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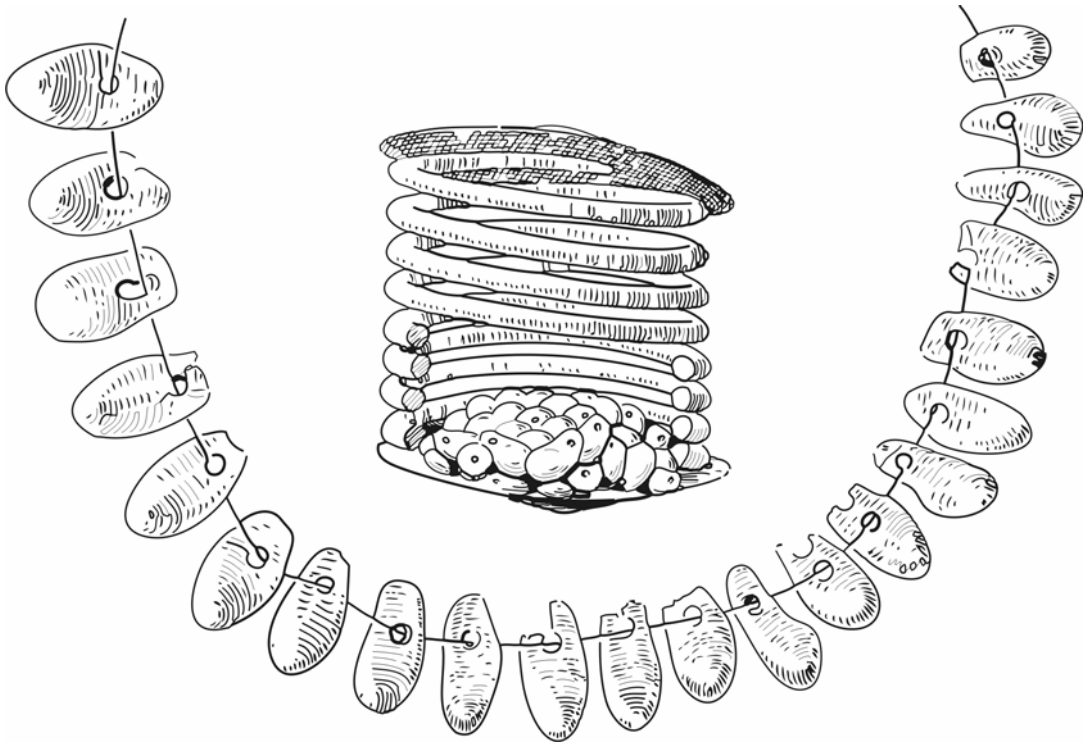

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SUMAR

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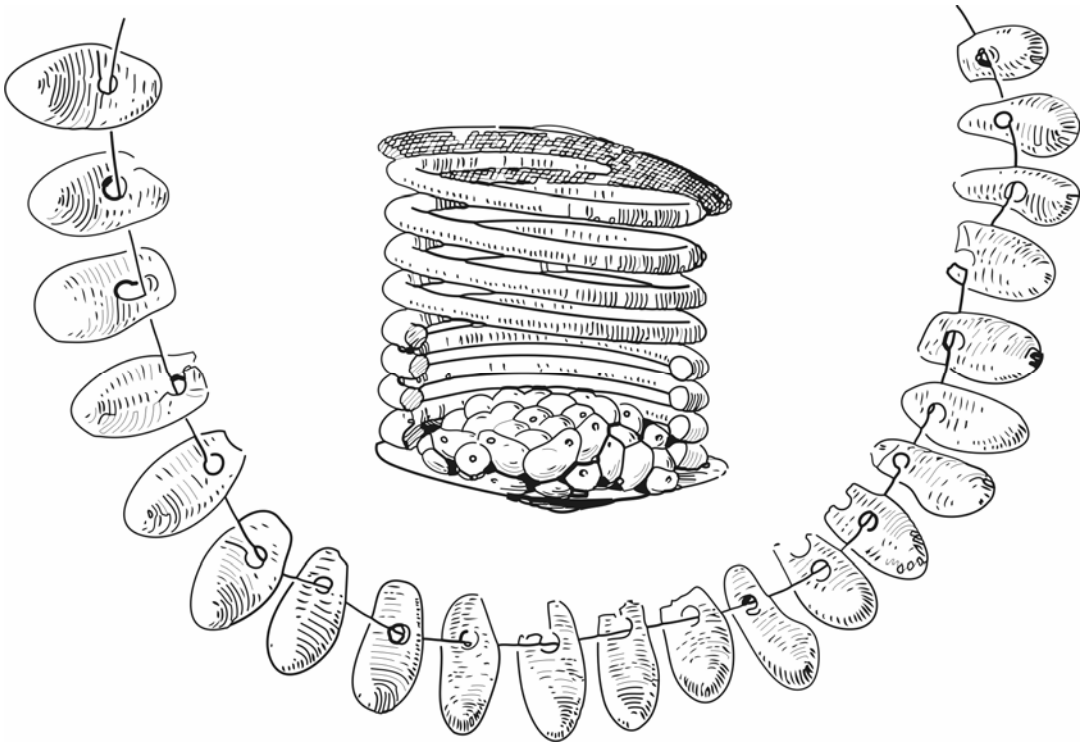

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A S O C I A Ţ I A R O M Â N Ă D E A R H E O L O G I E

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SUMAR

PREZENTĂRI DE CARTE

Interview with Kostas Kotsakis

Douglass W. BAILEY*

Kostas Kotsakis is Professor of Archaeology in the Faculty of History in the Aristotle University of Thessaloniki. He is widely acknowledged as the foremost authority on the Neolithic and wider prehistory of Greece.

Douglass W. Bailey: What is particular in the way that the study of prehistory fits into the archaeology of Greece?

Kostas Kotsakis: That's an interesting question. You must realize that Greece is a country that is dominated by the Classical tradition. Greece as an ideological structure has been built on the Classical past and therefore there has been very little room for prehistory. Prehistory in Greece is mainly the prehistory of the Greeks, of Greek culture, and of the Greek civilization. Until only a few decades ago, prehistoric archaeology in Greece was limited to the study of the Bronze Age civilizations such as the Minoans and the Myceneans and that was it. This situation started to change in the 1960s when a significant amount of work started to focus on the Neolithic. Work by Theocharis and work by foreigners such as Milojčić. So, with this there was an impetus for the study of the Neolithic, but it is always a subject which, in many senses, was peripheral. You can see this in the structure of education. Prehistory is covered by a smaller portion of the university staff, and the programme for the study of the Neolithic is even smaller. In fact, for many years, only the University of Thessaloniki was teaching the Neolithic. Theocharis started it in the 1950s when he was a state archaeologist working for the Archaeological Service. He had experience digging prehistoric sites and working with foreign groups as he did in Mycenae and Pylos. From the mid-1950s he started his work at Sesklo and then in the 1970s he moved to a position at the University at Thessaloniki. There he created an academic space for the study of prehistory, a space for his students to work in; I was one of those students. After Theocharis' death, Hourmouziades took over his position and the Neolithic came into very sharp focus. This created a tradition that characterizes Thessaloniki: the combination of the Neolithic with theoretical interests.

DWB: A common western perspective on archaeology in Greece and in southeastern Europe as a whole is that it is very untheoretical, that it is a tradition that does not engage theory. Is this true?

KK: This perspective is related to the international distribution of academic labour. You must understand that Theocharis was known to the international audience not because of his concepts of the Neolithic but because he was producing and delivering archaeological knowledge and evidence. It is like the Third World countries producing the materials which go to the industrial countries who work with them in the industrial process. Theocharis was producing information about the Neolithic in Thessaly at a time when no one else was producing any evidence. With Hourmouziadis, the process moved on to a second stage which not only used the information but which also involved the use of theory. Hourmouziadis was very interested in theory in the 1970s at a time when there was a lot of theory and discussion. Unfortunately, no foreign archaeologist would go to the trouble of reading the theoretical ideas of a peripheral archaeologist. Because of this, Hourmouziades is well known to the people who specialized in the Neolithic of Greece; they know Hourmouziadis and his work. Though he is now retired, he was a very prominent figurine and was very active. People know of Hourmouziades as the first one to open up the theoretical discussion. Theory was implicit in what he wrote, and theory was much more explicit.

Another aspect which we need to consider is the difference between local and international archaeology. It is true that international Aegean archaeology is not very theoretical; it is very factual. It deals with the factual evidence of archaeology. This is true of the study of the Myceneans and Minoans and, despite the fact here we had evidence for the appearance and the collapse of civilizations, there were no theories about such processes and events until the 1990s.

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Greece was always a region in which the archaeology was factual. The local, indigenous scholar had concerns that were global, but global in the sense that they were trying to give a full description, global as a holistic and complete understanding. They were trying to give a complete understanding to the different aspects of heritage.

DWB: What happens when you have a foreign archaeologist coming into a local area, which has its own tradition of doing work? Greece is the country which appears to be defined by its own and others' interests in its past and in the ancient history of democracy and of philosophy. What happens in the Neolithic archaeology of Greece when someone comes from another country with his or her own research agenda or theory and wants to do work in Greece? Is this different in different parts of Greece, for example for Thessaloniki or for Athens where the foreign schools are located?

KK: Greece is a special case because we have a huge amount of foreign interest in the Greek past. There are more than 20 foreign schools in Athens. This is not something that happens in other countries. Maybe in Italy, but I don't know of any other country where foreign archaeology is so focused and has been so institutionalized. This creates a false conception of the relationships between the local archaeologists and the foreign archaeologists. This is something that is very complicated, and it is difficult to describe. In some ways, it is a love-hate relationship. There are mutual interests, but it is very complicated for both sides and for the way that both sides exploit each other. At present, with the general post-colonial atmosphere, there has been a lot of discussion about what sort of relationship we (as Greek archaeologists) have with foreign archaeologists.

Another aspect is that foreign archaeologists came to the prehistory of Greece with particular agendas, for example, about the Greek civilization. In some cases this is explicit, as with Carl Blegen. In other cases it is more implicit, as with Milojčić. On the first pages of Milojčić's report about his work in Thessaly, he explicitly places Thessaly in the wider world. Why Thessaly in the wider world? Why not some other place? Then you realize that it is part of Greece and it is part of the legends of Greece. This creates a kind of agenda that defines the type of archaeology that developed in the Aegean. With this type of archaeology, you do not need to have much of an anthropological approach because the subject of study is high culture. You don't need anthropology to understand high culture, and you don't need to have all of those sophisticated theories and methods for analyzing the environment (among other things) which developed in other parts of Europe. Instead, you have a more historical archaeology. This gives Greek archaeology a very particular character.

As a center of archaeology, Thessaloniki developed because it was far away from all the institutions in Athens, and away from the areas where most people were working. With the exception of the French working in Thasos and (briefly) at Dikili Tash, and of the British work at Nea Nikomedeia, there was no work done by the foreign schools in northern Greece (i.e., Thessaly and Greek Macedonia). There was no major work done in this region and because of this the northern part of Greece went out of the vision. It was not part of the Greek civilization and cultural excellence. This left a lot of leeway in which Thessaloniki could develop in areas of prehistory with approaches that were not really available in the south or in which the people in the south were not interested. This has given archaeology at Thessaloniki a particular character. It is the consequence of a succession of particular people working at Thessaloniki. This did not happen in Athens with the other major Greek university. Thessaloniki, therefore, has a lineage within the Neolithic and a close relationship to theoretical archaeology. It is a question of people and personalities, but even more it is because we are away from the climate of Athens, of the Myceneans, the Minoans. The north is on the periphery. It is something else. It is an alien area. This position has given us a lot of leeway. It is a more political thing as well. When you are away from the decision makers it is different. When you are near them, you cluster around them, and you lobby them, but you don't actually do very much.

DWB: In Greece, there is a system for regulating foreign fieldwork projects by issuing a limited number of excavation permits to each of the foreign schools. Because of this restriction in excavation permits, there developed in Greece, methods for field-survey and field-walking which are now widely used around the world. Has this system of limited numbers of permits for foreign projects been a good thing or a bad thing?

KK: This is a tricky subject. There are many foreign schools (over 20 now) and the current law says that each school has three permits for excavation, three for survey, and three for *synargosia* (i.e., collaboration with a local *ephoria*). So, that is a total of nine permits per school. For a big school with a lot of resources and academic capital behind it, maybe nine permits are not enough. This is particularly the case when many projects go on longer than originally anticipated. However, for the smaller schools nine is not a small number.

There was a time when the field survey remained outside of the permit system (i.e., in the 1980s), and there was an explosion of field survey projects. The question is whether or not this was a problem. I can understand the need to have a regulation of the quality of the work that people are doing. In certain forms, surface survey is not a purely descriptive method; if the survey collects all the surface materials that it finds, then the method is a destructive one. I can see that this would be a problem. However, if the project is only measuring and counting material on the surface and not picking anything up, then I do not see a problem. Because of this, I would like to see some relief in the regulation of field survey.

Excavation is another situation as it is a destructive process. This is more serious. Here, there is the need for protecting what is excavated; unfortunately, this has not been the experience of all archaeological projects. In the 1970s, some foreign schools would just dig up something and then leave. Basically, this was the destruction of a site. In recent times, things have changed. Excavation projects require a form of control; survey projects require a quality control. These decisions are very delicate. If you are very relaxed, then you allow irresponsible damage to the country's heritage. Heritage is a limited resource, much more than oil and other natural resources. On the other hand, if you are very strict, then you discourage international interest and scholarship; this is not good, especially in the university environment where I would prefer to leave open research activities. However, if I was an administrator, I would be reluctant to let people do work without any constraint.

DWB: Are there Greek archaeological projects that go abroad and dig in foreign countries?

KK: Yes. I had a project that went to Turkey for three years to work at Catalhoyuk, and I think that there is a project in Syria run by a colleague in Ionnina University. So, there are some but not many. There are two reasons for the limited number of Greek archaeologists working in foreign countries. First, it is true that Greek archaeology is very focused on the Greek past. On the other hand, the practical problem of taking a research team abroad is so huge that it negates any benefit that might result. Finding money to do this is difficult, as is finding the people to be part of the team. Then, there is the problem of moving the team into the field. However, this is something that changes rapidly and there is a new generation of archaeologists in Greece now, and they have a much more international aspect and attitude. People are publishing in foreign journals now. This was not the case before; it was not easy to publish in foreign journals.

DWB: One could say that, in general, there are two types of archaeological countries: those that go out and dig in other countries and those that receive foreign teams of diggers. This is an imbalance. How would you describe Greek archaeology's position?

KK: I would be unwilling to give a single definite answer as my interests might be very different from those of other archaeologists in Greece. For example, I firmly believe in the historical aspect of archaeology. In this sense, we are dealing with a specific historical expression or phenomenon, something that happened at a specific time or place. I am not fascinated (as I once was) with generalizations or in making the rules (i.e., the production of a normative archaeology in the sense of setting the rules for phenomena on an international scale, as happens with the laws of physics). I am not interested in doing this and, in fact, I do not believe that one can do such a thing. To generalize and make such rules, one abstracts too much.

I am interested in focusing on particular areas and in understanding a place in depth. This is what we gain from archaeology, a depth of understanding. So I am satisfied to be doing archaeology in Greece in places that might be considered peripheral. While it is interesting to see how the Neolithic developed in Syria, for example, with a Natufian village, it is also interesting to see it developing in Greece. We need space for indigenous archaeology to develop in depth relations with local history.

I am not talking about a provincial archaeology with knowledge restricted by the borders of a political area. You have to have an overall knowledge of what is happening in other areas because you are always comparing. So, it is interesting to know how the Neolithic was developing in Bulgaria, or in Romania, or in Serbia, or in Syria, and it is valuable to compare it to your own experience. However, I do not need to go to Bulgaria to do research. I can do it where I am and I can use the information that comes from that place.

DWB: I understand that in Greek universities, archaeology sits in the History Faculties, that it is one subject (of many others) that a History student takes. How does archaeology sit within the wider academic environment in Greece?

KK: In Greece there are no departments of archaeology. Students who study archaeology have many other subjects to learn as well. Regardless, everyone who has a degree from the faculty of history can actually become an archaeologist by taking an exam and getting a job as an archaeologist. Of course, someone who has done nothing more specific then getting a degree in history has no real chance of becoming an archaeologist. Many people get into the Archaeological Service by getting contracts to do archaeological work and usually these are students who have studied more archaeology than other subjects. After a while, after some years of contract archaeology, they can become archaeologists in the Archaeological Service. It is not ideal, but things are starting to change. There is now a trend to choose students who have completed postgraduate studies in archaeology and thus who have chosen to specialize in prehistory or in the Neolithic. This happens at the Masters level. I doubt now that someone only with an undergraduate degree has enough experience to become an archaeologist. At the Masters level, students get a lot of experience in fieldwork as well as in course work. They are well prepared to work as archaeologists in the field. But this is only after the Masters. We have many undergraduates, 100s and 100s, and it is impossible to educate them to the level of expertise that they get with the Masters training. Most of the archaeology graduates find jobs as high school teachers.

DWB: Where does archaeology sit in relation to the social sciences? What is the relationship with subjects such as social anthropology.

KK: In Greece there is not a big tradition of the social sciences. In general this is for political reasons based on our political past. There was no social science until quite recently. In Greece, the civil war ended in 1950. After that there was at least 12 years of a quite oppressive situation, and then there was a dictatorship for seven years. In 1974, Greece returned to normal democracy. Because of this history, everything that was related to the social sciences and the questions that are part of the social sciences had to wait until 1974. Before that there was only the pretence that social reality was as it should be. This was not science. For the social sciences, one needs openness and a context which allows openness.

