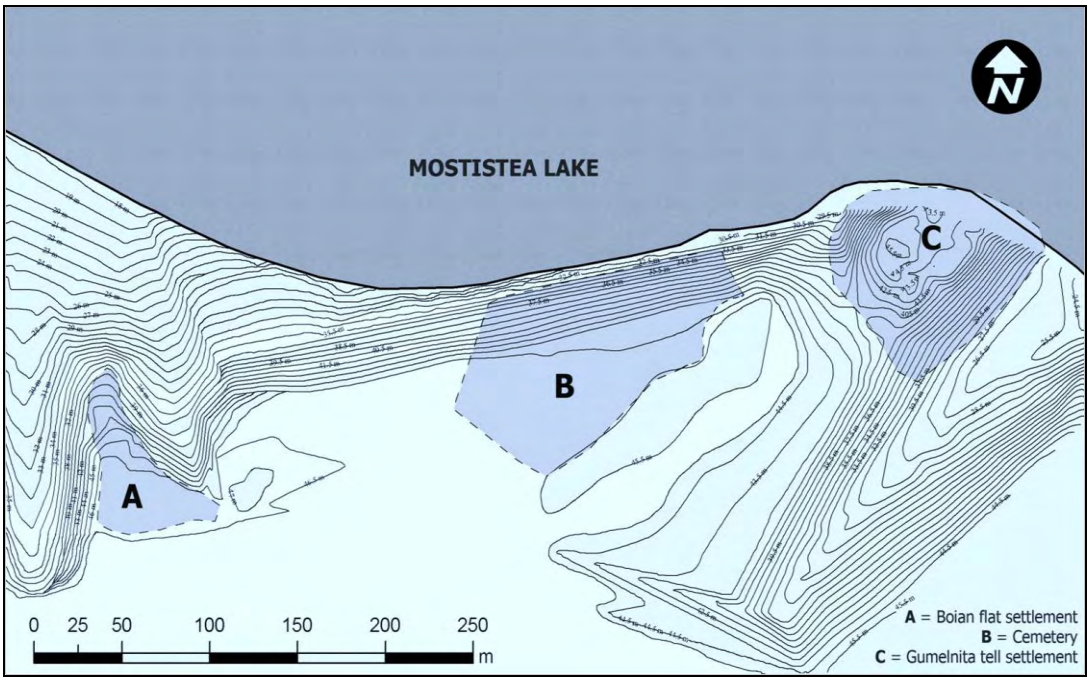

Fig. 2. General plan of high terrace of Mostiștea Lake and location of Sultana-*Gheţărie* flat settlement.
Planul general al terasei înalte a lacului Mostiştea şi localizarea aşezării plane de la Sultana-*Gheţărie.*

All the Eneolithic features researched at Sultana-*Gheţărie* are cutting this unit. S.u. 1005 is corresponding *grosso modo* to s.u. T1003 from the cemetery[1], which is equivalent of a prehistoric walking level. At the top, this stratigraphic unit (s.u. 1005) is overlapped by s.u. 1002, which is a yellowish-brown sediment with archaeological materials, that corresponds to the occupational level of the prehistoric settlement. At the bottom, s.u. 1005 is overlapping a natural level of *loess*.

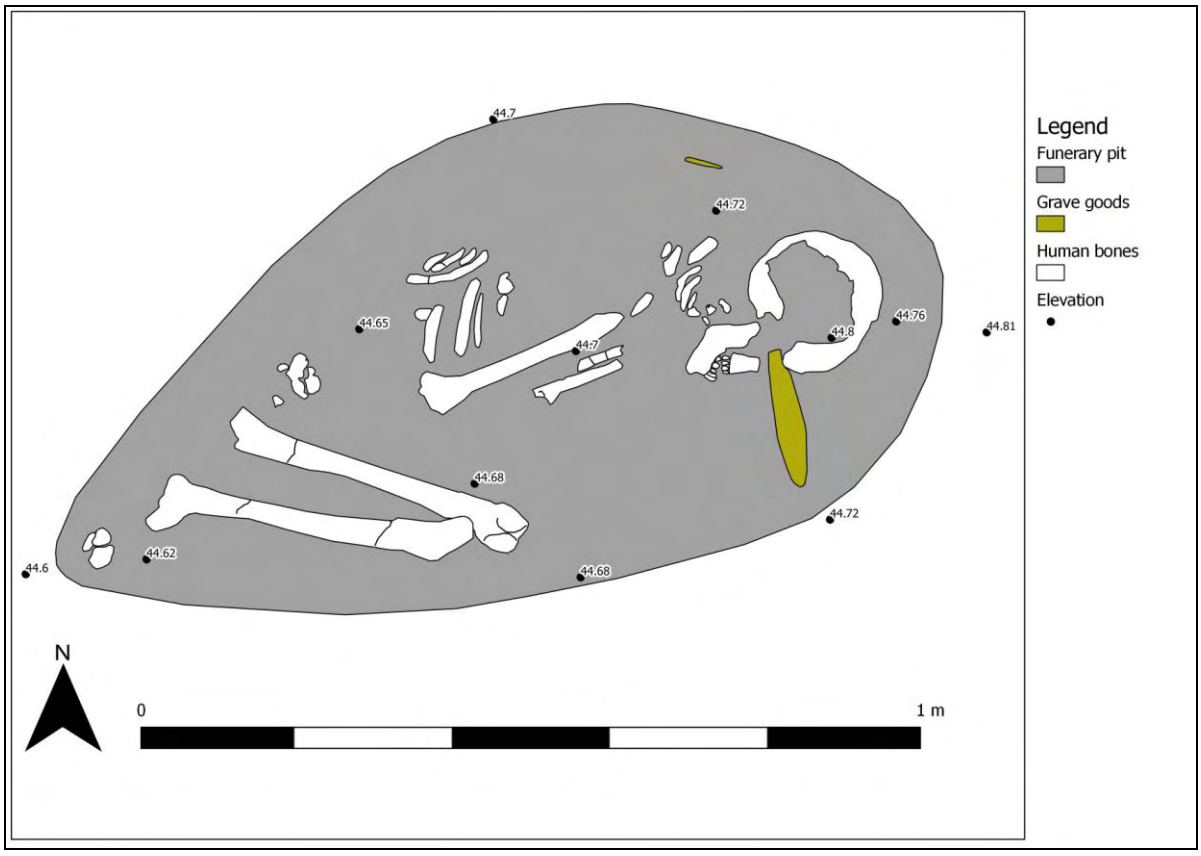

Fig. 3. Grave no. 1 from Sultana-*Gheţărie*.
Mormântul nr. 1 de la Sultana-*Gheţărie*.

◈ Grave structure

The funeral pit had an oval shape made for an individual grave without any traces of related constructions (fig. 3). It presents a maximum length of 1.218 m and a maximum width of 0.564 m. The surface of the pit was 0.531 m^2 and the base of the pit was at 44.63 m.a.s.l. (s.u. 1005). The filling of the funeral pit (s.u. 1012) was a yellow, homogenous and compact sediment, containing carbonates. Also, it was disturbed by a few burrows, some of them shifting the position of the bones.

The level of digging of the pit was not identified, but most probably, this was somewhere between the lower limit of the s.u. 1002 and the upper limit of the s.u. 1005. At the top no traces of marking of the grave area were identified.

◈ Funerary treatment

The grave contained the skeleton in anatomical connection and moderate state of preservation, laid in a lateral foetal position, on the left side, oriented E – W (fig. 3). The legs were accentuated flexed. The both arms were bent with the hands towards the skull.

[1] The Sultana-*Malu Roşu* cemetery and the flat settlement of Sultana-*Gheţărie* are on the same terrace of the Mostiştea Lake, so it is normal to be some correspondence between stratigraphic units of these two sites.

Generally, the funerary treatment applied to the dead from this grave is similar with that observed at the neighbouring necropolis of Sultana-*Malu Roșu*, which contained graves belonging to the Boian and Gumelnița cultures. In terms of the basic elements of the funerary ritual, the individual from the grave no. 1 reflects common burial practices characteristic for the Gumelniţa communities.

The deposition of the dead in a foetal position, preferentially on the left side and E – W oriented has been documented in several other necropolises belonging to the Kodjadermen-Gumelniţa-Karanovo VI cultural complex in Bulgaria and Romania (E. Comșa 1960, 1974, 1995; H. Todorova *et alii* 1975, 2002; D. Şerbănescu 1985; I. Angelova 1986, 1991; C. Lazăr 2001, 2011, etc.).

Fig. 4. Location of the inventory pieces in relation to the body of the dead: the stone axe (left) and the bone needle (right).
Localizarea pieselor de inventar în raport cu corpul defunctului: toporul de piatră (stânga) şi acul de os (dreapta).

◈ Grave goods

The funerary inventory is not consistent from a quantitative point of view as only two pieces were deposited in the grave (a stone axe and a bone needle). However, from the perspective of their typological representativeness the two objects are special (figs. 5/a-b and 6).

In terms of location of the grave goods in relation to the body of the dead, both pieces were found in the skull area (fig. 4). Thus, the needle was found on the back of the skull, at a distance of ca. 8.5 cm NNE of the skull (fig. 4). The stone axe was found in front of the skull with the blade entering the cranium (fig. 4). Even if, apparently, the axe seems to have been stuck in the deceased' head, a situation which may suggest the cause of the death, this is not the case. The position of the axe simply reflects post-depositional phenomena, the sliding of the axe over the skull, and by no means a violent action.

The bi-lobed needle was made by a long bone diaphysis diverted from a large mammal (fig. 5/a-b). The item is proximally fractured and, moreover, presents lime scale in surface, which make indecipherable the technological actions which led to its processing.

Morphologically, it is formed of two lobes and a trunk with circular section. From a morphometric perspective, it presents a maximum width, at the level of the lobes, of 31 mm, a maximum thickness of 4 mm and a diameter at the trunk level of 5.5 mm.

Only at the intersection of the lobes we identified technological marks (fig. 5/c), consisting of several cuts made by sawing, probably meant to ensure the release of the two lobes. Without any doubt it was also applied a method of shaping the fracture sides, but we do not know the used technique. At the trunk level, appear several red coloured spots (fig. 5/e), but it is hard to say if they appeared after sedimentation or if they are anterior to this stage (painted piece, contact with painted hair, etc.). As functional hypothesis we can invoke that of hair pin, stating both from its morphology and from the discovery context (at the skull level).

Even if they are not present in great number, such hair pins, with a bi-lobed morphology, are also mentioned in other Neolithic or Eneolithic necropolises or settlements in Romania and Bulgaria. It is the case of the necropolis from Cernica, belonging to the Boian culture (Gh. Cantacuzino, S. Morintz

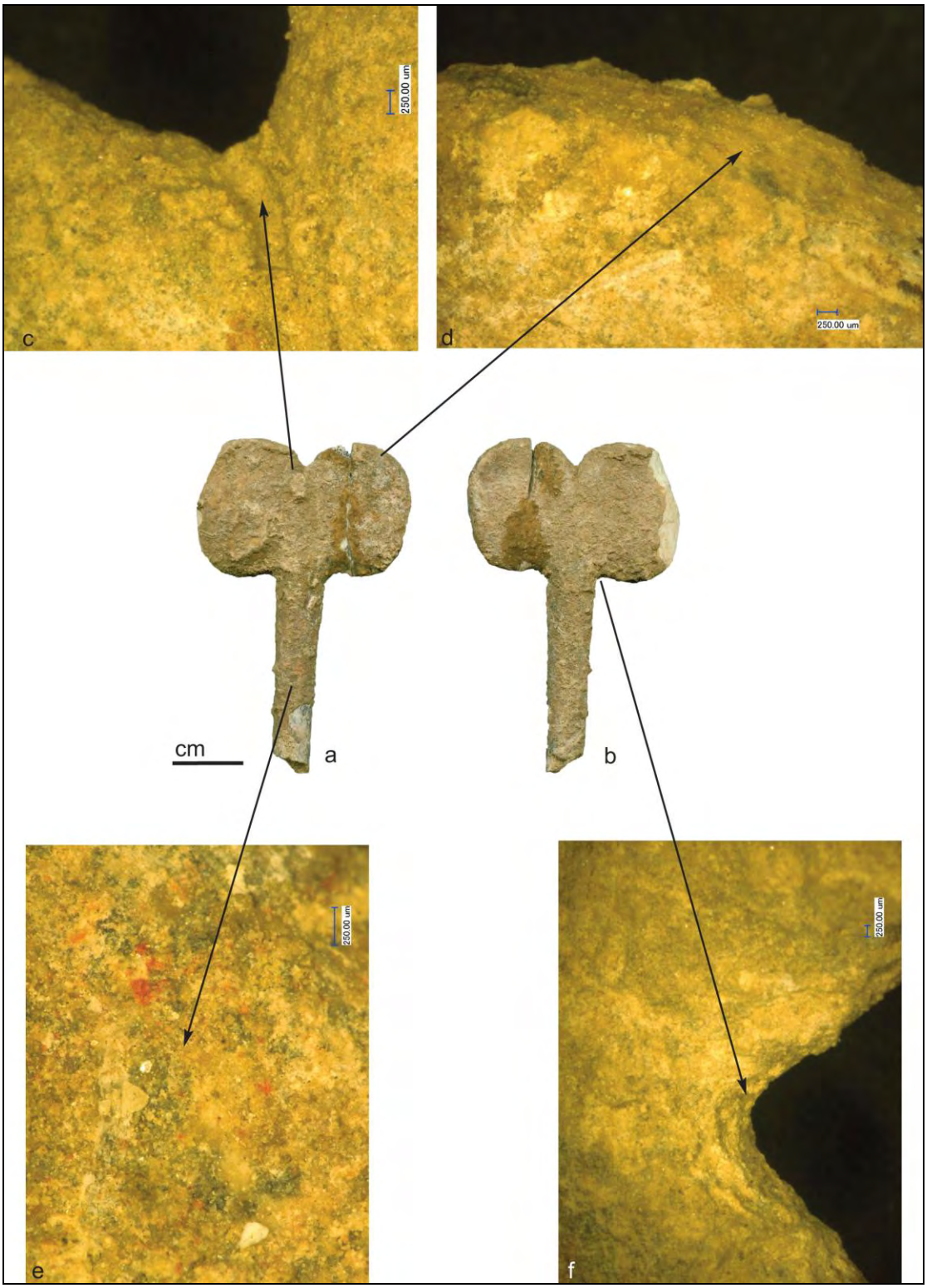

Fig. 5. The bi-lobed needle: a, b – anterior and posterior views; c – cutting marks, for the lobes release (50x); d – lobe extremity, attesting a shaping method of the fracture sides (50x); e – traces of red colorant, present on the trunk of the piece (100x); f – the morphology of the piece at the intersection of the trunk and one of the lobes (30x).
Acul bilobat: a, b – vedere anterioară și posterioară; c - stigmate de tăiere, destinate degajării lobilor (50x); d – extremitatea lobului, atestând o metodă de regularizare a marginilor de fractură (50x); e – urme de colorant roșu prezente pe trunchiul piesei (100x); f – morfologia piesei la intersecția trunchiului cu unul dintre lobi (30x).

1963, fig. 7), where was found a hair pin which was considered a stylized representation of a feminine figure but which, in its superior side, presents the same bi-lobed morphology. In the Gumelniţa culture it appears mostly in settlements, as is the case of the pieces from Vidra, Pietrele, Ruse or Tangâru (G. Georgiev, N. Angelov 1957, fig. 56/1; E. Comșa 1997, fig. 3/1-3; S. Hansen *et alii* 2011, abb. 77).

The stone axe was made of polymictic sandstone with quartz and biotite (dark mica) with carbonate cement and rare calcite diaclase. Morphologically, the axe is pentagonal in shape (fig. 6) and has a hole for hafting at its proximal part (Ø = 18.05 x 17.64 mm). The length of the axe is 192 mm, the maximum width is 48 mm, and has a thickness of 28.67 mm. From a functional perspective, the axe has no use-wear traces, what allows us to put forward the hypothesis of a pure symbolic function for this piece and not a utilitarian one. This type of axe, quite rare in discoveries belonging to the Kodjadermen-Gumelniţa-Karanovo VI cultural complex, present especially in necropolises, in some cases do not present use-wear traces[2] (e.g., grave no. 43 from Varna I cemetery), reason for what it can be considered a prestige item. Similar pieces with the one from Sultana-*Gheţărie* were found rarely in settlements (e.g., Ruse, Gumelnița, Vlădicească) but quite frequent in graves (e.g., Chirnogi-*Şuviţa Iorgulescu*, Curcani, Durankulak[3], Gumelnița I, Gumelnița II, Liljak, Spanțov, Varna I, Vinitsa, etc.) (Vl. Dumitrescu 1925; G. Georgiev, N. Angelov 1952, 1957; D. Ovcharov 1963; E. Ghianopoulos 1966; A. Radunčeva 1976; I. Ivanov 1978; K. Kănchev 1978; D. Șerbănescu 1985; S. Marinescu-Bîlcu 2000; H. Todorova *et alii* 2002).

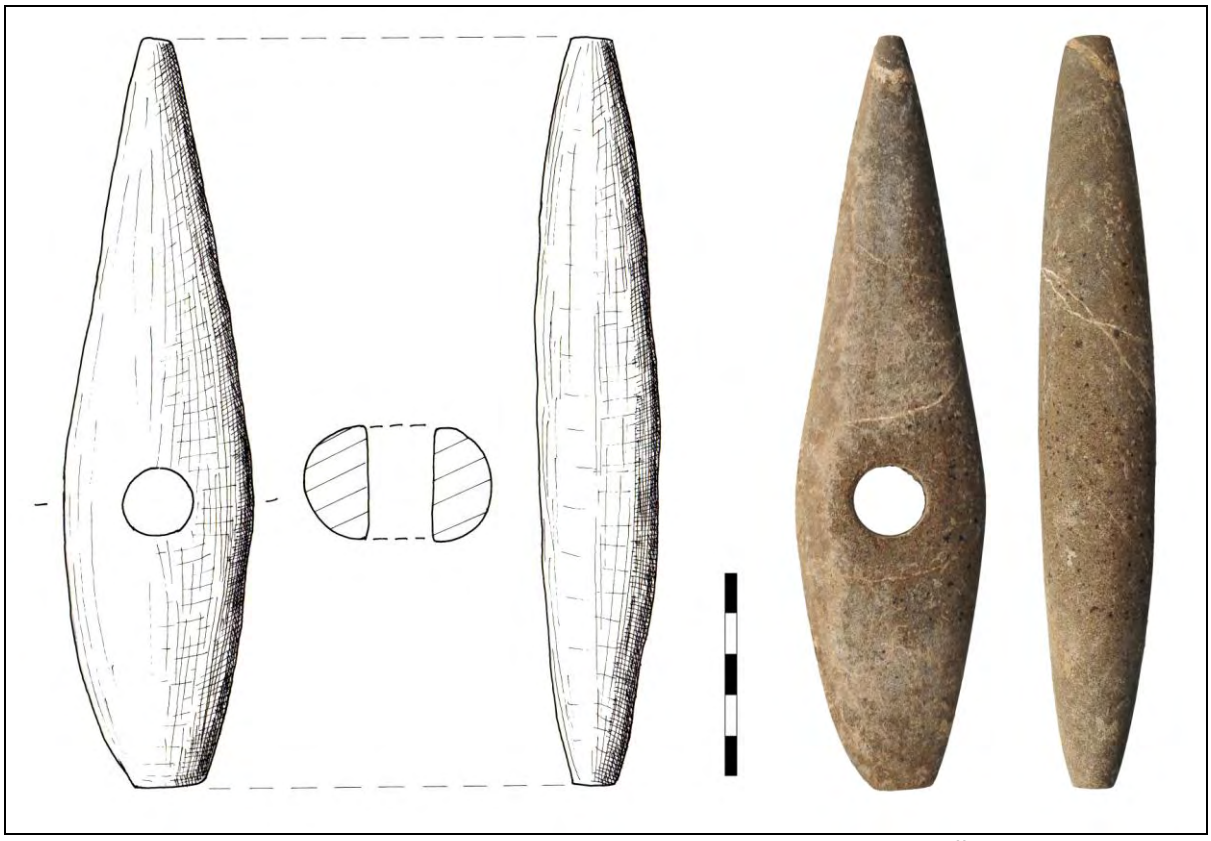

Fig. 6. The stone axe found in grave no. 1 from Sultana-*Gheţărie*.
Toporul de piatră din mormântul nr. 1 de la Sultana-*Gheţărie*.

◈ Anthropological data

Even though the skeleton from grave no.1 from Sultana-*Gheţărie* being partially complete, the bones are very fragmentary. In terms of representativeness, at the level of the cephalic segment, the following bones have been identified: the frontal bone (a fragment of squama, the supraorbital margin

[2] There are some cases of axes of this type which present use-wear traces (e.g., Varna I cemetery) or traces of degradation (e.g., the isolated grave from Curcani) (E. Ghianopoulos 1966; K. Kănchev 1978).
[3] Very interesting is the fact that the pieces from this necropolis are in a fragmentary state.

and the right frontal eminence), the parietal bones (approximately complete), the left temporal bone, the right temporal bone (petrous pyramid and a fragment of the mastoid process) and the occipital bone (a fragment of squama occipitalis and two fragments from the basilar part with the occipital condyles). The elements of the facial skeleton are lacking.

The dento-maxillary apparatus is represented by the left maxilla (a fragment containing the alveoli of the premolars), the right maxilla (a fragment containing alveoli for incisors, canine and premolars) and the mandible (a fragment of the body with alveoli of the canine and left premolars, the right hemimandible being approximately complete, lacking a fragment of the horizontal ramus containing the corronoid process and the mandibular condyle).

The dentition is permanent, being identified the following teeth (the lacking teeth were lost *post-mortem*):

Right	Left
- - - P^2 P^1 C' I^2 I^1	- I^2 C' P^1 P^2 M^1 M^2 -
M_3 M_2 M_1 P_2 P_1 $C_,$ I_2 I_1	- I_2 $C_,$ P_1 P_2 M_1 - -

The axial skeleton is very weak represented, among its constitutive elements being identified only three cervical bodies of vertebrae, 12 fragments at the levels of vertebral arches and four rib fragments.

From the level of the shoulder girdle are lacking the scapulae. The left clavicle is lacking the sternal extremity, and the right one is represented by a fragment of diaphysis.

The skeleton of the upper limbs is represented by the left humerus (four fragments of diaphysis, without anatomical connection), the right humerus (the proximal third is missing), the left radius (proximal extremity) and the left ulna (a fragment of diaphysis).

From the pelvic girdle are preserved only two fragments comprising the bilateral acetabular fossa.

The lower limbs are represented by the left femur (approximately complete, unrestorable, with damages at the level of proximal and distal extremities and of the trochanter), the right femur (complete diaphysis, and fragmentary at the level of extremities), the left patella (approximately complete), the left tibia (fragmentary, with the proximal third lacking), the right tibia (a fragment of diaphysis and the distal epiphysis), the left fibula (a fragment of diaphysis), the right fibula (a fragment of diaphysis and the distal extremity), the left tarsus (astragalus and calcaneus) and the right tarsus (astragalus, with damages).

Sex determination. For determining this parameter were utilized the general morphological characteristics of the skeleton, especially those at the level of the skull (the pelvis, which reflects also the sexual dimorphism, being largely damaged, was not utilized). The characteristics were scored/calculated after the algorithm established by J.E. Buikstra and D.H. Ubelaker (1994, p. 16-21) as follows: nuchal crest (+3), mastoid process (+3), supraorbital margin (+5), glabella (+4) and mental eminence (+4). The results show that the analysed individual was a male.

Estimation of age at death. Due to a high degree of fragmentation of bones, as well as due to the lack of that elements which assure a high accuracy in establishing the age at death (pubic symphisis, auricular surface, rib extremities), the age of the analyzed individual was estimated based on the degree of dental wear of the molars, utilizing the system described by D. R. Brothwell (1981, p. 72). All molars present a strong and unequal attrition (degree 5+ and 5++) what indicates an age at death of above 45 years (old adult).

Stature estimation and pathological conditions. The estimation of the stature was not possible as none of the long bones were completely preserved. Also, no dental or osseous pathological modifications were observed.

Non-metric characteristics. There were evaluated both the epigenetic traits at the level of the skull, following the book of G. Hauser and G. F. De Stefano (1989) and those at the level of the postcranial skeleton, based on the study of M. Finnegan (1978). There were identified the following characteristics: right supraorbital groove, a sutural (wormian) bone on the track of the left lambdoid suture (at this level, the wormian bones have the highest frequency of occurrence), *foramen mentale* (right), and a right hypotrochanteric fossa (with unclear origin: genetic, metabolic or mechanical).

Biometry. The calculated measurements and the related indices were given after R. Martin (1914) and G. Bräuer (1988, *apud* R. Martin 1914) and are presented in the following table:

Dimensions and mandibular indices	Values (mm)
69. height of mandibular symphysis	29.96
69(1). height of mandibular body (right) [beside *foramen mentale*]	26.81
69(2). height of mandibular body (right) [beside M2]	22.85
69(3). thickness of mandibular body (right) [beside *foramen mentale*]	8.72
69b. thickness of mandibular body (right) [beside M2]	12.38
71. width of mandibular vertical ramus (right)	30.55
– height index of mandible (right) [69(2) : 69)]	76.26
– height-width index of mandibular body (right) [69(3) : 69(1)]	32.52
Dimensions and indices for postcranial skeleton	**Values (mm)**
– width of humeral epicondyle (right)	64.63
– minimum perimeter of humeral diaphysis (right)	66.00
– sagittal diameter (anterior-posterior) radial head (left)	20.85
– circumference of radial neck (left)	44.00
– maximum length (height) of patella (left)	40.66
– maximum thickness of patella (left)	22.58
– width of distal fibular epiphysis (right)	31.17
– maximum length of astragalus (left)	59.15
– maximum length of astragalus (right)	60.44
– width of astragalus (right)	45.03
– height of astragalus (right)	31.06
– index length-width of astragalus (right)	74.50
– index length-height of astragalus (right)	51.38
– maximum length of calcaneus (left)	77.25
– height of calcaneus (left)	39.36

◈ Discussion and conclusions

Following research conducted in the summer of 2012, we can say that the flat settlement of Sultana-*Gheţărie* has two occupational levels (s.u. 1001 and s.u. 1002), both assigned to the Vidra phase of the Boian culture. All researched features are pits, most of them being garbage pits. No dwelling structures are identified until present. All these data indirectly indicate that the promontory where research was conducted is a marginal area of the settlement, where various specific activities probably took place. The actual settlement, with the related housing structures, is to be found probably further south, on the high terrace of the Mostiștea Lake.

Returning to the chrono-stratigraphical situation, along with artefacts and features belonging to the Boian culture, pits and stray finds assigned to post-Eneolihic periods were also discovered. However, there are no other materials or features attributable to the Gumelnița culture. Under these circumstances the question put forward is: how can be explained the presence of a Gumelnița grave in a settlement belonging to the Boian culture?

A first working hypothesis proposed was that the Eneolithic necropolis from Sultana-*Malu Roșu* extended until this area, taking into account the fact that the distance between the two sites is quite small (only 320 m). To verify this hypothesis, between the area under research from Sultana-*Malu Roșu* necropolis and the small valley separating at east the promontory where the settlement of Sultana-*Gheţărie* is located (fig. 2), we made an alignment of 17 test pits, with dimensions of 3 x 1 m placed from 10 to 10 metres, paralleled by an alignment of 19 drill cores. These test pits led to the identification of numerous features from the Eneolithic (both Boian and Gumelnița cultures) and also from later periods. Some graves were discovered close to necropolis but not more than 80 metres west of the cemetery. Otherwise, the Eneolithic features discovered are pits of different dimensions. Based on these results and also on the absence of evidence for other Gumelnița funerary discoveries

in the perimeter of the promontory from Sultana-*Gheţărie*[4], we considered this first hypothesis unfounded.

A second working hypothesis proposed was that of the presence in the researched area of an another cemetery (or of a group of graves) belonging to Gumelniţa communities but chronologically later than the period of use of the settlement from Sultana-*Gheţărie*. To verify this hypothesis, we made a long trench (Son 21/2012) with dimensions of 20 x 2 m, oriented from north to south. The trench was put in the immediate vicinity of the grave no. 1. We started from the idea that if the Gumelniţa grave belongs to a necropolis than close to grave no. 1 must be also other contemporary graves. Unfortunately, in this trench were discovered only pits belonging to the Boian culture or later periods, but no graves or other features attributable to the Gumelniţa culture. As a result, this working hypothesis was also abandoned.

We can conclude that, based on data collected and taking into account the rejection of the above mentioned hypotheses, we are dealing with an isolated grave belonging to the Gumelniţa culture, of whose presence in the perimeter of the settlement of Sultana-*Gheţărie* we can not explain. Why the Gumelniţa people from the *tell* of Sultana-*Malu Roşu* chose to bury a member of the community not in the neighbouring cemetery but in an isolated place, remains a question to which we can not respond at this time. The fact that the grave contained special funerary inventory excludes any suppositions related to punishment or opprobrium. We hope that future research and maybe other similar discoveries will contribute to a better understanding of the problems put by this isolated grave.

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[4] Remember that the area where the settlement of Sultana-*Gheţărie* is situated, was, and still is utilized by local people for clay extraction for various household activities. Starting in 2001, we checked yearly all the pits resulting from these activities, but we never discovered materials or features belonging to the Gumelniţa culture.

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Observations at microscope on pottery fabric of some ceramic fragments from Gumelniţa *tell* settlements Hârșova and Bordușani *Popină*

Constantin HAITĂ*

Abstract: *In this paper we present preliminary results of microscopic study on pottery fabric of few ceramic fragments discovered in Chalcolithic* tell *settlements Hârşova and Borduşani* Popină*. Analysis of 20 sherds considered the description of their paste fabric in terms of texture, microstructure, porosity, composition and colour, in order to characterize technological issues related to preparing the mixture and combustion conditions, identify materials used and indicate possible natural sources for them. The main identified paste types are characterized by the presence, constantly, of small pottery fragments ("crushed ceramic"), as well as plant fragments such as straw, or even coprolites (probably sheep and goat types, as suggesting the presence of phyto-sferolites). A special case is that of the bivalve shell fragments that are observed not only in ceramic fragments attributed to Cernavodă I culture (as presented in literature), but also in one of Gumelniţa ceramic fragments from Borduşani, as with the fine carbonate fragments (limestone rounded grains). Also were found units of surface finishing (fine pure clay slip) added at the external surface of pots, and simple surface (mostly external) finish in very wet state, without addition of clay. Combustion temperature is estimated quite low because not produce transformations of mineral grains and does not allow the complete combustion of vegetable matter in the mixture. The ceramic fragments from Hârşova present oxidation zone in the external part, while some ceramic fragments from Borduşani present symmetrical zones of oxidation, suggesting different ways of arranging the dishes in the oven (for example, for Hârşova in stack, upside down). To complete this study, it is particularly important to perform the clay mineral analysis by X-ray diffraction method. Also, this study must be developed in a systematic way, corresponding to the main types of paste that can be recognized macroscopically and with binocular magnifier, and also by their correlation with the types of vessels identified.*

Rezumat: *În acest articol prezentăm rezultate preliminare ale studiului la microscop asupra pastei unor fragmente ceramice descoperite în așezările eneolitice de tip* tell *Hârșova și Bordușani Popină. Analiza celor 20 de fragmente ceramice a avut în vedere caracterizarea organizării pastei acestora din punct de vedere textural, al microstructurii, porozității, compoziției și culorii, în scopul caracterizării aspectelor tehnologice referitoare la prepararea amestecului și condițiile de ardere, identificării materialelor utilizate și indicarea posibilelor surse naturale pentru acestea. Principalele tipuri de pastă identificate sunt caracterizate prin prezența, în mod constant, a fragmentelor de ceramică de mici dimensiuni („cioburi pisate"), ca și a fragmentelor vegetale de tipul paielor, sau chiar a coprolitelor (probabil de ovicaprine, după cum sugerează prezenţa fito-sferolitelor). Un caz special este acela al fragmentelor de cochilii de bivalve, ce sunt observate nu numai în fragmentele ceramice atribuite culturii Cernavodă I (cum este prezentat în literature de specialitate), dar și pentru unul dintre fragmentele ceramice gumelnițene de la Bordușani, ca și în cazul fragmentelor carbonatice fine (granule de calcar rotunjite). De asemenea, au fost întâlnite unități de finisare a suprafeței (slip de argilă fină, pură) adăugate la exteriorul vaselor, cât și simpla finisare a suprafeței (cel mai adesea externă), în stare foarte umedă, fără adaos de argilă. Temperatura de ardere este estimată ca una destul de scăzută, deoarece nu produce transformări ale granulelor minerale și nu permite arderea completă a materiei vegetale din amestec. Fragmentele ceramice de la Hârșova prezintă zone de oxidare numai în partea externă, în timp ce unele dintre fragmentele ceramice de la Bordușani prezintă zone de oxidare simetrice, ceea ce sugerează modul diferit de dispunere a vaselor în cuptor (de exemplu, la Hârșova, în stivă, cu gura în jos). Pentru completarea acestui studiu, este deosebit de importantă analiza mineralelor argiloase prin metoda difracției de raze X. De asemenea, acest studiu trebuie dezvoltat într-o manieră sistematică, corespunzător principalelor tipuri de pastă, ce pot fi recunoscute macroscopic și la lupă binoculară, ca și corelarea acestora cu tipurile de vase identificate.*

Keywords: *Chalcolithic, Gumelnița, pottery fabric, microscopic study.*

Cuvinte cheie: *Eneolitic, Gumelnița, pasta ceramicii, studiu microscopic.*

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Studii de Preistorie 9, 2012, p. 113-121.

◈ 1. Preliminary considerations

Fabric analysis of pottery is the study of the features related to fine (clay) matrix, inclusions and firing temperature and conditions (C. Orton *et alii* 1993, p. 67).

Ceramic paste is the subject of detailed chemical and mineralogical analysis in order to characterize technological aspects related to the composition of mixture (matrix and inclusions), and identify the materials used, as well as natural sources for them. One of the most commonly used methods for the study of ceramic constituents is the petrographic analysis (D. Şeclăman *et alii* 2003, p 200). If identifying sediments in thin section under the microscope is done considering optical and mineralogical criteria, analyzing the microstructure, porosity and organic inclusions envisages the micromorphological criteria allowing characterization of materials prepared by mixing such: bricks, adobe, mortar, etc, as well as the transformations suffered by them (M.-A. Courty *et alii* 1989, p 72-74). The overall microstructure, the porosity and the birefringence fabrics, are very important features providing clues on the modality of preparing the ceramic paste (C. Haită 2003, p. 79-80).

Nature of inclusions can distinguish the types of ceramic paste from different cultural areas, or coming from different settlements, in relation to available materials. Identification of organic matter in ceramic paste, as well as the transformations experienced by some mineral grains (such as clay minerals and quartz; D. Şeclăman *et alii* 2003, p. 201), may indicate the temperature interval of pottery burning.

In what follows, we intend to present the results of microscopic analysis on the ceramic fabric, on issues related to the preparation of the paste of ceramic fragments, as well as the different materials used, without having detailed information on natural sources, as complementary mineralogical and chemical analysis were not available.

◈ 2. Material and method

For the purpose of this study twenty pottery fragments were analyzed in thin section; these ceramic samples are coming from the micromorphologic thin sections made on archaeological occupational units investigated in the *tell* sites from Hârşova (15) and Borduşani (5), which are attributed to cultural levels Gumelniţa A2 – 18 and Cernavodă – 2 (only from Hârşova). Because most sections are covered with glass slides, it was not possible to perform chemical analysis by physical methods. Also, this study do not intends the characterization of all different types of paste that can be observed macroscopically or with binocular magnifier, for all kind of pottery found in two sites, but intends to present some preliminary observations, which will be developed in a systematic study.

The microscope study is performed in the laboratory of the *National Center of Pluridisciplinary Researches* in Bucharest, using an *Olympus BX 60* petrographic microscope, in polarized light (PPL and XPL), at magnifications between x100 and x500, and the photographs were done using the *Olympus* analogical camera adapted for this microscope.

Microscopic analysis took into account all the characteristics that are analyzed for the prepared materials such as adobe, clay, mortar, plaster and other materials made by mixing. These features are: texture, microstructure, porosity, composition and colour (C. Haită 2003, p. 68).

Textural features indicate the types of sediments used, how they were sampled and the presence of any intentional mixing of sediments, in order to increase non-plastic granular content (degreaser) in clay. The sorting degree and the maximum size of sedimentary grains are the most important parameters to be considered here in order to understand if the mineral inclusions were intentionally added as tempering material or occur naturally in the clays. Some clays could be washed to remove the very coarse inclusions before they can be used (F.R. Matson 1971, p. 594).

Microstructure expresses the degree of homogeneity of the mixture, the general distribution of the materials (non-preferential or preferential arrangement, outlined by the existence of zones or bands) and clay orientation relative to coarser grains (shown in birefringence fabric). It provides information on the modality of the paste preparation and the subsequent transformations by combustion.

Porosity is characterized by isolated circular voids formed by preparing mixture in wet state (air bubbles trapped in clay) or voids and channels resulted by burning organic matter added to the mixture, and through fissures formed by separation of different areas of material and cracking during firing, resulted by the rapidly elimination of water.

Overall composition of the ceramic paste concerns both fundamental mass of mineral constituents – clay or other fine sediments (fine matrix), and mineral or organic compounds added as

degreasing (inclusions) – grains of quartz, limestone, shell fragments, ceramic fragments, fragments of clay or daub, plant fragments, such as straw and husks, coprolites, etc. The mineralogical analysis of the sedimentary matrix indicates its source (wind deposits – *loess*, alluvial, lacustrine, etc.). Chemical and petrographic analysis of added constituents characterizes the type of paste and its physical characteristics. Inclusions added as degreaser are described by size, frequency, shape, roundness and sorting.

The colour expresses the overall composition, the nature of constituents (especially iron compounds and organic matter) and the distribution thereof (discrete inclusions or clay mass oxides), but also ceramic combustion conditions (temperature, duration and atmosphere combustion). Although is very important that the description of colour is done using a standard chart, this is difficult to asses under microscope; also the colour is variable, under the firing conditions.

The dark core of the ceramics can be used as a means of the analysis of the degree of low-temperature firing. To estimate the degree of combustion, it must be considered that the temperature and the duration of combustion are inter-dependent variables and texture and porosity directly affects the degree of transformation of clay paste. The dark core is thus the expression of the "depth" to which the thermal transformation is done. In the case, the pottery was fired insufficiently with respect to both temperature and duration to eliminate this darker zone, and usually is meaning that a kiln was not used (F.R. Matson 1971, p. 595).

Also, very important is to observe the colour differences between surfaces and margins, resulting from conditions after burning, by cooling (O.S. Rye 1981, p. 116; C. Orton *et alii* 1993, p. 69). In this case, for oxidizing firing, there are not significant changes (O.S. Rye 1981, p. 117). Other thermal transformations could result by secondary burning, if the potteries come from structures destroyed by firing.

◈ 3. Preliminary results of the analysis at the microscope

3. 1. Texture

All ceramic fragments analyzed have very fine textured sedimentary matrix consisting of clay, containing rare and fine non-plastic grains. They are represented mainly by grains of mono- and polycrystalline quartz, feldspar and micas (pl. I/fig. 2, 3). In terms of their frequency and size were identified the following types:

1. Very fine fabric with clay texture (pl. I/fig. 1);

2. Fine fabric with clayey silt texture; in this case, the silt grains of 20-40 microns in size, and rarely fine sand, 63-100 microns in size, have frequencies of 3-5% and 5-10% rarely; in this case, the sedimentary matrix presents a good sorting (pl. I/fig. 2);

3. Medium (semi-fine) fabric with clayey silt and fine sand texture, which, along with silt grains, fine sand grains are observed with sizes from 63 to 200 microns, rare of 200-250 microns, which have usually frequencies of 10-20%, and in one case approximately 30% (pl. I/fig. 3); the sedimentary matrix has a moderate sorting and the grain size distribution has a bimodal aspect; in some cases the fine sand grains implies a heterogeneity of the paste (zones of concentration).

These textural features indicate that there is no mixing of sediments, only different ways of sampling and, possibly, of preparation. Individualization of the three textural types would indicate that there is likely a better control on sediment texture used for making ceramic paste of the fragments analyzed. A single ceramic piece with the content of about 30% fine sand granules with the maximum size of 250 microns; in this case, the sedimentary material has a moderate sorting, suggesting a possible mixing during sampling from alluvial sequences.

Also, these textural variations were observed in the case of the ceramic fragments ("crushed ceramics") included in the paste.

3. 2. Microstructure

Ceramic fragments studied have, in general, a homogeneous microstructure, indicating a good mixture preparation. The presence of coarse grains (pottery, limestone granules, and fragments of shells) defines microstructure of porphyric type (pl. I/fig. 4), in their absence, ceramic fragments analyzed have a massive microstructure.

For the finishing units such as slips, a banded microstructure is characteristic (pl. I/fig. 5). There were observed both situations, the case where slip is applied externally, generally consisting of fine and pure clay (pl. I/fig. 6), and where no clay is added for the wall finish (pl. II/fig. 1).

The birefringence[1] fabrics indicate the orientation of clay minerals around coarse grains added as a degreaser (pl. II/fig. 2) and striated fabric, parallel to the surface of vessel. A very good orientation of clay is observed for the finishing zones as slip, where the pure fine clay was applied in a very wet state.

3. 3. Porosity

Paste porosity of analyzed pottery fragments can be classified into two distinct categories. In the first case, there are only isolated circular pores, determined by the air trapped in the sediment at the time of preparation (pl. II/fig. 3), or circular pores and fine channels, obtained by burning plant material added to the mixture (pl. II/fig. 4).

In the second category there are the fine fissures made by firing, parallel to the surfaces. Generally, the cracks are very fine, <1 mm, but frequent. They are very common in the case of the very fine fabric, when vegetable matter was added, where millimeters cracks are interconnected and associated with voids that include charred vegetable fragments (pl. II/fig. 5).

3. 4. Composition

For the majority of ceramic fragments analyzed, inclusions are represented by fine fragments of pottery ("crushed ceramics") and plant fragments. The pottery grains have sizes between 0.2 and 2 mm, rarely 2.5-3 mm, angular shapes and low frequency, 10-20%, and rarely 30-40% (pl. I/fig. 3, 4; pl. II/fig. 2). Were observed several instances where ceramic fragments include, in turn, other pottery (pl. II/fig. 6), indicating the reuse of these materials; the ceramic fragments of a sample have different texture and combustion transformation degree. Accidentally, in the composition, granules of clay or daub were noted. They are more common in the pottery fragments assigned stratigraphically to the Cernavodă I cultural level from Hârşova.

Rarely are encountered rare millimeter-sized fragments of bivalve shells (pl. III/fig. 1) and carbonate grains (pl. III/fig. 2). Shell fragments are characteristic of ceramic fragments attributed to Cernavodă I culture, as described in the literature, but were observed also for a pottery fragment from Borduşani, attributed to A2 phase of Gumelniţa culture.

Plant fragments are present in very variable proportions and characterize generally the very fine and fine fabric types. There are situations in which decayed plant fragments are observed – vegetables that may become either from coprolites, either from organic clayey sediments.

A special case is represented by the two fragments attributed to Cernavodă I culture, in which plant material is very frequent (about 40-50%) and includes common vegetable debris. Also, dense organic aggregates with fibrous microstructure and rounded morphology were observed, resulting most likely from the sheep and goats coprolites (pl. III/fig. 3). In some situations were observed phyto-sferolites of calcium oxalate (pl. III/fig. 4), specific (M.-A. Courty *et alii* 1989, p. 114, pl. III/f) for the waste and coprolites of this category of animals, that also are more compact, and include strongly disturbed phytoliths and vegetable debris.

3. 5. Colour

Regarding the colour of studied ceramic fragments, it should be noted that there are considerable differences between the external wall, the internal wall and the central zone (pl. III/fig. 5). In general, the external zone has colours in shades of red to yellow reddish indicating an oxidative combustion, while the inner part, light brown – dark brown, suggesting a predominantly reducing combustion ambiance, which might suggest that the vessels were burned either upside down or stacked one above another.

Individualization of oxidation zones indicates that the combustion is made in dominant oxidizing conditions. The vast majority of the ceramic fragments have a brown-dark brown internal zone, containing vegetable matter, which is not transformed sufficiently to be destroyed by burning, in some cases recognizing plant structure (pl. III/fig. 6).

The differences between some pottery fragments from Hârşova and from Borduşani are related to the conditions of firing. Possibly this indicates the different arranging of pots in the firing structure.

The oxidant character of the surface may indicate a rapid cooling in open air or "the opening" of the oven before cooling. There are situations when, for the same type of paste, colour is variable, which might indicate a relatively low temperature control.

[1] The birefringence is the optical feature of different minerals corresponding to XPL polarized light vibration on the two optical axes in thin section.

◈ 4. Conclusions

Microscopic analysis of these ceramic fragments showed the presence of three main types of paste, identified primarily by the texture of sedimentary matrix. These three types are typically associated with different types of inclusions:

- very fine textured fabric contains only vegetable fragments;
- fine sandy textured fabric may not contain vegetable matter when the frequency of sand granules reaches 20-30%;
- the fabric with fragments of shells, although characteristic of ceramic fragments attributed Cernavodă I culture, is observed very rarely – in one case of Gumelnița ceramics from Borduşani. Here, very rarely are observed also carbonate granules.

Textural characteristics of sediments used, including the observed variations and also the mineralogical nature of fine sand and silt fractions, indicate a local source, located most likely in areas where fine alluviums of the Danube were available for sampling. The same could be indicated by the constant presence of very fine altered plant fragments that can derive from natural sediments.

Although for ceramic fragments assigned to Cernavodă I culture were observed fine calcitic grains, there are not arguments supporting in any way that sediment source could be represented by deposits of *loess*, as for the main types of construction materials of these *tell* settlements, prepared by mixing with plant material – daub.

Regarding microstructure, it was observed that ceramic fragments attributed to Cernavodă I culture have a strong heterogeneity in the central part and a high content in vegetable matter. In the cases studied, it was observed a very thin slip of pure clay, the clay particles being very well oriented, parallel to the vessel walls. A systematic study may indicate that there are different "recipes" for preparing, or other elements of production technology of ceramic paste.

Regarding burning, it is very clear that the duration and temperature of combustion were not sufficient for complete combustion of vegetable matter included in the paste. The same is indicated by the presence of dark core, which occur when, under the action of temperature, equilibrium is not established for the entire thickness of the vessel wall. On the other hand, there are not notable changes in the minerals constituent, this indicating clearly a thermal domain below the 700°C. The degree of fine fraction birefringence, which represents the optical response of clay minerals determined by individual particles orientation, also indicates a low temperature combustion, which did not cause important transformations of these minerals. The presence of organic amorphous compounds indicate a short combustion at a temperature of 300-400°C (D. Șeclăman *et alii* 2003, p. 203). Such situations are presented in the literature as a result of short-term burning in an oxidizing atmosphere. The same situation was observed for the ceramics from the Starčevo-Criș site of Foeni-Sălaș site (M. Spataro 2003, p. 40). The low firing temperature was sufficient for making pottery good for its aims, and also required less fuel. The very dark, organic core, of Cernavodă I pottery is explained by the high organic content and possibly dung (probably from sheep and goat animals) content.

Greater frequency of cracks, as almost complete burning of vegetable matter and a red uniform section may indicate in some cases of the very fine fabric ceramic fragments, burning at a higher temperature, but as well, the fact that tempering was not good enough, the interconnected fissured suggesting that the pottery obtained was not very adequate as liquids container.

Based on currently available data, we can say that the ceramic paste from the two Gumelniţa settlements have very similar characteristics. As for the pottery attributed to Cernavodă I culture is evident that presents distinct characteristics, whose specificities must be detailed in a systematic study.

To complete this study, it is particularly important to perform the clay mineral analysis by XRD method and by other quantitative analysis. Mineralogical analysis of silt and sand fractions may indicate possibly different sampling sites of sedimentary material.

Also, this study must be developed in a systematic manner, by reference to the main types of paste that can be identified macroscopically and at the stereomicroscope, and by correlation of the results with the types of vessels identified.

◈ Aknowledgements

This study is achieved under the project funded by the National Authority for Scientific Research, CNCS – UEFISCDI, *Co-evolution patterns between human and environment in the wetland zone of Balţa Ialomiţei* (2011-2014), proiect PN-II-ID-PCE-2011-3-0982.

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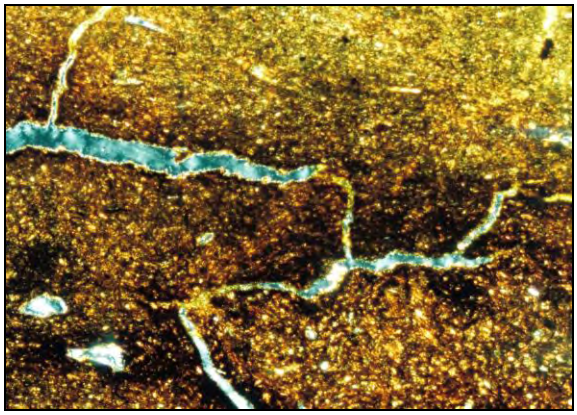

Fig. 1. Pottery fragment with very fine texture and well developed fissures. XPL, f. w. 2 mm.
Fragment ceramic cu textură foarte fină și fisurație bine dezvoltată. XPL, l. i. 2 mm.

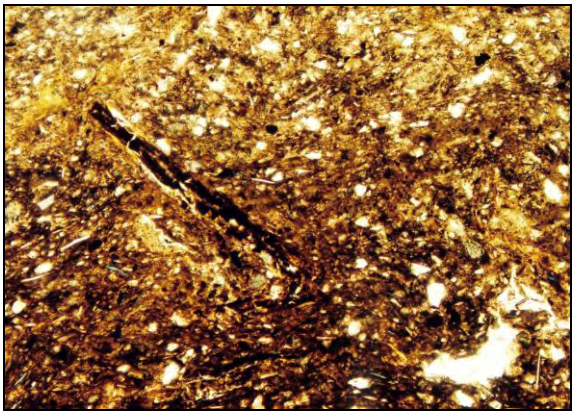

Fig. 2. Pottery fragment with fine texture, including a vegetable fragment. PPL, f. w. 2 mm.
Fragment ceramic cu textură fină ce include un fragment vegetal. PPL, l. i. 2 mm.

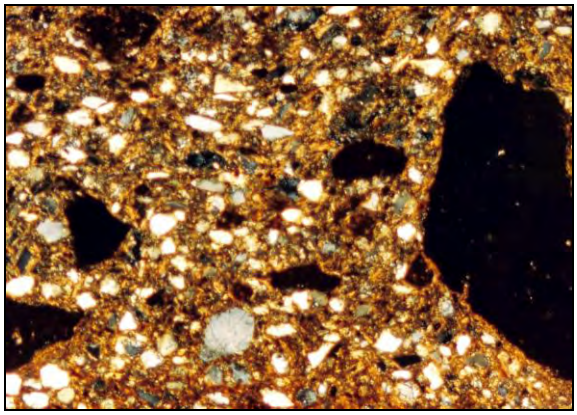

Fig. 3. Pottery fragment with fine sand moderate texture, including pottery fragments. XPL, f. w. 2 mm.
Fragment ceramic cu textură medie, cu nisip fin, ce include fragmente ceramice. XPL, l. i. 2 mm.

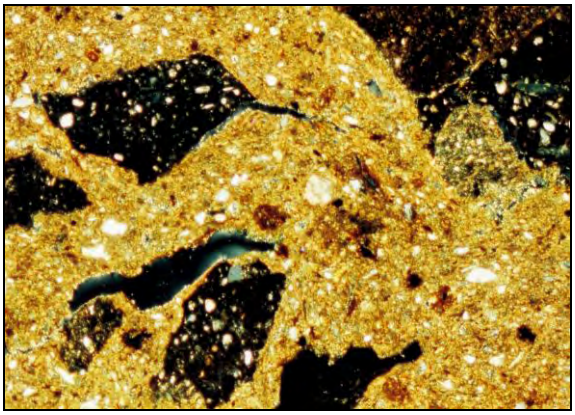

Fig. 4. Pottery fragment with fine texture, with frequent pottery fragments. XPL, f. w. 2 mm.
Fragment ceramic cu textură fină, cu frecvente fragmente ceramice. XPL, l. i. 2 mm.

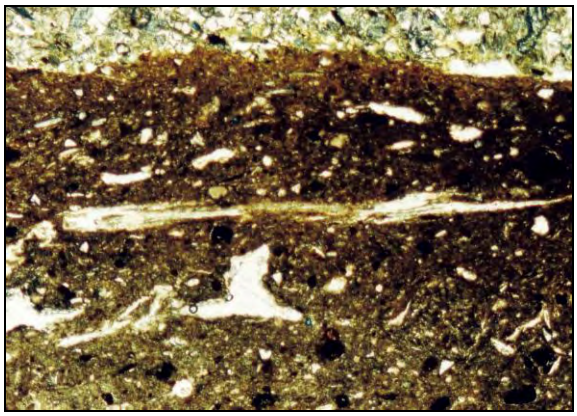

Fig. 5. Pottery fragment with banded microstructure, including vegetable fragments. PPL, f. i. 2 mm.
Fragment ceramic cu microstructură în benzi, ce include fragmente vegetale. PPL, l. i. 2 mm.

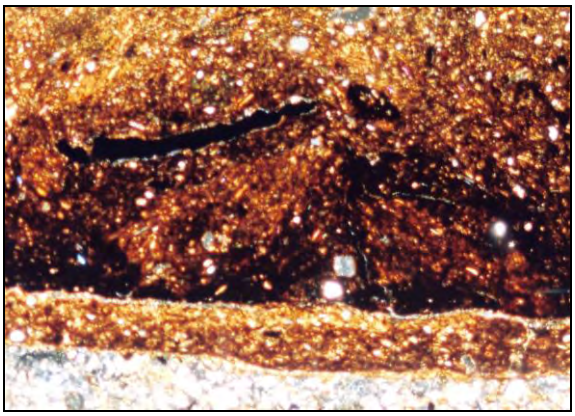

Fig. 6. Pottery fragment with fine clayey slip, including vegetable fragments. XPL, f. w. 2 mm.
Fragment ceramic, cu slip argilos fin, ce include fragmente vegetale. XPL, l. i. 2 mm.

Pl. I. Photos at the microscope. PPL – plan polarized light; XPL – Crossed polarized light; f. w. – frame width.
Imagini la microscop. PPL – lumină plan polarizată; XPL – lumină polarizată încrucișat; l. i. – lățime imagine.

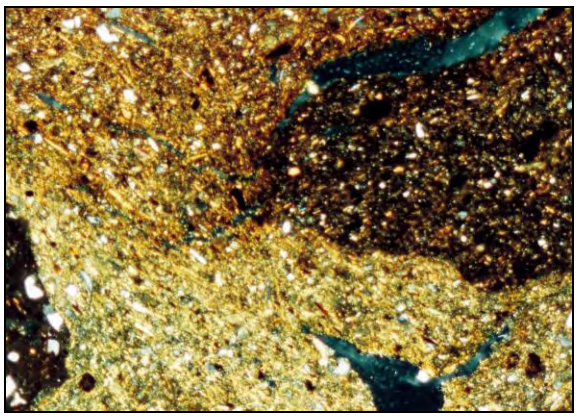

Fig. 1. Pottery fragment with wall polishing unit with pure clay. XPL, f. w. 2 mm.
Fragment ceramic cu finisare a peretelui cu argilă fină. XPL, l. i. 2 mm.

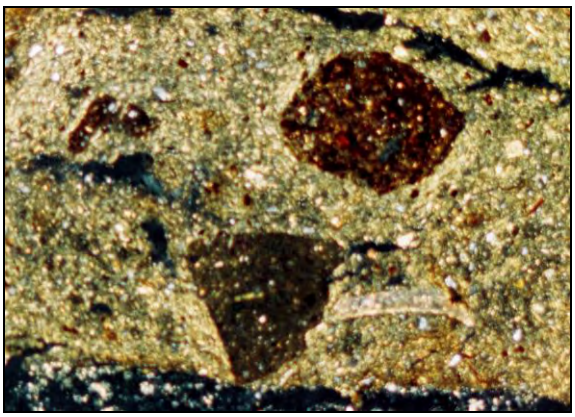

Fig. 2. Pottery fragment showing birefringence fabric. XPL, f. w. 2 mm.
Fragment ceramic ce prezintă microstructură de birefringență. XPL, l. i. 2 mm.

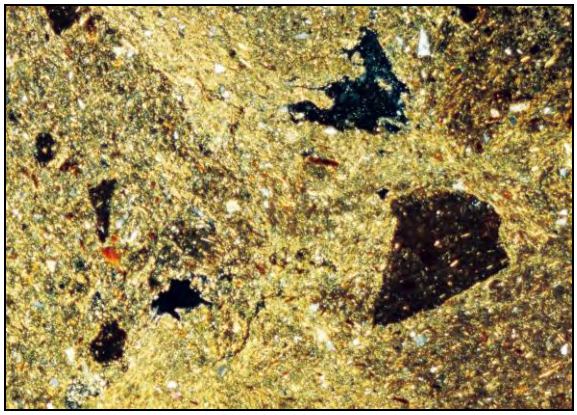

Fig. 3. Pottery fragment with vesicular porosity, with isolated voids. XPL, f. w. 2 mm.
Fragment ceramic cu porozitate veziculară, cu pori izolați. XPL, l. i. 2 mm.

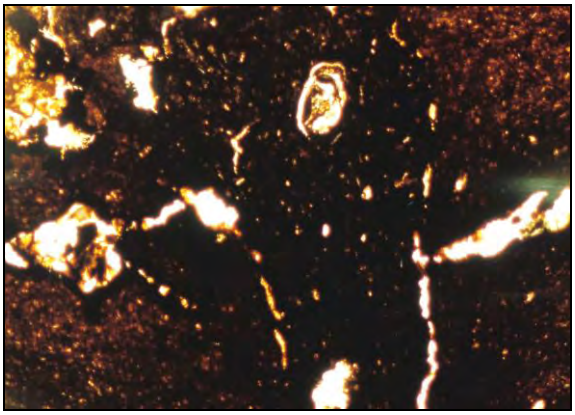

Fig. 4. Pottery fragment with vesicular and channeled porosity. PPL, f. w. 2 mm.
Fragment ceramic cu porozitate veziculară și cu canale. PPL, l. i. 2 mm.

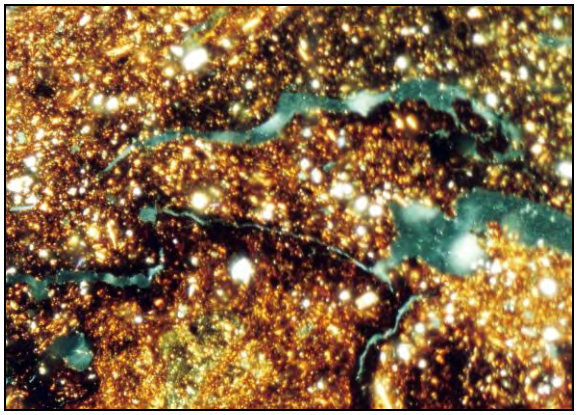

Fig. 5. Pottery fragment with frequent interconnected fissures and vegetable debris. XPL, f. w. 2 mm.
Fragment ceramic cu frecvente fisuri interconectate și resturi vegetale. XPL, l. i. 2 mm.