Archaeology was alive because it was related to the use of historic evidence; it was very much part of the national ideology. I wouldn't say that archaeology was a self-reflective discipline at this time, but to be realistic, archaeology was not self-reflective anywhere in the world then. Archaeology had a particular ideological history within the state. Part of the dominant ideology of the state was based on historical descent; this was a place in which archaeology could work.

Social anthropology is almost non-existent in Greece. The only person who introduced the ideas of social anthropology was a professor in Thessaloniki in the 1930s; he introduced the ideas of functionalism, Malinowski, and similar concepts. Apart from that, there was folklore and the study of the primitive within the urban culture and the rural aspect; it was about the survival of the ancient Greek culture. At present, social anthropology is developing gradually. There is a Social Anthropology Department in Athens and in a few other places. They are not dealing with continuity of the Greek state; they are dealing with other aspects. In any event, there are very few relations between archaeology and social anthropology.

DWB: In different countries and in different intellectual traditions, archaeology has had different historical trajectories. What has been the trajectory in Greece? Has there been a series of critical moments (e.g., processualism or post-processualism) that archaeology has gone through?

KK: In Greece, for example, the post-processual movement did not happen. Hourmouziadis had introduced aspects of processualism in his work. But he did this with a very different theoretical language, and it was based on very different theoretical concepts when compared with processualism in America or the UK. Hourmouziadis' work had nothing to do with the processual positivist ideas of those other traditions. Greece followed a different trajectory. The main part of this was the relationship with history and a very strong historical perspective. This is why the ideas of Gordon Childe and of culture-history were privileged in Greece. There is a distinct part of Classical Archaeology that is historical, for example in defining your sources. This is a strong tradition in Greek archaeology. This tradition ties in very well with post-processual ideas although from a very different angle from that which was prominent in Britain for example. This sense of a historical archaeology contains this idea of interpreting things in view of their historical depth in a way which is pretty much the same as the post-processual approach to archaeology: but it does not do it with all of the philosophical elaboration that comes through with British post-processualism and its reaction against positivism.

When a classical archaeologist discusses a relief sculpture in Homer for the 286th time, he is actually reinterpreting that in view of historical contingency. Often, I say to my colleagues that even though they do not realize it or even dream of it, and even though they do not know the meaning of the concept, their work is actually very post-processual. You take all of the texts that survive from the ancient word; it is a limited number. These texts are re-read again and again, and each time someone finds something different in them. This creates the sort of continuous reinterpretation which is very much at home with the post-processualist way of thinking. So the whole thing makes a circle back to its beginning.

I often wonder what happens in the German tradition of classical scholarship, because the hermeneutic aspect of philosophy is pretty much a German tradition in central Europe; these things are strands that actually tie together. The German case is of trauma after the Second World War. Because of the abuse of archaeology that took place before the war, all of the concepts in German archaeology became very factual and very realist; in a sense most people were terrified to make any sort of generalization of any type. However, I think that this has changed now. The new generation of German archaeologists is different and is very much excited about interpreting things. I have the feeling that there is a young generation who will rise to the top. They may be the types of people who reconnect the ties with the very important and long tradition of central European hermeneutics that goes back to the eighteenth century. Of course there are many shades of this tradition: the more factual, where you have the interpretation of a reality; or you have more relativistic approaches where interpretation continues. In any event, you have everything there and you can just choose which strand of this tradition you want to tie up with. I would expect that the younger generation who are theoretically exposed (because there is a theoretical discussion going on now) and who have the privilege of reading these texts in their mother language will exploit this potential.

For France it has always puzzled me that the archaeologists have not engaged with the rich tradition of French philosophers, especially as non-French archaeologists have found inspiration in these philosophers. Why do we have a country that has produced all of these interpretations and interpreters like Michel Foucault, Jacques Derrida, Jean-Paul Sartre, and all those phenomenological philosophers, yet in which archaeologists, who know of these traditions, just don't care. Why this happens I do not know. Perhaps, the reason is that French prehistoric archaeology grew up from Palaeolithic studies and that Palaeolithic studies had no room for interpretation. What I mean by this is that they were strongly modeled on the Earth Sciences. There is a lot of scope for interpretation in Earth Science of course. Modeling the Palaeolithic tradition on the Earth Sciences and on stratigraphic excavation gave French archaeology a very positivist aspect; thus, French archaeology is part of the sciences and not of history or philosophy.

DWB: We are now living in a new Europe with the expansion of the EU and archaeology has a pan-European scope (e.g., the European Association of Archaeologists). In these contexts, is it unavoidable that the different strands of local, indigenous traditions will be watered down or lost? Or will some strands of practice and method from one place be picked up and become dominate in

another? Is there a worry about a globalized Europe or a federal Europe, and thus of a general European approach to archaeology?

KK: I don't know if this is a worry, but Europe is definitely moving towards a more unified scene. It is very easy now for a lot of younger people from different countries to find a place in international journals, to find an international stage for their work, and to find international publishing houses for their books. This is bound to happen. All of my students publish in other languages than Greek, and before they finish their PhDs they have published papers in English in international journals.

DWB: But is it dangerous to write articles and books according to the style-sheets and programs of an international (English or otherwise) editorial and intellectual format? One has to write in a particular way to be accepted for publication in particular journals; one writes differently for a local indigenous journal than for a pan-European one. Is this a problem?

KK: I agree. I suppose that this is something that needs to be discussed in each particular country. In Greece we had a traditional of international contact; we have never been isolated from the international scene. There was a time when all of the scholars who worked in Greece wrote in Greek. This is not the case any more. I was always aiming at an international audience more than for a Greek audience that is first of all very small and second which is dominated by a particular structure (at least when I started my academic life). I was not interested in participating in that and I am not interested now either, though things have changed. There was always an internal scope. For example if I was to write for *Archaiologike Ephemeris* which is a very tradition and conservative journal and which (out of choice) I did not to write for, I would have had to write different things in different ways; this was one of the reasons that I never wrote for them.

DWB: Do you think that the journals and the grant-givers have a very powerful role in the ways in which people do research and publish?

KK: Our responsibility in Greece is to support Greek archaeology and to preserve its integrity and its character, and to ensure that it is not assimilated into the global idiom; this is a very clear danger. When the Greek students come back from Britain, having completed their MAs and PhDs, they seem to be assimilated into the British model. The wording that they use is the appropriate wording that they have to write with if they are to be accepted in the British system. This phenomenon is so recognizable that it becomes amusing to see. One very important thing that we try to make our students do (though this is relevant for other countries as well) is to support the local tradition of archaeology without letting is be appropriated by the international scene. They need to support explicitly the indigenous tradition as a viable and correct one. People from this local tradition have said very important things and sometimes they have done so much earlier than anyone else in any other countries. We have to respect this and we have to underline this. As Greek archaeologists, it is our responsibility. We have to support the local traditions. We have to persuade our students to project their ideas with Greek reference and ideas. The local tradition in Romania or anywhere else should not try to imitate the Greece one. There was a time when a lot of value was attached to foreign legitimation and thus people wanted to gain their credentials from outside their own country, from the international community. On the internal scale, this is fine, but one must remain conscious of the local tradition, one has to support it and respect it as heritage.

DWB: For your students, if there were three things that you would insist that they read (in any language) what would they be?

KK: As at this stage of my career I am feeling more theoretical. I would tend to suggest something broadly theoretical, something about our relation with the past, probably David Clarke's *Analytical Archaeology* (Methuen, 1968), which reminds me of my early days. Also I would include Ian Hodder's *Reading the Past* (Cambridge University Press, 1986) but also Theocharis' *The Dawn of Thessalian Culture* (Thessaloniki, 1967).

DWB: Of your own work, what are most proud of? Are there articles that people have not talked about that you feel have been overlooked?

KK: There are some papers that I wrote about the organization of space in the Neolithic, and I think that this has been one of my most important contributions to the ideas of site and the use of space. Also, there are papers that I have written more recently about the beginning of the Neolithic in Greece and about the beginnings of domestication that I would choose. There are many misunderstandings about these things in Greece and I have tried to set these things right. Last year I wrote a paper that presents a general overview of the situation not only in Greece but also in the eastern Mediterranean (including Cyprus) and I think that this gave a good argument about how these things develop, in my opinion at least. My arguments are very different from the dominant views that one can find in the papers of Colin Renfrew on the Indo-European languages and in others peoples' papers about gradual diffusion from the Near East.

DWB: What papers would you write in a different way now than you did when you originally wrote them?

KK: There are many things that I would do differently now, but that is how it should be. For example a lot of things that I wrote in my PhD, I would not underline them now, let along say them.

DWB: There is a popular British interview program called Desert Island Discs, and the final questions ask if you were left on a desert island (and you could have some say in what you had with you), then what book and what luxury item would want .

KK: I don't think that there is a single book; I would need a library not one book. For the luxury, I would want a sail boat.

Milieux, processus, faciès et dynamiques morphosédimentaires des formations travertineuses quaternaires en relation avec les changements climatiques et les occupations humaines entre Méditerranée et Caucase

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Abstract : *Travertine deposits L. S. are related to well define specific processes that are the expression of particular hydrogeologic, geomorphologic and climatic context. Without being exhaustively, this paper list a review of the analytic potential of studies concerning quaternary travertine's evolution for a better knowledge of the relationship between climate / human occupations and morphogenic dynamics. Several examples come from research realised between Mediterranean and Caucasus range in the context of actual international scientific programs. Travertine formations and sequences exposed are inheritances of warm climatic phases and high quality palaeoenvironmental archives showing notably the influence of human occupations on landscape evolution since the Neolithic.*

Rezumat : *Depozitele de travertine (în sens larg) sunt elaborate în urma unor procese bine definite care sunt expresia unor contexte hidrogeologice, geomorfologice şi climatice particulare. De o manieră non exhaustivă, acest articol încearcă să facă un bilanţ al potenţialului analitic al studiilor privind evoluţia formaţiunilor travertinoase cuaternare pentru o mai bună înţelgere a relaţiilor climat / moduri de ocupare / dinamici morfogenice. Mai multe exemple sunt prezentate în urma cercetărilor în curs efectuate între Marea Mediterană şi Caucaz. Formaţiunile şi secvenţele travertinoase prezentate constituie martori ai fazelor de încălzire climatică şi arhive ale paleomediului de o bună calitate demonstrând mai ales influenţa ocupaţiilor umane asupra evoluţiei peisajului începând cu neoliticul.*

Keywords : *Man and environment relationship, Quaternary climates, travertine, morphogenesis, Neolithic, Europe, Southern France, Armenia, Romania.*

Cuvinte cheie : *Relaţii om/mediu înconjurător, climat, travertine, morfogeneză, neolitic, Europa, Franţa de sud, Armenia, România.*

Introduction

Sur un axe compris entre Mer Méditerranée et Mer Caspienne une multitude de formations travertineuses peuvent être rencontrées (fig. 1). Variété des situations liée à la diversité des contextes paysagés, implication d'un large cadre chronologique (de l'Eocène à l'Holocène récent), relations privilégiées avec les occupations humaines, sensibilité aux multiples facteurs locaux de forte variabilité (évènements météorologiques, incendies, etc.) ou aux changements plus généraux (fluctuations climatiques quaternaires globales, impact évolutif des sociétés humaines), sont les atouts majeurs des travertins du pourtour méditerranéen, de Roumanie et d'Arménie.

Les travertins ont fréquemment suscités un grand intérêt de la part des géologues, géographes, préhistoriens et paléoenvironnementalistes. A titre d'exemple, depuis le début des années 80 (XX siécles), de véritables actions de recherche pluridisciplinaires motivées par la richesse intrinsèque de ces formations se sont développées du Languedoc à la Provence (sud de la France) sous l'initiative de Jean Nicod (*formations carbonatées externes tufs et travertins* - Collectif 1981), Jean Vaudour (A.T.P. P.I.R.E.N. : *Les édifices travertineux et l'histoire de l'environnement dans le midi de la France*, -J. Vaudour 1988), Jean Louis Vernet et Jean Vaudour (A.T.P. P.I.R.E.N. *Milieux et anthropisation à l'Holocène en Méditerranée occidentale à partir des sites karstiques*, J.-L. Vernet et J. Vaudour, 1988-1990) ou encore Paul Ambert (G.D.R. 1058: *Travertins et dépressions fermées de piémont : paléoenvironnements et anthropisation des paysages du midi méditerranéen,* P. Ambert

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1997). En revanche, la quasi-absence de recherches dans ce domaine marque les territoires arméniens ou roumains.

Fig. 1. Localisation régionale des sites à travertins étudiés entre sud de la France, Roumanie et Arménie.
Localizarea regională a siturilor cu travertine studiate în Franţa de sud, România şi Armenia.

Les études actuelles, effectuées dans le cadre de programmes internationaux (« Mission Caucase », Programme ECLIPSE, « *Environnements quaternaires du Petit Caucase : forçage du volcanisme, des glaciations et de l'Homme »,* Programme ECONET, *« Paléoéconomie et paléomilieu dans le contexte néolithique européen entre mer Noire et mer Caspienne »*, Programme Collectif de Recherche *« la France méditerranéenne entre deux mondes, diversité biologique, diversité culturelle entre 45 et 35 Ka »*), sont centrées sur un axe Méditerranée-Caucase et s'inscrivent naturellement dans la continuité du travail réalisé par ces différentes actions scientifiques dont les principaux résultats connurent déjà quelques comparaisons à l'échelle européenne (J. Vaudour 1988).

Il ne s'agit pas ici de dévoiler de façon prématurée les résultats en passe d'être obtenus, mais de démontrer par quelques exemples évocateurs, l'intérêt et le potentiel exceptionnel des formations travertineuses présentes au sein des espaces français, arméniens et roumains, actuellement en cours d'étude.

1. Milieux, processus, faciès, intérêt paléoenvironnemental

1.1. Travertins thermogènes et météogènes

La formation de travertins *s.l.* a une double origine. Il convient de distinguer les formations d'origine hydrothermales (travertins thermogènes), résultant de la remontée d'eaux chaudes profondes, riches en minéraux et d'origine volcanique ou géothermique (souvent caractérisées dans ces cas par d'importantes teneurs en CO_2 favorisant notablement le développement des incrustations carbonatées), des dépôts « d'eaux fraîches » (freshwater travertines), issus de systèmes d'exsurgences ou de résurgences « karstiques » (travertins météogènes) se développant en contexte lithologique calcaire, dolomitique ou évaporitique *l.s.* (salifère à gypseux notamment).

Les formations travertineuses « météogènes » (freshwater travertines) sont incontestablement associées aux systèmes karstiques (F. Magnin *et alii* 1991). Ce sont des carbonates externes construits d'origine physico-chimique et biochimique dont l'édification se déroule en trois

étapes : ***prélèvement du calcium*** sous forme de bicarbonate par dissolution de la roche mère par les eaux météoriques (également rôle important de la densification du couvert végétal dans l'augmentation du CO_2 et la dissolution du substratum carbonaté par les acides humiques) ; ***transport de cet élément en solution*** sur une distance variable ; ***précipitation de carbonate de calcium*** plus ou moins pur, par modification de certaines caractéristiques physico-chimiques (pression et dégazage du CO_2, J.S. Herman, M. Lorah 1988 ; L.N. Plummer *et alii* 1979) ou biologiques de l'eau (rôle des cyanobactéries, J.P. Adolphe 1981, 1986 ; P. Freytet, E.P. Verrecchia 1998 notamment), induites par des variations d'ordre géochimique, géomorphologique ou climatique du milieu (M. Campy, J.J. Macaire 1989).

Ce sont en outre des dépôts sensibles et complexes qui réagissent aux moindres modifications de leur biotope par des interruptions de l'accumulation carbonatée ou des changements de faciès (V. Ollivier 2006). Alors que les formations détritiques (alluviales, colluviales, etc.) démontrent classiquement deux étapes de l'évolution morphogénique globale (détritisme, parfois comme vecteur d'instabilités de courtes ou de longues durées, incisions indiquant des ruptures majeures dans les modalités de la sédimentation et des changements dans l'activité des organismes hydrologiques), les séquences travertineuses affichent trois phases déterminantes dans l'évolution de la morphogenèse : carbonatation (stabilité), détritisme (instabilité) et incisions (ruptures). Dans les deux cas l'apparition de phases de pédogenèses est une autre variante synonyme de stabilité. Mais celles-ci demeurent encore trop rares et insuffisamment développées ou conservées au sein des formations, à l'échelle des périodes concernées, pour pouvoir être réellement exploitées de façon systématique. Ce sont également des dépôts riches en données paléoécologiques (conservation des macrorestes végétaux, pollens charbons et malacofaunes dans les faciès crayeux, fossilisation des espèces ligneuses environnantes par concrétionnement, photo 1) de même que des milieux attractifs depuis au moins le mésolithique (J. Vaudour 1994) qui conservent de ce fait des vestiges archéologiques et des niveaux d'occupation humaine.

Enfin, bien que principalement liés aux milieux karstiques, les formations météogènes peuvent toutefois s'exprimer en surface dans d'autres contextes lithologiques (basaltiques ou cristallophylliens) lorsque les exsurgences ou résurgences concernées sont alimentées par des aquifères qui évoluent plus en profondeur dans des niveaux géologiques carbonatés. Celles-ci sont également présentes dans une multitude de milieux, du domaine montagnard à la plaine alluviale, ce qui leur confère une importante légitimité dans la représentativité des évolutions paysagères passées obéissant à des forçages globaux.

Photo 1. Processus actuel d'encroûtement et de fossilisation d'espèces ligneuses (Mada, Roumanie, cliché: V. Ollivier, 2008).
Procesul actual de fosilizare a speciilor lemnoase (Mada, România, fotografie de către V. Ollivier, 2008).

Les travertins thermogènes sont des indicateurs paléoclimatiques moins performants que dans le cas des séquences météogènes car largement inféodés aux remontées géothermales/

hydrothermales relativement indépendantes des contextes et des variations climatiques. Leur élaboration dépend principalement de l'état de ces aquifères profonds dont le fonctionnement s'avère particulièrement complexe. Dans ces contextes, les informations dérivées d'éventuelles influences des oscillations climatiques sur les moteurs de l'accumulation des incrustations carbonatées sont difficiles à percevoir en dehors de toute analyse isotopique ciblée. En revanche, à l'instar des formations météogènes, ceux-ci fossilisent et conservent parfois des empreintes de macrorestes végétaux dont l'étude se révèle précieuse dans le cas de reconstitutions paléoenvironnementales (à l'exemple des travertins de Tatev en Arménie, contenant des empreintes foliaires de platanes et de saules datés à 4.000 BP, P. Roiron, V. Ollivier 2003, pl. 1)**.** Dans certains cas rares, les travertins thermogènes peuvent enregistrer l'impact des occupations humaines sur leur développement à l'exemple du travertin hydrothermal de Germisara (Roumanie, photo 2) ou les aménagements antiques (II^{ème} siècle après Jésus Christ) ont influés sur l'hydrodynamique du système (galeries et canaux drainant) aboutissant à des changements de faciès carbonatés (passage de faciès travertineux construits à des craies par engorgement de la source).

Outre la présence de charbons dans certains niveaux pouvant être datés par la méthode du ^{14}C, les travertins (qu'ils soient météogènes ou thermogènes) constituent eux même des éléments datables par l'analyse du rapport Uranium / Thorium (U^{238}/Th^{232}) dans les parties calcitiques et dont les résultats obtenus ne nécessitent pas de calibration (les marges d'incertitudes peuvent toutefois être importantes pour les périodes récentes et en fonction de la qualité de l'échantillon). Cette caractéristique renforce le potentiel de calage chronologique des évolutions morphogéniques (entre autre analyse) en contexte travertineux.

Les analyses géochimiques des travertins offrent également des possibilités de quantification des paramètres climatiques qui restent encore sous exploitées. Les variations des isotopes par la méthode de l'analyse spectrale notamment (M. Dubar 2006), absolument applicable dans le cas de travertins à lamines de type stromatolitique, permet de retrouver les composantes physiques périodiques du climat. Ces composantes sont particulièrement bien connues aujourd'hui pour l'Europe du Sud grâce aux données météorologiques (Oscillation Nord-Atlantique, Oscillation Arctique, Quasi-Biennial Oscillation, etc.).

Photo 2. Dôme travertineux hydrothermal sur le site archéologique antique de Germisara (Geoagiu Băi, Roumanie, cliché: V. Ollivier, 2008).
Dom de travertin hidrotermal în situl arheologic Germisara (Geoagiu Băi, România, fotografie de către V. Ollivier, 2008).

Compte tenu des potentialités liées à leur importante répartition (dans une majorité de contexte géologiques sédimentaires) et des phasages possibles avec les oscillations climatiques quaternaires et les impacts anthropiques, nous traiterons préférentiellement de formations travertineuses d'origine météogène dans le cadre de cet article.

1.2. Typologie conventionnelle des formations travertineuses météogènes

Selon la typologie géomorphologique réalisée par J. Casanova (1981), les formations travertineuses, peuvent être classée selon trois catégories dépendantes de la morphologie du cours d'eau (fig. 2) : *Les complexes de résurgence* (dimensions modestes, couches à stratification grossières, pendage conforme à la pente topographique) ; *les complexes de barrages* (situés en amont du cours, engendrant une cascade et une retenue en amont, et dont la croissance, progradante vers l'aval, s'effectue par accrétion horizontale sous le contrôle bathymétrique du seuil de la retenue) ; *les complexes de plaine alluviale* (interdépendants avec les dépôts alluviaux détritiques qu'ils compactent ou dans lesquels ils s'interstratifient. Ces deux derniers types concernent particulièrement les formations rencontrées lors de nos investigations.

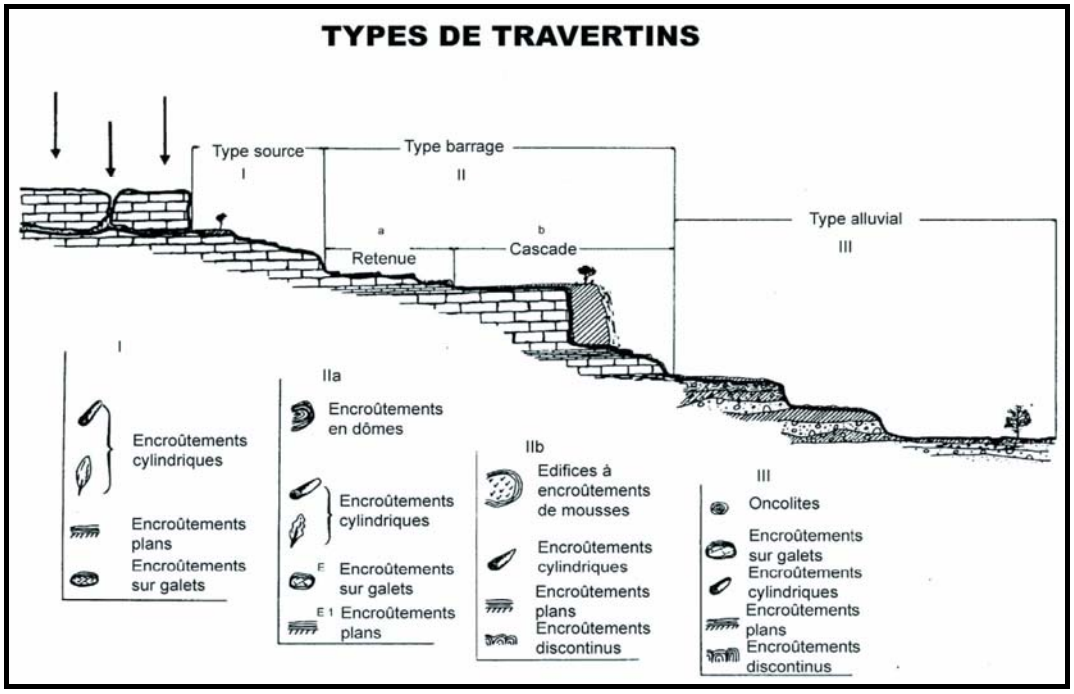

Fig. 2. Typologie générale des formations travertineuses (d'après J. Casanova 1981).
Tipologia generală a formaţiunilor travertinoase (după J. Casanova 1981).

1.3. Les différents faciès et les milieux qui leurs sont associés

Les différents contextes environnementaux dans lesquels se développent les formations travertineuses, les caractéristiques géomorphologiques de leur environnement immédiat de même que l'impact des fluctuations morphosédimentaires et paléohydrologiques (variations de l'hydrodynamisme notamment), génèrent une variété de faciès significative des conditions de dépôts.

On peut ainsi dresser une typologie des différents faciès observés et de leurs modalités de dépôt (F. Magnin *et alii* 1991 ; J.-L. Guendon, en J. Riser, 1999 ; J.-L. Guendon *et alii* 2003, V. Ollivier *et alii* 2006) :

- Les travertins construits (photo 3) résultent de l'accumulation de tapis algo-bactériens calcigènes. Les travertins les plus purs sont bien indurés et adoptent des faciès stromatolithiques rubanés ou laminaires. Lorsqu'ils sont plus tendres, poreux ou vacuolaires, ils sont assimilés à des tufs calcaires (J. Vaudour 1986a). Ces faciès fossilisent fréquemment de nombreux végétaux (feuilles, aiguilles, cônes, troncs, mousses, brindilles, etc.) et leur morphologie (bancs, banquettes, vasques, ressauts, cascades, dômes, etc.) est fortement dépendante du support sur lequel ils se développent. Ils sont généralement associés à des milieux de fort hydrodynamisme (ruisseaux, torrents, chutes d'eau, ruissellements sur versants) et se localisent préférentiellement au niveau des ruptures de pente ou d'embâcles (rochers, branches, etc.). Ces accidents accentuent, par le brassage occasionné, le dégazage des eaux et accélèrent la sursaturation des solutions responsables de la précipitation des carbonates. Les édifices construits peuvent aboutir dans certains cas à la formation de barrages à l'amont desquels se développent des zones palustres ou des étendues lacustres.

Photo 3. Travertin construit à empreintes foliaires (Haghartsin, Arménie, cliché : V. Ollivier, 2007).
Travertin construit din amprente foliare (Haghartsin, Armenia, fotografie de către V. Ollivier, 2007).

- Les craies calcaires travertineuses (photo 4) sont des sédiments fins et meubles, généralement blanchâtres ou grisâtres liés à la précipitation de fines particules carbonatées (M.A. Geurts 1976). La fraction granulométrique représentée est inférieure à 500 µ et le pourcentage de $CaCO_3$ supérieur en moyenne à 70% (V. Ollivier 2006). Ils sont parfois litées en alternance avec de fins niveaux charbonneux, des incrustations oncolithiques, en tubes (encroûtement de débris végétaux), choux-fleurs ou plaques en fonction de l'énergie des écoulements et du type de milieu concerné (alluvial, palustre ou lacustre). Ces dépôts se produisent plutôt dans des contextes environnementaux de faible hydrodynamisme, généralement localisés en amont de barrages travertineux ou latéralement au chenal principal d'écoulement dans le cas des systèmes carbonatés fluviatiles.

Photo 4. Faciès crayeux travertineux (Luberon, Vaucluse, France, cliché : V. Ollivier, 2006).
Faciesuri cretoase de travertin (Luberon, Vaucluse, Franţa, fotografie de către V. Ollivier, 2006).

- Les ensembles travertino-détritiques (photo 5) sont constitués soit d'éléments détritiques allochtones (argiles, limons, cailloutis) mêlés à des concrétionnements autochtones (laminés, à mousses, crayeux, oncolithiques, tubulaires), soit d'éléments clastiques essentiellement travertineux (sables travertineux). Ils proviennent de l'érosion et du remaniement de formations carbonatées en développement en amont et sont souvent localisés sous la forme de lentilles incorporées dans les niveaux crayeux. Ces différents faciès indiquent des érosions de faible intensité qui n'arrêtent pas

totalement l'accumulation travertineuse. Ils dénotent souvent des milieux fragilisés ou naturellement sensibles.

Photo 5. Faciès travertino-détritiques (Luberon, Vaucluse, France, cliché : V. Ollivier, 2006).
Faciesuri travertino-detritice (Luberon, Vaucluse, Franţa, fotografie de către V. Ollivier, 2006).

- Une place à part doit être réservée aux faciès gélifractés (photo 6), spécifiques des formations d'altitude. Ce sont à l'origine des travertins construits laminés, micro-fracturés au fur et à mesure de leur élaboration par le jeu de l'alternance gel/dégel (M. Fort 1981 ; J.M. Mlakar *et alii* 1999). Les concrétionnements fragmentés peuvent subir un transport (gravitaire ou lié au ruissellement) sur une courte distance, et font l'objet d'une cimentation calcitique synsédimentaire dont résultent les faciès micro-bréchiques. L'analyse comparative de formations actuelles en milieu montagnard indique qu'ils se développent préférentiellement dans des zones de faible ruissellement dépourvues de couverture forestière protectrice (qui amoindrie les effets de l'onde de gel), ce qui qualifie ces faciès comme caractéristiques des milieux ouverts d'altitude.

Photo 6. Faciès travertineux gélifracté (Hautes Alpes, France, cliché : J.-L. Guendon 2004).
Faciesuri de travertin rezultate în urma înghețului (Munţi Alpi, Franţa, fotografie de către J.-L. Guendon 2004).

- Enfin, les faciès purement détritiques (photo 7), constitués de sédiments argileux, limoneux, sableux et/ou caillouteux (éléments du substrat parfois mêlés, en proportion largement inférieure aux ensembles travertino-détritiques, à des blocs ou fragments de travertins) se retrouvent à la base des coupes ou à leur sommet. Ils correspondent souvent à de brefs épisodes de crues, des migrations

latérales du chenal principal, des phases d'érosion ou d'instabilité du milieu. Ces dépôts révèlent généralement des épisodes de crises morpho-sédimentaires.

Photo 7. Faciès détritique intraformationnel dans la séquence travertineuse (Luberon, Vaucluse, France, cliché : V. Ollivier, 2006).
Faciesuri detritice intraformaţionale în secvenţa travertinului (Luberon, Vaucluse, Franţa, fotografie de către V. Ollivier, 2006).

- A ces dépôts sédimentaires il convient d'ajouter les marqueurs d'incision (photo 8) : ce type d'évènement morphosédimentaire se distingue par des discordances stratigraphiques, des séquences emboîtées ou par des édifices disloqués lors de glissements de terrain. Les lacunes de dépôts qui en découlent, traduisent des crises morpho-dynamiques majeures, qui se produisent vraisemblablement dans des milieux instables, fragilisés par exemple, par des variations climatiques brutales ou/et des pressions anthropiques fortes.

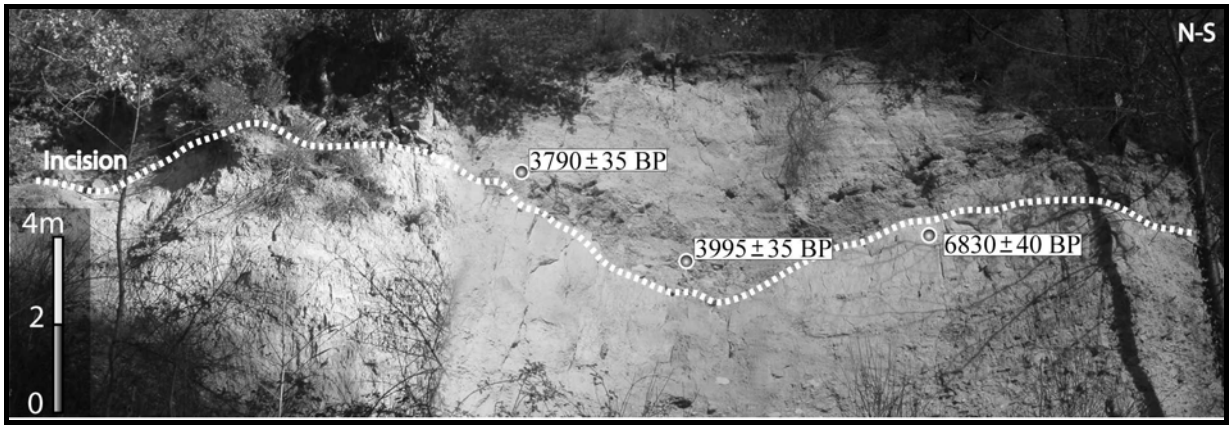

Photo 8. Incision dans la séquence travertineuse (Luberon, Vaucluse, France, cliché : V. Ollivier, 2006).
Incizie în secvenţa travertinului (Luberon, Vaucluse, Franţa, fotografie de către V. Ollivier, 2006).

Dans sa totalité la séquence travertineuse comprend donc : des travertins construits, des craies, des sédiments détritiques et des discordances stratigraphiques liées à des incisions et/ou des érosions. Ces différents faciès peuvent être considérés comme autant de témoins des différents stades d'évolution, des phases de développement continu de la formation aux discontinuités générées par des perturbations d'origines autocycliques (fonctionnement propre du système) ou externes.

2. Climats, occupations humaines, dynamiques morphosédimentaires

L'impact climatique sur le développement des formations travertineuses météogènes est certain. En revanche peu de données récentes semblaient susceptibles de confirmer l'effectivité des perturbations anthropiques sur le développement des systèmes carbonatés. Plusieurs résultats concernant le sud de la France avaient émis l'hypothèse d'une interruption de l'accumulation travertineuse et du démantèlement des formations aux alentours du Néolithique (J. Vaudour 1994). Elle apparaît en fait plus récente et sous contrôle climato-anthropique à partir du Néolithique Final tandis que son expression n'est réellement effective qu'au cours du Petit Age Glaciaire (V. Ollivier 2006).

2.1. Tendances climatiques et développement des formations travertineuses

La relation entre tendances climatiques tempérées (interstadiaires ou interglaciaires) et développement des formations travertineuses est un sujet d'étude privilégié (A. Weisrock 1986, M. Pedley *et alii* 1996, F. Dramis *et alii* 1999, N. Franck *et alii* 2000, N. Horvatincic, R. Calic 2000, K. Zak *et alii* 2002, S. Ordonez *et alii* 2005, notamment). Les mécanismes de la carbonatogenèse (cf. *supra*) s'accordent en effet particulièrement bien avec des conditions climatiques où les températures clémentes, la répartition, les régimes et l'intensité (modérée) des précipitations favorisent, entre autres facteurs, le développement des cyanobactéries, de la rypisylve (microenvironnement propice à la biolithogenèse), d'une couverture pédologique (richesse en CO_2) préservée de l'érosion et des écoulements abondants et réguliers aux eaux fraîches (14 à 15°C paraissent favorables).