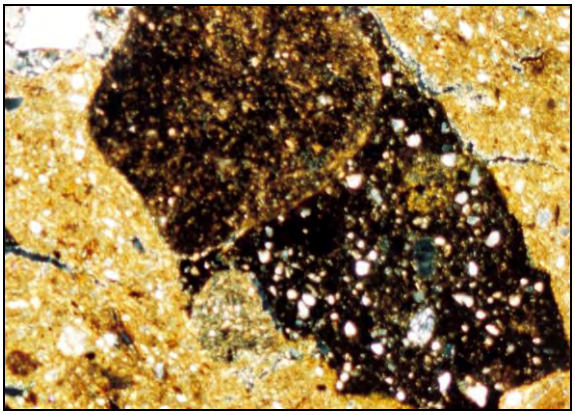

Fig. 6. Pottery fragment including another pottery fragment with crushed ceramics. XPL, f. w. 2 mm.
Fragment ceramic ce include un alt fragment ceramic cu ceramică pisată. XPL, l. i. 2 mm.

Pl. II. Photos at the microscope. PPL – plan polarized light; XPL – Crossed polarized light; f. w. – frame width.
Imagini la microscop. PPL – lumină plan polarizată; XPL – lumină polarizată încrucișat; l. i. – lățime imagine.

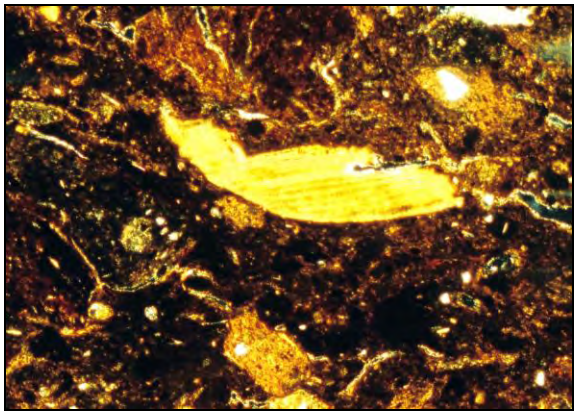

Fig. 1. Pottery fragment including a shell fragment. XPL, f. w. 2 mm.
Fragment ceramic ce include un fragment de cochilie de bivalve. XPL, l. i. 2 mm.

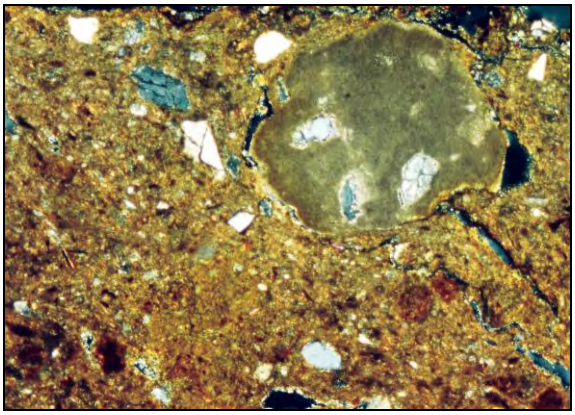

Fig. 2. Pottery fragment including a carbonate granule. XPL, f. w. 2 mm.
Fragment ceramic ce include un granul carbonatic. XPL, l. i. 2 mm.

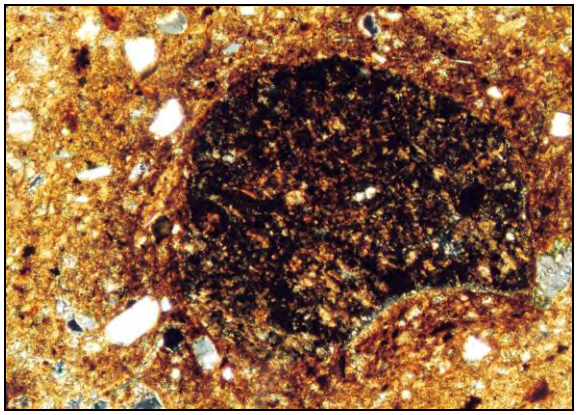

Fig. 3. Pottery fragment including a coprolite fragment. XPL, f. w. 2 mm.
Fragment ceramic ce include un granul coprolitic. XPL, l. i. 1 mm.

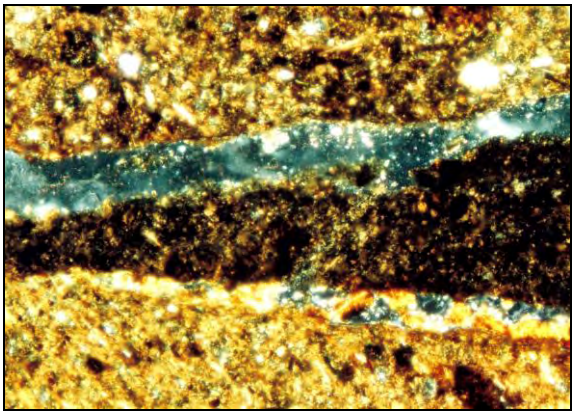

Fig. 4. Pottery fragment with coprolite aggregate with vegetable debris and phyto-sferolites. XPL, f. w. 2 mm.
Fragment ceramic cu agregat coprolitic cu debris-uri vegetale și fito-sferolite. XPL, l. i. 1 mm.

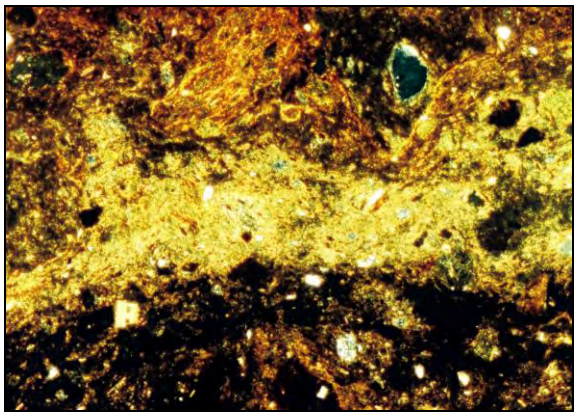

Fig. 5. Pottery fragment with fine clay slip and very organic internal zone. XPL, f. w. 2 mm.
Fragment ceramic cu slip argilos fin și zonă internă foarte organică. XPL, l. i. 2 mm.

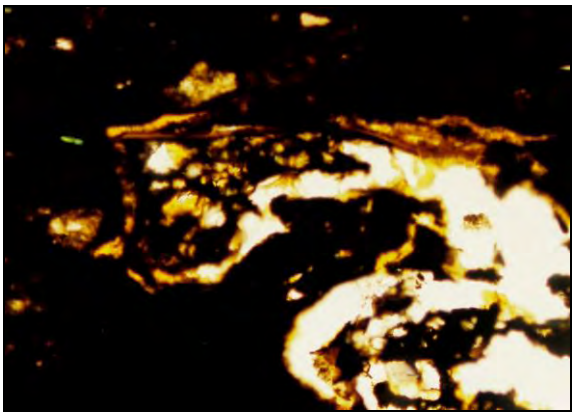

Fig. 6. Pottery fragment including a vegetable structure. PPL, f. w. 1 mm.
Fragment ceramic ce conţine o structură vegetală. PPL, l. i. 1 mm.

Pl. III. Photos at the microscope. PPL – plan polarized light; XPL – Crossed polarized light; f. w. – frame width.
Imagini la microscop. PPL – lumină plan polarizată; XPL – lumină polarizată încrucișat; l. i. – lățime imagine.

Sites under threat.
Tell settlements from South-East Romania

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Radian-Romus ANDREESCU*

Abstract: *This paper has as aim to present some tell settlements from Southern Romania from the point of view of their preservation (identification of the main degradation types) and protection. With the shape of a mound, the tell type settlements drew the attention not only to archaeologists but also to local people who saw them as a good raw material source for different constructions. Despite their presence on the List of Historical Monuments the tell settlements are currently used as fields for agriculture or are invaded by constructions built inside the protection area or even on the site itself. All these had as consequence the total destruction of some of these sites (e.g. the tell sites nearby Bucharest: Vidra, Măgura Jilavei, Chitila). The careless of the local authorities regarding this type of monument is one of the causes the destruction of the tell settlements.*

Rezumat: *Acest articol prezintă aşezările de tip tell din sud-estul României din perspectiva stării de conservare (identificarea principalelor tipuri de degradări asociate), a protecţiei lor şi a punerii în valoare. Având aspectul unor movile (numite „măguri" sau „gorgane") aşezările de tip tell au atras atenţia nu doar arheologilor, ci şi localnicilor, care au întrevăzut în acestea, între altele, o sursă de materie primă pentru diverse amenajări. În ciuda statutului lor de monumente istorice, tell-urile sunt folosite ca teren agricol sau sunt invadate de construcţii moderne, ridicate chiar pe aşezare sau în aria de protecţie. Toate acestea au dus în unele cazuri la distrugerea completă a câtorva dintre aceste situri (de exemplu tell-urile din jurul Bucureştilor: Vidra, Măgura Jilavei, Chitila). Indiferenţa autorităţilor faţă de acest tip de monument istoric face ca şi în prezent numeroase aşezări de tip tell să fie distruse de diverse amenajări şi lucrări agricole.*

Keywords: *tell settlements, natural risks, man made threats, preservation.*
Cuvinte cheie: *aşezări de tip tell, riscuri naturale, riscuri antropice, conservare.*

◈ Introduction

The *tell* settlements are an unusual type of monument. A very good description of a *tell* settlement was made by archaeologist Dinu V. Rosetti who excavated several Neolithic *tell* settlements near Bucharest in the interwar period. According to D.V. Rosetti the *tell* settlements are : "*artificial mounds made of rubbish belonging to collapsed buildings, due to often fires, floods and continuous habitation on the same ground*" (our translation; D.V. Rosetti 1932, p. 5).

These settlements are usually placed on river valleys, more rarely on terraces, easy to identify as a mound and visible in a flat land (the term "*tell*" is of Arabic origin and its meaning is mound). They were formed during hundreds of years by the accumulation of settlements debris which succeeded for centuries. Some of these settlements disappeared because of fires and other were abandoned. Their importance is related to the extraordinary richness of artifacts which they enclose inside of them. Some enclose hundreds of years of history and the information resulting from their research is important not only to the history of Romania, but also to the history of Europe.

Unfortunately these settlements were submitted during time to several degradations due to both natural risks and man made threats. The field works from the last decades in Southern Romania revealed several situations in which the *tell* settlements were partially or totally destroyed by the mentioned factors.

About 150 *tell* settlements were identified so far in Southern Romania. They belong to Gumelniţa culture and they are the main form of habitation on Romania's territory in the 5th mill. BC (R. Andreescu, P. Mirea 2008). Several types of degradations associated with the *tell* settlements were identified, as well as some dysfunctions related with their legal status as historical monuments.

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◈ Degradations caused by natural factors

In this category we included several settlements submitted to natural factors (e.g. erosion, rain, wind, freezing / defrosting, etc.) which lead to the destruction of an important part of the settlement. Two examples will illustrate this type of destruction.

Sultana - *Malu Roşu* (pl. 1/1-2). The *tell* settlement is placed on the high terrace of Lake Iezerul Mostiştei, in Sultana village, Mânăstirea commune, Călăraşi County. The oldest scientific researches in a *tell* type settlement were undertaken at Sultana site, which is related with the beginning of the Romanian school of archaeology. Rescue excavations were undertaken at the site in the 70 – 80's of the last century. The excavations were restarted in 2001 (R. Andreescu, C. Lazăr 2008).

Nowadays what was left of the settlement measures cca. 35-40 m on the long axis and 25-30 m on the short axis. To make an idea about how the site was destroyed in the last decades, just notice that in 1923 archaeologist I. Andrieşescu estimated the long axis of the settlement at about 71 m (I. Andrieşescu 1926, p. 172). The area corresponding to about 30-35 m of the long axis of the settlement collapsed in the waters of the lake in approximately 80 years. Since 2001 when researched were restarted, more than 5m from the north-western edge of the settlement were collapsed. A very rich archaeological inventory was discovered at the site. Among it stands out a little treasure containing golden objects, some of the oldest artifacts in gold found in Europe. Nevertheless the site is not on the *List of Historical Monuments*[1] of Călăraşi County. This situation is due to a problem related to the legal status of the field on which the site is located.

Coţatcu *Ceţătuia* (pl. 2/1). The *tell* settlement is placed in the bottom of a valley near Coţatcu village, Podgoria commune, Buzău County. The site was submitted to an accelerated deterioration in the last decades. The site was discovered in 1971 when the first land slides occurred and they affected the site. The researches undertaken back then consisted in a 40 x 1,5 m sondage on the long axis of the settlement. When the excavations were restarted in 2006 there were only 10-12 m left of this long sondage, the rest being collapsed in the nearby valley (R. Andreescu *et alii* 2010). In the settlement profile there were visible traces of burnt dwellings. The rich archaeological inventory belongs to the so called Stoicani-Aldeni cultural group dated back in the 5th millennium BC Stoicani-Aldeni is a cultural group located in the contact area between the Chalcolithic civilisations of Precucuteni-Cucuteni and Gumelniţa.

◈ Degradations caused by man made actions

The man made actions which affected a large number of sites are as follows: the modern habitation (houses), different constructions or infrastructural works (roads, embankments, lakes) and the agricultural works.

Some of the *tell* type settlements were affected by modern habitation.

Hârşova (pl. 3/1-2). The *tell* type settlement is placed on the Danube shore, in Hârşova town, Constanţa County. The site is the biggest *tell* settlement in Romania, with an impressive height of 12 m, formed by the successive deposition of settlements belonging to the cultures Boian, Gumelniţa and Cernavodă I, dated back to the 5th – 4th mill. BC. Initially the site covered more than two hectares but due to the erosion caused by Danube River and to human activities, the remaining settlements measures nowadays 190 m on the long axis and 80 m on the short axis. Modern houses could be found on almost the entire surface of the *tell* settlement and around it, so that the last habitation levels of the *tell* settlement were affected. The archaeological researches could be undertaken, with exceptional results, only a small part of the site (D. Popovici *et alii* 2000). The *tell* settlement from Hârşova is an unhappy example of conjugation of destructive natural factors and human made activities. The site is on the *List of Historical Monuments* (code CT-I-s-A-02677).

Măgura-Bran (pl. 4/1-2). The *tell* settlement is placed on a remnant in Clăniţa valley, at the edge of Măgura commune, Teleorman County. Its present dimensions are 90 m on the long axis and a maximum length of 60 m. Its height is about 11 m, from which only 6,5 m are traces of successive settlements from Iron Age, Bronze Age and Eneolithic (Gumelniţa culture). The *tell* settlement surface is occupied by the church and cemetery of Bran Village, though the upper levels of prehistoric habitations were strongly damaged. Under these circumstances, only a small sondage could be done

[1] The list comprises the sites and monuments in Romania.

on the slope in order to establish the site stratigraphy (R. Andreescu, K. Moldoveanu 2010, p. 17-18). The site is on the *List of Historical Monuments* (code TR-I-s-B-14210.02).

Uzunu (pl. 5/1-2). The *tell* settlement is placed in the nearby of Câlnişţea valley, in Uzunu village, Giurgiu County. The site is placed at the edges of the village and it was affected by the actions of the villagers. Archaeologist D. Berciu mentioned in 1956 a mound of big size located in the courtyards of two villagers, who repetitively made diggings on the southern edge of the settlement in order to enlarge the courtyard and obtain earth for other constructions (D. Berciu 1956, p. 500-501). Nowadays the site is much destroyed by the villagers who extended their courtyards in the detriment of the *tell* settlements. In the spring of 2010 many burnt dwellings could still be observed in the site profile and its very vicinity a new house was under construction. Nevertheless, the site is on the *List of Historical Monuments* (code GR-I-s-B-14834).

Some other *tell* type settlements were affected by various constructions or infrastructural works (roads, embankments, lakes, etc).

In Balaci commune, Teleorman County, two *tell* settlements were partially destroyed by various works. One of the *tell* settlements placed in the northern side of the village was cut by the local road. In the eastern side of the village, on Burdea River valley, there was another *tell* settlement destroyed almost completely by access roads and by the local villagers who took earth from the *tell* settlement for different constructions. Still, the site is on the *List of Historical Monuments* (code TR-I-s-B-14186).

Another example is the site named *Gorgan* (pl. 6/1-3), Teleorman County, placed on Vedea River near the town of Alexandria. It is one of the oldest mention of a *tell* settlements in Teleorman County by archaeologist C. Bolliac during his "archaeological exploration" from 1869 (C. Bolliac 1869, p. 3-4). Since that time, C. Bolliac mentioned a hole made by treasure hunters in the middle of the settlement. A side of the site was also destroyed by a local road. The settlement was researched in 2002 when a stratigraphical profile was made by cutting the side destroyed by the local road (R. Andreescu, D.W. Bailey 2003). Many trees could be found on site in past times and they also contributed to the partial destruction of the last habitation levels. The site is on the *List of Historical Monuments* (code TR-I-s-B-14182).

Other *tell* settlements are systematically destroyed by their use as clay source for different constructions. Such an example is the *tell* settlement from Glina - *La Nuci* (pl. 2/2), Bălăceanca commune, Ilfov County, placed nearby Bucharest on Dâmboviţa River valley. The *tell* settlement was researched by archaeologist I. Nestor since the interwar period (I. Nestor 1933). The site was used as an earth source for different infrastructural works, as embankments of A2 highway. A lot of garbage is deposited around the site. The site is on the *List of historical monuments* (code IF-I-m-A-15146.02).

Another *tell* settlement around Bucharest researched in the '80s of the former century is the one from Chitila *Fermă*, Mogoşoia commune, Ilfov County. The site was discovered in 1972 when the bulldozers destroyed the *tell* settlement placed on the bank of Colentina River near the railway Bucharest - Ploieşti (V. Boroneanţ 2000, p. 49). The site is on the *List of Historical Monuments* (code IF-I-m-A-15214.08 /09).

Another example is the one of the settlement named *Măgura din livezi* from Drăcşănei village, Teleorman County. In 2005 the embankment of a lake nearby was affected as a result of floods from Burdea River valley. The earth for repairing the embankment was taken from the *tell* settlement which lead to the destruction of the entire settlement. The site is on the *List of Historical Monuments* (code TR-I-s-B-14198).

The most frequent cause for the destruction of the *tell* settlement is represented undoubtedly by the agricultural works. They generally affect the upper levels of the *tell* settlements but there are cases when the sites are completely destroyed due to these works.

One significant example of intentional destruction of a site happened in the case of *tell* settlement from Vidra *Măgura Jidovilor* (pl. 7/1-3), Ilfov County, placed in Sabar River valley near Bucharest. The site was researched by archaeologist D.V. Rosetti in the interwar period (D.V. Rosetti 1934, p. 7). He mentioned that the *tell* settlement had a height of 6 m, composed of habitations levels belonging to Boian and Gumelniţa cultures ($6^{th} – 5^{th}$ mill. BC).

A field research made in autumn 2010 revealed the fact that the *tell* settlement was completely destroyed. Placed behind the houses in the village, practically in the courtyards of local people, the site was levelled by using bulldozers. One of the masterpieces of prehistoric art, the so called "Goddess from Vidra" was discovered at this site, so it is much possible that other objects of this kind to be lost during the levelling works done at the site, not to mention the lost of the historical information. The site is on the *List of Historical Monuments* (code IF-I-s-A-15255.04/05).

Most of the *tell* settlements are currently used as agricultural fields. As a consequence, the last habitation levels are partially affected and many times traces of old houses could be found in the fields, disturbed by plough, as well as a rich inventory, composed of tools and ceramic spread within the perimeter of the site.

Such examples could also be found on Teleorman valley, at Slăveşti (pl. 8/1) – the site is on the *List of Historical Monuments* (code TR-I-m-B-14224.01) or Trivale-Moşteni (pl. 8/2) – the site is on the *List of Historical Monuments* (code TR-I-m-B-14227.02). As a result of agricultural works, the edges of the site was compromised. Another example is the *tell* settlement from Petru Rareş, Giurgiu County. The site was researched by archaeologist D. Berciu (D. Berciu 1937) and nowadays it is used as agricultural filed. The site is not on the *List of Historical Monuments*.

There are more examples but we focused on the *tell* settlement from Vităneşti - *Măgurice* (pl. 9/1-2), Teleorman County, which is a special case. The researches undertaken here starting with the year 1993 showed the destruction degree on which the site was submitted by man made actions (R. Andreescu *et alii* 2003). The *tell* settlement is placed in Teleorman River valley, in the vicinity of the houses from Vităneşti village. After 1989 the land on which the site is located was given back to the owners who transformed it into an agricultural field, which determined the intervention of archaeologists. As a consequence, agricultural works stopped in 1995 and the site was introduced in the *List of Historical of Monuments*. The archaeological investigations revealed that the last habitation level, belonging to Gumelniţa culture, placed 20-30 cm under the ground, was strongly disturbed by agricultural works. Thus the burnt dwellings belonging to this level were partially destroyed and spread on the surface of the site. Many other holes dug by the local villagers also contributed to the site degradation. Another element which seriously perturbed the site stratigraphy is represented by animals which dug large galleries through the *tell* settlement, leading to the destruction of the site, mainly the prehistoric dwellings. The site is on the *List of Historical Monuments* (code TR-I-s-A-14230).

These are only a few examples from a long list of *tell* settlements totally or partially destroyed by natural factors but mostly by human made actions. Their visibility in the landscape offers both advantages but also disadvantages. On one hand, this visibility is an advantage for archaeologists who can easily identify such prehistoric sites but on the other hand, their visibility put their integrity in danger as local people see in them not historical monuments but rather a handy source for building material for houses or other constructions.

Such example is the case of the *tell* settlement from Bucşani, Giurgiu County. Placed in the floodplain of Neajlov River, the *tell* settlement was included in the pillar of a bridge which was supposed to be built over Neajlov River at the end of the 90's last century. Luckily in this case the archaeologists have been noticed and so the *tell* settlement could be researched before it suffered because of the construction of the bridge (S. Marinescu-Bîlcu *et alii* 1999).

Unfortunately many *tell* settlements are located on private properties. The local people don't know the laws regarding the protection of heritage and act consequently by destroying important historical vestiges, old of some thousands of years, enclosed in these *tell* settlements.

◈ Discussions

Regarding the *List of Historical Monuments*, there are some dysfunctions regarding the *tell* settlements. Thus, some of them, for example Sultana – *Malu Roşu*, which is one of the oldest researched *tell* settlement and where excavations are still undertaken is not on the list, while other *tell* settlements which practically do not exist at the moment, are still on the list. It is the case of the *tell* settlement at Vidra, destroyed by agricultural works or the one from Vlădiceasca, Călăraşi County, which is covered entirely by the waters of Mostiştea Lake due to some works made on the river.

For the protection of the mentioned sites there is a legislation based on Law no. 422/2001 regarding the preservation of historical monuments, together with the Government Ordinance no. 43/2000 regarding the protection of archaeological heritage. According with this law, the local authorities have an important role in protecting these sites. Unfortunately they ignore this type of monuments as they usually understand by "monument" a stone or wood construction and not a mound of earth. Even in big towns, not to mention in the small ones or in the villages, the historical monuments are destroyed without the authorities to take any measure. In these circumstances of ignorance of the legal frame it is not a wonder that the *tell* type settlements are not viewed as historical monuments which should be preserved.

The awareness of the local authorities is necessary in the first place for the protection of these sites because the ignorance of these sites is the main risk factor for destruction. Secondly, some campaigns of informing the communities about the cultural local values are needed, as well as the official signage for the historical monuments. Other actions which should be taken in consideration regarding the management of the monuments are: the creation of site museums inside the schools, enclosing systems for the sites, appropriate signage – directional informative panels and display panels and the inclusion in local circuits for visiting. Unfortunately these examples are rare.

An interesting case is the one found at Drăgăneşti-Olt (pl. 10/1-2), where there is a *tell* settlement which was partially destroyed by an industrial railway and currently serves as a waste disposal area. In exchange, the results of the researches undertaken in this site (M. Nica *et alii* 1994) are visible in the local museum (Museum of Boian Plain) where there is a very interesting ethno-archaeological park with a reconstruction of the *tell* settlement at 1:1 scale. There is also a site museum at Drăgăneşti-Olt.

A very good example of research, preservation and management of a *tell* settlement is the site of Çatal Hüyük (pl. 11/1-3), placed in Konya Plane, Turkey. Here we can find special shelters where visitors can look at vestiges preserved in situ even during researches, an experimental house (a reconstructed Neolithic house) and a visitor centre. On the website of the Çatal Hüyük research project[2] there is also an interesting management plan with a wide view on the archaeological site regarding issues as the conservation and protection of the site, integrated in a system of factors involved in this process. A special attention is given to real proposals for the preservation, protection and marketing of the site, on a short, medium and long term.

The present paper had as aim to drew the attention upon a less known type of monument, namely the *tell* type settlements. They are viewed as "*vast archive of highly selected memories*" (I. Hodder 2005, p. 131) as they enclose in them thousands of years of history and artifacts with a special value. Under the present conditions of economic development (infrastructural works, constructions, agricultural works) these monuments are more and more threaten with destruction. This is why a good collaboration is needed between the specialists involved in their research and the local authorities for the preservation and protection of *tell* settlements.

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- ArchaeoLandscapes Europe.

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Pl. 1. Sultana Malu-Roşu, Călăraşi County. 1. Aerial image of the site (photo C. Bem, © cIMeC); 2. North-western view of the site eroded by the waters of Iezerul Mostiştea.
Sultana Malu-Roşu, jud. Călăraşi. 1. Imagine aeriană a sitului (foto C. Bem, © cIMeC); 2. Vedere dinspre nord-vest a sitului erodat de apele Iezerului Mostiştea.

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Pl. 10. Drăgăneşti-Olt, Olt County. 1-2. Reconstruction of the tell settlement within the Museum of Boian Plain.
Drăgăneşti-Olt, jud. Olt. 1-2. Reconstituirea aşezării de tip tell în cadrul Muzeului Câmpiei Boianului.

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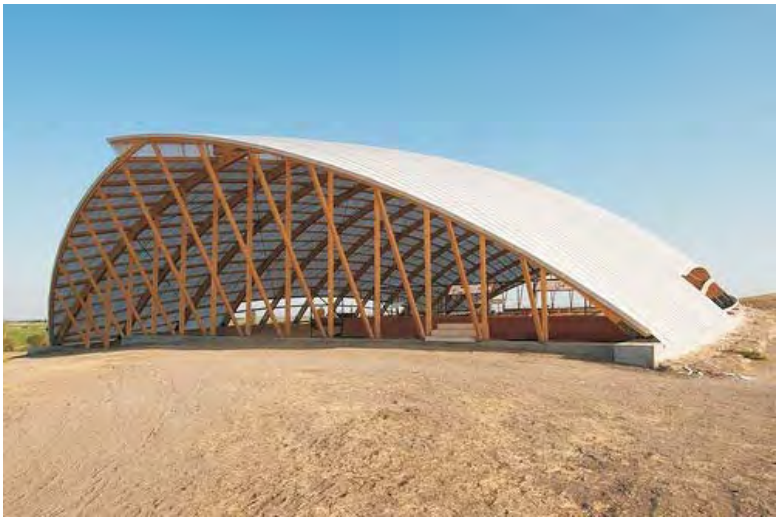

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Pl. 11. Çatal Hüyük, Turkey. 1-3. Protection structures of the site, with infrastructure for visitors (after http://www.catalhoyuk.com).
Çatal Hüyük, Turcia. 1-3. Structuri de protecţie a sitului, cu infrastructura pentru vizitare (http://www.catalhoyuk.com).

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Pl. 2. 1. Coţatcu Cetăţuia, Buzău County. General view of the site affected by land slides; 2. Glina, Ilfov County. Image of the site used as earth source for different constructions.
1. Coţatcu Cetăţuia, jud. Buzău. Imagine de ansamblu a sitului afectat de alunecări de teren; 2. Glina, jud. Ilfov. Imagine a sitului folosit ca sursă de pământ pentru diverse amenajări.

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Pl. 3. Hârşova, Constanţa County. 1. Aerial view of the site invaded by modern habitation (photo C. Bem, © cIMeC); 2. View of the profile with traces of burnt Chalcolithic dwellings.
Hârşova, jud. Constanţa. 1. Imagine aeriană a sitului invadat de locuirea modernă (foto C. Bem, © cIMeC). 2. Vedere a profilului cu urme de locuinţe eneolitice incendiate.

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Pl. 4. Măgura Bran, Teleorman County. 1. Aerial view of the site with the village cemetery (photo C. Bem, © cIMeC); 2. View of the site from the village.
Măgura Bran, jud. Teleorman. 1. Imagine aeriană a sitului cu cimitirul satului (foto C. Bem, © cIMeC); 2. Vedere a sitului dinspre sat.

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Pl. 5. Uzunu, Giurgiu County. 1. Profile of the site with traces of Neolithic burnt dwellings; 2. View of the site invaded by constructions.
Uzunu, jud. Giurgiu. 1. Profil al sitului cu urme de locuinţe incendiate; 2. Imagine a sitului invadat de construcţii.

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Pl. 6. Alexandria Gorgan, Teleorman County. 1. Aerial view of the site (photo C. Bem, © cIMeC); 2. Stratigraphic profile during researches.
Alexandria Gorgan, jud. Teleorman. 1. Imagine aeriană a sitului (foto C. Bem, © cIMeC). 2. Profil al sitului în timpul cercetărilor.