Les recherches menées actuellement dans le sud de la France, la Roumanie et l'Arménie soulignent cet état de fait :

En Arménie, l'étude préliminaire de 9 formations travertineuses (7 météogènes et 2 thermogènes) sur un axe nord-ouest / sud-est de plus de 220 km de longueur entre les 41ème et 39ème parallèles (Haghartsin au nord de l'Arménie, Arzni, Aghveran et Arzakan au nord de Erevan, Khndzorut au sud-ouest de Vayk à la frontière du Nakitchevan, Uyts à l'ouest de Sisian au sud de l'Arménie, Shamb 1 et 2 au sud de Sisian et Tatev à l'extrême sud de l'Arménie) ont délivrés une répartition chronologique (datations U/Th et ^{14}C) du développement de ces formations située entre les Stades Isotopiques 9 et 1 (V. Ollivier *et alii* 2006). Chacune des phases de croissance des accumulations travertineuses correspond de manière évidente à de hauts niveaux marins lors de phases interglaciaires ou interstadiaires (fig. 3).

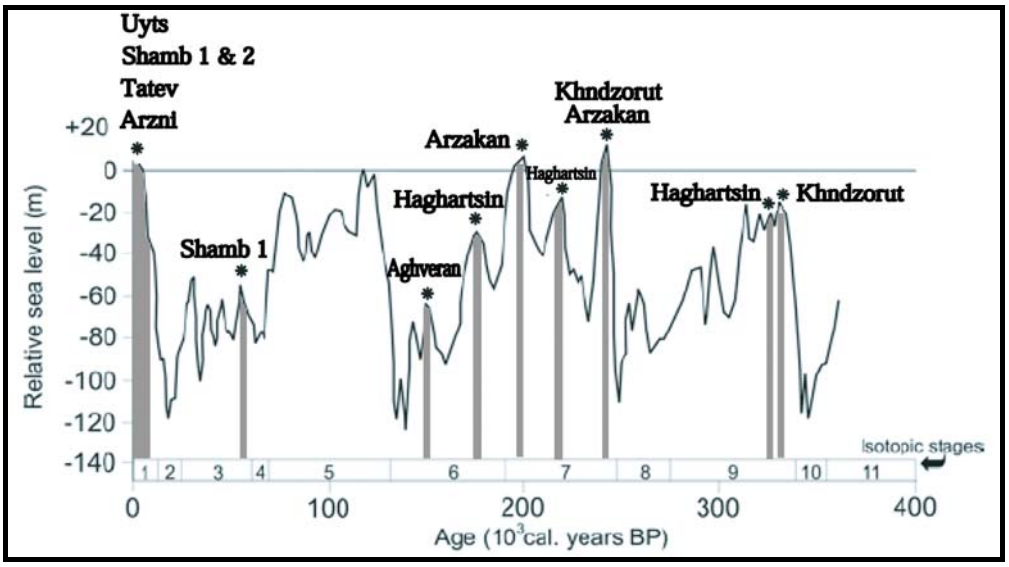

Fig. 3. Localisation chronoclimatique des travertins étudiés en Arménie (Mission Caucase) sur la courbe de fluctuation des niveaux marins globaux.
Localizarea cronoclimatică a travertinelor studiate în Armenia (Misiunea Caucaz) pe curba de fluctuaţii a nivelurilor marine globale.

En Roumanie, les premières analyses géomorphologiques en cours sur les formations travertineuses météogènes (parfois également influencées par du thermalisme) de Geoagiu (photo 9), Cărpiniş, Banpotoc (département de Hunedoara) et Borsec (département de Harghita) semblent

indiquer des âges relatifs pléistocènes (selon la concordance des faciès rencontrés et les relations géométriques des dépôts par rapport aux unités géomorphologiques localement connues) qui pourraient également s'inscrire dans des phases globales de climat tempéré. Dans la partie sommitale de la séquence de Borsec (au niveau de l'ancienne carrière d'extraction de travertins), deux paléosols relativement développés (photo 10) signent des contextes climatiques tempérés et une certaine stabilité morphogénique. Les faciès rencontrés, les premières études sédimentaires effectuées de même que la relation morphostratigraphique observée par rapport à la formation initiale vraisemblablement pléistocène (emboîtement et recouvrement) semblent révéler une seconde formation potentiellement postglaciaire (photo 11).

Photo 9. Formation travertineuse de Geoagiu (Roumanie, cliché : V. Ollivier, 2008).
Formaţiunea travertinoasă de la Geoagiu (România, fotografie de către V. Ollivier, 2008).

Photo 10. Détail des « paléosols » de la formation de Borsec (Roumanie, cliché : V. Ollivier, 2008).
Detaliu al "paleosolurilor" din travertinul de la Borsec (România, fotografie de către V. Ollivier, 2008).

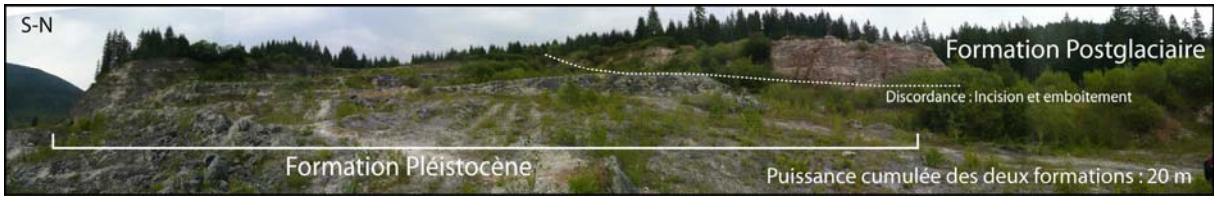

Photo 11. Vue générale de l'organisation morphosédimentaire de la formation travertineuse quaternaire de Borsec (ancienne carrière, Roumanie, cliché : V. Ollivier, 2008).
Vedere generală a organizării morfosedimentare a formaţiunii travertinoase cuaternare de la Borsec (vechea carieră, România, fotografie de către V. Ollivier, 2008).

Enfin, dans le sud de la France, entre Languedoc et Provence, de nombreuses formations s'organisent également lors de phases tempérées de durées variables. Citons par exemple en Languedoc (sud-ouest de la France) les séquences travertineuses de la Rouquette (350 000 BP par UTh, P. Ambert *et alii* 1992), du Chenil (même age), du Château de Creissels (222 000 BP par UTh) ou encore de la vallée du Lez entre 122 000 et 44 000 BP (P. Ambert *et alii* 1995). En Provence (sud-est de la France) nous pouvons également évoquer les cas de Meyrargues (Bouches du Rhône) datées entre 172 900 BP et 144 700 BP à la Papeterie Vasino (dont les analyses du contenu paléoécologique et les datations U/Th obtenues indiquent deux épisodes climatiques tempérés à végétation forestière au sein du Stade Isotopique 6 considéré comme globalement froid, F. Magnin *et alii* 1990), de Roquevaire (Bouches du Rhône) entre 91 000 et 47 000 BP (A. d'Anna *et alii* 1988, J.-L. Guendon 2007, inédit) avec de surcroît le présence d'un paléosol, ou encore de Vinon sur Verdon (Bouches du Rhône) vers 23 400 BP (J.-L. Guendon 1998, inédit).

Mais la question apparaît complexe. En effet, même si ces formations restent statistiquement, tant du point de vue de leur volume que de leur répartition, plus nombreuses et mieux développées en environnements tempérés, divers travaux ont signalé la présence de travertins dans des domaines montagnards d'altitude, au climat froid et rigoureux. On peut citer par exemple dans les Alpes françaises le Queyras (A.-A. Ali *et alii* 2004), le col du Lautaret (J.M. Mlakar 1999), ou dans des contrées plus lointaines, l'Afghanistan (J. Lang, G. Lucas 1970), l'Himalaya (P. Freytet, M. Fort 1980, M. Fort 1981) ou encore l'Argentine (B.-L. Valero-Garcés *et alii* 2001). Le chimisme des eaux lié au degré d'évolution du karst semble un élément déterminant dans le cadre du développement de ces formations (F. Magnin *et alii* 1991). Il convient donc de distinguer le potentiel de travertinisation des eaux de celui de la capacité d'accumulation des systèmes carbonatés, variable fortement dépendante des fluctuations paléohydrologiques et du rapport : intensité du dépôt du $CaCO_3$ / intensité de l'érosion (M. Bakalowicz 1988).

2.2. Occupations humaines et environnements travertineux : des relations privilégiées

Témoins essentiels de la transformation des géosystèmes naturels en géosystèmes anthropisés au cours du Postglaciaire (J. Vaudour 1986b), les édifices travertineux contiennent de nombreux indices ou vestiges d'occupations humaines *in situ* ou dans leur environnement proche. Deux cas peuvent être distingués : celui des formations travertineuses fossiles et celui des systèmes travertineux actifs. Cette distinction est arbitraire car les deux cas peuvent coexister, les formations fossiles étant très souvent proches de systèmes encore actifs.

Parmi les formations travertineuses fossiles (aux époques des occupations concernées), les systèmes en balcon et en cascades présentent des caractères morphologiques qui en font des sites privilégiés : replats suspendus favorables à l'établissement de sites perchés et fortifiés, cavités naturelles recherchées comme lieux d'habitats en grottes, bergeries ou maisons et villages troglodytes. Les cas d'occupations préhistoriques semblent peu connus compte tenu des nombreuses, durables et importantes occupations plus «récentes» qui ont pu diluer l'information ou détériorer les vestiges antérieurs. Nous pouvons cependant évoquer, dans le sud de la France, l'habitat magdalénien du site de l'Estabel à Cabrières dans l'Hérault (P. Ambert 1979-1981, 1993-1998), ou encore les multiples occupations du site de Ségriès (travertins du Pléistocène inférieur) qui s'échelonnent du Moustérien à l'époque contemporaine (M. Dubar, P. Clappier 1989) et de l'abris du Rouet (Carry-Le-Rouet) en ce qui concerne le Tardigravettien (J.E. Brochier, M. Livache 2003 ; Brochier, communication orale).

L'abondance, la pérennité et la qualité des eaux sont sans doute les facteurs essentiels qui font des systèmes travertineux actifs, qu'ils soient alluviaux, de sources, cascadants ou palustres, des sites attractifs fréquentés et occupés de tous temps par les populations humaines. Sans exhaustivité, les travertins de Vendres (P. Ambert 1982 et 1991) ou de Millau, la Rouquette (P. Ambert *et alii* 1989), sont de bons exemples pour le Paléolithique inférieur et moyen, tout comme Pont de Joux en Provence (racloir double moustérien, Paléolithique moyen, A. D'Anna *et alii* 1988).

Avec les périodes plus récentes du Néolithique les occupations de plein air en milieux travertineux deviennent plus marquées et les interactions sur la sédimentation et l'environnement sont alors plus sensibles. Les cas sont multiples et quasi généralisés de la Provence au Languedoc (sud de la France) au moins dès le Néolithique moyen (A. D'Anna, J. Courtin 1986). A titre d'exemples nous pouvons citer les formations de : St. Antonin où l'avant dernier ensemble sédimentaire daté à 4 840 ± 80 BP intègre du mobilier archéologique provenant de gisements périphériques attribués au Chasséen/Néolithique final, (J.-L. Guendon *et alii* 2003) ; Vauvenargues (gisement Néolithique final/ Chalcolithique en place vers 3 040 BC, M. Cheylan, A. D'Anna 1979 ; A. D'Anna, J. Courtin 1986) ; du

Mirail et des Hermitans (niveaux d'occupations du Néolithique final entre 4 737 ± 47 BP et 3396 ± 30 BP, V. Ollivier *et alii* 2004) ou de la Resclauze à Gabian (P. Ambert, A. Delgiovine 1979 ; P. Ambert, 1988; J.E. Brochier 1988).

Bien que souvent bref (J. E. Brochier 1988, 2002), l'impact des modes d'occupation humaine au Néolithique semble avoir une influence sur le bilan accumulation/érosion dans le développement des séquences travertineuses. Dans ce cas précis, une conjonction de facteurs en rétroaction positive, tel que variabilité climatique intra-holocène + poids des occupations humaines ou sensibilité acquise des milieux travertineux + poids des occupations humaines, semble nécessaire pour que les effets de ces « anthropisations » soient plus nettement marqués (cas du Luberon et de la Sainte Victoire en France, V. Ollivier *et alii* 2006 ; J.-L. Guendon *et alii* 2003).

3. Sensibilité des systèmes, cyclicité de l'organisation morphosédimentaire

Les formations travertineuses, de par leur réactivité face aux changements environnementaux d'origine globale ou locale, voient leur organisation morphologique et leurs modes de dépôt varier au cours du temps. L'évolution des pôles sédimentaires et l'enregistrement des ruptures morphogéniques fournissent, lorsqu'ils sont décryptés à la lumière des nouvelles recherches, des informations paléoenvironnementales pertinentes dans le cadre d'analyses sur les relations Homme/milieux.

3.1. Des formations sensibles aux modifications du biotope, des marqueurs privilégiés des changements environnementaux

Dans le sud de la France, des analyses paléoécologiques (anthracologie et malacologie) ont été associées aux études sédimentologiques et géomorphologiques. Elles concernent les formations de St. Antonin (massif de la Sainte Victoire, Bouches du Rhône) et du Mirail (massif du Luberon, Vaucluse) à l'évolution globale particulièrement explicite. Les résultats obtenus par ces recherches témoignent de la nécessité d'une conjonction des facteurs pour engendrer la « mort » progressive des édifices travertineux. Ceux-ci soulignent également l'impact certain des modes d'occupation humaine de la fin du Néolithique sur le développement des séquences carbonatées.

A St. Antonin (fig. 4, J.-L. Guendon *et alii* 2003), la séquence débute au Préboréal-Boréal dans un contexte forestier ouvert (espèces hygrophiles et pionnières de ripisylve et quelques essences mésophiles de la chênaie pubescente) où la travertinisation construite se développe conjointement à un détritisme de départ en diminution progressive. Ensuite, de la fin du Boréal au début de l'Atlantique, le milieu végétal se referme (chênaie pubescente), l'accumulation des travertins devient optimale (selon la relation : densification du couvert végétal, augmentation du CO_2 favorable à la dissolution du substratum calcaire, transport en solution et re-précipitation des carbonates sous la forme de travertins). Celle ci perdure malgré une première ouverture du milieu végétal dès l'Atlantique ancien. Enfin, du milieu de l'Atlantique jusqu'au Subboréal, le contexte environnemental passe d'un milieu forestier ouvert (chênaie pubescente et ronce) à un milieu forestier très ouvert (chênaie pubescente, Pin d'Alep, Genévrier et ronce). L'apparition brutale d'érosions et le retour d'un important détritisme, associés à un mobilier archéologique remanié datant du Néolithique Final, semble s'accorder avec l'ouverture croissante du milieu végétal observée par les analyses anthracologiques et malacologiques. Toutefois, en sommet de séquence, la travertinisation construite reprend.

Dans le Luberon (V. Ollivier, 2006 ; V. Ollivier *et alii* 2006), la formation du Mirail (fig. 5) connaît une évolution en de nombreux points comparable à celle de St. Antonin. L'accumulation travertineuse y débute au Tardiglaciaire sous l'aspect de faciès crayeux (au taux de carbonates moyens constants mais inférieurs à ceux enregistrés pour l'Holocène). A l'Atlantique, les faciès crayeux se développent dans un environnement immédiat palustre bordé d'une forêt ouverte (S. Martin 2004 ; V. Ollivier 2006). L'existence de sols hydromorphes suggère des conditions édaphiques assez stables. Les fluctuations moyennes des taux de carbonates mesurés témoignent d'une stabilité environnementale et d'une régularité dans les apports en $CaCO_3$ et leur accumulation. Seules quelques nappes caillouteuses provenant de petites crues ou de migrations latérales du chenal principal rappellent le caractère alluvial du fond de vallon. Ces décharges détritiques ne sont pas accompagnés d'incisions et n'entravent pas l'accumulation des craies.

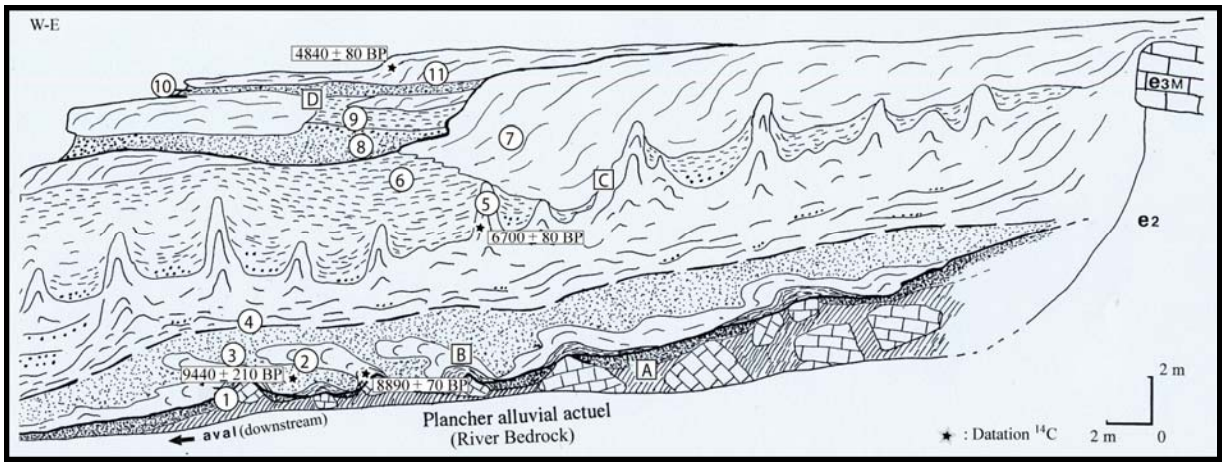

Fig. 4. Coupe d'ensemble des travertins holocènes de la cascade de St. Antonin (massif de Sainte Victoire, Bouches du Rhône, France) d'après J.-L. Guendon *et alii* 2003. Légende : Substratum : e2) Argilites rouges du Paléocène moyen (Thanétien) ; e3M) Calcaire du Paléocène supérieur (Sparnacien) ; Ensemble A : Blocs calcaires et dépôts alluviaux ; Ensemble B : 1) Travertins laminés ; 2) Travertins à mousses, 3) Limon rouge ; Ensemble C : 4) Travertin feuilleté ; 5) Gours à travertin laminé ; 6) Craies ; 7) Cascade de travertin ; Ensemble D : 8) Niveau détritique contenant quelques vestiges remaniés du Néolithique ; 9) Travertin caverneux et limons crayeux ; 10) Niveau détritique ; 11) Travertin vacuolaire.