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Pl. 7. Vidra Măgura Jidovilor, Ilfov County. 1. Image of the site during 1933 campaign (after D.V. Rosetti, 1934); 2. Image of the place where the site used to be, nowadays completely destroyed by agricultural works; 3. "The Goddess from Vidra", anthropomorphic figurine discovered in the settlement (after D.V. Rosetti, 1934, pl. I-III/1).
Vidra Măgura Jidovilor, jud. Ilfov. 1. Imagine a sitului în timpul campaniei din anul 1933 (după D.V. Rosetti, 1934); 2. Imagine actuală a locului unde a fost situl, distrus în totalitate de lucrările agricole; 3. "Zeiţa de la Vidra", statuetă antropomorfă descoperită în aşezare (după D.V. Rosetti, 1934, pl. I-III/1).

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Pl. 8. Sites affected by agricultural works: 1. Slăveşti, Teleorman County; 2. Trivale Moşteni, Teleorman County (photo C. Bem, © cIMeC).
Situri afectate de lucrări agricole: 1. Slăveşti, jud. Teleorman; 2. Trivale Moşteni, jud. Teleorman (photo C. Bem, © cIMeC).

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Pl. 9. Vitănești Măgurice, Teleorman County: 1. Image from 1993 with the site affected by agricultural works; 2. Aerial view of the site from 2010 (photo C. Bem, © cIMeC).
Vitănești Măgurice, jud. Teleorman: 1. Imagine din anul 1993 cu situl afectat de lucrări agricole; 2. Imagine aeriană a sitului din anul 2010 (foto C. Bem, © cIMeC).

The combined use of air photographs and free satellite imagery as auxiliary tools in preliminary archaeological exploration: potential and limitations from three case studies in three distinct geo-cultural regions in Mexico

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Abstract: *This paper brings into the attention of the academic community a series of methodological aspects that we considered of a possible general interest, deriving from our own practical application of aerial photography and satellite imagery within three distinct archaeological survey projects that we conducted during the last decade on three different geo-cultural regions of Mexico. We try to emphasise what works and what doesn't within the realm of the aerial and satellite imagery employed during pioneering explorations aimed to identify new archaeological sites in natural settings that pose a number of challenges and obstacles to the photo-interpretation. In the ravished jungles of south-western Yucatan Peninsula we identified several Mayan settlements by stereoscopy, as the dominant archaeological feature is the mound. In the mountains and deserts of Aguascalientes, central-northern Mexico, air photos and Google Earth proved almost useless in most of the cases, but precious in valuing landscape changes. In the arid deserts of northern Zacatecas, air photos and satellite imagery acted weakly in the actual identification of hunter-gatherer campsites, but turned crucially important in the identification and monitoring of geo-spatial units and paleo-landforms hosting ancient human occupations probably since the end of Pleistocene.*

Rezumat: *Acest articol aduce la cunoştinţa comunităţii academice o serie de aspecte metodologice pe care le considerăm de un posibil interes general, pornind de la propria noastră experienţă de teren în folosirea fotografiilor aeriene şi a imaginilor satelitare cu acces liber în trei proiecte de cercetare desfăşurate de noi pe parcursul ultimei deceniu în trei regiuni geo-culturale diferite din Mexic. Încercăm să clarificăm ce funcţionează şi ce nu în cadrul utilizării de imagini aeriene şi satelitare în explorări pioniere în regiuni necercetate în prealabil şi al căror obiectiv este descoperirea de noi situri arheologice în peisaje care pun de la început o serie de obstacole în faţa fotointerpretării. În junglele din sud-vestul Peninsulei Yucatan am reuşit prin simpla stereoscopie să identificăm câteva aşezări Maya necunoscute, dat fiind trăsătura spaţială dominantă - monticulul. În munţii şi deşerturile din Aguascaliente, în Mexicul nord-central, fotografia aeriană şi imaginile Google Earth s-au dovedit practic inutile în majoritatea cazurilor, însă valoroase în evaluarea transformărilor de peisaj. În deşerturile din nordul statului Zacatecas fotografiile aeriene şi imaginile satelitare s-au dovedit ineficiente în identificarea de situri de vânători-culegători, însă au devenit cruciale în identificarea şi monitorizarea unităţilor geo-spaţiale şi vechilor forme de teren care au atestat prezenţa oamenilor încă de la sfârşitul Pleistocenului.*

Keywords: *Mexico, aerial photography, satellite imagery, Maya, Zacatecas, Aguascalientes, hunter-gatherers.*

Cuvinte cheie: *Mexic, fotografie aeriană, imagini satelitare, Maya, Zacatecas, Aguascalientes, vânători-colegatori.*

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◈ 1. Introduction and methodological statements

This paper is not intended to be any methodological review of the employment of aerial or satellite imagery in the archaeological exploration nor is it any representative compilation of the application of such tools in Mexican archaeology. This is just the synthesis of our own practical application of these obliged technical approaches in three of our research projects recently undertaken in three different geographical and cultural regions in Mexico, a decision justified by the belief that sharing these humble experiences with colleagues from other parts of the world would probably flow into benefit for them, for us and for fellow explorers who probably look at the topic through much more sophisticated and professional glasses. We will also make a brief presentation of the Mexican aerial photography environment from the legal and technical point of views, together with a brief instruction on how to access archives. Before continuing consulting this paper, the reader should know that we are not going to propose any new technique or methodological procedure, not even an outstanding revelation on how to interpret features in Mesoamerican sites; instead, we are going to show what works and what doesn't in using both aerial photography and free access satellite imagery (Google Earth) as basic auxiliary techniques for archaeological surface exploration in three distinct cultural regions with their anthropic manifestations differing drastically one from another, all nested in three very different landscapes, and how their potential in the employment of these techniques varies considerably, asking the researcher to modify the approach accordingly in each specific case.

The methodological discussion we propose in this paper builds up on three case studies situated in Mexico (fig. 1). We prefer not to use the geo-cultural term *Mesoamerica* in referring to the three cases altogether, because at least one of them might fall out of the traditionally accepted geographical and cultural extent of the concept. The three cases we offer are characterised by very different natural and cultural settings, not entirely similar to what our colleagues in other places like Europe would expect to see on an aerial photograph or a Google Earth image. Without deep organic soils, lacking cereal crops on surface, almost completely lacking plowing, instead with deep jungles, rough terrain, dense shrub vegetation or compact cacti masses - and without the blessing of a long photo-interpreting tradition in archaeology - the use of these mandatory methodological steps is always a challenge and a fascinating duty in our part of the world, a task that gives you the feeling of a 'first-timer' every single time. Nevertheless, these cases do share one common feature: the areas had never been studied before in any systematic manner, and no previous professional archaeological exploration had been completed for the locations in discussion. That means that the utilisation of aerial photographs and satellite images stood as a fundamental tool in the early stages of our preliminary explorations of the newly discovered "lost worlds", as well as during the more advanced phases of analysis and interpretation.

The first case refers to an early exploration we conducted over an almost unknown area on the middle course of the Candelaria River in southwestern Yucatan Peninsula, state of Campeche, at the periphery of the so-called "Tierras Bajas Noroccidentales" ('Northwestern Lowlands'), a subcomponent of the famous Maya site-rich Petén macro-region. In this case, the use of vertical imagery was employed in the initial recognition of the study area, in the definition of the limits of the surveys and the identification of the presence of sedentary Mayan settlements displaying relatively low monumental and domestic mound-based architecture (fig. 2-4). We shall see how this specific environment - dominated by secondary regenerating jungles, mangrove swamps and extensive anthropic savannahs - can affect the use of aerial/spatial imagery. The second case to discuss is settled in the semi-deserts of Aguascalientes, in central-northern Mexico, where societies shifting between nomadic hunter-gatherer and sedentary-agricultural ways of life generated shallow surface archaeological records barely visible on the field or on air photos (fig. 5-7). The third case to be discussed stands even further from 'normal', as it refers to a research still ongoing at the moment of the publication of these pages, set in the cactus-and-shrub dominated rugged semi-desert of northern Zacatecas, dealing with hunter-gatherer archaeology, searching for the earliest traces of human occupation in the area as a particular manifestation of the controversial 'bigger picture' of the peopling of Americas at the end of the Ice Age (fig. 8, 9). In this particular case, the target were nomadic or semi-nomadic hunter-gatherer societies spanning over many centuries of intermittent occupation whose archaeological record usually leaves very thin traces on the surface of the ground, hardly visible when walking on them and even less probable to be seen from the air or from the outer space. Not too encouraging when thinking about the use of aerial/satellite photography to identify this kind of sites on the ground, we will show how it had an immense potential in identifying geo-units of both environmental and cultural relevance and in predicting the presence of old hunter-gatherer sites on the base of the behaviour of these units in space.

◈ 2. The aerial photography in Mexico: institutions, archives, legal frameworks

In Mexico, the National Institute of Statistics and Geography (INEGI, by its Spanish initials) is the federal institution in charge of the generation, processing, storage and diffusion of the aerial imagery for the academic and public use. There are also recently created private companies that can provide specific flights on demand (conventional photographs or LiDAR), but in archaeology we normally employ the data created by INEGI because it is relatively cheap, easily accessible and it has a full national coverage. Along almost four decades, INEGI has built up an archive containing above 800,000 negatives; these files are the base for both black-and-white and colour photographs, normally distributed to the users in printed format of 23x23 cm for stereoscopic use, as well as for specific amplified images of up to 14x and photographic mosaics (INEGI 2009). INEGI's photogrametry department elaborates optically corrected digital versions in the form of ortophotos, which normally cover the territory occupied by eight aerial photographs. The ortophotos can be easily used for horizontal measurements and they come in formats perfectly compatible with most of the GIS softwares. When an internal or foreign scientific project starts on the national territory, it is highly recommended for the researchers to contact INEGI in the first instance and obtain their primary data from this institution before contracting any further flights with private companies. This can be done through their webpage, but it is recommended to better visit their headquarters in the city of Aguascalientes or one of their state offices across the country and have a personal meeting with one of the specialists and get a proper consulting on which flight lines are required, the correct overlaps for the stereoscopic pairs, the right format and scale for ortophotos etc.

In theory, INEGI does flights every two years - although this premise is not at all valid simultaneously for the entire national territory - using a pair of two-engine propeller aircrafts for intermediate altitudes and flying roof situated at around 10,000 metres. These combine with low and medium-fly small jets for flights at around 6,000 metres. The aircrafts bear built-in cameras operated by personnel from INEGI's General Direction of Geography and connected to the plane's computerised systems, and these devices count with movement correction, automatic exposure, low lens distortion and high resolution. The obtained photographs use to be printed in small scale (< 1:50,000), medium scale (between 1:15,000 and 1:50,000) and high scale (> 1:15,000). The organisation of the flights takes into accounts the atmospheric conditions, season of the year and the appropriate time of the day. This last variable tends to follow the height of the sun at 45º above horizon, according to the latitude and time of the year. The cartography produced by INEGI consists of printed and digital topographic charts based on the aerial photography and they are actually just an interpretation of aerial imagery with added layers of information on it but with a disappointing level of detail, as it will be shown further below.

Here it is very important to specify a few crucial aspects of our praxis with aerial photography. In Mexico we do not count with a significant archive of aerial photography generated during military situations, like the vast war and espionage-related archives in Europe. There are indeed aerial photographs taken at different moments along the 20th century by the military in Mexico, but they do not cover the entire territory and they are not open archives nor easily available for public access. As archaeologists, when we think of aerial photography, we always refer to INEGI archives. Obtaining military files produced in decades predating the INEGI institutionalised flights would imply a very elaborated and complex project focused exclusively on the aerial photography itself. But, for us, the aerial archives are only an obliged preliminary tool in researches centred on wider questions, so we prefer the photographs to be as recent as possible, although we perfectly understand the immense value and potential of older air photos. The employment of raw aerial archives or photogrametry in combination with topographic charts and maps elaborated on the field form together the usual practice in the country (E. Fernández-Villanueva Medina 2005). A very important task that we admit we haven't accomplished yet, is to obtain the entire aerial photograph archives generated for specific areas during the last half a century or so, and use them to evaluate the degree and rhythm of changes that affected the archaeological monuments of México.

◈ 3. The first case study: the Mayan sites on the middle Candelaria River

The investigation we developed among the swamps and mangroves of the middle Candelaria River in south-western Yucatan Peninsula was aimed to identify, map and explore the Pre-Hispanic occupation in one of the less known regions of the Mayan world (fig. 1). No systematic studies had been undertaken in the area, although a series of pioneering explorations from 1970's and 1980's left notice about the apparent presence of a small number of peripheral Mayan settlements lost among patches of ancient jungles, cleared fields for cattle raising and luxurious mangroves and marshes. That part of the world had been completely emptied of people by the Spaniards in the 17th century when they displaced and concentrated the indigenous nations into crowded settlements on the coast in order to control them better, and it remained covered by dense jungles for almost three centuries until the massive colonisations with immigrants from the northern Mexican desert states during the 20th century as part of a controversial plan led by the federal government and meant to solve severe demographic and agrarian problems of the country. In conclusion, by the beginning of the 21st century, an entire portion of the Mayan territory still stood completely unknown mainly because of a variety of factors that cannot be detailed here fairly. But one of these factors has to do with the fact that the Mayan sites in this part of the Peninsula are not so monumental and architectonically impressive as the huge pyramids of the Petén or the sophisticated decorated façades from the interior Yucatan. For both the public and political mentality, those sites were invisible.

We started the research in the summer of 2003 in order to fill in the gap (C.F. Ardelean 2005, 2006, 2008, 2009). From the previous research done in the area on the level of quick surface reconnaissance, we knew that there were at least three archaeological sites around the main swamps situated on the middle course of the river, where the shape of the water body dilutes into hundreds of small marshy channels and mangrove tunnels. These sites were El Chechén, Las Palmitas and El Astillero, already mentioned in some reports with these names taken from the local ranch toponymy. The information we counted with was extremely poor; the descriptions were not precise and not at all illustrative, while the bidimensional hand-drawn maps of the cores of the settlements were very approximate and incomplete (S. Pincemin 1993).

Therefore, we started from a minimum of information but we had the certainty that there were Pre-Columbian settlements in the area we had targeted for our research. Based on the fact that the previous investigators admitted to have explored only shallowly the area and just for a brief time, we knew that the visited sites had to be much bigger than reported and not the only ones in the area. The initial archaeological project mainly focused on field walks and exhaustive surface explorations and only later, during a second phase, excavations were to be undertaken. The use of cartographic charts, aerial photography and satellite imagery was not only a mandatory methodological step, but a necessary procedure in order to define the range of explorations on the field, evaluate the behaviour of the landscape and potential difficulties, locate the sites mentioned in literature, and identify new settlements.

There is a very important detail to be discussed here. When we talk about Mesoamerican sites in general or Mayan sites in particular, we visualise in our minds the remains of an ancient human settlement manifesting as a more or less organised accumulation of mounds. This is virtually all you can see either on the ground or from the height of a flight. Smaller features like stone alignments (usually remains of thatch-and-pole wall reinforcements or ancient property fences), ceramic sherds or lithic artifacts scattered on the ground and beneath the thick cover of vegetation are not likely to be identified on photographic imagery obtained from a certain elevation. Archaeological sites eager to be seen on aerial photography almost always will look like groups of mounds. Mesoamerican archaeology has not developed enough practice in interpreting any other kind of human-related shapes and colours visible on black-and-white or colour aerial photographs, as it might be the case in the European archaeology, maybe because the regular use for the aerial photography in our part of the world has normally been restricted to the rough identification of the presence of relatively large archaeological settlements dominated by pyramids. The aerial photography is only an auxiliary technique in the exploration of an area and a preliminary stage before the actual on-foot survey of a territory.

Mesoamerican people, from all the cultures that developed within this large and heterogeneous macro-region, built their houses and temples on top of higher or lower platforms, and when the sites got abandoned and these platforms became eroded, they went covered in sediment and vegetation and persisted as *montículos* (Spanish for 'mounds') until today. In other words, as

soon as you saw mounds on the aerial photography, you located a site, you delimited its extension and you felt ready to prepare the field explorations. That is why we have always employed the aerial imagery only in the form of stereoscopic pairs. We almost never use a single aerial photograph or ortophoto by itself in order to look at colour-and-shape patterns, but in stereoscopic superposition with another one, because what we are interested in is the 3D manifestation of the archaeological mounds. We used to believe that any other kind of intended use would render useless. Jungles, regenerating forests or tall pastures for cattle almost always cover the surface of the ground and it is highly improbably to meet proper ploughing fields in your surveys.

On the other hand, another relevant detail consists in the fact that all these mounds look the same across the time and space. No matter how different the architectural units looked like during their active lives, when they become covered by dirt and vegetation they all look the same. That means that we cannot infer any chronological or cultural affinities of the mounds visible in the photographs by just looking at them on the image. We must go out there and collect artefacts from their surface in order to be entitled to propose a tentative chronology and cultural pertinence as a working hypothesis that would later be tested by controlled excavations. If our European colleagues are able to say "Look, there is a Bronze Age enclosure next to a Roman camp on this field", we can only say "I've got another Mayan site"; I can guess that because I am in the middle of the Mayan territory, but I cannot say if the buried ruins are from the Preclassic, Classic, or Postclassic times.

All our explorations were low-budget ones, as many of the pioneering surveying projects in this part of the globe. For our preliminary studies of the marshes of El Chechén we armed ourselves with a minimum of indispensable documentation. We acquired the topographic chart of the area with the national code E15B86 and the related aerial photograph lines in stereoscopic pairs in printed format. We also employed the related ortophotos, in digital format only, at a 1:20,000 scale. The digital ortophotos were visualised in ArcView and were employed only for horizontal measurements, data layer superposition, coordinates references and general landscape visualisation, but not at all as a platform for the identification and characterisation of archaeological features. We did not use Google Earth at the beginning of this exploration, simply because in 2003 this tool – still named Keyhole back then – was still not well known among us and not a free access satellite imagery database. We did not purchase our own flights either, mainly because of lack of money for this service and also because we considered, at that moment, that the INEGI data was sufficient.

From the very beginning of the research we familiarised ourselves with the limitations of INEGI's topographic charts. Beyond the scale limitations, we realised that the charts had very little detail even on the 1:50,000 scale versions. The charts are almost entirely based on aerial photography and the respective flights are usually very old. Sometimes, the charts that users can buy from INEGI's offices across the country are not updated and they offer out-of-date information sometimes even twenty or thirty years old. They seem to lack on-field confirmation and the information represented graphically in the chart is usually exclusively an interpretation of features observed in old aerial photography. We learnt it the hard way and we could not rely on the information provided by the charts unless we checked it on the field. The interesting aspect of this limitation is that we can actually consider these topographic charts and the related aerial photographs as proper old archives. Even if we don't count with considerably older flights, the data in Mexico is sometimes comparable to some. We had to work with data from old flights and related non-actual topographic charts in very fast changing environments, where both landscape and manscape modify quickly over the years, impacting significantly on the potentials and aims of specific archaeological investigations.

The topographic charts lack archaeological information. If it is not a tourist site or a highly important archaeological zone open to public, it simply misses from all maps. The information is supposed to be updated every certain number of years, but in practice that is seldom done. On the other hand, the topographic charts are really useful when starting our research at least because they helped us to locate the names of the sites mentioned in the literature. As the names reflect the local toponymy, this is always represented in the charts, so we managed to find immediately the three sites published with hand-drawn maps. Then we passed to the corresponding aerial photographs and searched for the major features represented in the topographic map, managing to identify the approximate location of the reported archaeological sites.

For the El Chechén Wetlands region we employed the flight lines number 940 through 944, from January 14, 16, and 18 of 1996, with a standard scale of 1:20,000 shot from an altitude of 10,600 feet. That means that at the moment of the commence of our research, the landscape pictured from the air was only seven years old, which is in fact outstandingly recent, although the

modifications occurred during this relatively short time were already evident during our first visits on the field. The topographic chart for the area was based on a flight realised in March 1994, just two years before the stereoscopic pairs, so the data in the chart was still very consistent with the information shown in the aerial photos. Using simple stereoscopy we identified the most important mounds from the cores of each of the three sites: El Chechén, Las Palmitas and El Astillero. Besides that, we analysed each photograph extremely carefully searching for other sites and additional cultural manifestations and we managed to identify two completely new sites, never reported before: El Palmar (apparently a sort of a satellite settlement for El Chechén), and Isla Montuy, this last one being a very interesting small settlement formed by three groups of very low mounds, most of them not higher than 1.5 meters, and yet visible in stereoscopy.

The landscape played a crucial role in the amount of benefit we extracted from the employment of aerial photography in the early stage of our research. There are three crucial characteristics of the local environment that interfere with the potential of this technique. The jungle stays in the first place. Most of the original rainforest is gone now, cut down almost completely by the recently arrived colonists in order to make space for the invasive cattle raising needs. Nevertheless, there still are patches of densely packed forests and also the *acahuales*, a local term referring to regenerating forest after the abandonment of a crop field; peasants abandon previously cleared areas and, subsequently, dozens of species of grasses, trees and bushes fight for gaining the struggle for survival and form a completely impenetrable mass of vegetation that leaves no chance for the identification of archaeological traits either from the air or on the ground by conventional means. The Mayan jungles play, after all, the same limiting role as any other forest when talking about aerial photographs. The detail is that they constantly change their aspect: large patches of forest diminish or disappear, while open spaces can turn into dense acahuales and young rain forests in a matter of few years. In the second place, we have the *potreros*, the grazing areas of the anthropic savannahs created by deforestation and grass seeding, especially tall grasses imported from other continents. In the third place, the wetlands. The shores of the river channels, marshes, and mangroves are covered by dense and complex vegetation that do not respond to the possible archaeological features underneath, blocking our access to preterit cultural manifestations. In our study area nobody practices agriculture, but in a very reduced scale for family needs and ploughing is never employed.

The cattle raising areas pose very interesting methodological problems that must be taken into account. The reader should remember that the only thing we can expect to identify on an aerial photography from the Mayan Lowlands are mounds: larger or smaller bumps on the surface of the ground, as remains of ancient architectural elements that came down and became covered by sediments. We have no hope to identify them beneath the jungle cover or in the middle of the smooth and even swamps, unless we employ more recent and expensive technologies, like LiDAR. So we have to focus our attention on potreros, on those areas cleared by man in order to seed grasses for cattle, mainly cows and *borregos*, the tropical sheep. Each one of our sites identified by stereoscopy shows how the specific particularities of the modern use of the land make our job more difficult or much more easier, accordingly to the situation. And the principle is very simple and ironic: the tougher the anthropic destruction of the landscape, the easier to identify archaeological mounds of even tiny dimensions.

El Chechén is the eponym site of the region, although not the biggest. It was the first one to be investigated in 2003 and we managed to identify its main pyramids fairly easily on the aerial stereo-pairs, mainly because the core of the settlement – the same portion originally visited and drawn by S. Pincemin (1993) – is situated close to the house of the ranch and the main cattle enclosures, assuring the grasses stay short for most of the year as the cows continuously graze on them. The surface materials recovered on site indicate a long occupation since the Late Preclassic, but the highest concentrations suggest a cultural peak by the Terminal Classic, perhaps between the 9th and 11th centuries AD. The biggest mounds, some of them 12 metres tall, were clearly visible and that helped us as a reference point for identifying other mound clusters around them and further away in a roughly concentric pattern around the settlement's civic core. Nevertheless, some very large household platforms (as big as 30 meters in diameter and otherwise easily visible from above) were totally invisible on the photographs simply because they were situated in areas maintained as acahuales for reasons only known to the landlord, or covered by patches of trees kept intact in order to provide shadow for the herds and source of timber for the ranch's needs. Analysing the surrounding of the site inch by inch on the stereoscopic pairs, we discovered El Palmar, a very small sector of El Chechén on its northwestern periphery and very close to the wetland limits. It is surprising that we were able to identify it by one of its main mounds no higher than 1.5 m and just a few meters

wide. The reason is simple: the soil here is extremely shallow and it stands on a hard surface of limestone and chert outcrops surrounded by flooded areas. The landlord keeps the area cleared, because of the proximity to his house, barns and the main access road.

A very different situation is observed in the site of El Astillero, a few kilometres to the southeast, situated in another cattle ranch with predominant exogenous grasses and very little of the original ecosystem (fig. 2). Here, the biggest pyramidal mounds, from 8 to 12 metres tall, are clearly visible in the landscape no matter how dense the vegetation (fig. 4). But the interesting fact is that the kind of grasses introduced by the farmers (probably of African or Australian origin) behaves very differently from expected. They are very tall grasses that can reach up to 4 metres in height. If they grow on top of a mound or in a depression they simply level de visual aspect of the terrain and do not reflect the surface's modulations. These grasses tend to grow all up to the same height until they all reach the sunlight and atmospheric moisture at the same level, meaning that the plants from a depression will struggle to grow up taller in order to reach those that do not need to grow up too much as they stand on top of a mound. In the aerial photographs you can only see an evenly flattened surface, while on the ground, during the actual exploration and topographic survey, you can miss the structures if working during the wet summer.

Exactly the opposite happened in the small site of Isla Montuy (fig. 3). This one had never been reported before, and we found it only by stereoscopy. It is situated on a small island of limestone and chert outcrop in the middle of swamps and secondary river branches. We managed to identify tiny mounds on the aerial photography mainly because there are virtually no trees nor grasses on this island because of the over-exploitation of it: sheep and goats completely exterminated the vegetation cover allowing us to explore a bold land. A patch of trees kept in the southern part of the site was visible on the aerial photograph and still in place during our field walks on the site, hiding a few mounds beneath. A couple of years later, during another visit, the landlord had completely removed those trees, exposing the mounds to the naked eye, but this landscape modification has not been reflected yet in any new flight, nor Google Earth.

For these specific tropical environments with high modern human incidence, the best moment to take photographs is during the dry season when the vegetation has a slower growing rate, like for example during the Spring. Nevertheless, it is important to know that during the April-May period the locals use to set the fields on fire, causing controlled fires meant to burn and regenerate the grasses for the cattle. This procedure briefly eliminates most of the softer vegetation cover (grasses and bushes), allowing surprising views over the archaeological sites, but adding new stains of dark tones to the surface. This is probably the best epoch of the year for low-altitude specific flights. The project developed field seasons from 2003 to 2005, four in total, and the research was closed by 2008. The aerial photography has only been used during the initial phases of exploration. We used Google Earth later, but only for illustrative purposes and for academic presentations as the surveys had been concluded when this became a common tool in archaeology.

◈ 4. The second case study: discovering new sites in Aguascalientes

The central-northern region of Mexico is a vast territory, which in east-west direction extends from the oriental slopes of Sierra Madre Occidental towards the Pacific Ocean all the way to the western piedmonts of Sierra Madre Oriental, including parts of the states of Jalisco, Guanajuato, Aguascalientes, as well as meridional Zacatecas and western San Luis Potosí (G. Fernández Martinez 2007). The studied area for the project considered for this second case surrounds the valley formed by the Río Verde - San Pedro basin, between the states of Aguascalientes and Zacatecas (fig. 1, 7). This province counts with a large variety of landforms, dominated by flattened large mesas of volcanic origin. The valley is closed on the west side by topographic ramifications diverging from Sierra Madre Occidental in the shape of piedmonts, ravines, plateaus and water courses, all generating specific microclimates rich in vegetal and animal species (J.I. Macías-Quintero 2007).

The archaeological investigations in Aguascalientes are extremely young and the research we resume here is actually the first one to employ systematic surveys for the identification of completely new human settlements (J.I. Macías-Quintero 2006). As mentioned elsewhere, this is another manifestation of the typical behaviour of a national official archaeology interested mainly in monumental architecture sites. Most of the archaeological sites in central-northern part of country, mainly during the Epiclassic period (about 10th-13th centuries AD), lack monumentality, in contrast with most of the Mesoamerican macro-region, and this is seldom interpreted as a manifestation of

societies that developed after the collapse of the major leading metropolis of Teotihuacan around the 7th-8th centuries A.D., when a new cultural landscape crystallised upon the reorganisation of new political systems during a short period of the Pre-Hispanic history. By the 10th century A.D., most of these territories occupied by sedentary societies became completely abandoned and emptied because of still mysterious reasons, and that is why the archaeological sites in this area show very brief occupational sequences, and that translated into a very shallow archaeological record on surface, with features that are very difficult to be identified and analysed through conventional aerial photography. The peculiarity of the archaeological record of the area in discussion comes from the strange succession of cultural modes of life: the local societies behaved like hunter-gatherers for over five millennia, then they adopted sedentary agricultural subsistence for less than 500 years, to finally return to the hunter-gatherer way of life again until the Spanish invasion in the 16th century (L. López-Luján 1989).

The typical Epiclassic archaeological site in Aguascalientes' semi-desert is hard to identify on the ground even when standing in the middle of it. The explorer has to adapt the visual capacities to interpret the barely visible features and timid elevations on the surface or the doubtful alignments of raw stones that formerly were foundations for pole-and-thatch walls. In their majority, the sites are built on isolated hills and mesas – although often associated to agriculture-related soils – and the contrast between the pronounced topography of the landforms and the almost invisible human-made features transforms the use of stereoscopy into an almost useless task. When we commenced the surveys, we employed a series of geographical and ecological criteria in order to augment the probabilities of localising sites on surface. Before studying aerial imagery, the distribution of propitious soils, specific landforms, presence of strategic mineral resources and water bodies were crucial aspects to be taken into account. Nevertheless, the challenge was to evaluate if the aerial photography was in conditions to reveal the presence of Pre-Columbian archaeological features.

We explored the region between 2005 and 2006. The data we employed was particularly fresh, as the air photos and ortophotos came from flights done in 2003 and the Google Earth shots dated to 2005. The black-and-white digital ortophotos were preferred in this case at a scale of 1:10,000. In this particular region of study the use of aerial and satellite imagery did not yield the expected results; because of a chain of both natural and anthropic causes, we only detected a few patterns that turned into a positive correspondence with ancient settlements. These factors are to be further explained below, and they can be considered as valid transformation factors for all the cases when typified aerial archives have been employed in the detection and exploration of new archaeological sites.