Vedere de ansamblu a travertinelor holocene de la cascada St. Antonin (masivul Sainte Victoire, Gurile Ronului, Franţa) după J.-L. Guendon *et alii* 2003.

L'alternance entre milieux typiquement palustres et reconquêtes forestières se poursuit jusqu'à la fin de l'Atlantique sans modification notable des faciès travertineux. Dès les installations marquées des populations humaines du Néolithique final dans le secteur (manifestée par de nombreux vestiges archéologiques et plusieurs niveaux d'occupation), de fortes ouvertures du milieu végétal interviennent, des incisions apparaissent et les premiers faciès travertineux construits se développent (fig. 5). En sommet de séquence, la travertinisation se poursuit au moins jusqu'au Moyen Age chaque fois associée à de petites phases d'incisions qui génèrent fréquemment des faciès construits.

Du Tardiglaciaire à la seconde moitié de l'Atlantique, à St. Antonin comme dans le Luberon, les modifications dans l'accumulation carbonatée semblent inféodées aux seules variations des conditions bioclimatiques. Cependant, les fluctuations climatiques ne sont pas suffisamment prononcées pour perturber durablement et interrompre le développement des séquences carbonatées. En revanche, dès la fin de l'Atlantique/début du Subboréal, les variations bioclimatiques (F. Magny *et alii* 2006) associées à l'impact de plus en plus répétitif des occupations humaines du Néolithique se font ressentir. Elles se manifestent par des ouvertures du milieu végétal nettement marquées et par des ruptures dans les séquences travertineuses : des incisions, notamment dans le Luberon, et des changements de faciès dans les deux sites (détritisme à St. Antonin, travertin construit dans le Luberon). Dans les séquences travertineuses du sud de la France, ces changements très brutaux de l'environnement à partir de l'implantation des sites du Néolithique final sont très fréquents. Dans la séquence tourbeuse et travertineuse de Tourves dans le Var par exemple, un important changement des caractéristiques hydrologiques du système est enregistré à partir du Subboréal (V. Andrieu-Ponel, P. Ponel 1999). Les analyses entomologiques et palynologiques indiquent une disparition des conditions palustres au profit d'un environnement d'eau courante dont l'avènement provient peut être de pratiques de drainages associées aux activités agricoles. Dans la formation travertineuse de Vauvenargues (Bouches-du-Rhône), les assemblages malacologiques montrent également une rupture liée à une forte ouverture de la végétation forestière à partir de l'installation des hommes du Néolithique (F. Magnin 1991) sans toutefois remettre en cause l'accumulation des travertins.

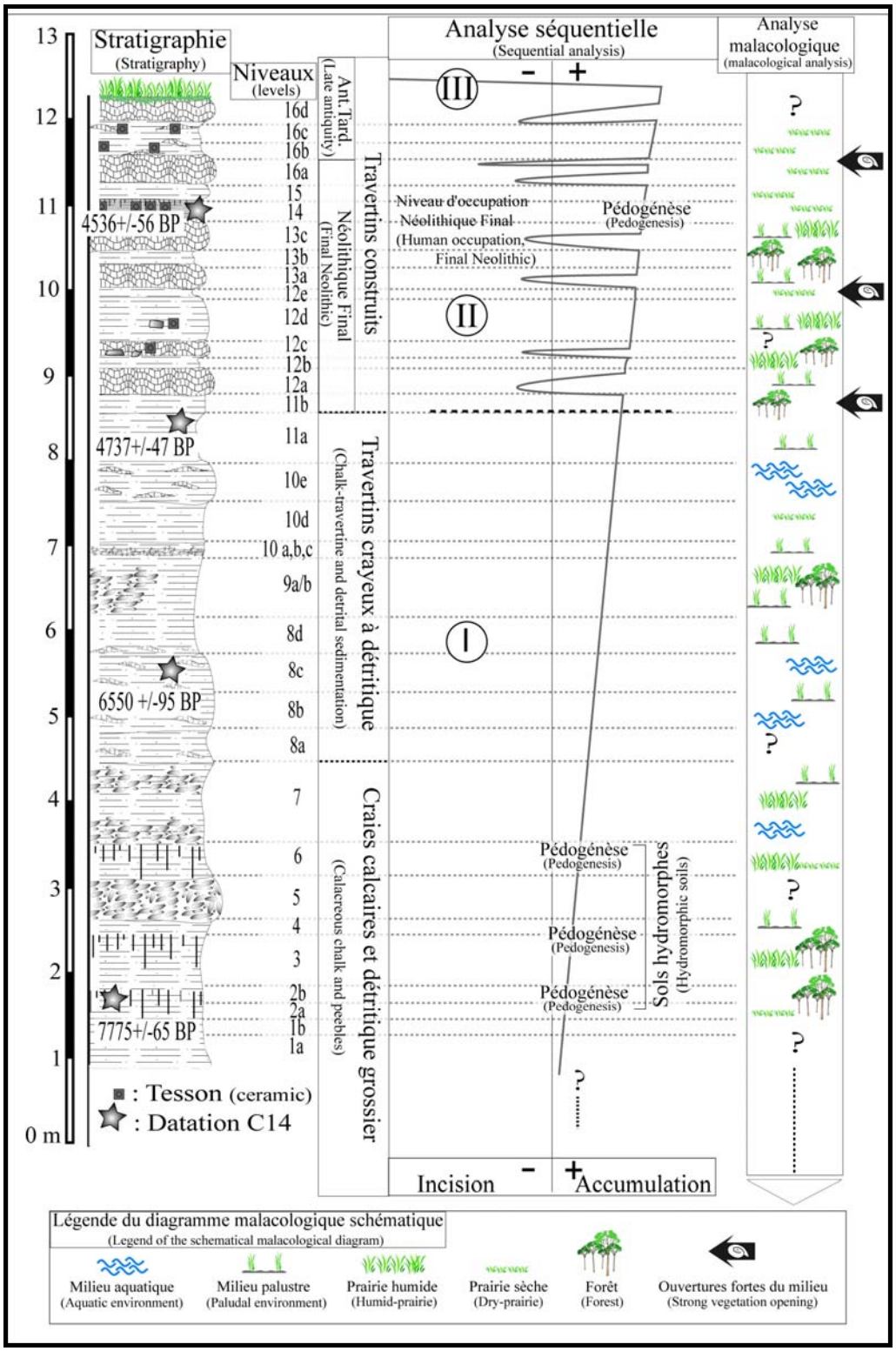

Fig. 5. Analyse séquentielle et paléoécologique de la coupe du Verger-sud (formation travertineuse postglaciaire du Mirail, Luberon, Vaucluse, France). Legende : I) Accumulation continue, contexte environnemental stable ; II) Accumulation discontinue, ruptures, incisions, changements de faciès, instabilité environnementale ; III) Cumul des pressions climato-anthropiques, incision linéaire généralisée des talwegs.

Analiza secvenţială şi paleoecologică a profilului Verger-sud (formaţiune de travertin postglaciar din Mirail, Luberon, Vaucluse, France). Legendă: I) Acumulare continuă, context al mediului înconjurător stabil; II) Acumulare discontinuă, incizii, schimbări de faciesuri, instabilitate a

mediului înconjurător; III) Cumul de presiuni climato-antropice, incizie lineară generalizată a talvegului.

Les pressions climato-anthropiques sur les environnements travertineux apparaissent très clairement à partir du Néolithique et aboutissent à des changements dans les rythmes de la sédimentation (renversements de tendances) et dans l'expression des faciès carbonatés (ruptures morphosédimentaires, travertinisation construite, variabilité des taux de $CaCO_3$, V. Ollivier 2006). Toutefois, il faudra plusieurs millénaires pour que la répétition et l'augmentation du poids de ces contraintes (accroissement des occupations humaines et hausse dans la fréquence des fluctuations climatiques : Rapid Climate Changes 4.2-3.8 Ka cal. BP ; 3.5-2.5 Ka cal. BP, 1.2-1 Ka cal. BP, Optimum médiéval, Petit Age Glaciaire, etc.), qui engendrent des « réajustements » perpétuels dans le fragile équilibre des systèmes travertineux (variations cycliques des pôles sédimentaires), puissent déstabiliser durablement la croissance des édifices (arrêt de l'accumulation carbonatée) et aboutir à une suprématie des érosions et de l'incision sur l'accumulation des carbonates.

De l'Arménie à la Roumanie, quelques séquences travertineuses holocènes récemment découvertes et encore en cours d'étude pourraient avoir enregistré des évolutions comparables (cas probables des travertins supérieurs de Borsec en Roumanie et des séquences d'Arghartsin et de Shamb en Arménie). Les investigations actuelles, établissant des protocoles d'analyses croisées entre géomorphologie, archéologie, paléoécologie, se concentrent sur ce sujet.

3.1. Evolution cyclique de la séquence carbonatée : une succession de relations entre travertins, détritisme et incisions

Une typologie cyclique de l'évolution verticale de la séquence travertineuse a déjà été élaborée en domaine méditerranéen (J. Vaudour 1986a ; F. Magnin *et alii* 1991). Celle-ci définissait deux principaux pôles d'évolution, l'un positif concernant la partie inférieure des formations l'autre négatif dans la deuxième moitié de la coupe stratigraphique, annonçant la « mort » progressive de l'édifice travertineux (F. Magnin *et alii* 1991). Dans le premier pôle, l'enchaînement des faciès débutait par des cailloutis alluviaux, et se poursuivait par des limons ou des argiles, des craies travertineuses puis des travertins construits (principal corps carbonaté de la formation). Le second pôle s'amorçait par des concrétionnements remaniés (sables travertineux, limons à manchons calcitiques, etc.) et était souvent recouvert par une nappe détritique colluviale. Une incision plus ou moins importante suivait généralement la mise en place de ces dépôts, avant que ne se réalise un nouveau cycle sédimentaire travertineux, emboîté ou étagé par rapport au précédent (F. Magnin *et alii* 1991). Cette analyse traduisait une évolution environnementale et morphosédimentaire qui commençait par des conditions de milieux essentiellement détritiques où la travertinisation n'avait pas la possibilité de s'exprimer et de s'accumuler. L'apparition d'un contexte carbonaté au préalable crayeux, qui constituait les premiers stades de l'accumulation travertineuse, suivit de faciès construits (travertins laminés ou rubanés, incrustations recouvrant divers débris végétaux, etc.) représentait au final l'optimum de la carbonatogenèse.

Les recherches sur la dynamique actuelle des systèmes travertineux de Provence (sud de la France) et l'observation de coupes locales et extra régionales dans les formations héritées nous ont amené à préciser cette cyclicité dans l'organisation des faciès carbonatés au sein de la séquence travertineuse postglaciaire (V. Ollivier 2006 ; V. Ollivier *et alii* 2006).

Dans les ensembles travertineux alluviaux actuels, le chenal est généralement le siège de la travertinisation construite et les marges celui de la travertinisation crayeuse (V. Ollivier 2006). Mais au cours de l'évolution morphogénique des systèmes carbonatés de ce type au Postglaciaire, certaines périodes humides (au Tardiglaciaire notamment) étaient plutôt favorables à une travertinisation crayeuse à faibles taux de concrétionnements dans des vallons engorgés (faible déclivité linéaire) à écoulements plus ou moins diffus et de faible hydrodynamisme. Ce n'est qu'à la faveur d'une modification de la tendance morphogénique (passage d'une phase de remblaiement à un épisode d'incision) liée à des variations climatiques et/ou probablement à des interventions humaines (modes de mise en valeur des paysages) sur ces environnements que les faciès construits semblent intervenir (V. Ollivier 2006 ; V. Ollivier *et alii* 2006). La rupture marquée par l'incision engendre une concentration et une accélération des eaux (inclinaison plus forte de la pente et hausse de l'hydrodynamisme) qui favorise le brassage des eaux, le dégazage du CO_2 et l'ensemble des processus physicochimiques et biochimiques qui engendrent les incrustations carbonatées. Le détritisme (cailloutis et parfois artéfacts archéologiques) qui accompagne souvent cette étape ne semble pas inhibiteur de la carbonatation car il est souvent encroûté au fur et à mesure de son dépôt.

Lorsque l'accumulation travertineuse l'emporte sur « l'érosion » du chenal liée à l'incision (pendant un temps plus ou moins long), l'édifice construit poursuit sa croissance verticale et a tendance ensuite à transgresser sur les marges du talweg (V. Ollivier, 2006 ; V. Ollivier *et alii* 2006). Cet exhaussement du chenal principal amoindri à terme la vigueur du profil longitudinal local du cours d'eau et l'hydrodynamisme. Dans ce contexte et avec une potentialité de carbonatation identique des eaux, les faciès crayeux se développent à nouveau. Cet enchaînement de séquences sédimentaires carbonatées se poursuit ensuite au rythme des fluctuations paléohydrologiques et morphogéniques. Il convient de noter que ce type d'évolution morphosédimentaire ne peu s'élaborer qu'au cours d'une augmentation d'assez longue durée de l'hydrodynamisme dans une tendance à l'incision. Les débordements liés à des crues, qui sont de courtes périodes d'augmentation de l'hydrodynamisme et qui n'aboutissent pas à un renversement de tendance morphogénique n'engendrent que le dépôt de nappes caillouteuses qui se mêlent aux faciès crayeux sans en interrompre le développement. Il en va de même pour les migrations latérales du chenal sans incision.

En définitive, dans les ensembles travertineux alluviaux les craies peuvent donc être considérées comme représentatives d'une période optimale de stabilité du milieu tandis que les faciès construits, synonymes d'augmentation de l'hydrodynamisme, apparaissent à la suite de petites incisions dans les niveaux crayeux sous jacents. Dans ce cas précis, la travertinisation construite intervient après une phase d'instabilité morphogénique, de rupture dans le processus d'accumulation. Elle ne signe donc pas forcément un optimum de la carbonatation mais plutôt une étape intermédiaire vers un nouvel équilibre en faveur de la croissance des édifices.

La séquence travertineuse apparaît donc comme un système complexe, sorte d'autopoïèse (capacité d'un système à se produire et à s'auto-entretenir, F.-J. Varela 1989), où chaque perturbation interne ou externe est suivie d'une régénération de l'ensemble selon de multiples formes et en fonction de l'état initial (défini par ses caractéristiques géomorphologiques).

Conclusions

Les formations travertineuses occupent une place privilégiée au regard de leur qualité stricte d'archives sédimentaires haute résolution, mais aussi et surtout, parce qu'il s'agit de systèmes dynamiques et évolutifs aux temps de réponse rapides aux diverses influences et mutations environnementales. Témoins des changements globaux, les formations s'inscrivent au sein de périodes interglaciaires ou signent l'existence d'oscillations / phases climatiques tempérées lors de périodes glaciaires.

Dans le cadre d'analyses stratigraphiques séquentielles, la variabilité des faciès travertineux devient un précieux indicateur des dynamiques paléohydrologiques et morphologiques au sein d'espaces paysagers en perpétuelle mutation. Cet aspect renforce la qualité des enregistrements liée aux capacités de bonne conservation (fossilisations) de ces milieux ainsi que les bénéfices que l'on peut habituellement envisager par l'exploitation de leurs données.

Les raisons des arrêts, ruptures et reprises multiples de l'accumulation carbonatée sont inféodées aux oscillations climatiques d'ampleurs variables de même qu'à l'évolution des modes d'occupations humaines, ce qui les place au premier rang des enregistreurs continentaux dans l'analyse des relations Hommes/milieux selon de multiples échelles spatiotemporelles. L'incrémentation des données issues des séquences alluviales conventionnelles par l'analyse des systèmes carbonatés peut paliier aux fréquentes discontinuités des séquences continentales détritiques qui ne répondent pas de la même façon, ni de manière aussi précise, aux modifications des paramètres responsables de l'évolution, qu'ils soient d'origine climatique ou climato-anthropique.

Emprunts de pluridisciplinarité (archéologie, paléoécologie, géomorphologie, géologie isotopique, paléoclimatologie, etc.) ces milieux soulèvent également des problématiques qui appartiennent aux sociétés actuelles comme la définition des valeurs patrimoniales, des ressources et des modes de gestion durable des systèmes travertineux (zones humides par définition), des milieux karstiques et de leurs aquifères, de l'évolution de la biodiversité, de l'aménagement du territoire et des prospectives climatiques, par la modélisation des données héritées témoignant de la nature des facteurs qui régissaient les dynamiques paysagères dans des contextes différents des notre.

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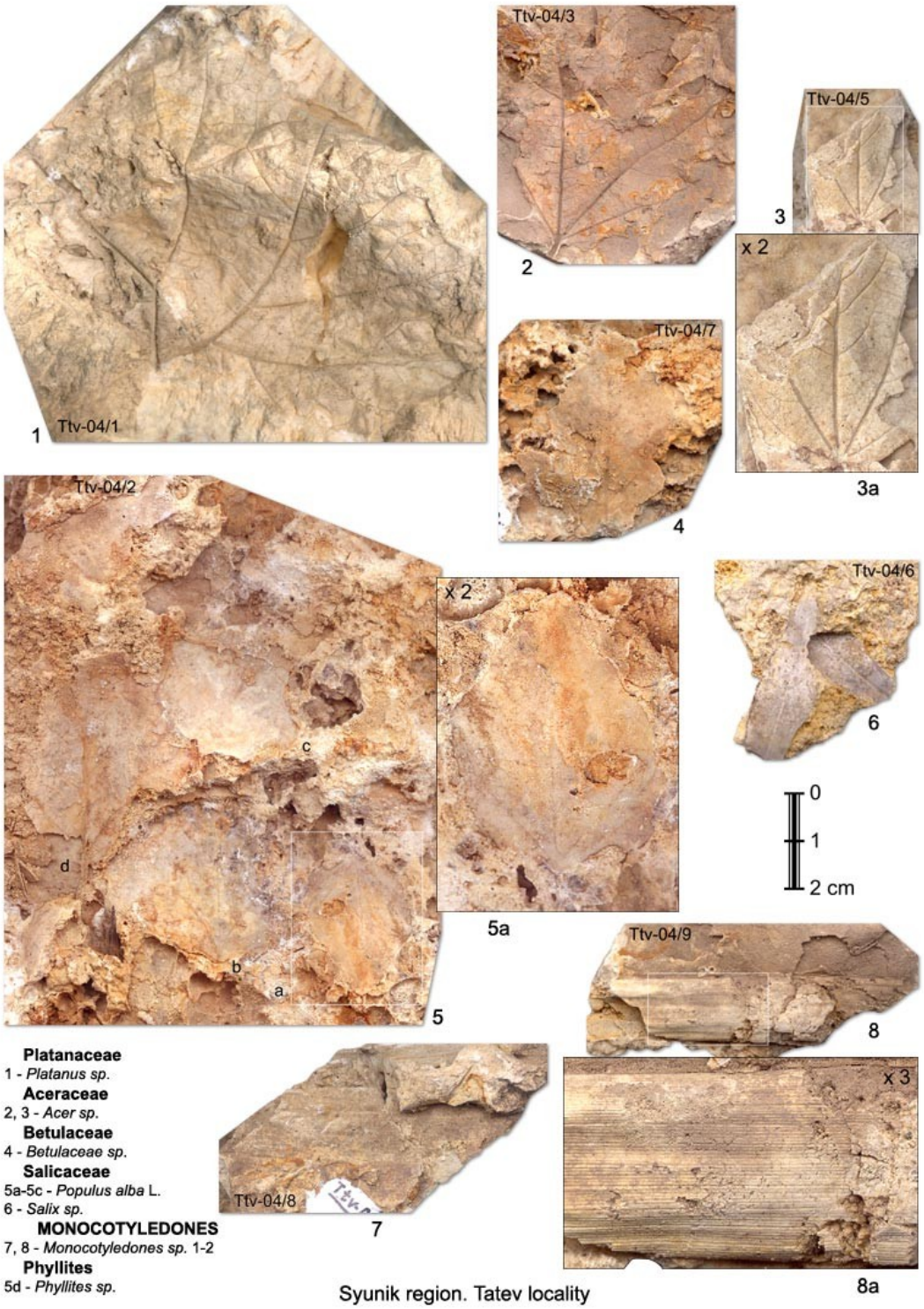

Pl. 1. Empreintes foliaires fossiles, formation travertineuse hydrothermale de Tatev (Arménie, d'après P. Roiron, V. Ollivier 2003).
Amprente foliare fosile, descoperite în travertinul hidrotermal de la Tatev (Armenia, după P. Roiron, V. Ollivier 2003).

Estimating the size of lithic artifact assemblages. A view from the Southern Carpathians Middle Paleolithic

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Abstract: *The current work is focusing on the on the issue of estimating the size of artifact assemblages and uses a recently developed method, for establishing a number of indices with particular relevance to the subject. This method is put into practice to a number of seven Middle Paleolithic assemblages from the Southern Carpathians.*

Rezumat: *Prezenta lucrare analizează problema estimării numărului de artefacte litice şi utilizează o metodă dezvoltată recent, pentru stabilirea unei serii de indici cu relevanţă specială asupra subiectului. Această metodă este pusă în practică pe un număr de şapte industrii litice atribuite Paleoliticului Mijlociu din sudul Carpaţilor.*

Keywords: *Lithic analysis, quantification, fragmentation, Middle Paleolithic, Southern Carpathians.*

Cuvinte cheie: *Analiză litică, cuantificare, fragmentare, Paleolitic Mijlociu, Sudul Carpaţilor.*

Assessing the size of lithic ***artifact*** assemblages and the effects of taphonomic processes over it, should be among the first steps of any lithic analysis studies. Most of the studies provide the overall density of the lithic specimens of a site, whereas establishing the artifact abundance of a site/layer, has not necessarily been the main concern. This is in contrast with the analysis of the faunal archaeological assemblages which definitely absorbed the integration of taphonomic processes and the need of estimating the abundance taxa of an assemblage. Textbooks (L. Binford 1984; R. Lyman 1994; M. Stiner 1994) and journal articles (Y. Abe *et alii* 2002; R. Lyman 1984; D. Grayson 1989; C. Marean *et alii* 2001) dedicated to faunal analysis, abound with procedures relative to counting the animal bones, and indices for establishing the number of individuals, anatomical elements etc.

Although the importance of taphonomic processes and depositional effects over the accumulation of lithic assemblages and site formation processes, trampling damage and edge damage effects has, by no means, been the focus of many archaeologists (G. Clark, M. Barton 1993; D. Crabtree 1972; H. Dibble *et alii* 1997; H. Dibble *et alii* 2006; S. McBrearty *et alii* 1998), the implications of these processes over the abundance estimation, have not been detailed at length until very recently (P. Hiscock 2002).

Most of the studies, when artifact abundance is at focus, either count for only the complete component or flake initiations (e.g. complete and proximal and longitudinal fragments) (W. Andrefsky 1998; H. Dibble and M. Lenoir eds. 1995), or treat the complete and fragmentary components as equal units, as is the case for most of the Romanian lithic studies (M. Cârciumaru 1999; Al. Păunescu 2001). While counting flake initiations, does offer a minimal number of flakes produced (W. Andrefsky 1998), it nonetheless provides low estimates, and a better suited index has been recently developed (see P. Hiscock 2002). On the other hand, the treatment of the whole lithic assemblage component (complete and fragments) as equal units, is even more unproductive, as it overlooks, the effects of fragmentation processes significant for all components of the archaeological record.

Recently P. Hiscock (2002) provided more units toward the estimation of the quantity of knapping activities having as starting point the MNI measure, within the faunal analysis, which gives the minimum number of animals to count for the skeletal specimens (P. Hiscock 2002, pp. 252-255).

Before taking the step forward with this study, it is important to take a short look over the state of the art within the Romanian archaeology lithic studies, relative to the subject. Until recently (R. Dobrescu 2007, 2008; M. Cârciumaru *et alii* 2007), the information relative to the general composition of the lithic assemblages, did not provide a detailed image in respect with the lithic data class and blank types, in terms of providing separate counts for whole and different fragmentary component of the assemblages and, detailed metric attributes. Fragment units, such as, distal and medial components, were not at focus, within older studies, and (except for the retouched component), and were generally considered as fragments and/or shatter. At best, one can distinguish the count of flake initiations, where an analysis of platform types and count has been the focus (see Al. Păunescu 2001). Moreover, when the artifact abundance is the focus, all artifact fragments are counted and treated as equal units, giving, therefore, an overestimate of the actual abundance (M. Cârciumaru 1999; Al. Păunescu 2001, to cite the

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most detailed). This is an actual issue in the recent publications either. I do not want to argue that those products were not recognized, or accounted for, by the archaeologists, but that their importance, in respect with a better understanding toward the general processes that played a major role in the formation of the lithic assemblages, and their consequences, has not been fully addressed.

The aim of this work is to use and explore the utility of such method and the units of measurement, like those provided by Hiscock (2002), at a number of Middle Paleolithic assemblages from the Romanian Southern Carpathians (tab. 2, 3), and to further detail and explore some of them. This research is based on my own analysis of assemblages at hand and recent published data (Al. Păunescu 2001), when available relative to the Flake initiations.

Fragmentation and Minimum Number Estimates

Given that this approach has been detailed at length in the above mentioned paper, I will not go further into detail with it, but will only present its basic characteristics and the calculation steps for the counting units that Hiscock provided (tab. 1). Some of the terms that have been proposed (NAS and MNF for example), are comparable with correspondent indices, such as, NISP and MNI, used in the faunal analysis and, represent the count of the recovered artifacts (complete and/or fragmentary) and an estimate of the minimum number of flakes detached from a core, respectively. As stated by Hiscock, while the NAS do offer a general image of an artifact assemblage composition, it does not measure the size of an assemblage affected by the taphonomical processes (P. Hiscock 2002, p. 252). Therefore, an index of the minimum number of the knapping activities was needed, as well as, derivates of it (see below), as a better understanding of the consequences that fragmentation had over an assemblage abundance, is looked for.

Different fragmentation patterns are characteristic to different sites, irrespective of their cultural or non-cultural processes including, trampling, manufacture, use. A standard classification of fragments, which definitions are given in several lithic analysis textbooks (W. Andrefsky 1998; D. Crabtree 1972; J. Whittaker 1994), is employed here. As such, I have recorded in my own analysis of the subject assemblages, the following categories: *complete flake, longitudinal fragments, transverse fragments (divided in three categories: proximal, medial and distal)*. No *marginal* or *surface* fragments were recorded (see P. Hiscock 2002 for details). The diversity of the fragment types recognized and their density in some of the subject assemblages, as well as, my own results (see below) similar to Hiscock's, strengthen the need for an additional index to that currently used by Andrefsky and other lithic analysts.

Following Hiscock's suggested indices and calculation steps the following equations have been undertaken for the current work:

1. Flake Initiations: C + P + (LCS/2), where C represents the complete flakes, P is the proximal component and LCS/2 the number of the longitudinal fragments divided by 2, considering two fragments per flake. As we shall see, that index will lower the actual abundance especially for the assemblages where distal fragments accounts for most of the fragmented component.
2. MNF index as suggested by Hiscock (2002, p. 254): MNF= C+T+L, where T represents the category of the transverse fragments, excluding medial, and L, the count of the longitudinal fragments displaying the fracture initiation and termination, excluding the medial portions.
3. MNC – Minimum Number of Cores, given by the equation: MNC=complete cores + (core fragments/k), where *k* is the result of mean weight complete cores / mean weight core fragments.
4. MNR – Minimum Number of Retouched artifacts, computed using the same method as for the MNF. Both MNF and MNR indices can and should be further detailed, when different raw materials are present within an assemblage. For the current work I have split the raw material in two categories: coarse grained (quartz, quartzite etc.) and fine grained (flint, jasper etc.). The calculation steps of these indices are similar to MNF and MNR. .
5. MNA – Minimum number of artifacts, as a result of MNF + MNC.

Results and Implications

At first glance it is quite evident that the all the assemblages display a relatively high degree of fragmentation (tab. 2) and a variety of fragmentation patterns, in terms of the general data class, with most of the fragments belonging to the flake terminations (distal fragments). A quite different pattern is distinguishable (tab. 2) when the retouched tools are considered. Invariably the vast majority of them represent the complete items and, a much less significant amount of tools is represented by the fragmented blanks, either the raw materials are considered together or divided by the two groups of raw material established (tab. 3, 5, 6, 7). Of these, the most important components are the distal and the proximal fragments. Given that, the differences between the total retouched pieces, retouched blanks initiations, and MNR are not really significant. However, the variation in medial and distal fragments might mead significant variations relative to the retouched initiations to total retouched ratio and MNR. This might be significant, when larger assemblages (such as Ohaba Ponor - Bordu Mare III) are involved. Therefore the use of MNR is better suited, as well, when the retouched component is of concern. The relevance and importance of the MNF index is quite clear when the overall *artifactual* composition of an assemblage is at focus, and deserves further discussion. A very important difference between my study and Hiscock's is that minimum number estimates resulted from my analysis are tested against the NAS, and not to an actual number derived through refitting. However, the results are very significant and reveal important discrepancies between the NAS, FINI and MNF Indices. First of all, the importance of distal fragmentation pattern leads to very small accounts of the flake initiation index, and hereby lowers the minimum number estimate to an unnecessarily extent. It is necessarily to stress that the discrepancy between NAS and FINI is averaging between 32-55 %. Looking at the MNF index values one acknowledges the fact that it gives a more reliable way as to the minimum estimates of the knapping activities, an idea that is supported by the relationship between the MNF, NAS and MNA (tab. 3, 4).
The MNF is therefore, as suggested by Hiscock as well, a better suited index to use, when assemblages similar to those discussed by Hiscock and myself, displaying more distal fragments, are in the thick of it. Given that the number of medial fragments per flake varies, these fragments are not included in the MNF calculation index. On the other hand, none of these assemblages display an emphasis on medial fragments, nor they represent the only transverse fragment type, within any of the assemblages. For the subject assemblages, the small sample of medial fragments, would not significantly change the ratio NAS: MNF or NAS: MNA, even if the number of the medial fragments would be divided by an average number per flake ranging from 2 to 4, or even more (see P. Hiscock 2002, p. 255) and then added to the MNF, MNA indices respectively (tab. 4, 5; fig. 1)[1]. Anyway, if the context requires it, and especially for the small samples, adding a mean value of the Medial fragments (to count for a Medial index) might be useful to improve for the MNF and MNA estimations overall.

As stated before, those indices may further be used to elaborate the information, by raw material estimates, when available data are at hand and, when the context requires it. This is also a way to diminish the ambiguities that may appear when fragments of different raw materials are counted together for the same index. Therefore, the same calculation steps were followed for what I called the fine grained raw material category (e.g. flint, jasper etc.). This is a result of sampling constraints; otherwise, when large assemblages are available, it is recommendable to distinguish those estimates for each extant raw material category. Nonetheless, even the current context gives interesting and significant results (tab. 5, 6). The results display a fairly different pattern in terms of fragmentation patterns as well as in the degree of fragmentation, from the quartz/quartzite materials. Pursuant to, all the four indices (FINI inclusive) show not much discrepancy and, the NAS-MNF, NAS-MNA relationships are very strong and significantly correlated (fig. 5, 6). The bigger degree of fragmentation for the coarse grained raw materials, overall, is unsurprisingly though and generally characteristic to quartz and quartzite assemblages (V. Mourre 2004). This is happening, mostly, on account of different flaking characteristics of those largely defined groups of raw material, but at the same time, on account of differential access to raw material that stands for differential procurement patterns, reduction strategies and intensity of use. In terms of blank selection another interesting pattern comes to light.

[1] All tables and graphs and statistical tests were run with the SPSS 11.5 for Windows.

It is obvious that for much of the retouched artifacts the complete specimens represent by far the largest number, followed by proximal and distal blanks (distal blanks surpass the proximal fragments, but not significantly, for quartz/quartzite). Although the patterns of blank selection, in terms of the completeness of the blanks selected are similar, the extent of blanks selected to retouch is very significantly different between the two categories, and has much to do with the raw material procurement and use, and the size, overall, of an assemblage, knapped out from a raw material or another. The linear regression analysis is very strong and significant in this respect (fig. 1) (r= 0. 930, r^2= 0. 865, p= 0.002, with MNA and raw material (aggregated) as constant, independent values). There is hereby 87 % explained variation of the percentage of retouched blanks, given by the MNA values overall, by raw material. This is quite remarkably strong and very significant at 0.01 level. The regression scatter plot reveals, as stated above, totally different patterns of blank selection, when the analysis is conducted by raw material categories (fig. 1). Thus, the fine grained raw material reveals a strong positive relationship between the MNA and the frequency of retouched blanks, again very strong and significant (r= 0.9763, r^2= 0.988, p= 0.012) (r= -0.642, r^2= -0.4213, p= 0.120, for coarse grained raw materials), with the MNA explaining for almost 95 % of variation of the frequency of fine grained retouched blanks. The regression scatter plot is very cogent in this respect (fig. 1), with the regression line displaying a very clear positive slope, as expected from the regression values, and the regression points closely lined up along the regression line. As a consequence, the regression *beta* (Pearson's *r*) has a strong positive, significant value (p= 0.012), for 95% confidence degree. The coarse grained raw materials displaying a totally different negative slope, weaker and statistically not significant (see above), suggesting that the bigger the overall density of an assemblage will be, than, the retouch frequency of that assemblage will lower (see also J. Riel-Salvatore, M. Barton 2004; J. Riel-Salvatore *et alii* 2008). This is again quite remarkable given that we are dealing with old collections, inherently biased to a certain degree, by both recovery field methods and collections curation history. These results confirm the expectations of a model, according to which, the retouched tools assemblage richness depends mostly on the size of the retouched assemblage (D. Grayson, S. Cole 1998). Moreover, at least according to these results, the general size of a retouched assemblage and the retouched "types" richness, is expected to be explained through the variation of the size of an assemblage overall, depending upon the context of raw material availability, mobility patterns, geographical setting, settlements systems etc. (G. Popescu *In press*) In most of the cases (W. Andrefsky 1994; P. Brantingham 2003), when raw material is readily available, even though of poorer quality, there is not so much concern for tools curation or for the use of more formalized reduction strategies. This has all to do with the concept of *effective raw material availability*, which has elsewhere been detailed at length (J. Riel-Salvatore, M. Barton 2004; J. Riel-Salvatore *et alii* 2008). However, more analyses and test (on larger assemblages) are more than welcomed in order to test for the validity and strength of those implications.