Human alterations. All the social processes after the European conquest generated a never-ending succession of landscape alterations. The land use dynamics implemented with the introduction of the Spanish-style farms or *Haciendas* in the 17th century continued in recent times with the accelerated industrialisation and the urban development, with a huge impact on the actual landscape and our interpretation of the aerial photography. In general, the anthropic features we managed to identify in the archive aerial images were all generated by hacienda-related activities from the 17th and 18th centuries, like dams, large scale cultivation areas, cattle fencing, property-marking fences, deforestation, etc. But one of the most notable cases is the apparent presence of a circular pyramid (known as *guachimonton*) near Calvillo, a structure that normally is characteristic for the Occident of Mexico and its cultural environment, far away from Aguascalientes. It consists of a pattern of multiple circular pyramids of smaller size disposed in a circular pattern and surrounding a bigger pyramid in the middle. Our feature looked exactly the way these architectural monuments used to appear on air photographs. Nevertheless, when we explored the area by foot, we noticed that this was in fact nothing more but a modern feature associated to plowing activities and cleaning of the surface for seeding that resulted in the piling up of stones and debris in the form of a massive mound made by farmers (fig. 6).

Vegetation patterns. The understanding of the botanical spectrum of a region is a key condition in the employment of the aerial photography in the central-northern region of Mexico. The dominant vegetation (subtropical shrubs) is associated to the predominant soil systems of the region, meaning that the areas lacking consistent modern human activities are characterised by abundant patches of original shrub vegetation. The average height of these shrubs oscillates between two and four meters and in occasions they follow natural humidity patterns in the ground giving the impression of the presence of artificial linear features not supported by direct verification on the ground. In an opposite manner, vegetation lines sometimes indicate positive features like platform margins, walls, and stone alignments, of clear archaeological origin (fig. 5, 7).

Geological and soil patterns. As everywhere else, the local geology plays an important role in the detection of cultural manifestations. Igneous rocks outcropping in the form of eroded mesas, with predominance of rhyolites and litosols, mainly form the area (fig. 7). The settlement pattern of the ancient societies in the region has always been linked to inter-mountain areas, so the deforestation and erosion have prohibited the formation of deep and fertile soils, except the deep valleys and canyons. Most of the settlements used the igneous outcrops as foundations for their buildings and space features, and this particular behaviour impacted directly upon the nature of three key indicators in the interpretation of aerial photography: vegetation patterns, shadows and shapes on the ground.

In the areas where vegetation has not been altered, the volcanic rock outcrops - that in turn can design their own long and linear formations sometimes up to three meters high that generate their own pattern of elevation and shadows making themselves erroneously interpreted in the aerial photography as artificial architectural features - condition its concentration or dispersion. The trees grow scarcely and irregularly on the sites, so their shadow is a negligible factor, especially when the air photographs are shot at the correct time of the year and the appropriate hour. In the aerial imagery we employed, even 2-3 m high archaeological mounds could not be identified through their own shadows, only by stereoscopy. Further on, the changes in colour on the surface were explored as potential indicators for the presence of human activities, but, once corroborated on the field, all the assumptions proved wrong as we discovered that the presumed manscape features were in fact totally natural phenomena caused by simple processes. First, the presence of *tepetate* (a light coloured local rock of conglomerates) erodes out in the form of soft matter that mixes with the matrix of the soils generating significant changes in the hue of the surface layers of soil. Second, the upper layers of clays inside the soils horizons are lighter in colour and tend to be mixed by plough.

Resuming, we have not been able to identify relevant traces of ancient human activity in the air photographs for these sites, except some major architectural mounds easy to discover through stereoscopy. The little success we obtained by using INEGI aerial photographs for the discovery of new archaeological sites does not necessarily mean the technique lacks importance. Its potential is proved by the fact that it actually stands as an excellent archive and historical document useful in the study of progressive changes in the landscape due to past and contemporary human activities. In one of the illustrations we can observe a notable change in the landscape, as the comparison shows for the southern slope of the site of El Zapote (fig. 6). The INEGI flight is from 2004; when we went back in 2005, one of the archaeological mounds (mound F) had been completely destroyed by a bulldozer meant to expand a water tank. In correspondence, the posterior Google Earth satellite image clearly reflects the situation.

◈ 5. The third case study: searching for Pleistocene in the Northern Zacatecas desert

This research is the most recent one and still in full development at the time of the submission of this paper. It commenced in 2010 as a pioneering effort to seek the earliest human occupation at the end of the Pleistocene and the beginning of the Holocene in another completely unknown and unexplored region of Mexico: the semi-desert landscape in the extreme north of the state of Zacatecas, a complex articulation of short mountain chains, valleys, basins and alluvial fans. An area that had never received any attention from scientists before us, in spite of its proximity to large mining centres, urban and rural communities and the easy access through a national motorway and a fairly rich network of roads. As stated repeatedly in this text, the traditional Mexican archaeology has always focused more on large and monumental settlement of the mightiest civilisations and left on secondary positions the 'peripheral' sites and prehistoric settlements like the ones the authors of these lines accustom to work on.

In this case, again, the region we chose completely lacked any kind of information, data, reference or allusion about any possible archaeological presence in the area since the earliest times at the end of the Ice Age. Previous shallow explorations yielded no results at all (J.L. Lorenzo, L. Mirambell 1986). We had to start from zero, and the preliminary use of aerial photography and satellite imagery turned vital. The study area had been delimited initially over a large territory around the county capitals of Concepción del Oro and the neighbouring Mazapil, one of the first mining towns on the continent and epicentres of the cruel and long-lasting "Chichimec Wars" that turned the entire second half of the 16th century into a terrifying bloodshed, one of the strongest anti-Spaniard indigenous resistance campaigns. The inhabitants of those territories, all along the Holocene, were hunter-gatherers, and they had the

same mode of subsistence at the moment of the European invasion, heavily modified and mutilated during the occupation and genocide commonly known as *Colonia*.

These people have never erected durable architecture able to resist the transformation processes and persist as perennial features in the landscape. Their sites are somehow 'invisible' to the unadvertised eye, and there are no proper 'ruins' to be admired on the fields, no mounds or platforms, nor pyramids or ancient roads. We knew from historical and documentary investigations, as well as from older oral Mesoamerican traditions, that this region of northern Zacatecas was home for at least three tribe confederations at the moment of the arrival of Spanish invaders and their Central Mexican allies (Ph.W. Powell 1996). They were *guachichiles*, *zacatecos* and *irritilas*. We don't know much about them, nor are we able yet to tell one from another by looking at the archaeological record. But we suspected that the famous demographic concentration noticed during the European colonisation might be the reminiscence of an even more considerable occupation of the region in earlier times. Adopting working hypothesis promoted by other fellow researchers based on data from other parts of North America, we considered that the desert was a relatively recent phenomenon and the desertification started just a few thousand years ago; before that, the region had been covered by grasslands and pine-and-juniper forests and abundant water bodies like lakes, springs, creeks, ponds, under a more humid and more stable climate (E. Johnson *et alii* 2006). It is obvious that this kind of sites cannot be identified on standard aerial photography, neither by studying Google Earth imagery. The way we approached the remote imagery data is somehow different in this case, and we shall try to resume it here.

To begin with, we simply did not employ aerial photographs in stereoscopic pairs for this research. This may sound strange, but the reasons are strong. In the first place, since the very start of our preliminary procedures, we had decided that the stereoscopic use of aerial photographs in order to identify sites was totally excluded, as there were no archaeological features created by hunter and gatherer societies in America that might be highlighted on surface in third dimension. Second, because for some unknown and unexplained reasons, INEGI had recently suspended the commercialisation of printed aerial images for the public until an undetermined date, so we did not have any access to such documents. The ortophotos were available but of very poor resolution, so we actually started directly on Google Earth.

We consider that this simple tool is just as good as any other professional aerial imagery, sometimes even better than an ortophoto, because, in spite of the lower resolution, we can change the angle, zoom in and out, and see reasonably good colours and even some 3D elements where available. Therefore, the first delimitation of the initial survey area was done on Google Earth. We had a general idea about where to place the core of our research but we had absolutely no clue about where the most important archaeological manifestations might occur. So we decided to design a very large initial survey area formed by many geographical units and ecological niches (mountains, hills, piedmonts, basins, ravines, alluvial fans, etc); in other words, we chose as a complex region as possible. The bigger the initial survey area, the higher the chances to chose a suitable survey sample. We just looked carefully at every spatial component of the envisaged landscape and constantly compared the Google Earth information with the topographic charts of the region. Initially we laid down over 15 topographic maps of a 1:50,000 scale. We tried to include within the polygon the highest number of mini-basins that might have hosted lakes or ponds as the most probable foci of early human occupation. We tried to trace the limits of the main area along modern roads, pathways, agricultural fields or cattle-keeping fences in order to recognise them easily on the field.

Simply placing points on Google Earth and then drawing a polygon between them formed the limits of the survey area. This is how we obtained a huge survey region reaching almost 5,000 sq. miles in surface. The points defining the limit were later identified on the field and corrected by GPS during the preliminary visits on terrain. Such a huge area has never meant to be field-walked and surveyed in totality; we hoped that defining this large area on Google Earth we would be able to sample specific areas to be effectively and exhaustively investigated on the field. We accumulated a large number of topographic charts, as mentioned, because such a large area demanded the acquisition of the corresponding 1:50,000 INEGI maps in both printed and digital formats. But, as in other cases discussed above, these charts were of very little help beyond the simple orientation in space and the consultation of the local toponymy.

Soon after the start of the first field season we decided which component of that huge area would be the real candidate for the intensive exploration. We made the decision by studying the landscape on Google Earth and confronting the finds with the reality on the field simultaneously. A long and narrow endorreic basin formed on a half-graben hosted an evident lake in remote times,

which might have survived as a combination of ponds, springs and marshes into post-Conquest times, standing as the core for one of the highest demographic concentrations ever known for hunter-and-gatherer societies in Northern Mexico. The basin is surrounded by long and narrow mountain chains and it has strong geological similarities to other formations recently studied in the north of the country (J. Ortega Ramirez *et alii* 2004). The field explorations undertaken during several months in the summer and winter of 2010 led to the discovery of more than 30 hunter-gatherer campsites distributed around the contours of the basin, at different altitudes and on distinct ecological niches, principally on the south-western shores of the north-western half of the unit. Such a high density of archaeological sites shows that we have made the right decision when opting for this geographical unit as the sample to be fully investigated on the field.

Such an appropriate decision could not have been taken blindly and only by roaming in jeeps around the basin, mainly because that would have taken too much time only for evaluating the potential. The combined employment of digital ortophotos and Google Earth imagery was absolutely decisive and practically the only platform to rely on before any physical exploration of the land; doing this before going out to the field saved us a lot of time and money. The difference between the use of aerial imagery in the other projects and its employment in this case is that in the previous studies we identified cultural features in the aerial photographs, like mounds, while in this last case we identified natural features, geographical and geological units with potential for hosting hunter-gatherer campsites (fig. 8). We had to follow certain "guess-like" logic in formulating ad-hoc working hypothesis for each kind of landscape units that called our attention while studying the basin on Google Earth. We couldn't have just bet that certain unit was propitious for archaeological manifestations; we had to assume it temporarily in terms of a short-termed hypothesis, then go back and check the assumption on the field and evaluate its objective potential and then, if our beliefs proved right, we felt confident to further search in Google Earth or on the ortophoto for similar units that might offer a similar kind of archaeological record. This archaeological project had been launched as a systematic search for the Pleistocene occupation in northern Zacatecas, and we can assure that the discoveries we have achieved so far were possible thanks to a systematisation enhanced by the use of this simple on-line tool.

The ortophotos we employed for the area were 11 years old, based on flights from 1999. The satellite images from Google were considerably younger, meaning shots not older than 5 years. Nevertheless, the changes in landscape reflected independently in the two sorts of data were not significant. We constantly preferred the use of Google Earth over the INEGI's ortophotos, because it was easier to access, it was obviously easier to zoom out to larger geographic scales and also the colours helped a lot in the identification of our 'favourite' geo-units. We consider that the resolution was very similar. The pixels started to manifest in both documents more or less at the same magnifications. As a final and definitive argument, Google Earth allowed us to have a fast general view of the entire geographical region all the time at our disposition, while this is not possible with an ortophoto beyond the physical space limits reflected in the digital file you bought.

We learnt important things about paleo-landscapes by surfing across Google Earth and watching ortophotos. In the first place, we identified the bottom of the ancient lake that occupied the depression (fig. 8). As soon as you approach the main survey area, you notice the greyish tone of a finely delimited shape: the flattened bottom of the depression clearly differentiating from the slightly inclined surrounding terrain that forms the shores in the form of alluvial fans and colluvial accumulations. That feature is not clearly understandable from the ground level, but using the coordinates obtained from the tip of the cursor we could follow by foot the exact limit on the inflexion angle between the bottom and the shores and we learnt how to recognise it on the field without further aid from the computer. In a second stage, we noticed a very strange pattern of rounded shapes covering the entire former lake bottom, mainly on its north-western half, just west of the Highway 54, while the opposite half seemed having a higher altitude and more greenish and yellowish tones. Later on the field we realised that the large figures where huge hardened dunes apparently composed of carbonates, sand and maybe inner layers of gypsum, with forms shaped by particular phenomena that could be both aquatic and wind-blown in origin (fig. 8, feature A). This part of the depression was completely naked of any vegetation excepting rare patches of dwarf bushes and small grasses adapted to highly saline environments. Walking on the opposite half of the basin we learnt that the tones observed in Google Earth reflected very specific vegetation related to particular soil chemistry.

The paleo-beaches were the most important discovery (fig. 9). At the beginning, we noticed the presence of whitish cleared areas, fairly wide, framed by areas with vegetation, running in parallel

patterns along the ancient shores of the playa-lake, almost exclusively along the meridional margins, where the slope is smoother and sediments shallower and more evenly distributed. Corroborating the data on the field, we acknowledged that those geologic features represented ancient beaches indeed, covered by wind-blown loess in more recent times perhaps after the drying out of the lake. Walking on these opened spaces covered by fine loess and water-worn sand allowed us discover the earliest archaeological sites from this region, probably of Paleoamerican age dating back to the end of the Pleistocene, although this is still an unconfirmed working hypothesis. There are two or three phases of paleo-beaches, probably dating to different epochs and they look from above like a sort of wide irregular white stripes in parallel relationship, separated by accumulations of vegetation, closer or further away from the marked line of the playa-lake's bottom (fig. 8). We discovered very soon that the beach with archaeological evidence is only the middle one (numbered II in fig. 8), with an average altitude of 1665 metres above the sea level. This is about 10-15 metres higher that the average altitude of the flat bottom. Once we learnt how to recognise them and which altitude to choose, we used to consult Google Earth regularly and plan our future field explorations based on these specific conditions.

Then, there were the tree lines. Towards the northwestern end of the beaches we discovered a curious pattern of parallel dark lines running along the culturally active beach and very close to the reference altitude marker of 1665 masl. Studying these features on Google Earth and ortophotos, in the office, we concluded that they are trees or bushes disposing in nine or ten parallel lines, around 50 metres apart and about 2 km long each (fig. 8, feature B). They seemed to be following some natural buried elements that allowed water to accumulate underground in such a predictable formation, and that moisture supported permanent vegetation. Following the coordinates, we visited that place on the field in a couple of occasions and we confirmed that they indeed seemed to be natural patterns of linear stripes made of *mezquite* trees and grasses which probably lived on buried moist sediments whose origin - we believe - could be related to the progressively retrieving water levels during the transition from the wetter Terminal Pleistocene to the drier Holocene. This spectacular phenomenon could teach us a lot about human adaptations around the basin when we shall be in conditions to study it properly through remote sensing and controlled stratigraphic excavation in the near future. Further east to the opposite extreme of the valley, in a gorge forming the access between two adjacent basins, around a shallow ravine, we observed extensive and deep white carbonate-based sediments while driving our trucks in that direction. They turned out to be Pleistocene sediments containing considerable amounts of extinct megafauna bones. Looking at the digital archives and seeing how this kind of sites should look like from above, we were able to identify other two similar sites on the ortophoto and Google Earth and locate and verify them on the field. But all these discoveries, mainly related to environmental manifestations and directly linked to the cultural-archaeological dimension, would not have been possible without the use of remote imagery.

◈ 6. As a conclusion

The air photographs can be considered as archives even if they are not several decades old and even if it has not been shot under very different historical and social circumstances compared to the present. Same principle should apply for the satellite images like those available through free public access database like Google Earth. As long as the images have been produced under a separate institutional framework and as consequence of flight planning that are distinct from those in which the images are being used for scientific purposes in the archaeological investigation, we are definitely speaking of archive photographs. In this article we discussed three concrete investigations in which we used images taken from the air and from space in the preliminary stages of particular archaeological projects dedicated to the exploration of territories that had remained completely unknown to our discipline. The air photos we used were images obtained regularly by a federal institution on a national scale and turned into archives as they get stored as negatives that can be later commercialised in the form of printed stereoscopic pairs, digital ortophotos or complex photographic mosaics as requested by the client. The time that elapsed between the date of the flight and the moment the photographs are used within a scientific investigation is always sufficient for the landscape and manscape to change and the discrepancy between the information provided by the image and the new reality on the field can act in favour or in disadvantage of an accurate preliminary study.

We used the standardised air photographs only, without the additional purchase of on-purpose low-altitude flights, but in constant combination with satellite imagery on Google Earth, both

only as auxiliary and preliminary tools at the very beginning of archaeological exploration in new regions not explored before. We learnt that the use of air photos for the identification of non-monumental archaeological sites lacking major earth-works and significant perennial structures is highly dependant on the particularities of the landscape, useless without immediate confrontation with the terrain and mainly applicable as stereoscopy. Nevertheless, it turned clear that even in the realm of the earliest prehistory and the study of the most "invisible" surface archaeological record, the air images in the form of digital ortophotos and Google Earth present an immense potential for the identification and study of specific landforms and geological units that could represent the remains of ancient ecological niches propitious for the installation of hunter-gatherer campsites.

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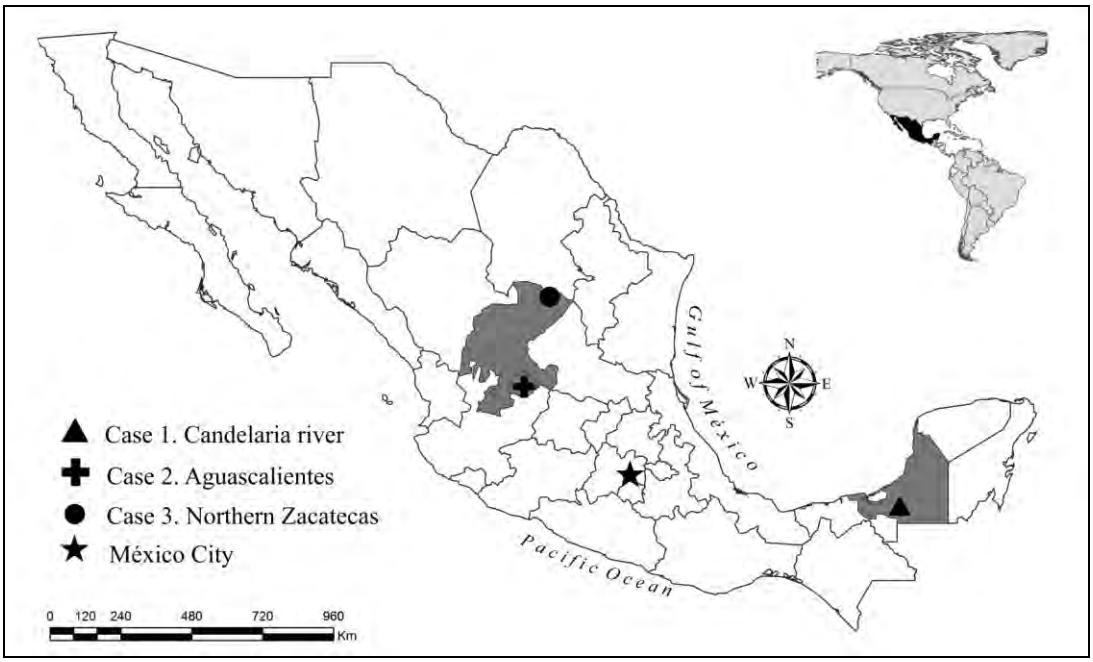

Fig. 1. General map of Mexico (with its location on the continent in the inlay), showing the geographic position of the three case studies analysed in the text.
Harta generală a Mexicului (cu localizarea sa pe continent), arătând poziţia geografică a celor trei studii de caz analizate în text.

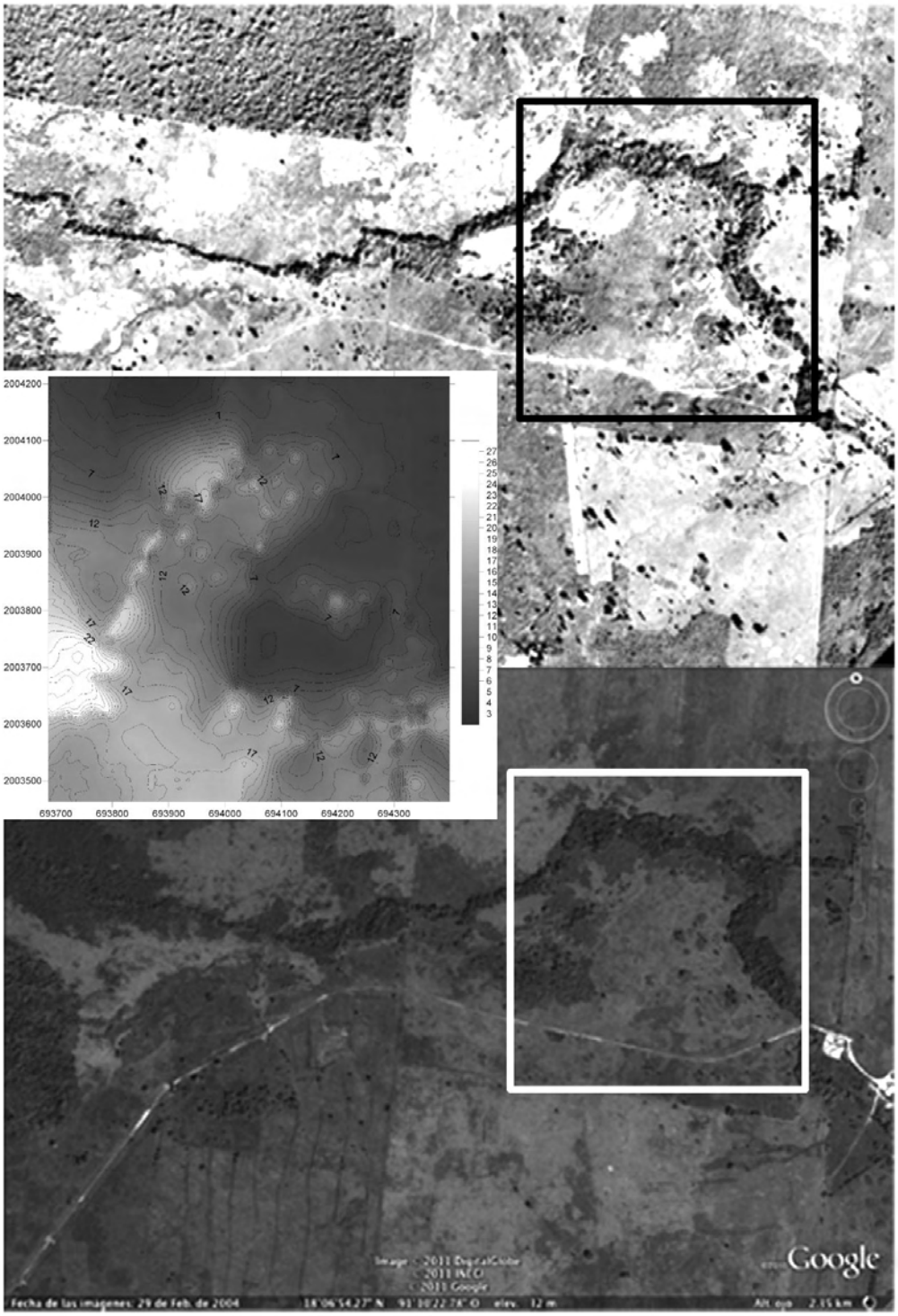

Fig. 2. The setting of the Mayan archaeological site of El Astillero; its urban core, originally identified by stereoscopy, is framed on the air and satellite images, while the inlay on the left contains the topographic survey we realised on the field, with the ancient ruins appearing as mounds on the surface. Substantial changes in landscape and manscape can be observed by comparing the archive air photo (above, by INEGI, 1996) and the more recent Google Earth picture (below, 2004).
Contextul sitului arheologic maya El Astillero; nucleul său urban, iniţial identificat prin stereoscopie, apare marcat pe imaginile aeriene şi satelitare, în timp ce imaginea din stânga conţine ridicarea topografică realizată de noi pe teren, cu vechile ruine apărând ca monticuli în suprafaţă. Schimbări substanţiale în peisajul natural şi antropic pot fi observate comparând fotografia aeriană de arhivă (sus, INEGI, din 1996) şi imaginea mai recentă de pe Google Earth (jos, 2004).

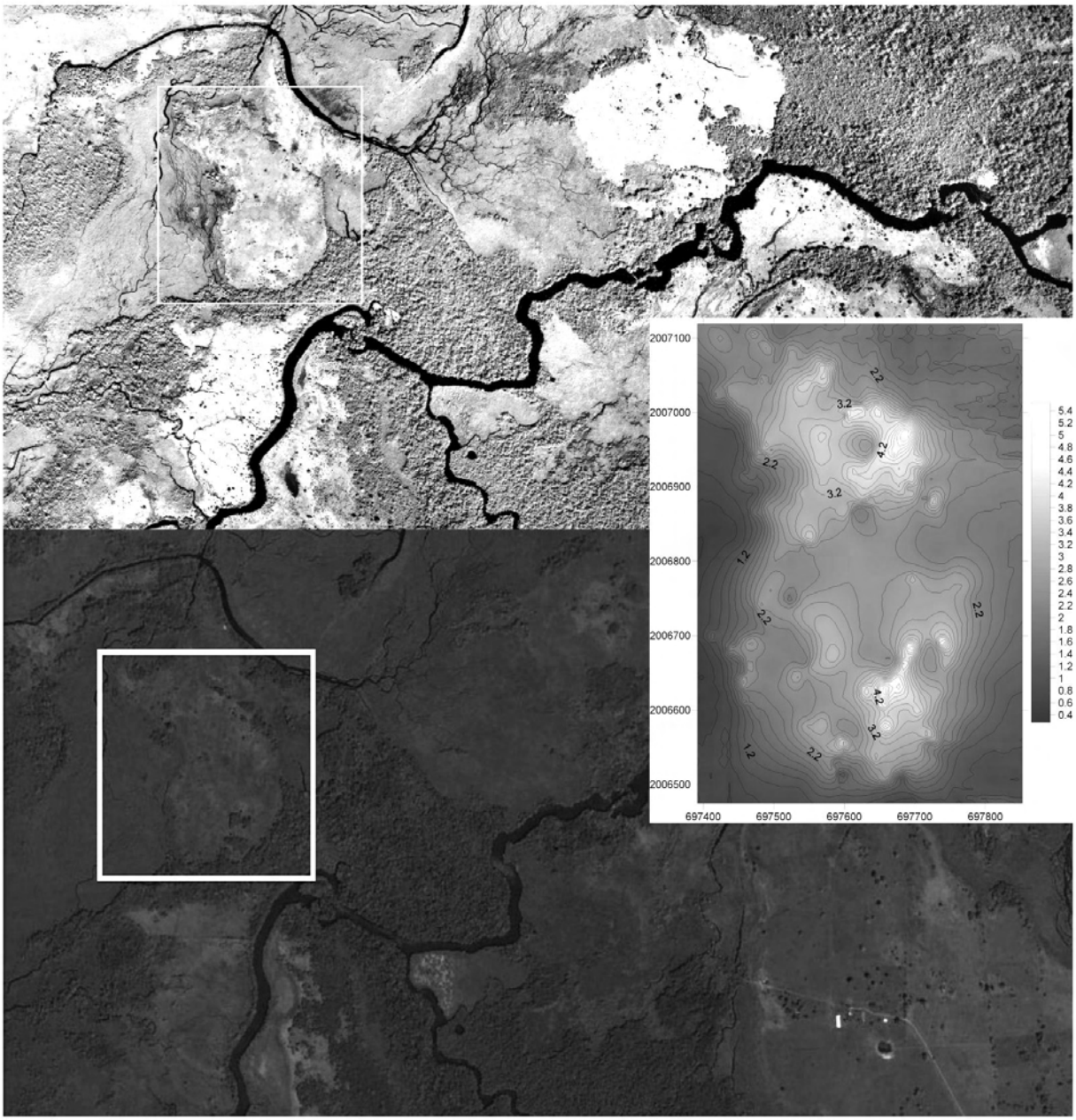

Fig. 3. The swamps and mangroves along the Middle Candelaria river, Campeche, with the small domestic site of Isla Montuy framed on both images; its topographic survey is in the inlay to the right. Comparison between an air photograph (above, by INEGI, 1996) and a Google Earth image (below, 2004).
Mlaştini şi mangrove de-a lungul cursului mijlociu al râului Candelaria, Campeche, cu mica aşezare de pe Insula Montuy, marcată în cele două imagini; ridicarea sa topografică se află în imaginea din dreapta. Comparaţie între o fotografie aeriană (sus, INEGI, 1996) şi o imagine Google Earth (jos, 2004).

Fig. 4. One of the tall mounds from the core of the Terminal Classic Mayan site of El Astillero, Campeche, Mexico (IX-XI A.D.), covered by the anthropic savannah vegetation in the middle of cattle-raising fields (photo: C.F. Ardelean).
Unul dintre monticulii mai înalţi din centrul sitului maya El Astillero, Campeche, Mexic, datat în perioada Maya a Clasicului Final (secolele IX-XI A.D.), acoperit de vegetaţie proprie savanei antropice în mijlocul unor păşuni pentru vite (foto: C.F. Ardelean).

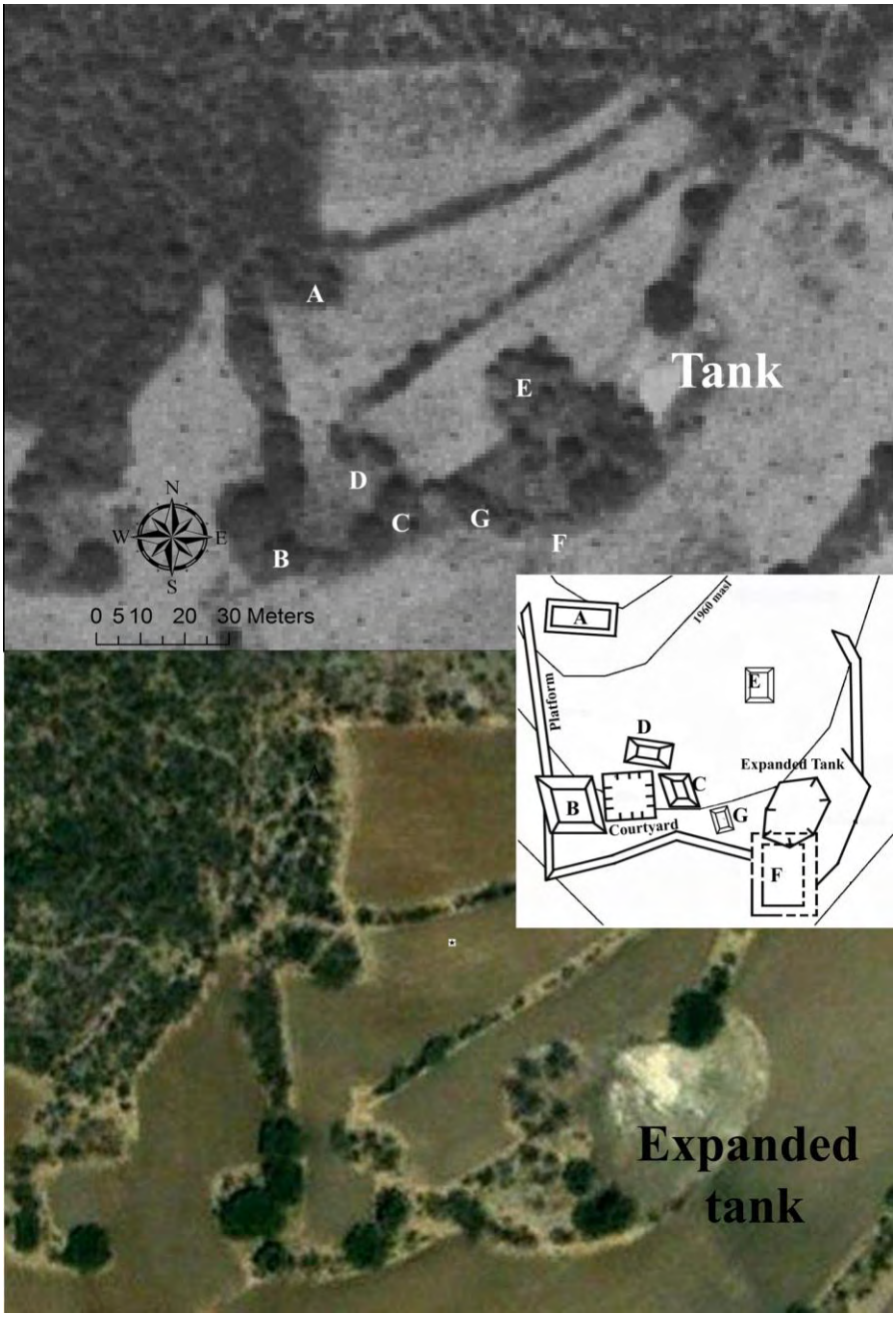

Fig. 5. The Pre-Columbian archaeological site of El Zapote, in the Laurel Mountains, Aguascalientes, discovered in 2005. The bi-dimensional map (inlay) is the on-field interpretation of the architectural features found on the digital ortophoto above (by INEGI, 2004), where the dark vegetation lines (trees and bushes) indicate not negative, but positive features, like platforms and walls. The area had been cleared and deforested for agricultural use, but the farmers could not clean those features off with heavy machinery because of the stones. Nevertheless, the Google Earth view (below, 2005) shows that only one year later the locals had managed to destroy part of the site by amplifying a water tank.

Situl arheologic precolumbian El Zapote, în Munţii Laurel, Aguascalientes, descoperit în 2005. Harta bidimensională (centru dreapta) reprezintă interpretarea pe teren a elementelor arhitectonice identificate pe harta ortofoto (sus, INEGI, 2004), unde liniile întunecate de vegetaţie (copaci şi arbuşti) nu indică trăsături negative, ci pozitive, precum platforme şi ziduri. Aria a fost curăţată şi defrişată pentru uz agricol, însă ţăranii locali nu au putut să înlăture elementele arheologice din cauza pietrelor. În ciuda acestui fapt, imaginea Google Earth (jos, din 2005) arată că, doar un an mai târziu, localnicii reuşiseră sa distrugă o parte din sit prin lărgirea zonei rezervorului.

Fig. 6. In the Google Earth image below (2007), from the site of Plazuelas, Guanajuato (not mentioned in the text), we can appreciate how a 'guachimonton' usually looks like from above. A 'guachimonton' is a characteristic round pyramid surrounded by smaller ceremonial platforms in a circular pattern. An almost identical feature appears in the upper image (Google Earth, 2005), indicating a 'guachimonton'-like pyramid at Calvillo, Aguascalientes. But the verification on the ground proved that it was just a recently made huge pile of debris and stones gathered in circular form by farmers' heavy machinery in order to clean a plowing field.

Pe imaginea Google Hearth de jos (2007), din situl Plazuelas, statul Guanajuato (nemenţionat în text), putem aprecia cum arată de obicei, de sus, un 'guachimonton'. Un 'guachimonton' este o piramidă circulară înconjurată de platforme ceremoniale mai mici, de asemenea într-un model circular. Un element aproape identic apare în imaginea de sus (Google Earth, 2005), sugerând o piramidă asemănătoare unui 'guachimonton' lângă Calvillo, Aguascalientes. Însă, verificările noastre pe teren au arătat că de fapt este vorba de o îngrămădire recentă de resturi şi pietre adunate în formă circulară de către ţărani în urma curăţării unui teren pentru arătură.

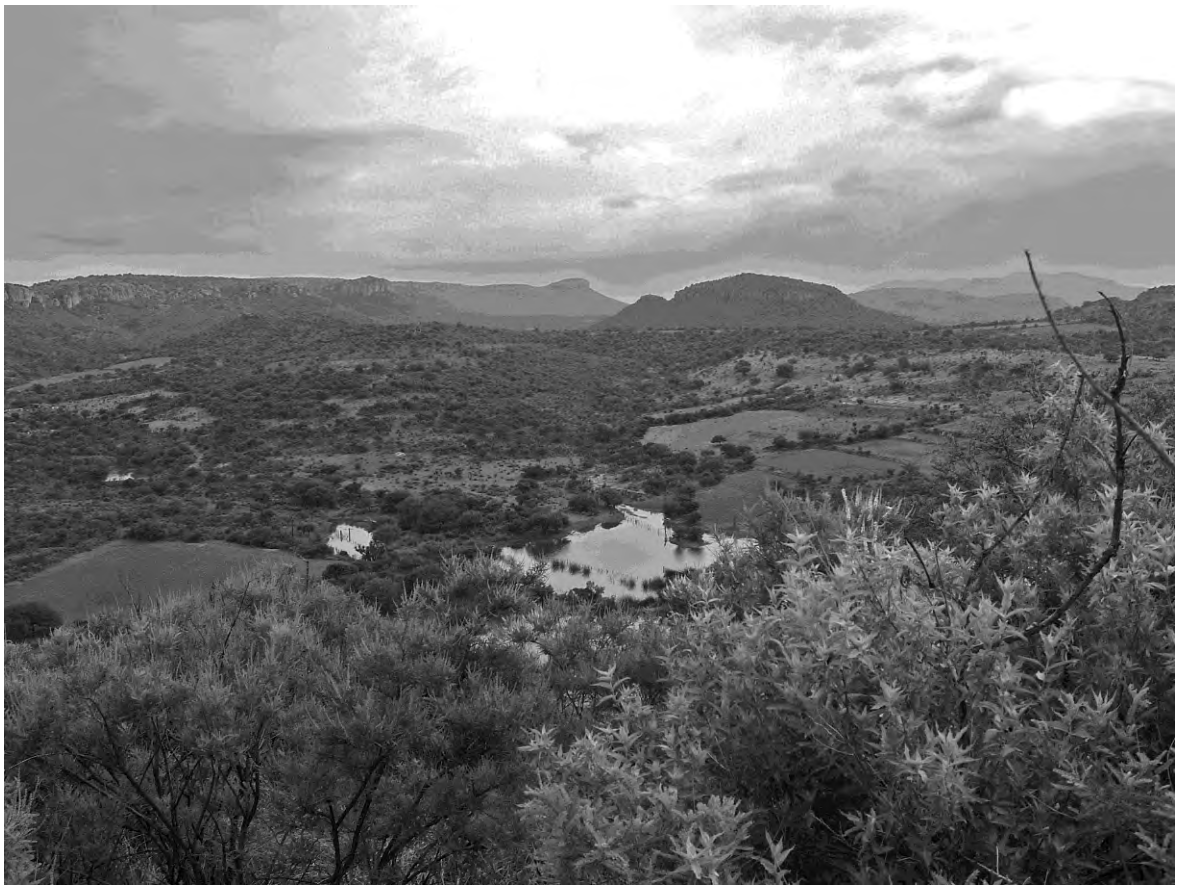

Fig. 7. The landscape of the study area in Aguascalientes, Mexico, during the rainfall season. It highlights the abundance of volcanic hills and the vegetation disturbed by modern farming (photo: J.I. Macías-Quintero).
Peisajul zonei de studiu din statul Aguascalientes, Mexic, în timpul sezonului ploios. Se evidenţiază abundenţa de ridicături de origine vulcanică şi vegetaţia modificată prin activităţi agricole (foto: J.I. Macías-Quintero).

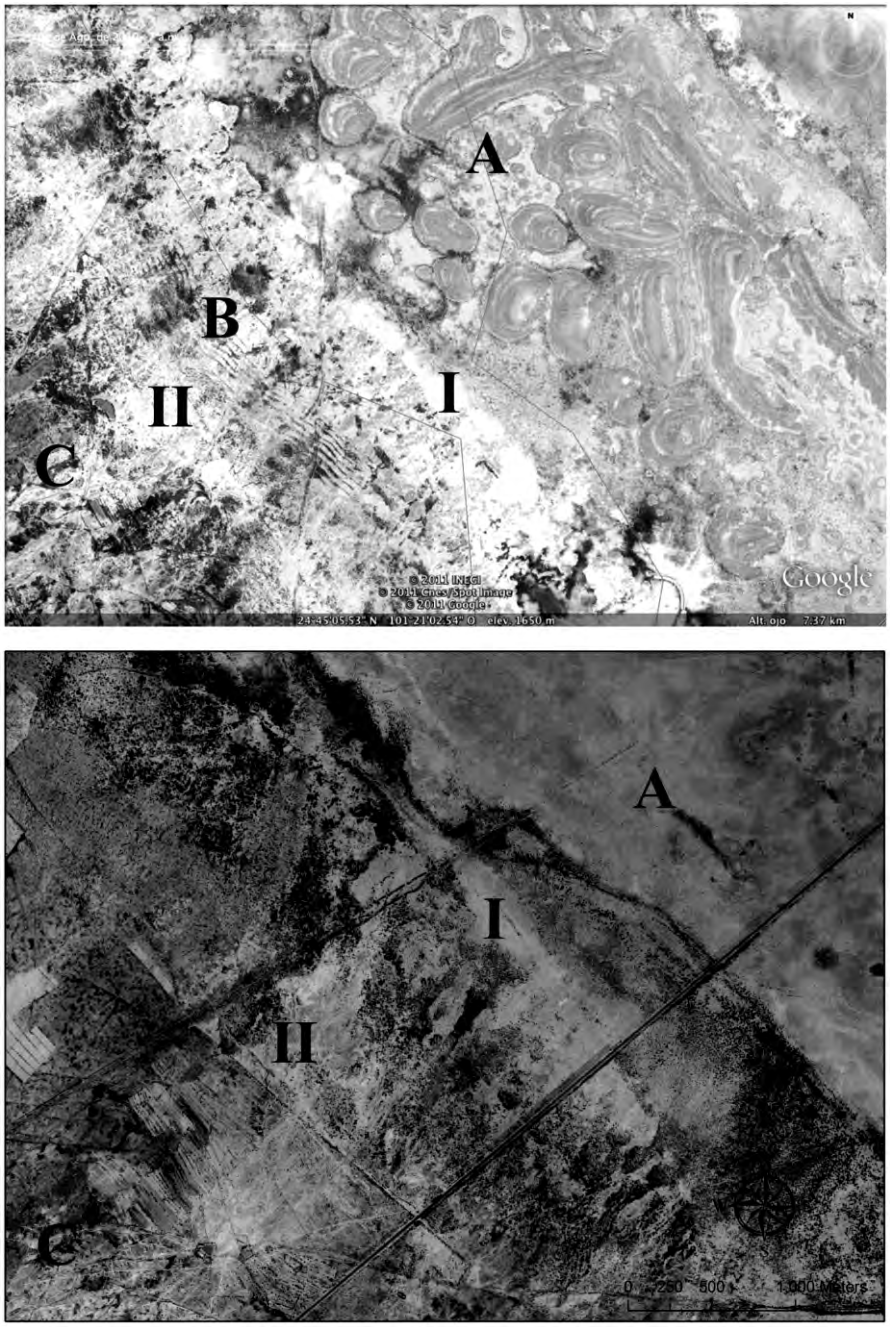

Fig. 8. A Google Earth Image (above, 2005) and an ortophoto (below, by INEGI, 1999) showing two distinct sectors of the endorreic basin of Concepción del Oro, Zacatecas, where hunter-gatherer shallow surface features cannot be identified on aerial imagery. In spite of that, we learnt to search for geological units which could lead us to the identification of preferential areas for human occupation. On the images we can observe the bottom of the paleo-lake with its significant hardened dunes (A), two palaeo-beach horizons (I and II), strange tree-lines probably marking the retrieving margins of the ancient water body (B), and alluvial fans (C).
O imagine Google Earth (deasupra, 2005) şi o ortofotografie (jos, INEGI, 1999) arătând două sectoare diferite ale bazinului endoreic din Concepcion del Oro, Zacatecas, în care elementele arheologice de suprafaţă ale vânătorilor-culegători nu pot fi identificate pe imaginile aeriene. În ciuda acestui fapt, noi am învăţat să identificăm acele unităţi geologice care ne-ar ajuta să descoperim ariile preferate pentru locuirea umană. Pe imagini putem observa fundul unui paleo-lac cu dunele sale solidificate caracteristice (A), două orizonturi de paleo-plaje (I şi II), ciudate distribuţii liniare de copaci probabil marcând contururile de retragere ale marginilor vechiului corp de apă (B) şi acumulările aluviale (C).

Fig. 9. General landscape characterizing the environment of the site of Dunas de Milpa Grande, on the margins of the playa-lake dominating the endorreic basin of Concepción del Oro, Zacatecas (photo: by C.F. Ardelean).
Vedere generală ce caracterizează mediul înconjurător al sitului preistoric Dunas de Milpa Grande, pe marginile unui ‚playa-lake' ce domină bazinul endoreic din Concepcion del Oro, Zacatecas (foto: C.F. Ardelean).

CĂLĂTORII ARHEOLOGICE

Despre o călătorie de documentare arheologică în U.R.S.S.

Radu-Alexandru DRAGOMAN*

◈ Călătorul

În toamna anului 1980, o cercetătoare a Institutului de Arheologie „Vasile Pârvan" din Bucureşti se pregătea în vederea unei călătorii de documentare în „Măreaţa Uniune Sovietică", după cum am auzit-o denumind nu o dată, cu ironie nedisimulată, vecina dinspre răsărit a României de până la schimbările politice din 1989-1991. Cercetătoarea, pe numele său Silvia Marinescu-Bîlcu, era la data respectivelor pregătiri un bine-cunoscut arheolog specializat în domeniul neoliticului şi epocii cuprului din sud-estul Europei, în mod particular în cel al aşa-numitului „complex cultural Ariuşd-Cucuteni-Tripolje", identificat prin săpături arheologice atât în România, cât şi pe teritoriul republicilor sovietice socialiste Moldovenească şi Ucraina. Printre altele, Silvia Marinescu-Bîlcu publicase în 1974 o monografie dedicată „culturii Precucuteni" din România (S. Marinescu-Bîlcu 1974), ce avea să aibă mai târziu corespondent în U.R.S.S. într-o lucrare similară despre faza timpurie a „culturii Tripolje" (Vl. G. Zbenovič 1989). Mai mult decât atât, la momentul călătoriei, Silvia Marinescu-Bîlcu finalizase o altă monografie, de data aceasta referitoare la situl liniar ceramic şi cel cucutenian de la Târpeşti (jud. Neamţ), despre care până atunci nu apăruseră decât articole, şi care va fi publicată doar un an mai târziu (S. Marinescu-Bîlcu 1981). Drept urmare, o călătorie de documentare în U.R.S.S. era într-adevăr binevenită pentru completarea informaţiilor despre „cultura ceramicii liniare" şi „cultura Precucuteni/Cucuteni-Tripolje". De altfel, nu era prima dată când Silvia Marinescu-Bîlcu călătorea în aceeaşi direcţie şi cu acelaşi scop, ea având ocazia ca, tot graţie schimbului inter-academic, să viziteze şi în anul 1970 câteva oraşe din U.R.S.S.

Exceptând dimensiunea ştiinţifică, Silvia Marinescu-Bîlcu nu avea alte motive de interes pentru a întreprinde această călătorie. Din contră, sentimentele sale faţă de „Măreaţa Uniune Sovietică" erau unele de respingere. În parte, aceste sentimente se datorau unor experienţe personale nefericite, chiar tragice, şi anume faptului că asistase în copilărie, imediat după cel de-al doilea război mondial, la deportarea în Siberia a saşilor din oraşul său natal – Braşov; totodată, trupele sovietice constituiseră unul dintre instrumentele prin intermediul cărora în România fusese instaurat un regim comunist ce îşi consolidase puterea prin represiune, una dintre nenumăratele victime închise în centre de detenţie politică fiind chiar tatăl ei. Acestor amintiri le putem adăuga unele elemente traumatice din memoria colectivă românească, precum anexarea pe cale militară, în diverse momente din trecut (1812, 1940, 1944), a unei părţi din Moldova, cea dintre Prut şi Nistru (numită de români Basarabia), mai întâi de către Imperiul Ţarist şi mai apoi, după 1917, de către Uniunea Sovietică, sau prigonirea şi deportarea unei părţi a populaţiei româneşti din Basarabia (vezi în acest sens, de exemplu, Monah Moise 2012). Cu conştiinţa nerostită a tuturor acestor evenimente, nerecunoscute de istoria oficială a vremii, pornea la drum într-o zi de noiembrie Silvia Marinescu-Bîlcu.

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◈ Călătoria

Silvia Marinescu-Bîlcu nu a ţinut un jurnal de călătorie, dar şi-a făcut totuşi o serie de însemnări într-un caiet. Astfel, aflăm că a plecat în data de 9 noiembrie din Bucureşti, s-a oprit a doua zi la Moscova, până în data de 16 noiembrie, când s-a îndreptat spre Leningrad; după aceea, în data de 28 noiembrie, a revenit la Moscova, de unde a plecat în ziua de 30 noiembrie spre Kiev, pentru ultima etapă a călătoriei în U.R.S.S., ce se va încheia în data 6 decembrie – momentul întoarcerii spre Bucureşti, unde ajunge ziua următoare (fig. 1). Având în vedere scopul ştiinţific al călătoriei, la Moscova a mers la Muzeul de Istorie, la Institutul de Arheologie, la Universitate şi la Muzeul Asiei, la Leningrad a fost primită la Institutul de Arheologie, la Muzeul de Antropologie şi Etnografie, la Ermitaj şi la Muzeul Rus, în timp ce la Kiev a fost la Institutul de Arheologie, la Muzeul de Arheologie şi la Muzeul de Istorie. Totodată, a vizitat muzeul Mănăstirii Sfântul Andronic şi Catedrala Sfântul Vasile Blajenâi din Moscova, a văzut o expoziţie din Spania la Muzeul de Artă Puşkin din Moscova, a mers la mănăstirile din Zagorsk şi Kiev, precum şi la Teatrul Kirov din Leningrad.

În timpul călătoriei Silvia Marinescu-Bîlcu a purtat discuţii cu arheologi „sovietici" interesaţi de aceleaşi teme de cercetare, a consultat literatura de specialitate publicată în U.R.S.S. şi a putut vedea materialele arheologice care o interesau, având toată libertatea şi timpul necesar pentru a-şi lua note şi a face desene (fig. 2), deşi, după cum mi-a relatat într-una din discuţiile despre această călătorie, multe dintre materiale erau inedite (S. Marinescu-Bîlcu, com. pers., Bucureşti, decembrie 2012). În plus, a primit numeroase planşe cu desene ale unor materiale arheologice, precum şi fotografii din timpul săpăturilor efectuate în diverse situri din republicile sovietice socialiste Moldovenească şi Ucraina sau fotografii cu unele dintre obiectele descoperite (fig. 3-4). Ajutorului primit de la colegii săi ruşi şi ucrainieni, Silvia Marinescu-Bîlcu i-a răspuns cu dorinţa de a le trimite neapărat unele articole sau cărţi de care aveau nevoie, publicate de arheologi români; astfel, în mai multe locuri din caietul de însemnări întâlnim menţiuni precum: *„De trimis art. prof. Vladimir Dumitrescu Ecaterinei Cernîş (cele care amintesc caracteristicile fazelor şi etapelor culturii Cucuteni şi cele cu Drăguşeni)"*, completată ulterior cu o notă scrisă cu altă culoare *„De trimis şi volumul lui A. Crîşmaru"*; *„De trimis la Leningrad: Cultura Precucuteni; analogii pt. Racoveţ"*; *„Pt. Ecaterina Cernîş – / (1) Vladimir Dumitrescu, Arta culturii Cucuteni / (2) Memoria Antiquitatis"* (sublinierea în original). De asemenea, sunt prezente şi notaţii ce indică disponibilitatea Silvia Marinescu-Bîlcu de a-i ajuta, la rândul ei, pe unii dintre arheologii ruşi să călătorească pentru documentare în România: *„Invitaţiile pt. Ec. Cernîş şi Titov pt. Neoliticul din 1981 să fie trimise în decembrie anul acesta ca să se poată face planul de către Academie"*. În orice caz, întâlnirile şi discuţiile faţă-către-faţă au dus la crearea unor legături, fie şi efemere, a căror urme materiale se mai păstrează şi astăzi sub forma adreselor scrise sau lipite în caietul de însemnări (fig. 5).

Dintre rezultatele muncii arheologilor „sovietici", cea mai puternică impresie asupra Silviei Marinescu-Bîlcu pare să fi fost produsă de un demers de cercetare iniţiat la începutul anilor '1970, remarcabil prin datele obţinute: identificarea prin fotografie aeriană şi prospecţiuni geofizice a aşa-numitelor „aşezări gigant" tripoljene din regiunea Uman din Ucraina (pentru un istoric al cercetărilor vezi M. Videiko 2001). Dovadă în acest sens este menţiunea admirativă: *„Deosebit de importante rezultatele pe care le obţin cu ajutorul fotografiei aeriene pe care o completează cu arheo-magnetism. Dacă s-ar putea face şi la noi"*. Măsurătorile geofizice constituie şi în prezent un instrument important utilizat în analiza „mega-siturilor" tripoljene din Ucraina, spre exemplu în proiectul dedicat sitului de la Nebelivka (*e.g.* J. Chapman şi M. Videiko 2011). Din păcate, în România, primele cercetări geomagnetice sistematice ale unor situri (e)neolitice aveau să înceapă abia în anii '2000, ca parte a unor proiecte demarate în colaborare cu instituţii din Occident, mai ales din Germania (vezi W. Schier şi F. Draşovean 2004; S. Hansen *et alii* 2006; C. Mischka 2008, 2009). De altfel, alte abordări novatoare ale arheologilor din U.R.S.S. nu sunt nici astăzi prezente în practica arheologică din România; un exemplu în această privinţă este analiza sistematică a amprentelor digitale de pe vasele de lut, demers efectuat încă din anii '1930 de P.N. Tret'jakov pe ceramica comunităţilor de vânători-culegători din nordul şi centrul Rusiei (*apud* B. Trigger 1989, p. 223; totuşi, un interes pentru astfel de analize a arătat Eugen Comşa [G. Basiliade, C. Rişcuţia 1974]).

La fel de impresionată a fost Silvia Marinescu-Bîlcu şi de vizita făcută în afara programului strict academic la Lavra Sfântului Serghie de Radonej – Sfânta Treime din oraşul Zagorsk, redenumit după 1991 Serghiev Posad (fig. 6), mănăstire ortodoxă situată la o oră şi jumătate distanţă de Moscova, mergând cu trenul. Privind de la distanţă, *„Unele turle sunt încă aurite, altele au o culoare azurie peste care, din loc în loc s-au aplicat foiţe aurite în formă de stele. Alb, albastru şi aur pe albul imaculat al zăpezii – teribil de impresionant"*. Arhitectura, pictura făcută de Andrei Rubliov şi tezaurul de obiecte de cult ale acestei mănăstiri înconjurate de ziduri puternice de incintă au făcut-o pe Silvia

Marinescu-Bîlcu să afirme în scris *„Am înţeles aici câte ceva din Pravoslavnica Rusie"*. Ea îşi mai notează că lumea venită bea din apa sfinţită *„şi ia o cantitate impresionantă şi pentru acasă"*. La moaştele Sfântului Serghie de Radonej *„este un adevărat pelerinaj, iar viitorii preoţi vin şi se închină regulat şi după un ritual de la care nu se abat. În colţuri se roagă sau mănâncă stând pe jos oameni, mătăniile sunt frecvente, ele se bat adesea dând roată bisericii, la capul sfântului un preot citeşte nume, pe un candelabru ard buchete de lumânări din ceară de cea mai bună calitate, din penumbra pereţilor te privesc icoane splendide, toată mulţimea îngână acelaşi Gospode pomiloi – dacă închizi ochii te poţi trezi uşor în plin secol 17-18"*.

Troiţa Sergheevna Lavra nu a fost singura mănăstire pe care Silvia Marinescu-Bîlcu a vizitat-o în U.R.S.S. Ajunsă la Kiev, ea s-a dus şi la Lavra Pecerska, în incinta căreia fusese amenajat însă tezaurul oraşului, ca urmare, aş adăuga eu, a aceleiaşi politici anti-religioase a regimului comunist ce dusese la transformarea altor biserici ortodoxe în cinematografe, restaurante sau cămine culturale. De altfel, după cum mi-a povestit Silvia Marinescu-Bîlcu, atât la Lavra Sfântului Serghie de Radonej, cât şi la Lavra Pecerska fuseseră amenajate muzee ale ateismului (S. Marinescu-Bîlcu, com. pers., Bucureşti, decembrie 2012).

La data la care scriu textul de faţă, ca obiecte-memorie ale acestei călătorii în U.R.S.S. au rămas un caiet cu însemnări, desenele şi fotografiile primite de la colegii ruşi şi ucrainieni, precum şi o cutie cu diapozitive cumpărate la Zagorsk (fig. 7). O mână de obiecte ce pot fi considerate banale. Însemnările din caiet nu se constituie într-un jurnal de călătorie, deci nu sunt nici abundente, nici foarte detaliate, nu au valoare literară şi nici nu conţin idei sau date importante din punct de vedere istoric sau politic; sunt simple schiţe fragmentare ale unor materiale şi impresii. La rândul lor, desenele şi fotografiile primite au fost probabil publicate ulterior de arheologii „sovietici", deci nu ar mai avea un caracter inedit pentru arheologii din prezent. Culoarea diapozitivelor s-a schimbat datorită trecerii timpului. Şi totuşi, tocmai datorită „neînsemnătăţii" lor, aceste obiecte au relevanţă dincolo de valoarea lor personală sau, eventual, de utilitatea lor arheologică.