We must now turn back a little to the indices and, take a short look to the MNC (Minimum number of cores). As suggested by Hiscock, this index is being calculated as a result of complete cores + (core fragments/k), where *k* is the result of mean weight complete cores / mean weight core fragments. Upon circumstances, (e.g. small sample vs. large), the use of MNC index is definitely useful to calculate, but for raw material categories too (when available data at hand). In my analysis it has proven to be useful especially when the Bordu Mare, Peştera Hoţilor and Nandru level 2, were at focus. Given the small sample and the raw material for the rest of the sites involved, the MNC proved to be identical with the total number of cores (complete and fragmentary counted together). Of course, more analysis and larger core samples are needed, in order to refine the results of this index and to make it an even stronger estimate.

After all these indices, been established as they were, both MNF and MNC are reliable to use, keeping in mind however that they reflect, as already argued, minimum estimates of the actual flaking production and objective pieces from which the flakes were break off. They are hereby more reliable estimates when the *artifactual* abundance is at focus. Having established the MNC index it has been consequently possible to be added to the MNF index and produce the MNA index (tab. 3-7). In order to test for the strength of these analyses it is necessarily that the indices MNF and MNA to display a predictive strong positive relationship as a result of both argued to be the reflection of the actual flake abundance of an assemblage (see P. Hiscock 2002). Moreover, it is also expected that the relationship

between NAS and MNA to be similarly modeled and display the similar positive slope, NAS MNA relationship been the reflection of the actual *artifactual* abundance of an assemblage. In order to do that a linear regression analysis is undertaken for both relationships (fig. 2, 3). Once again, in order to strengthen the results reliability, the analysis is run according to the raw material categories. Figures 2 and 3 present the illustration of this relationship and display as expected, a remarkably strong positive relationship between those indices (r= 0.999, r^2= 0.999, p< 0.001, for NAS-MNF and r= 0.999, r^2= 0.999, p< 0.001 for NAS-MNA relationship). Clearly, there is no unexplained variation overall, as the size of the residuals is insignificant, and the regression slope and correlation coefficient are the same. These values hold true when the regression is run within each group (see fig. 2, 3 Rsq. values. They are all significant at 0.01 level). It is therefore quite clear, for assemblages at hand that these indices are valid heuristics for estimating the actual abundance of an assemblage, and MNF can be predicted from the NAS counts. It is expected however, that the advocated relationship to display variation upon different contexts including settlement patterns, regional geographical setting, fragmentation patterns etc. Especially true for the old collections, the recovery methods and collections curation history may be an important bias. No matter how important that variation might be, the general trend it displays should be consistent with the general positive statistical slope. An exception probably being, the very strong biased assemblages.

An argument has been made, for the use of a method recently developed (P. Hiscock 2002) as a heuristic for the evaluation of the actual *artifactual* abundance of a lithic assemblage. My own results, similar to Hiscock's prove that this method is a valuable one for this endeavor. It is therefore expected that it has much to offer for analyses relative to differential reduction strategies, raw material procurement patterns and management and intensity of use, to account for further discussions relative to the land-use strategies and mobility patterns.

Of course more analyses are suited from different other sites, in order to test for its strengths and weaknesses and to draw attention toward different kinds of biases that may affect its overall results. Importantly, this method can be used as a heuristic to evaluate *artifactual* abundance of any lithic assemblage, irrespective of its regional and cultural setting or time span involved.

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Abbreviations

Sites

BHPH – Băile Herculane Peştera Hoţilor;
NPCI – Nandru Peştera Curată Mousterian I;
NPCII – Nandru Peştera Curată Mousterian II;
OPBMI – Ohaba Ponor-Peştera Bordu Mare Mousterin I;
OPBMII – Ohaba Ponor-Peştera Bordu Mare Mousterian II;
OPBMIII – Ohaba Ponor-Peştera Bordu Mare Mousterian III;
OPBMIV – Ohaba Ponor-Peştera Bordu Mare Mousterian IV;

Lithic Class and Blank Class

C.Flake – Complete flake;
L.Fragment-Longitudinal fragment;
D.Fragment-Distal fragment;
M.Fragment-Medial fragment;
P.Fragment-Proximal fragment;
C.Core-Complete core;
F.Core-Core fragment ;
Unret.-Unretouched;
C.tool-Complete tool;
L.tool-Longitudinal tool;
D.tool-Distal tool;
M.tool-Medial tool;
P.tool-Proximal tool.

Raw Material

C.Grained (CG)-Coarse grained;
F.Grained (FG)-Fine grained;

NAS (Number of artifactual specimens)	All recovered artifacts complete or fragmentary
MNF (Minimum number of flakes)	Minimum number of flakes to account for the complete and fragment flakes in an assemblage
MNC (Minimum number of cores)	Minimum number of cores complete to account for the complete and fragment cores in an assemblage)
FINI (Flake Initiations)	Minimum number of flakes to account for the complete, proximal and longitudinal fragments / 2
MNR (Minimum number retouched)	Minimum number of retouched artifacts to account for the complete and fragment retouched flakes
NMA (Minimum number of artifacts)	Minimum number o flaked artifacts in an assemblage.

Tab. 1. Counting units (redrawn from P. Hiscock 2002, p. 252).
Indici analizaţi (după P. Hiscock 2002, p. 252, cu modificări).

Site/ Layer			Blank Class						Total
			Unret.	C.Tool	L.Tool	D.Tool	M.Tool	P.Tool	
BHPH	Class	C.Flake	39	13		0		0	52
		L.Fragment	2	0		0		0	2
		D.Fragment	30	0		2		0	32
		M.Fragment	16	0		0		0	16
		P.Fragment	17	0		0		1	18
		Shatter	18	0		0		0	18
		C.Core	9	0		0		0	9
		F.Core	8	0		0		0	8
		Nonflaked	2	0		0		0	2
	Total		141	13		2		1	157
NPC I	Class	C.Flake	36	17	0	0			53
		L.Fragment	0	0	1	0			1
		D.Fragment	13	0	0	1			14
		M.Fragment	4	0	0	0			4
		P.Fragment	6	0	0	0			6
		Shatter	19	0	0	0			19
		C.Core	5	0	0	0			5
		F.Core	1	0	0	0			1
		Nonflaked	2	0	0	0			2
	Total		86	17	1	1			105
NPC II	Class	C.Flake	41	21		0	0	0	62
		L.Fragment	4	0		0	0	0	4
		D.Fragment	19	0		1	0	0	20
		M.Fragment	6	0		0	2	0	8
		P.Fragment	10	0		0	0	2	11
		Shatter	29	0		0	0	0	29
		C.Core	6	0		0	0	0	6
		F.Core	4	0		0	0	0	4
		Nonflaked	3	0		0	0	0	3
	Total		126	19		1	2	1	149

Tab. 2. Lithic assemblage composition for the subject assemblages.
Componenţa inventarului litic pentru industriile litice analizate.

Site/Layer					Blank Class				Total
			Unret.	C.Tool	L.Tool	D.Tool	M.Tool	P.Tool	
OPBM I	Class	C.Flake	16	5	0	0		0	21
		L.Fragment	3	0	1	0		0	4
		D.Fragment	12	0	0	1		0	13
		M.Fragment	4	0	0	0		0	4
		P.Fragment	4	0	0	0		2	6
		Shatter	13	0	0	0		0	13
		C.Core	2	0	0	0		0	2
	Total		54	5	1	1		2	63
OPBM II	Class	C.Flake	10	5					15
		L.Fragment	2	0					2
		D.Fragment	10	0					10
		M.Fragment	4	0					4
		P.Fragment	4	0					4
		Shatter	5	0					6
		C.Core	2	0					2
		F.Core	2	0					2
	Total		39	5					44
OPBM III	Class	C.Flake	566	85	0	0	0	0	651
		L.Fragment	22	0	1	0	0	0	23
		D.Fragment	354	0	0	11	0	0	365
		M.Fragment	85	0	0	0	2	0	87
		P.Fragment	185	0	0	0	0	9	194
		Shatter	83	0	0	0	0	0	83
		C.Core	38	0	0	0	0	0	38
		F.Core	11	0	0	0	0	0	11
		Nonflaked	12	0	0	0	0	0	12
	Total		1356	85	1	11	2	9	1464
OPBM IV	Class	C.Flake	82	10		0		0	92
		L.Fragment	3	0		0		0	3
		D.Fragment	32	0		2		0	34
		M.Fragment	4	0		0		1	5
		P.Fragment	19	0		0		0	20
		Shatter	8	0		0		0	8
		C.Core	2	0		0		0	2
		F.Core	2	0		0		0	2
	Total		153	10		2		1	166

Tab. 2. Lithic assemblage composition for the subject assemblages (continued).
Componenţa inventarului litic pentru industriile litice analizate (continuare).

	Specimen Counts								Total Counts				
			Transverse			Cores							
Site	Complete	Long.	Proximal	Medial	Distal	C.Core	F.Core	Shatter	NAS	Fl.Ini.	MNF	MNC	MNA
Herculane M	52	2	18	16	32	10	8	18	156	71	86	16	102
Nandru MI	53	1	6	4	14	5	1	19	103	60	68	5	73
Nandru MII	62	4	11	8	20	6	4	29	146	75	83	8	91
Bordu Mare MI	21	4	6	4	13	2	0	13	63	29	38	2	40
Bordu Mare MII	15	2	4	4	10	2	2	5	44	20	25	3	28
Bordu Mare MIII	651	23	194	87	365	38	11	83	1452	857	1028	48	1076
Bordu Mare MIV	92	3	20	5	34	2	2	8	166	114	129	4	133

Tab. 3. Different approaches of counting for the subject assemblages. Coarse grained and fine grained raw materials aggregated.
Diferite metode de numărare a industriilor analizate. Materie primă cu textură grosieră şi cu textură fină combinate.

	Specimen Counts								Total Counts				
			Transverse			Cores							
Site	Complete	Long.	Proximal	Medial	Distal	C.Core	F.Core	Shatter	NAS	Fl.Ini.	MNF	MNC	MNA
BHPH	51	2	18	16	32	10	8	18	155	70	85	16	101
NPC I	26	0	5	3	11	2	1	17	67	31	37	2	39
NPC II	26	3	2	5	10	4	2	31	83	31	39	4	43
OPBM I	18	4	4	4	13	2	0	13	58	24	35	2	37
OPBM II	13	2	4	4	10	2	2	5	42	18	25	3	28
OPBM III	546	22	173	82	340	34	11	75	1283	730	897	44	941
OPBM IV	78	3	18	5	32	2	2	8	148	98	113	4	117

Tab. 4. Minimum number estimates for coarse grained raw material.
Numărul minim estimat pentru materie primă cu textură grosieră.

	Specimen Counts								Total Counts				
			Transverse			Cores							
Site	Complete	Long.	Proximal	Medial	Distal	C.Core	F.Core	Shatter	NAS	Fl.Ini.	MNF	MNC	MNA
BHPH	1	0	0	0	0	0	0	0	1	1	1	0	1
NPC I	27	1	1	1	3	3	0	2	38	29	31	3	34
NPC II	36	1	9	3	10	2	2	0	63	46	47	4	51
OPBM I	3	0	2	0	0	0	0	0	5	5	5	0	5
OPBM II	2	0	0	0	0	0	0	0	2	2	2	0	2
OPBM III	105	1	21	5	25	4	0	8	169	127	131	4	135
OPBM IV	14	0	2	0	2	0	0	0	18	16	16	0	16

Tab. 5. Minimum number estimates for fine grained raw materials.
Numărul minim estimat pentru materie primă cu textură fină.

			Transverse							
Site	Complete	Long.	Proximal	Medial	Distal	NASFG	MNAFG	TOTRet	RetINI	MNRet
BHPH	1	0	0	0	0	1	1	1	1	1
NPC I	8	1	0	0	1	38	34	10	9	10
NPC II	14	0	2	2	1	63	51	19	13	16
OPBM I	2	0	2	0	0	5	5	4	4	4
OPBM II	2	0	0	0	0	2	2	2	2	2
OPBM III	41	0	4	1	4	169	135	50	45	45
OPBM IV	4	0		0	0	18	16	5	5	4

Tab. 6. Minimum number retouched artifacts. Fine grained raw materials.
Numărul minim de artefacte retuşate. Materie primă cu textură fină.

			Transverse							
Site	Complete	Long.	Proximal	Medial	Distal	NASCG	MNACG	TOTRet	RetINI	MNRet
BHPH	12	0	1	0	2	155	101	15	13	14
NPCI	9	0	0	0	0	67	39	9	9	9
NPCII	7	0	0	0	0	86	43	7	7	7
OPBMI	3	1	0	0	1	58	37	5	4	5
OPBMII	3	0	0	0	0	42	28	3	3	3
OPBMIII	44	1	5	1	7	1295	941	58	50	52
OPBMIV	6	0	0	1	2	149	117	9	6	8

Tab. 7. Minimum number retouched artifacts. Coarse grained raw materials.
Numărul minim de artefacte retuşate. Materie primă cu textură grosieră.

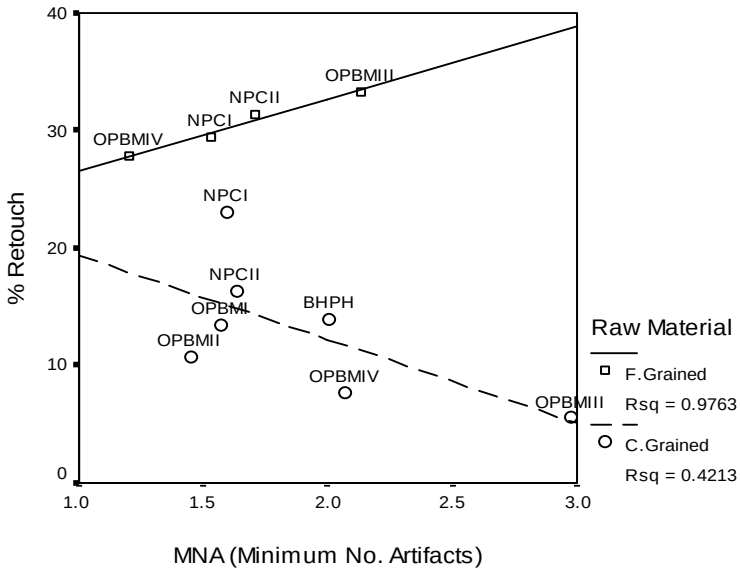

Fig. 1. Model of the relationship between the MNA and retouched frequency (%) for the subject assemblages by raw material; r= 0.988, Rsq.= 0.9763, p<0.012, for fine grained raw materials; r= -0.642, Rsq.= -0.4213, p= 0.120, for coarse grained raw materials.
Modelul relaţiei dintre MNA şi frecvenţa retuşării (%) pentru industriile litice studiate, pe tip de materie primă; r= 0.988, Rsq.= 0.9763, p<0.012, materie primă cu textură fină; r= -0.642, Rsq.= -0.4213, p= 0.120, materie primă cu textură grosieră.

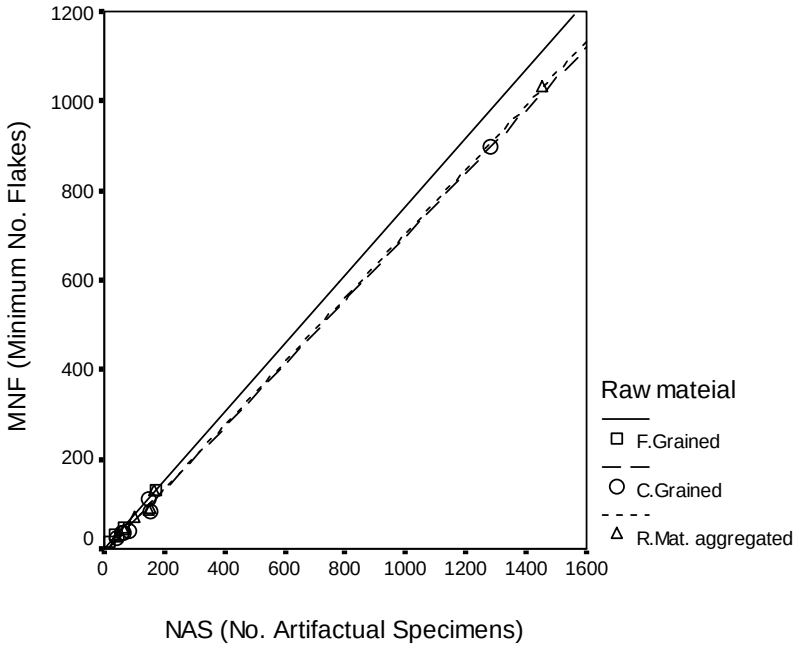

Fig. 2. Regression analysis of the relationship between the NAS and MNF, by raw material category; Rsq.= 0.999, R= 0.999, p< 0.001 for fine grained raw materials; Rsq.= 0.999, R= 0.999, p< 0.001 for coarse grained raw materials; Rsq= 0.9998, R= 0.999, p< 0.001, raw materials aggregated.
Analiza de regresie a relaţiei dintre NAS şi MNF, pe tip de materie primă; Rsq.= 0.999, R= 0.999, p< 0.001 materie primă cu textură fină; Rsq.= 0.999, R= 0.999, p< 0.001 materie primă cu textură grosieră; Rsq= 0.9998, R= 0.999, p< 0.001, ambele categorii de materie primă combinate.