◈ Memoria materială a călătoriei

Însemnările, desenele, fotografiile şi diapozitivele evocă nu doar o călătorie de documentare arheologică, ci oameni în carne şi oase legaţi printr-o pasiune comună, ce îşi oferă unii altora, ca o formă de dar, date şi literatură de specialitate, şi care, schimbând adrese, cred fie şi pentru o clipă că vor păstra legătura în viitor. Discuţiile purtate încep în termenii arheologiei, dar la un moment dat se iese din sferele academice şi se intră pe tărâmul altor subiecte şi preocupări. Astfel, din institute şi muzee de arheologie, de la săpături şi artefacte, se ajunge la mănăstiri ortodoxe şi la diapozitive cu biserici. Oricât de modeste, obiectele asociate călătoriei în U.R.S.S. spun o altă poveste decât cea prezentă în discursurile arheologice din România de după 1989, în care aşa-numita „arheologie sovietică" este prezentată exclusiv de o manieră negativă, drept un model impus politic de către regimul comunist instaurat de sovietici după cel de-al doilea război mondial. În astfel de discursuri, arheologii din U.R.S.S. ajung să fie subsumaţi unei categorii generice precum cea de „arheologie sovietică", iar munca lor desconsiderată implicit din motive istorice şi/sau politice. Totodată, însemnările şi diapozitivele referitoare la Mănăstirea Sfânta Treime din Zagorsk duc la o altă percepţie asupra ruşilor decât cea promovată de politica oficială a U.R.S.S. sau de politicile adversarilor săi („omul nou", respectiv „duşmanul democraţiei"), şi anume cea a oamenilor care, indiferent de ostilitatea regimului faţă de religie în general, cred în Hristos şi în Sfinţii Lui. În simplitatea lor, obiectele ce compun „memoria materială" (L. Olivier 2008) a călătoriei în U.R.S.S. transmit o imagine nuanţată şi umană ce contrastează puternic cu tipurile de retorică totalizantă şi uniformizatoare, de ieri şi de astăzi, în cadrul cărora „românii" şi „ruşii" (sau oricare altă naţionalitate) sunt reduşi la statutul de personaje colective.

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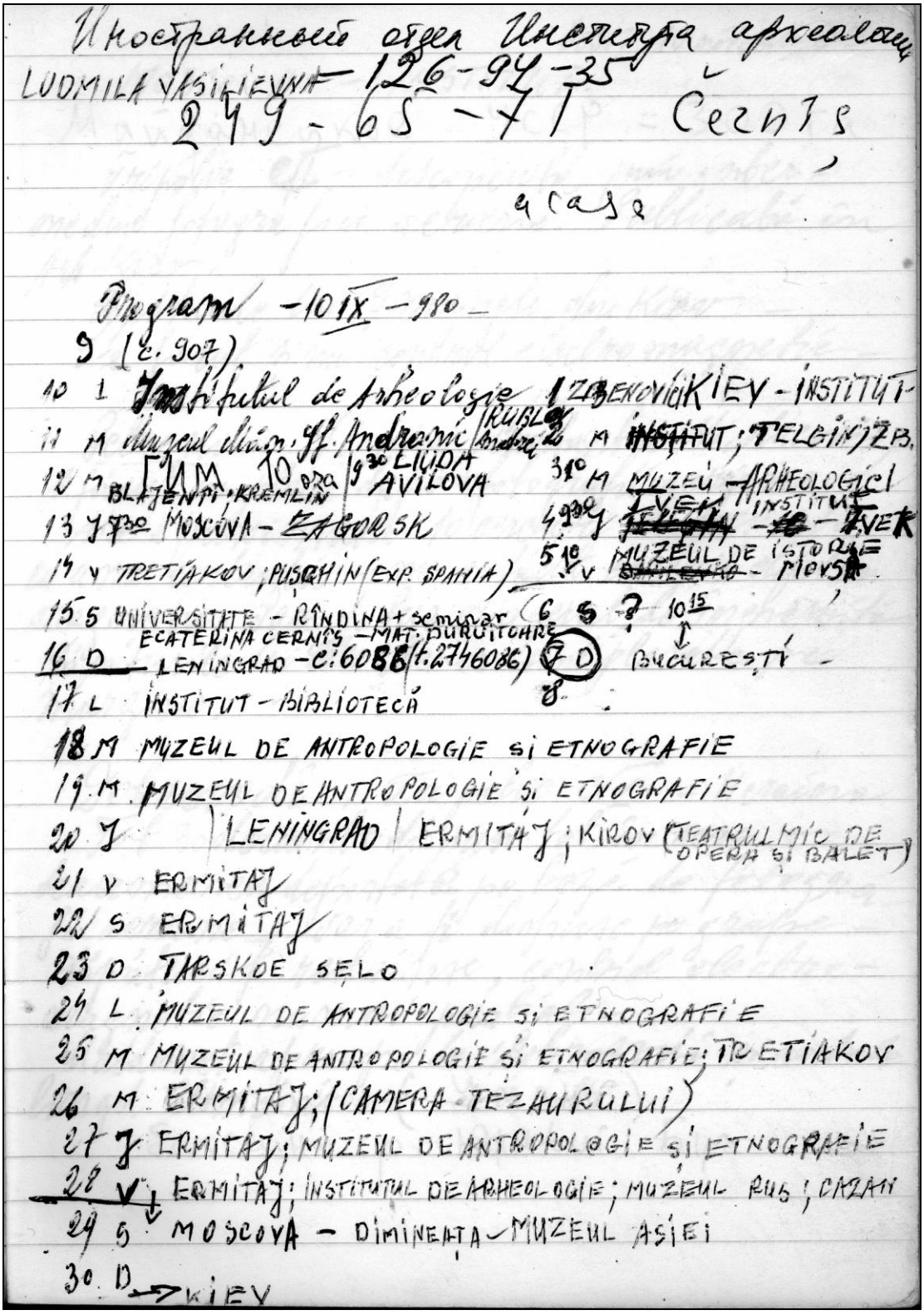


Fig. 1. Programul călătoriei în U.R.S.S.

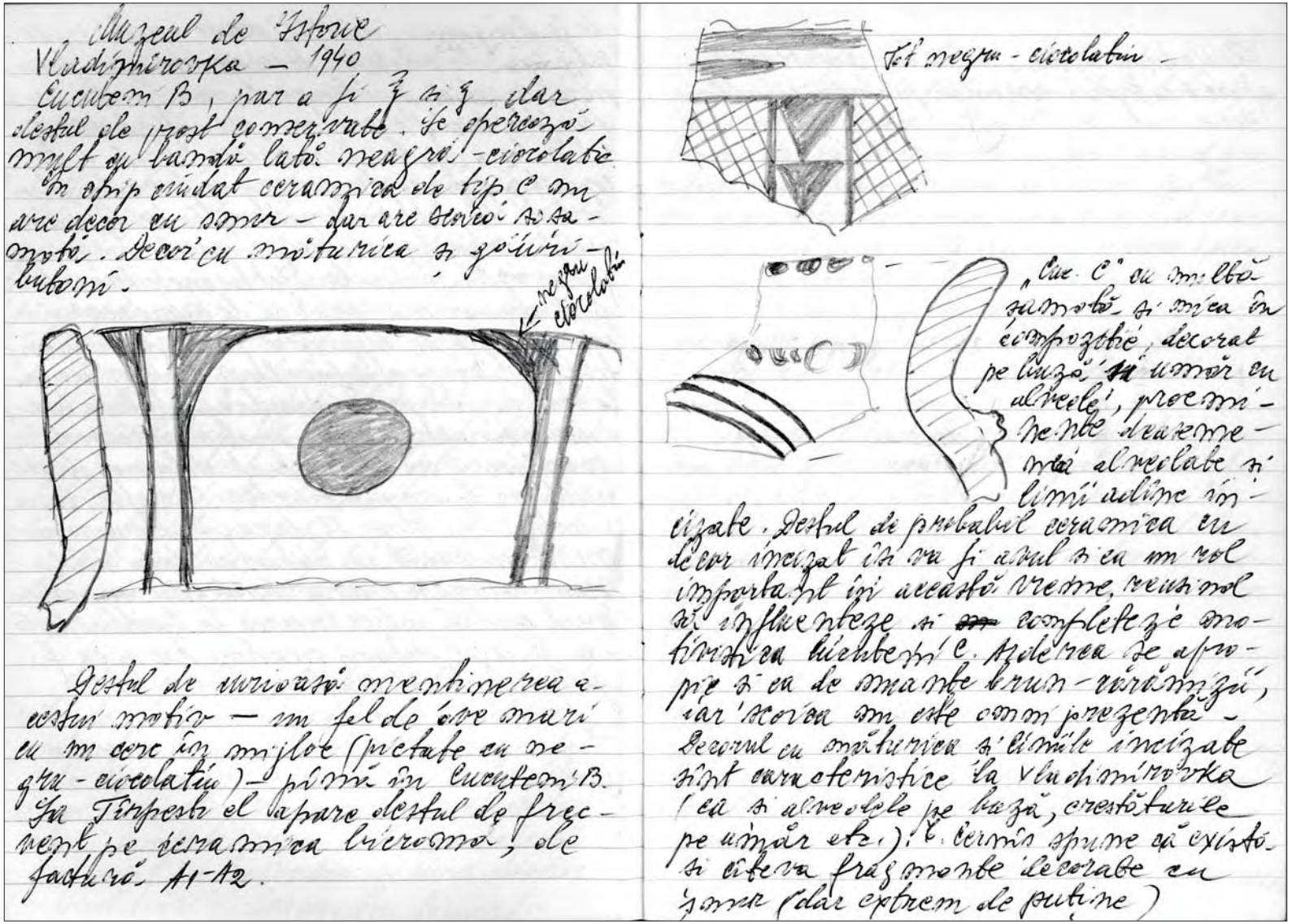


Fig. 2. Însemnări privind materialele de la Vladimirovka - Muzeul de Istorie din Moscova.

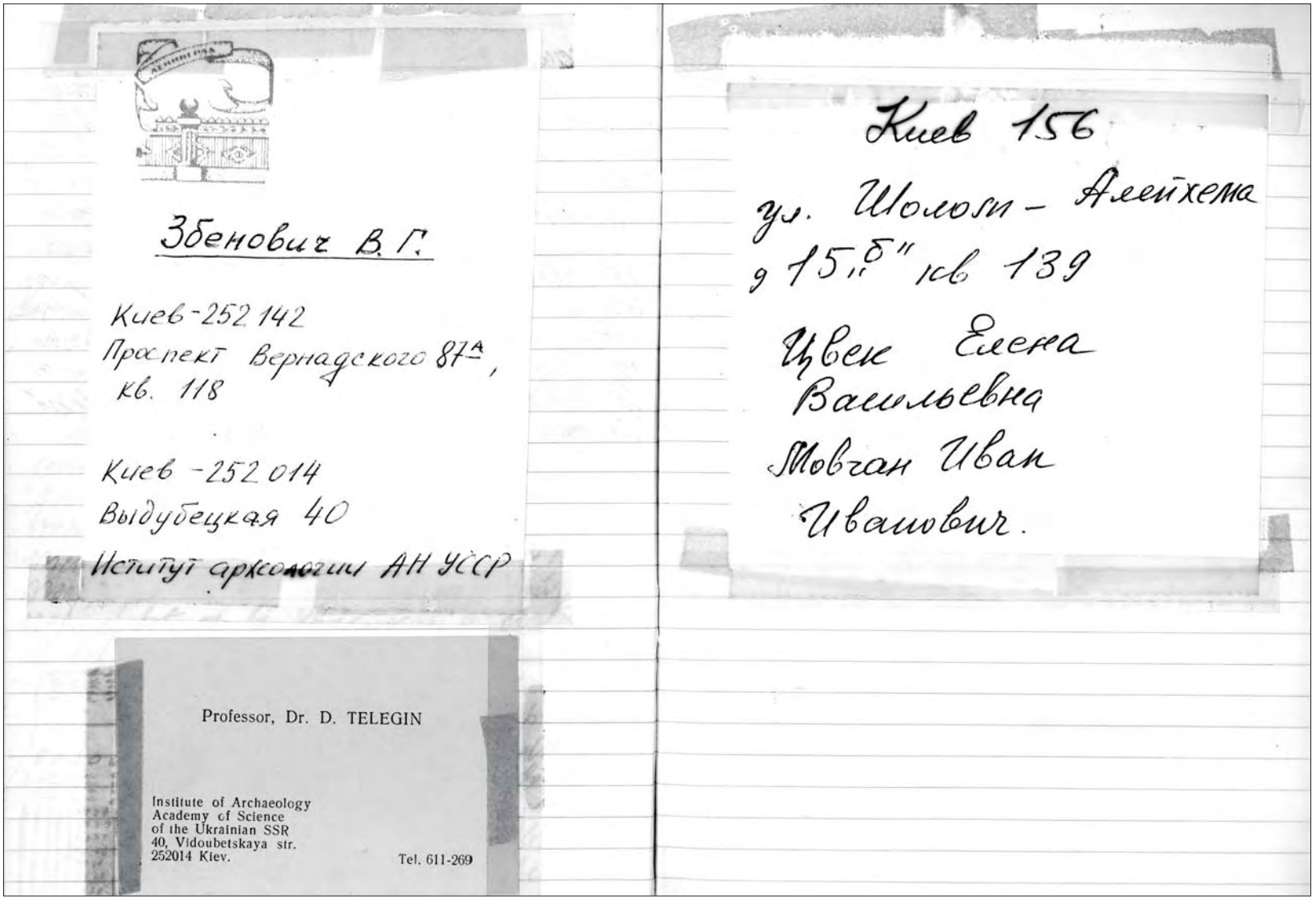


Fig. 5. Adrese ale unor arheologi din Ucraina.

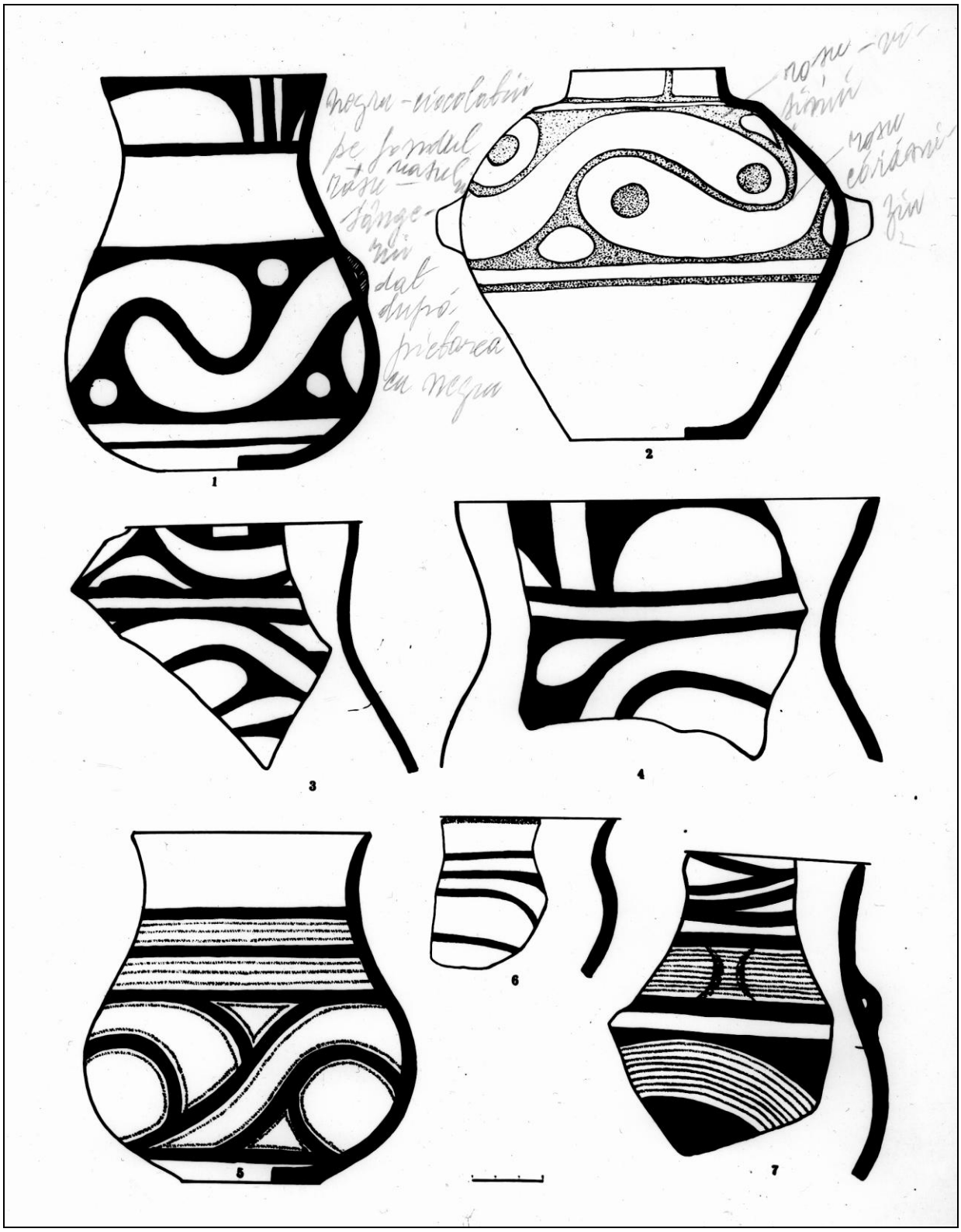
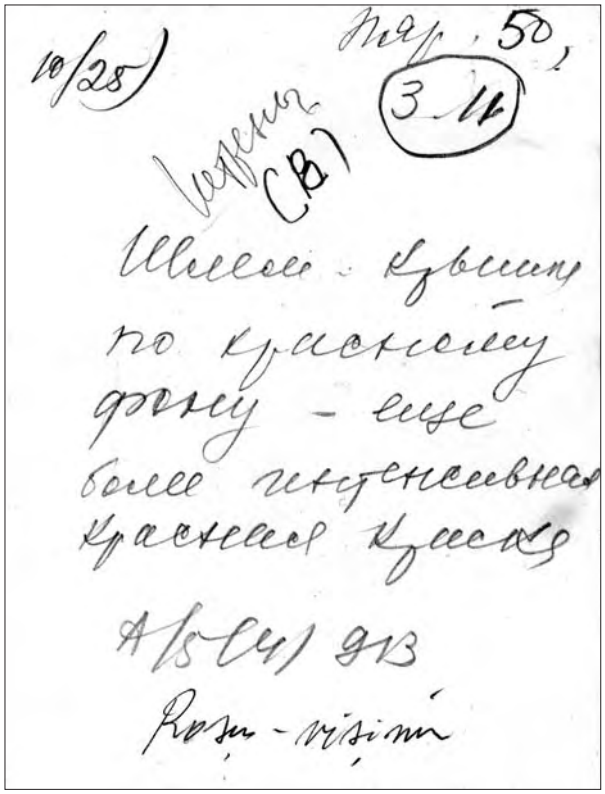


Fig. 3. Planşă cu desene ale unor vase de la Jablona, cu observaţii adăugate în limba română, cu creionul.

1

2a



2b

Fig. 4. Fotografii ale unor materiale de la Cuconeşti (1) şi Polivanov Jar (2); 2b - text în limba rusă şi observaţie adăugată în limba română, cu creionul, pe spatele fotografiei.

Fig. 6. Diapozitiv din perioada sovietică cu Mănăstirea din Zagorsk (Serghiev Posad): vedere dinspre nord.

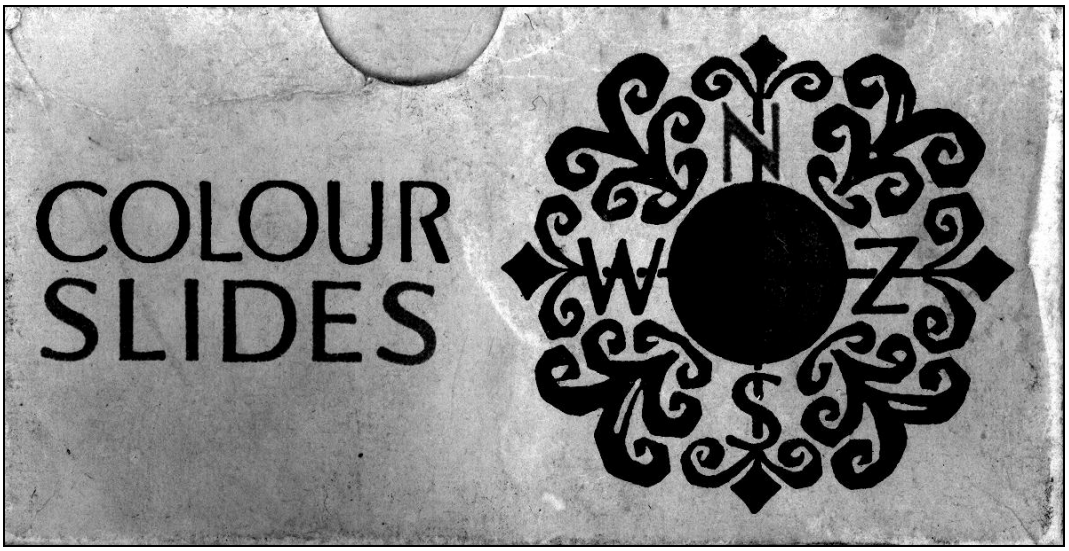


Fig. 7. Cutie cu diapozitive din perioada sovietică despre Mănăstirea din Zagorsk (Serghiev Posad).

Un altfel de șantier arheologic: un exemplu din Siberia

Alexandra GHENGHEA*

„Когда-то спрятали боги от людей далеко в Сибири"[1]

◈ Expediția arheologico-geografică „Kyzyl-Kuragino" este organizată și finanțată de R.G.O. (Russkoe Geografičeskoe Obšestvo) şi a fost lansată la data de 11.06.2011, în Republica Tuva. La finalizarea acestei expediții se are în vedere construirea căii ferate „Kyzyl-Kuragino" ce va uni Republica Tuva de regiunea Krasnoyarsk (www.rgo.ru). Institutul de Istorie și Etnografie al Siberiei, parte a Academiei Ruse de Științe, este coordonatorul acestei expediții. Au fost identificate 83 de puncte de interes arheologic, localizate atât în Tuva, cât și în regiunea Krasnojarsk (printre acestea, cele mai importante fiind cimitire tumulare și așezări din diferite perioade). Acest proiect arheologico-geografic se va încheia în toamna anului 2014. Am participat la expediția „Kyzyl-Kuragino" ca voluntar al taberei arheologice Jermak, în cea de a treia lună a sezonului 2012.

Organizarea expediției diferă probabil din multe puncte de vedere față de deplasările cu care suntem obișnuiți pe șantiere arheologice. Proiectul este promovat pe plan național prin susținerea oferită de agenții de presă precum R.I.A. Novosti, de ziarele „Komsomolskaja Pravda", „Argumenty i Fakty", „Rossijskaja Gazeta", „Tribuna" și canale audio-vizuale precum „Moja Planeta" și „TV Centr", Compania Radio „Mir", stația radio „Majak". De asemenea, revista „National Geographic Russia, Discovery" a promovat la rândul său expediția. Așa cum probabil suntem mai puțin obișnuiți, publicul este în permanență informat de activitatea societății, de desfășurarea expediției și chiar de modul de viață al taberelor, astfel încât popularizarea arheologiei reprezintă o activitate intensă și nu un concept ideal. În luna decembrie a anului 2012 a avut loc o conferință de presă ce a rezumat activitatea sezonului II și a prezentat deja condițiile pentru campania următoare. Totodată, pe parcursul săpăturilor, filmările și intervievarea arheologilor era o activitate obișnuită. La sfârșitul sezonului, ajunși la Moscova, voluntarii internaționali au fost invitați să dea un interviu privind taberele arheologice, timpul petrecut în sudul siberian, precum și recomandările personale pentru o viitoare mai bună funcționare a proiectului.

În anul 2011 săpăturile s-au desfășurat numai în Republica Tuva, fiind inițiată tabăra arheologică denumită în mod sugestiv „Dolina Carej" („Valea Regilor"), la 40 km de Kyzyl, în vecinătatea lacului Eerbek. Majoritatea descoperirilor arheologice din acest punct sunt reprezentate de fastuoase kurgane datând din epoca fierului. În 2012, activitatea arheologică a avut loc atât în Tuva, cât și în regiunea Krasnojarsk, cea de a doua tabără fiind stabilită în Jermak, la 13 km de satul Verchneusinskoje, pe malul râului Us. Punctele de lucru sunt localizate la câțiva kilometri de bază (motiv pentru care transportul voluntarilor era în permanență asigurat de autobuze). În această zonă, descoperirile constau din așezări sezoniere ale nomazilor din epoca bronzului și a fierului, fiind localizate în puncte strategic alese pentru menținerea vieții. În Jermak s-au deschis mai multe puncte de interes arheologic, lucrându-se în paralel la acestea.

Încă de la început, expediția a fost una internațională, fiind încurajată participarea voluntarilor din străinătate, din sferele arheologiei și geografiei. Au fost trimise invitații și înștiințări la multe dintre universitățile europene, dar și din S.U.A. În cazul ambelor situri, programul cuprinde trei luni de săpătură în fiecare an, desfășurându-se în trei schimburi succesive de câte o lună (iunie-august), cu echipe diferite de voluntari (atât din cadrul universităților Federației Ruse, cât și din străinătate). În restul anului nu se pot face săpături arheologice, date fiind condițiile climei. În perioada călduroasă se ajunge la o temperatură de +45°C în timpul zilei, dar la -10°C în timpul nopții. În anul 2012, pe parcursul celor trei schimburi, când ambele tabere arheologice au fost funcționale, au fost prezenți un număr total de 477 de voluntari, dintre care 90 au fost străini din 28 de țări (Marea Britanie, Elveția, Germania, Austria, Letonia, Estonia, Cehia, Ucraina, Republica Belarus, România, Bulgaria, S.U.A., Mexic, Brazilia etc.). Voluntarii erau studenți, masteranzi și doctoranzi în arheologie, geografie sau

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[1] „Cândva zeii s-au ascuns de oameni, departe, în Siberia" (legendă siberiană a munților Saian).

domenii apropiate. Echipele de lucru au fost extrem de numeroase, spre a se putea epuiza arheologic, în câteva campanii succesive, numărul mare de situri identificate. Drumul de la Moscova până la bazele arheologice s-a făcut cu avionul până în Abakan, apoi cu autocarul până în Yermak, respectiv Tuva. La întoarcere s-a mers cu autocarul până în Krasnojark, continuarea drumului făcându-se cu avionul.

Fiecare dimineață a vieții în tabără începea cu exerciții de gimnastică, în acest scop fiind în permanență angajată o profesoară de sport ce locuia la sediul bazei. Având în vedere statutul de voluntar, nu puteam lucra pe șantier mai mult de șase ore pe zi, iar consumul de alcool fiind cu desăvârșire interzis, cea de a doua parte a zilei era organizată într-un mod foarte activ. Pe toată durata expediției s-au ținut prelegeri de istorie, arheologie, cultură și geografie a zonei voluntarilor interesați de cunoașterea sau aprofundarea spațiului siberian. Orele de limbă străină se organizau cu regularitate, astfel încât existau lecții de rusă, engleză, germană și franceză predate de voluntarii care stăpâneau nativ aceste limbi. Competițiile sportive erau de asemenea obișnuite pentru cei interesați. Nici serile literare sau cinematografice nu au lipsit. Am avut astfel ocazia să cunosc îndeaproape creațiile valului de prozatori, poeți și regizori de origine siberiană ai celei de-a doua jumătăți a secolului XX (precum Šukšin, Rasputin etc.), dar și multe altele. Serile se desfășurau prin recitarea de poezie, acompaniată uneori de muzică și difuzarea filmelor care se integrau cum nu se poate mai bine în acest specific siberian. Trebuie adăugat că tabăra a fost mereu însoțită de pază, precum și de serviciu medical permanent. De asemenea, o rețea *wireless* a funcționat în mod constant.

Duminica se organizau excursii pentru voluntari. Una dintre ele a avut loc în Kyzyl, unde am vizitat orașul, dar mai ales muzeul arheologic unde sunt expuse inventarele mormintelor de la Aržan-II săpate recent de Konstantin V. Čugunov şi Hermann Parzinger (K.V. Čugunov *et alii* 2010). Tot în Kyzyl este stabilit punctul central al Asiei, loc în care este ridicat un monument, pe malul fluviului Enisei. Am făcut drumeții pe versanții apropiați, în Ergaki, urmând și un traseu până la lacurile Radujnoe și Svetloe. Nu în ultimul rând, participanții fiecărei tabere au avut ocazia să viziteze celelalte situri, putând vedea astfel săpăturile la care nu au lucrat.

Finalitatea proiectului este de profund interes național, iar importanța investigațiilor arheologice este promovată prin popularizarea descoperirilor și a desfășurării activității. Lansarea acestei expediții în Siberia poate fi considerată drept un model de susținere al unei cercetări arheologice, de organizare extrem de elaborată care nu a avut loc, așa cum adesea întâlnim în imaginarul colectiv, la capătul pământului, ci în centrul unui continent.

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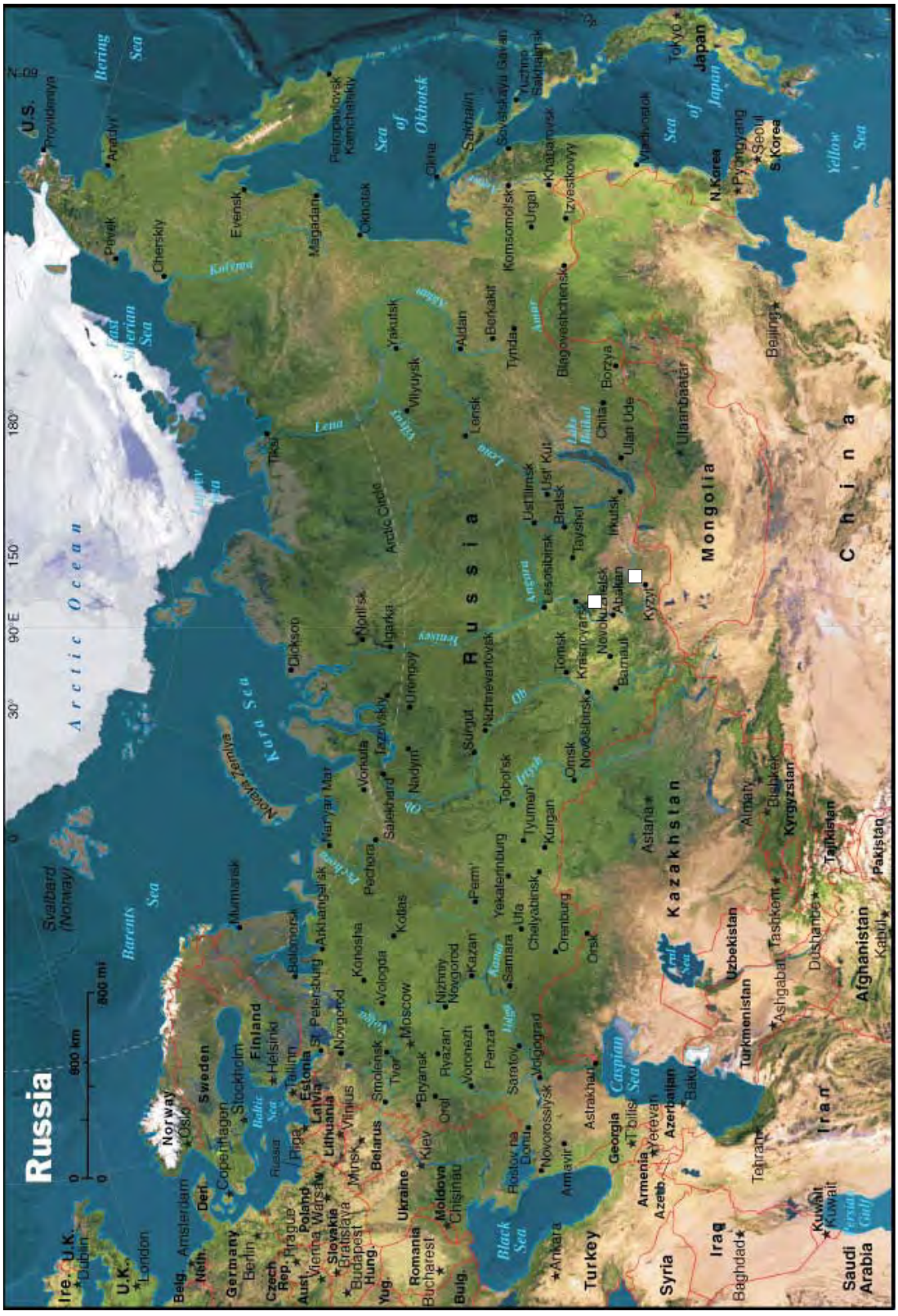

Fig. 1. Harta fizică a Federației Ruse cu localizarea taberelor arheologice (baza de hartă - http://maudestandard.files.wordpress.com).
Physical map of Russian Federation with the position of archaeological expeditions (base map from - http://maudestandard.files.wordpress.com).

Fig. 2. Tabăra arheologică „Dolina Carej” (fotografie: Alexandra Ghenghea).

Fig. 3. Tabăra arheologică Jermak (fotografie: Alexandra Ghenghea).

Fig. 4. Muzeul Naţional din Kyzyl (fotografie: Alexandra Ghenghea).

Fig. 5. Centrul Asiei (fotografie: Alexandra Ghenghea).

Fig. 6. Lacul Svetloe (fotografie: Alexandra Ghenghea).

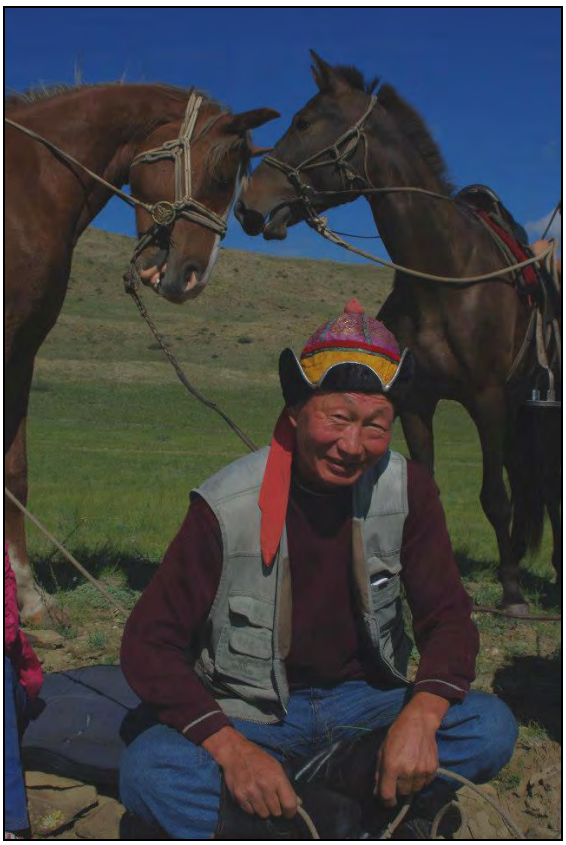

Fig. 7. Localnic (fotografie: Alexandra Ghenghea).

Fig. 8. Bancomat în mijlocul stepei (fotografie: Alexandra Ghenghea).

Fig. 9. *Wireless* în plină taiga (fotografie: Alexandra Ghenghea).

RECENZIE

Eugen Sava, Elke Kaiser, *Поселение с «зольниками» у села Одая-Мичурин, Республика Молдова (Археологические и естественнонаучные исследования)/Die Siedlung mit „Aschehügeln" beim Dorf Odaia-Miciurin, Republik Moldova (Archäologische und naturwissenschaftliche Untersuchungen),* Muzeul Naţional de Arheologie şi Istorie a Moldovei, Biblioteca „Tyragetia" XIX, Editura Bons Offices SRL, 2011, 532 p., 105 figuri, 19 diagrame, 29 tabele, 55 fotografii, ISBN 978-9975-80-525-4.

Tiberiu VASILESCU[*]

Preocupările lui Eugen Sava pentru studiul culturii Noua sunt de mai lungă durată, până în acest moment dedicându-i numeroase lucrări ce abordează diverse aspecte, de la cercetarea în sine a unor „cenuşare", expresie prin excelenţă a aşezărilor Noua, şi încercări de explicare a formării acestora, într-un context foarte larg, atât temporal cât şi geografic, şi până la exprimarea funerară în cadrul acestei culturi.

Volumul de faţă prezintă cercetările conduse de-a lungul mai multor campanii (2003, 2005-2008) în situl de la Odaia-Miciurin, Republica Moldova, de către Eugen Sava şi Elke Kaiser, în care, alături de investigaţiile arheologice, au fost efectuate şi studii arheozoologice, paleobotanice, geomagnetice, au fost prelevate probe pedologice, mineralogice şi pentru datare radiocarbon. Deşi au fost publicate încă de la demararea săpăturilor mai multe studii şi rapoarte de cercetare, atât în limba germană cât şi în rusă (unele fiind preluate şi în acest volum), lucrarea de faţă se constituie într-o binevenită completare şi într-un efort de sistematizare a acestora, fiind îmbogăţite şi cu rezultate de ultimă oră din perspectiva studiilor interdisciplinare asociate demersului de investigare arheologică.

Cartea, publicată bilingv în limbile germană şi rusă, cu un rezumat de 13 pagini în limba română, are următoarea structură: *Предисловие / Vorwort; I Введение / Einleitung; II История исследования / Geschichte der Untersuchungen; III Полевые исследования / Die Ausgrabungen; IV Материалы культуры Hoya / Der Fundstoff der Noua-Kultur; V Материалы других периодов / Fundstoff und Befunde aus anderen Periodenn; VI Естественнонаучные исследования / Naturwissenschaftliche Unterschungen; VII Выводы / Interpretationn; Rezumat* şi *Lista ilustraţiilor* (în limba română); *Список литературы / Literaturverzeichnis; Список сокращений / Abkürzungsverzeichnis;* şi trei anexe – *Приложение 1 к главе IV.3. Изделия из кости / Anhang I zu Kapitel IV·3. Knochenartefakte; Приложение 2 к главе VI.5. Документация радиокарбонных анализов выполненных в Ляйбниц лаборатории университета Кристиана Альбрехта в Киле / Anhang 2 zu Kapitel VI.5. Dokumentation der ^{14}C-Analysen, die im Leibniz-Labor der Christian-Albrechts-Universitat Kiel durchgeführt wurden; Приложение 3 к главе VII. О происхождении «зольников» на поселениях эпохи поздней бронзы по результатам их почвенно-химических и минералогических анализов / Anhang 3 zu Kapitel VII. Über die Entstehung von „Aschehügeln" auf*

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Siedlungen der späten Bronzezeit aufgrund der Ergebnisse von bodenkundlich-chemischen und mineralogischen Analysen.

În introducere se face o prezentare a stadiului cercetării în problematica „cenuşarelor". Chiar din prima pagină a introducerii se atrage atenţia asupra lipsei de substanţă a denumirii acestor situri, în structura lor nefiind înregistrată prezenţa cenuşei, conform analizelor chimice, geologice şi pedologice realizate în cursul cercetărilor de la Odaia-Miciurin, lucru ilustrat în capitolul VI al volumului. După un istoric al cercetării „cenuşarelor" de la primul moment în care au fost semnalate (1911), al ariei de răspândire (din Urali şi până în Transilvania), precum şi al altor segmente cronologice şi geografice în care mai apar astfel de depuneri, accentul este mutat pe spaţiul dintre Prut şi Nistru, asupra cercetărilor ce au avut loc aici (demarate în anii '1950) şi identificării treptate a tot mai multor situri de acest gen. Caracteristicile tipice „cenuşarelor" Noua, legate de aspect, structurile identificate şi inventarul arheologic, dar şi discuţiile din ultimii ani privind caracterul secular sau cultic al acestor cenuşare, sunt elemente ce s-au constituit în argumente ce au convins autorii de necesitatea combinării cercetărilor arheologice cu cele transdisciplinare, în vederea obţinerii unei imagini mai complexe asupra sitului de la Odaia-Miciurin.

Capitolul II abordează cadrul general al cercetării culturii Noua în regiunea dintre Prut şi Nistru şi etapele investigării sitului de la Odaia-Miciurin, pornind de la semnalarea acestuia, identificarea tuturor movilelor din care este compus situl (în număr de 28) şi până la ultimele cercetări. În cadrul aceluiaşi capitol a fost inserat şi un subcapitol dedicat locuirilor eneolitice şi din epoca bronzului din Câmpia Bălţi (autor Veaceslav Bicbaev). Din cele 87 de situri identificate şi cartate pe baza fotografiilor aeriene, verificate pe teren şi confruntate cu ortofotoplanuri mai recente, 46 sunt fie aşezări singulare Noua, fie aşezări multistrat, având şi depuneri ale culturii Noua. Sunt descrise un număr de 16 situri cu urme de locuire Noua, dar şi Cucuteni-Tripolie, aflate în proximitate, accentul fiind pus atât pe dimensiunile estimate ale siturilor, cu număr de movile vizibile, cât şi pe gradul lor de deteriorare. Dincolo de o îmbogăţire a inventarului de situri Noua, utilitatea catalogului este vizibilă în momentul în care este pusă problema densităţii aşezărilor Noua într-un micro-areal, precum şi modul în care ele reflectă sau nu o „explozie demografică", lucru dezbătut în capitolul de interpretare de către principalii autori ai lucrării.

Capitolul III este dedicat cercetărilor arheologice din patru „cenuşare" – 1 (doar un sfert), 16, 17 şi 21. Pentru fiecare dintre „cenuşare" este prezentată stratigrafia, sunt descrise amănunţit complexele identificate (gropi, construcţii, cuptoare), împreună cu evidenţa materialelor arheologice recuperate (număr de fragmente ceramice, piese de bronz, figurine, unelte litice şi de os, oase de animale, resturi de chirpici etc.) şi cu o cartare a lor pe planul fiecărei movile. Planuri, profile şi fotografii color însoţesc prezentarea extrem de detaliată a situaţiei existente în fiecare „cenuşar". Astfel, se evidenţiază dificultatea raportării stratigrafice a acestor complexe, situaţia din teren nepermiţând o diferenţiere între ele, stratul de cultură din interiorul „cenuşarelor" fiind extrem de omogen. In finalul capitolului III, compararea de către autori a respectivelor structuri cu cele identificate anterior în alte „cenuşare" Noua a dus la evidenţierea unor similitudini. Tot aici este reluată şi tema, dezbătută şi cu altă ocazie de către Eugen Sava, a deosebirilor existente între tipurile de construcţii din aşezările Noua şi cele Sabatinovka şi în principal lipsa folosirii pietrei, pusă nu atât pe seama condiţiilor de mediu (i.e. lipsa unui mediu forestier), cât mai ales pe seama influenţelor estice, Srubnaja-Andronovo.

Capitolul IV, consacrat descoperirilor Noua, este împărţit în subcapitole ce au ca subiecte prezentarea ceramicii, a obiectelor de bronz, os, corn, piatră, silex şi lut. Analiza ceramicii (cu peste 20000 de fragmente) este făcută statistic, pe fiecare „cenuşar", urmărind elementele tipice ale vaselor, modalităţile de tratare a suprafeţei şi tehnicile decorative. Este semnalat gradul ridicat de fragmentare al ceramicii, fapt ce a permis doar în puţine situaţii obţinerea unor forme întregi, relevante tipologic, excepţie făcând în special vasele de mici dimensiuni, ceşti sau căni. De altfel, în ilustraţie sunt prezentate doar 28 de vase cărora le-au putut fi calculate diametrul gurii (două pentru „cenuşarul" 1; două pentru „cenuşarul" 16; 17 pentru „cenuşarul" 17; şi şapte pentru „cenuşarul" 21), dintre care doar un singur vas cu profilul întreg, ce a fost găsit spart pe loc. Ilustraţia grafică şi foto, împreună cu tabele statistice însoţesc prezentarea ceramicii Noua din cele patru cenuşare. Cele 26 de piese de bronz plus câteva fragmente de zgură descoperite sunt descrise într-un catalog, alături de analogii din spaţiul Noua ale respectivelor piese. Obiectele de os şi corn, în număr de 183 şi analizate de Peggy Morgenstern, au fost recuperate în campanile din 2003, 2005-2007, dar în anexa 1 sunt publicate într-un tabel şi piesele din campania 2008. Analiza obiectelor de piatră şi silex, precum şi prezentarea pieselor de lut completează informaţiile privind inventarul atribuit culturii Noua.

Materialele arheologice aparţinând altor epoci, respectiv eneolitic, perioada romană şi cea medievală, sunt prezentate în capitolul V, redactat de către Veaceslav Bicbaev şi Valeriu Bubulici. Publicarea pieselor este realizată în aceeaşi manieră ca şi a celor din epoca bronzului, ţinându-se cont de „cenuşarul" şi complexele din care provin (când există o astfel de situaţie), de tipul de ceramică identificat, însoţite fiind de ilustraţie grafică şi tabele statistice.

Capitolul VI prezintă aportul interdisciplinar al cercetării de la Odaia-Miciurin. Analizele arheozoologice (Michael Hochmuth), antropologice – din „cenuşarele" 1, 16 şi 17 (Bärbel Heussner), arheobotanice (realizate de Helmut Kroll şi Eva Mackowiak), pedologice – în „cenuşarul" 21 şi într-unul din cenuşarele din punctul „La Răţărie" (Michael Facklam), sau cele de sol şi de compoziţie chimică a ceramicii (Malgorzata Daszkiewicz şi Gerwulf Schneider), alături de datele radiocarbon oferă informaţii complementare ce permit autorilor cărţii să formuleze în capitolul următor viziunea lor asupra modului de apariţie a „cenuşarelor". Foarte importante in acest sens sunt rezultatele cercetărilor pedologice şi mineralogice, ce infirmă aportul unor procese de ardere în formarea „cenuşarelor", culoarea deschisă a stratului datorându-se prezenţei ridicate de calciu, explicată prin mineralizarea resturilor de lut în amestec cu resturi organice, acţiune accentuată de condiţiile unui climat mai umed, specific epocii bronzului târziu. Acest proces este demonstrabil şi prin existenţa unui conţinut sporit de fosfor şi calciu, identificat în probele studiate, alături de carbohidraţi, totul indicând lipsa arderii intense a anumitor materiale, ipoteză vehiculată în încercarea de explicare a procesului de formare a cenuşarelor.

În ultimul capitol, VII, este dezbătută problematica formării „cenuşarelor" (obiectiv al cercetării arheologice de la Odaia-Miciurin), a structurii interne a aşezării şi poziţia acesteia în cadrul fenomenului Noua-Sabatinovka. Utilizând datele provenite atât din săpăturile arheologice, cât şi din investigaţiile interdisciplinare, autorii propun propria lor interpretare privind modul de constituire al „cenuşarelor". Astfel, spre deosebire de cele cinci etape de formare propuse de către Ja. P. Gerščovič, analizate şi în carte, se propun doar patru faze corespunzătoare unei mişcări de pendulare, ocupare–părăsire, repetată până în momentul abandonului. Acest scenariu vine în sprijinul interpretării comunităţilor umane respective ca fiind unele preponderent pastorale (în conformitate şi cu datele arheozoologice) şi în cadrul cărora activităţile agricole, aşa cum este indicat de analizele palinologice, au o importanţă minoră. Necesitatea identificării de noi păşuni şi nu o „explozie demografică" ar fi determinat numărul mare de situri Noua-Sabatinovka, iar revenirea la exploatarea păşunilor mai vechi, în momentul în care acestea redevin propice creşterii animalelor, şi reutilizarea sălaşelor mai vechi ar fi condus la formarea a ceea ce astăzi numim „cenuşare". Comparaţii etnografice cu construcţii pastorale şi rurale existente în Republica Moldova, dar şi cu comunităţi pastorale din Anatolia sau Africa sunt utilizate pentru susţinerea interpretării autorilor. Diferenţele existente atât în structura şi numărul de complexe identificate, cât şi in tipul şi numărul de obiecte descoperite în cadrul „cenuşarelor" cercetate sunt evidenţiate, inclusiv grafic, şi puse de autori pe seama unei funcţionalităţi diferite a fiecăruia dintre ele.

Aşa cum am menţionat deja, lucrarea conţine un amplu rezumat în limba română, în care sunt prezentate toate punctele importante, precum întrebările legate de structura şi funcţionalitatea „cenuşarelor" (fapt ce a determinat începerea cercetărilor de la Odaia-Miciurin), principalele rezultate obţinute şi interpretarea acestora de către autori. Lista bibliografică, cu peste 200 de titluri citate, conţine şi referinţe inedite la rapoarte de cercetare aflate în arhiva Muzeului Naţional de Arheologie şi Istorie a Moldovei.

Orientarea atenţiei autorilor către mecanismele de formare a „cenuşarelor" şi identificarea lor drept spaţiu de locuit (sălaşe) al unor comunităţi pastorale a dus însă la o limitare a interpretărilor materialelor identificate la Odaia-Miciurin. Fragmentarea excesivă a ceramicii este consemnată ca atare, fiind deplânsă imposibilitatea realizării unei tipologii adecvate. Cu toate acestea, există şi excepţia reprezentată de vasul spart pe loc în „cenuşarul" 21, ceea ce poate indica şi un anumit regim al depunerilor, diferenţiat de ceea ce autorilor le apare ca fiind rezultatul unor activităţi domestice. Nu s-a insistat însă pe formularea unor posibile explicaţii, altele decât cele deduse din repetatul proces de ocupare–abandon ce ar fi contribuit la această fragmentare. De asemenea, prezenţa oaselor umane în cadrul „cenuşarelor" ar putea atrage atenţia asupra unor semnificaţii mult mai nuanţate ale acestora. Este adevărat că a existat rezerva, pe deplin acceptată, unei nesiguranţe în ceea ce priveşte atribuirea lor, un exemplu în acest sens fiind dat de datarea mult mai târzie a gropii şase din „cenuşarul" 1, în ciuda inventarului atribuit culturii Noua. Teoria Laurei Dietrich privind caracterul acestor depuneri ca spaţiu, în care alături de prelucrarea pieilor de animale au loc şi acte ceremoniale, este considerată incompletă doar prin prisma afirmării desfăşurării a mult mai multor activităţi în cadrul „cenuşarelor", lucru ce nu neagă însă valoarea ipotezei. Observaţiile de mai sus atrag atenţia asupra faptului că

depunerile din cadrul „cenuşarelor" nu trebuie văzute exclusiv ca rezultat al unor activităţi „gospodăreşti", fapt ce de altfel a mai fost analizat de către Eugen Sava într-un studiu amplu dedicat acestei probleme.

O menţionare trebuie făcută şi seriei de date radiocarbon provenite de la Odaia Miciurin. Cele 20 de date se constituie în cel mai important lot pentru datarea culturii Noua, iar rezultatele lor, provenind din complexe sau din interiorul cenuşarelor, asigură o datare între 1450-1100 BC, evidenţiind, în opinia autorilor, procesul de lungă durată al formării „cenuşarelor". Merită însă menţionată şi proba 1 din „cenuşarul" 1 care, cu rezervele datorate atât marjei de eroare cât şi faptului că proba respectivă a fost colectată dintr-un nivel de săpare anterior probei 3, ce este mai recentă, duce datarea sitului până spre sfârşitul secolului XVI BC. În ciuda respingerii de către autori a posibilităţii unei datări ridicate a începutului culturii Noua, aşa cum a fost formulată de către Attila László pe baza datărilor de la Mahala, Crasnaleuca şi Sighişoara, existenţa unei prezenţe mai timpurii măcar în zona nordică a arealului ar putea fi explicată prin prisma unor diferenţieri regionale de devoltare şi difuzare, ipoteză susţinută de acelaşi Attila László. În acest context, intervalul temporal de 1450-1100 în care alături de Odaia-Miciurin (prin celelalte 19 date ^{14}C), Durankulak sau Kastanas se înscrie mai recent şi cimitirul de la Câmpina-Biserica Sf. Nicolae (A. Frânculeasa 2012, p. 94), ar reprezenta momentul în care cultura Noua se manifestă pe întreg arealul cunoscut la acest moment.

Volumul dedicat cercetărilor de la Odaia-Miciurin se constituie până la momentul de faţă în cea mai completă publicare a săpăturilor dintr-un sit Noua. Accentul cade, aşa cum într-un fel este şi anunţat din subtitlu, pe prezentarea rezultatelor arheologice şi a cercetărilor interdisciplinare asociate. Demersul este direcţionat spre explicarea mecanismelor de formare a „cenuşarelor", aportul cercetărilor pedologice şi mineralogice fiind extrem de important. Dacă rezultatele arheozoologice se înscriu în ceea ce ar putea fi numite o medie cunoscută pentru cultura Noua, demonstraţia lipsei proceselor de ardere ca principal motiv al constituirii stratului de culoare cenuşie caracteristic siturilor Noua reprezintă un aport major în cercetarea acestui fenomen. Merita probabil menţionat, în acest context, studiul sedimentologic din cadrul „cenuşarului" de la Grădiştea Coslogeni, care atrăgea atenţia asupra aceleiaşi situaţii, şi anume a lipsei atât a cenuşei cât şi a unor procese termice care să influenţeze constituirea acestor movile (C. Dobrinescu, C. Haită 2005, p. 424). Confirmarea acelor investigaţii de către cercetările la Odaia Miciurin contribuie la redefinirea şi înţelegerea modului de constituire a „cenuşarelor".

Prin multitudinea de informaţii oferite, modul analitic de prezentare a cercetărilor arheologice, dar şi calitatea grafică a ilustraţiei, acest volum se constituie într-un foarte bun instrument în cercetarea bronzului târziu în general şi a fenomenului Noua în special. Posibilitatea de exploatare a acestor informaţii şi de reinterpretare, prin coroborarea de informaţii din alte situri, rămâne deschisă, autorii neîncercând să inducă ideea unei rezolvări definitive a problematicii „cenuşarelor" Noua.

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A. Frânculeasa 2012 — *Arheologie şi istorie: parohia „Sfântul Nicolae"*, Editura Cetatea de Scaun, Târgovişte, 2012.

ABREVIERI

ACMIT	Anuarul Comisiunii Monumentelor Istorice, Secţia pentru Transilvania, Cluj-Napoca
AIGR	Anuarul Institutului Geologic al României, Bucureşti
AJA	American Journal of Archaeology, Boston
AJPA	American Journal of Physical Anthropology, New York
Aluta.	Aluta, Sfântul Gheorghe
AMM	Acta Musei Meridionalis, Vaslui
AMN	Acta Musei Napocensis, Cluj-Napoca
AMP	Acta Musei Porolissensis, Zalău
AMT	Acta Musei Tutovensis , Muzeul "Vasile Pârvan" Bârlad
AnB	Analele Banatului S.N., Timişoara
AO (SN)	Arhivele Olteniei (Serie Nouă), Craiova
ARCIFE	Academia RSR, Centrul de Istorie Filologie şi Etnografie, Seria Antropologică, Craiova
Argessis	Argessis, Studii şi comunicări, Piteşti
Apulum	Apulum, Alba Iulia
ArchB	Archaeologia Bulgarica, Sofia
ARCS	Annals of The Royal College of Surgeons, Londra
ArhMold	Arheologia Moldovei, Iaşi-Bucureşti
ArheologijaSofia	Arheologija. Organ na Arheologičeskija Institut i Muzej, Sofia
ARMSI	Academia Română. Memoriile Secţiunii Istorice, Seria III, Bucureşti
AS (IMP)	Archaeological Series (International Monographs in Prehistory)
B(M)SAP	Bulletin et Mémoires de la Societé d'Anthropologie de Paris, Paris
BA	Biblical Archaeologist, Atlanta
BAI	Bibliotheca Archaeologica Iassiensis, Iaşi
BAR	British Archaeological Reports, Oxford
BAR (BS)	British Archaeological Reports, British Series, Oxford
BAR (IS)	British Archaeological Reports, International Series, Oxford
BF	Before Farming, United Kingdom
BFSC	Buletinul Facultăţii de Ştiinţe, Cernăuţi
BiblThr	Bibliotheca Thracologica, Bucureşti
BMA	Bibliotheca Musei Apulensis, Alba Iulia
BMG	Bibliotheca Musei Giurgiuvensis, Giurgiu
BMN	Bibliotheca Musei Napocensis, Cluj-Napoca
BMJTA	Buletinul Muzeului Judeţean "Teohari Antonescu", Giurgiu
BMSAP	Bulletins et Mémoires de la Société d'Anthropologie de Paris, Paris
BRGK	Bericht der Römisch-Germanischen Kommission des Deutschen Archäologischen Instituts, Frankfurt am Main
BSA	Annual of the British School of Archaeology at Athens, Atena
BSPF	Bulletin de la Société Préhistorique Française, Paris
BSSC	Buletinul Societăţii Ştiinţifice din Cluj, Cluj-Napoca
CA	Cercetări Arheologice, Bucureşti
CAANT	Cercetări Arheologice în Aria Nord-Tracă, Bucureşti
CCDJ	Cultură şi Civilizaţie la Dunărea de Jos, Călăraşi
CI	Cercetări Istorice, Iaşi

CIAAP	Congrès International d'Anthropologie et d'Archéologie Préhistoriques, Bruxelles
Cronica	Cronica Cercetărilor Arheologice, Bucureşti
Dacia (NS)	Dacia (Nouvelle Serie). Revue d'Archéologie et d'Histoire Ancienne, Bucureşti
DocPraeh	Documenta Praehistorica, Ljubljana
Drobeta	Drobeta, Drobeta Turnu-Severin
EJA	Journal of European Archaeology, London
ERAUL	Etudes et Recherches Archéologiques de l'Université de Liège, Liège
Eurasia	Eurasia Antiqua, Berlin
IJO	International Journal of Osteoarchaeology, Wiley Interscience.
IJNA	International Journal of Nautical Archaeology, London
INA	Institute of Nautical Archaeology, Drawer
Izvestija	Izvestija na Arheologiskija Institut, Varna
IzvestijaVarna	Izvestija na Narodnija Muzej (Izvestija na Varnenskoto Arheologičesko Družestvo), Varna
JAS	Journal of Archaeological Science
JEA	Journal of European Archaeology, London
JFS	Journal of Forensic Sciences, West Conshohocken
JMA	Journal of Mediterranean Archaeology, London
JWM	Journal of Wildlife Management, Texas
Materiale	Materiale şi Cercetări Arheologice, Bucureşti
MAU	Materiali z Antropologij Ukrajni, Kiev
MCA (SN)	Materiale şi Cercetări de Arheologie (Serie Nouă), Bucureşti
MemAnt	Memoria Antiquitatis, Piatra Neamţ
MM	Mesolithic Miscellany, Wisconsin
MNIT	Muzeul Naţional de Istorie a Transilvaniei
OJA	Oxford Journal of Archaeology, Oxford
PA	Probleme de Antropologie, Bucureşti
PA – ND	Pervobitnaja Arkheologhija – Naukova Dumka, Kiev
PBF	Prähistorische Bronzefunde
PMMB	Publicatiile muzeului municipiului Bucuresti
PRIA	Proceedings of the Royal Irish Academy, Irlanda
PTRS	Philosophical Transactions of the Royal Society of London, Londra
PZ	Prähistorische Zeitschrift, Leipzig-Berlin
RDAC	Report of the Department of Antiquities, Cyprus, Lefkosia
RSP	Rivista di scienze preistoriche, Firenze
SAI	Studii si articole de istorie
SCA	Studii şi Cercetări de Antropologie, Bucureşti
SCIV(A)	Studii şi Cercetări de Istorie Veche (şi Arheologie), Bucureşti
SE	Sovetskaja Etnografia, Moscova
SP	Studii de Preistorie, Bucureşti
StudPraeh	Studia Praehistorica, Sofia
Tor	Tor. Tidskrift för arkeologi – Journal of Archaeology, Uppsala
VAH	Varia Archaeologica Hungarica, Budapesta

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