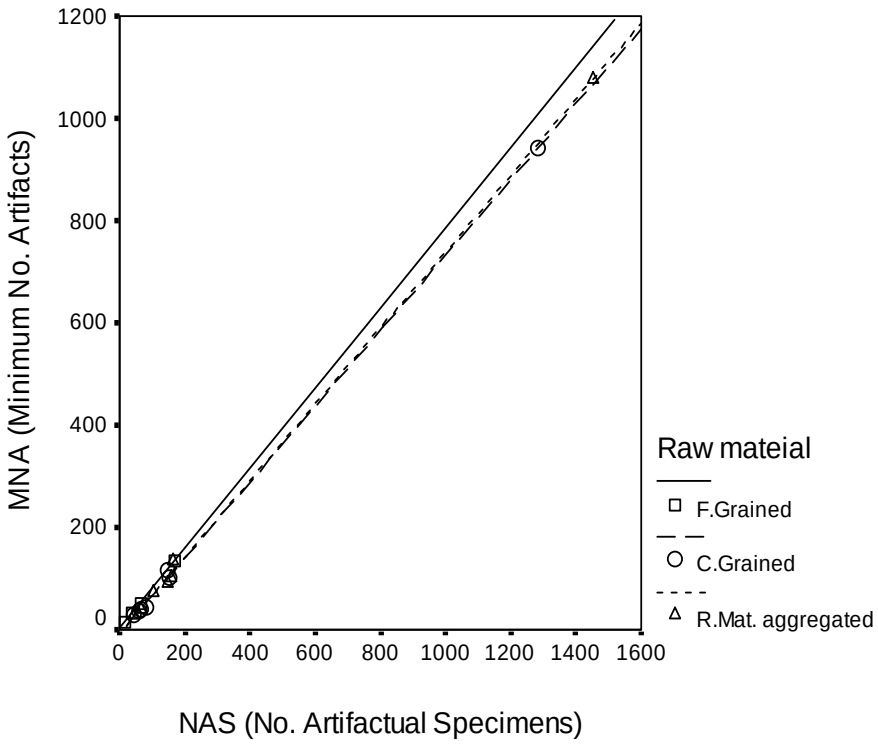

Fig. 3. Regression analysis of the relationship between the NAS, and MNA, by raw material category; Rsq.= 0.999, R= 0.999, p< 0.001 for fine, grained raw materials; Rsq.= 0.999, R= 0.999, p< 0.001 for coarse grained raw materials; Rsq= 0.999, R= 0.999, p< 0.001, raw materials aggregated.
Analiza de regresie a relaţiei dintre NAS şi MNA, pe tip de materie primă; Rsq.= 0.999, R= 0.999, p< 0.001 materie primă cu textură fină; Rsq.= 0.999, R= 0.999, p< 0.001 materie primă cu textură grosieră; Rsq= 0.999, R= 0.999, p< 0.001, ambele categorii de materie primă combinate.

The Icoana burials revisited

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Abstract: *The paper summarizes the formal burials and isolated human remains from the Mesolithic/Early Neolithic site of Icoana in the Iron Gates of the Danube. All the available information on the burials, as taken from the field notes and site plans is being presented for the first time after 40 years. A list of all the (remaining) isolate human remains found on the site, part of the collection of the Center for Anthropological Research "Francisc Rainer", is also given. The paper aims to be a first step in the attempt of the full publication of the archaeological records on the Mesolithic and Early Neolithic sites in the Iron Gates, hopefully leading to a better understanding of the Mesolithic-Early Neolithic transition in the area.*

Rezumat: *Articolul trece în revistă mormintele și resturile osteologice umane izolate descoperite în situl mezolitic/neolitic timpuriu de la Icoana din zona Porților de Fier ale Dunării. După 40 de ani de la cercetări este prezentată informația integrală conținută în carnetele de șantier și planurile întocmite în anii '60 ai secolului trecut. O listă a resturilor osteologice umane izolate, aflate în colecțiile Centrului de Cercetări Antropologice "Francisc Rainer" din București este de asemenea prezentată, împreună cu informația antropologică aferentă. Articolul se dorește să fie un prim pas spre publicarea completă a materialului și documentației arheologice a siturilor mezolitice și neolitice timpurii din zona Porțile de Fier, în speranța unei mai bune înțelegeri a perioadei de tranziție între cele două epoci.*

Keywords: *Iron Gates, Icoana, Mesolithic, Neolithic, burials.*
Cuvinte cheie: *Porțile de Fier, Icoana, mezolitic, neolitic, morminte.*

One of the most important features of the Iron Gates Mesolithic is the relatively large number of human burials uncovered on sites such as Lepenski Vir, Vlasac, Padina on the right bank of the Danube and, so far, only Schela Cladovei on the left bank. Among the sites excavated on the Romanian side, only Icoana provided other human interments: two relatively complete skeletons and an isolated skull (V. Boroneanț 2000, p. 112, 351, pl. 99, 1-2; 1970, p.18). Recently, another fragmented skull (not mentioned in the field notes), found in the collections of the Center for Anthropological Research „Francisc Rainer" in Bucharest, was published and dated (A. Dinu *et alii* 2007, p. 38-39).

The archaeological site of Icoana (former village of Ogradena, Mehedinți county), nowadays covered by the Danube waters, was located at the foothills of the Ciucaru Mic mountain, in the area of the Little Cauldrons of the Iron Gates (at approx. 100 downstream km 966 – fig. 1).

The excavations were conducted by Vasile Boroneanț in three consecutive campaigns from 1967 to 1969. This relatively long time interval is deceiving as the excavations actually lasted for only 31 days as a whole[1]. 8 trenches were opened, known as SI to SVIII, with a total surface of approx. 90 sqm. SI-SVI, SVIII were dug on the narrow land strip running along the base of the old road but some 6 m lower, in a floodable area in the very proximity of the Danube, while SVII was located on the mountain slope, above the old Austrian road. Prior to the excavations, in order to clear the area of the large boulders and the debris, fallen from up the slope, dynamite was used[2].

SI was excavated in 1967. Two trenches were opened in 1968, both running along the river bank: SII (9.25 x 2 m) and SIII (6 x 2.30 m), with approx. 6 m left between them (also excavated the next year and marked as SIV). At the time the river level was already very high due to the increase in the water of the artificially created lake for Iron Gates I power-plant, with the Danube level fluctuating very often, at times covering the site completely (fig. 2). SIV-SVII were excavated in 1969 while the water level was increasing constantly and SVII was opened higher up, on the mountain slope above the road and excavated when the river bank was inaccessible.

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[1] November 1-5, 1967; September 23-27, 1968 and October 23-November 2, 1968; July 28-August 7, 1969, V. Boroneanț, Icoana. Field notes 1967-1969.
[2] The controlled explosions were planned and carried out with the full support of the border troops. They took place on September 25, at 9 and 9.30 am, respectively 3.30 and 4 pm (V. Boroneanț, Icoana field notes 1968).

We offer below a summary of the field notes for trench SII, vital for the discussion of the human burials, previously only extremely briefly mentioned in publications (V. Boroneanț 2000, p. 112). A complete discussion on the Icoana site and its issues is under preparation (A. Boroneanț, forthcoming).

The SII trench was excavated in 4 squares: sq. 1, 2 and 3 measured 2 x 2 m each, while sq. 4 covered the remaining 3.25 x 2 m. Apart from the area where burials or features were observed, the surface was excavated in 10 cm spits and the resulted soil was dry-sieved (fig. 3). The depth was measured from the foundation of the protection wall of the old Austrian road, built in 1780.

The archaeological finds uncovered down to -0.30 m of depth were mixed: small fragments of Starčevo-Criș pottery and some "atypical" ones, abundant lithic material (quartzite and flint), faunal remains. No pottery was recorded lower than 0.40-0.50 m, only bone tools (the notes mention a spatula, a bone point, burn bone fragments), flint (a backed blade) and quartzite flakes. The excavator noticed a trapeze shaped platform, of hardened soil with lots of ashes and traces of burning, cut to the west by the wall foundation of the road. Based on the photographs, it seems to have occurred at a depth of approx. 0.30-0.40 m. Several slabstones of large size, more or less rectangular in shape and fired on one or several sides, were seen as fragments of a possible hearth. The finds from the platform consisted of many quartzite flakes, bones - many of them burnt, flint tools, fragments of bone tools. It seemed the platform covered almost the entire surface of sq. 2-4, with finds concentrating in square 2 and very few on sq. 4.

According to the field notes, a human skull (marked M1) and a relatively complete skeleton (M2) were uncovered in sq. 3-4 at a depth of 0.45-0.50 m. A second relatively complete skeleton (M3) was soon identified in sq. 2, and by analyzing the photos, it was probably found slightly lower down in the trench. The foundation of the wall protecting the old Austrian road had "cut" the graves, going through them (fig. 4). It is therefore safe to presume that the upper part of original Mesolithic level could have been higher than the one recorded, and the constant flooding of the bank and the falling of rocks from up the slope could account for erosion/depositional processes and the mixing of the materials in the upper 30 cm.

The human remains recorded on the field notes were described as follows:

M1 (SII, sq. 3-4, -0.45-0.50 m): isolated skull, no grave goods (fig. 5, 8)

M2 (SII, sq. 3-4, -0.45-0.50 m): human skeleton in extended supine position, head towards north, lying parallel to the Danube, hands on the pelvis. The lower part of the legs was destroyed by the foundation of the wall protecting the road. Bones were in very poor state of preservation, turning to dust when touched/removed. Under the right temporal bone a small red ochre boulder was found and several very small ones were also noticed (unfortunately no other details were given). In the close proximity of the skeleton several large boulders with a flattened side were uncovered (fig. 4, 8), although, by studying the photographs, they seem to be at a higher level.

M3 (SII, sq. 2, -0.50-0.60 m): skeleton in extended supine position, head pointing WNW, lying perpendicular to the Danube. Left arm on the pelvis, right arm along the body. The skull was destroyed by the same wall foundation. The feet were also disturbed by a pit feature. The skeleton was sprinkled with red ochre. The grave was rather narrow, fit to the size of the individual and dug through the above mentioned platform. From the head area a tusk tool was recovered (described as a *perćoir-racloir*). It was noticed (as shown in fig. 7) that the right ulna was detached from the lower leg and placed as a continuation of the right radius. On the „house platform", around the skeleton, approx. 0.45 m away, several Mesolithic tools were noticed: two scrapers (one flint, one calcareous rock), one bone and one tusk tool (marked as special 14).

One of the features of the Iron Gates Mesolithic was recognized in the intentional location of the burials around the "houses" or hearths (V. Boroneanț 2000, D. Srejovic, Z. Letica 1978). Still, it has been suggested that the same areas were not used simultaneously for burial and occupation and rather the houses were used for burial after they had been used for occupation or viceversa (C. Bonsall 2008, p. 259). As the graves were cut into the trapeze platform, it is conceivable that individuals were buried when the "house" stopped to be occupied (fig. 8).

* * *

Apart from the burials described above, isolated human remains were found in SIV - depth 1.70 m: "*fragments of a human jaw*", collected separately and labelled *special 25* in the field notes, in the context of antler tool fragments, bone points, in a black-grayish soil (V. Boroneanț, Icoana. Field notes 1969) - and SVII - depth 0.30 m - again fragments of a human jaw, in a very disturbed context: a mixture of sherds from the Iron Age (Hallstatt) and Starčevo-Criș Early Neolithic (ornamented fragments), a spear-point of Schela Cladovei type (labelled *special 58*). In the case of SVII, pottery occured down to 0.60 m of depth. In SIV, the Early Neolithic layer was reported to start at the depth of 0.30 m, with a compact Mesolithic layer occuring at 1.40 m. In both cases, no other details were given concerning the location of the human bones within the squares.

At the end of the excavation, the bones susceptible of being human were handed by Vasile Boroneanț to the anthropologist Dardu Nicolăescu-Plopșor from the Center of Anthropological Research "Francisc Rainer" in Bucharest.

We present below the collection comprising the Icoana human remains from the Center for Anthropological Research of the Romanian Academy. The measurements and determinations were made in accordance with the methodologies in T.D. White and P.A. Folkens (2005).

Year of excavation: 1968

1. M 1, S II, sq. 3 – 4
Description: cranial vault with some missing parts in the inferior area; thickness of the frontal: approx. 9 – 10.3 mm and 10.1 – 10.6 mm for the parietal;
Age estimation: Mature (based on the cranial suture);
Sex determination: Female.

2. M 3, S II, sq. 2
Description: fragments of skull, mandible, cervical vertebras, humeral head, ribs, and distal epiphysis of femur. The skull was restored; thickness of frontal approx. 6.5 – 10.6 mm and 7 – 10.8 mm for parietal;
Age estimation: 40 years old (based on the cranial suture and dental wear);
Sex determination: Male.

3. S II, 0.35 m
Description: right second proximal phalanx and the third right metacarpal;
Age estimation: Adult;
Sex determination: Unknown.

4. S II, sq. 1 – 2, - 1.15 m
Description: 7th cervical vertebra;
Age estimation: Mature;
Sex determination: Male.

5. S II, sq. 3, - 1.40 m
Description: one fragment of occipital and a fragment of left parietal;
Age estimation: Adult;
Sex determination: Female.

6. S II, sq. 3 – 4, - 1.55 m
Description: left metatarsal;
Age estimation: Mature;
Sex determination: probably female.

Year of excavation 1969

7. S IV, - 1.50 m
Description: right talus;
Age estimation: Adult;
Sex determination: probably female.

8. S IV, -1.90 m
Description: left fifth metatarsal and right first metacarpal;
Age estimation: Mature;
Sex determination: probably female.

9. S VI, 0.90 m
Description: left third metatarsal and left foot navicular;
Age estimation: Mature;
Sex determination: probably male.

10. S VII, - 0.30 m (see also A. Dinu *et alii* 2007, p. 39)
Description: 10 fragments of frontal, parietal, and occipital; the frontal has a thickness of 8.7 – 13.3 mm and the parietal of 9.0 – 13.0 mm;
Age estimation: Mature;
Sex determination: Male.

11. S VII, - 0.30 m
Description: fragment from the right scapula;
Age estimation: Adult;
Sex: Unknown.

Comparing the field notes with the description of the listed osteological material, it is easy to notice large discrepancies: first, there are human bones in the field notes that do not appear on the list but equally, there are human remains in the collection that were not listed on the field notes. Moreover, the available descriptions of the finds even when the location details coincide are not identical.

Summarizing:

M1 could surely be identified as no.1 in the list presented above.

M2 is not represented in the collection, probably due to its already very poor state of preservation when uncovered (see the description of M2 above) and while trying to remove it the bones could have been destroyed.

M3, identified as no. 2 on the list above, if compared to the plan (fig. 7), seems to be missing some of the vertebras, the arms and most of the leg bones. Unfortunately this makes impossible to check whether the human ulnae found near the right radius belonged to the same individual.

In SIV there is no human bone listed at 1.70 m of depth (as in the field notes) but in SVII, the "*jaw fragment"* mentioned turned to be an almost complete (reconstructed) cranial vault (no. 10). It is unclear (the marking on all the bone fragments only read *Icoana 1969, SVII, 0,30 m*) whether the fragments were found together or whether they were scattered over a larger area. This makes any speculation difficult on whether or not it was a burial (skull burials were documented in the Iron Gates Mesolithic - C. Bonsall 2008, p. 257, V. Boroneanț *et alii* 1999, p. 389).

Still, it has been suggested to be Mesolithic (A. Dinu *et alii* 2007, p. 32, 39), based on the ^{14}C dating of the resulted cranial vault giving the date of 6530-6390 cal. B.C. (AA 66368). The date has not been corrected for the freshwater reservoir effect (G.T. Cook *et alii*, 2002). So, it could finally prove to be as much as approx. 450 years younger than suggested and thus becoming problematic. A provisional chronology of the Iron Gates Mesolithic situates the Late Mesolithic around 7200-6300 cal BC (Hajducka Vodenica, Icoana, Ostrovul Banului, Ostrovul Corbului, Schela Cladovei, Vlasac), the Final Mesolithic (so far, based on the ^{14}C dates present only at Lepenski Vir, so far) between 6300 and 6000 cal. B.C. and the Early Neolithic (Cuina Turcului, Lepenski Vir, Padina, Schela Cladovei, Vlasac) between 6000-5500 cal. B.C. (C. Bonsall 2008, p. 252). Until corrected for the reservoir effect the date presented above it is a date of no use. And given the unsecure context of the bones, it was not the best candidate for a ^{14}C dating[3].

Seven items from the collection list were not mentioned in the field notes. Putting them in a precise archaeological context is difficult, as shown below:

[3] A more detailed discussion on Iron Gates stratigraphies will be given elsewhere (A. Boroneanț, The excavations from Icoana, forthcoming).

No. 3 came originally from a very unclear "layer", containing mixed Early Neolithic and undiagnosed pottery sherds, and no square indication.

No. 4 came probably from the pit of a "habitation"/pit feature (labeled L3), and shown in the published western profile of SII (V. Boroneanț 2000, p. 275, pl. 14), with a description in the field notes (A. Boroneanț, forthcoming). The habitation was dug in the Ib Mesolithic horizon.

The context of **No. 5** is horizon Ia, and of **No. 6** horizon Ia or the pit feature L3, thus horizon Ib.

No. 7 and **No. 8** are difficult to assign based only on the field notes and the existing plans – they could have come from a Neolithic pit feature (labeled habitation L4/1969) or a compact Mesolithic layer.

SVI did not seem to yield any other finds but the Mesolithic one – and this is unfortunately the most precise attribution to **No.9**, without further details regarding a specific horizon.

No. 11, the same as **No. 10** discussed above, comes from a disturbed context, and it not is unconceivable to be the result of alluvial processes.

Given the very poor state of the representation of the skeletons (apart from M2 and M3), the anthropological data resulted from the analysis is difficult to interpret. Nevertheless, the number of human bones scattered in various trenches at various depths and from what it seems to be different individuals speak of intense human activity in the area. Dating the two secure burials left (M1, M3) would provide important information on the chronology of Icoana and so would the full publication of the archaeological documentation and finds.

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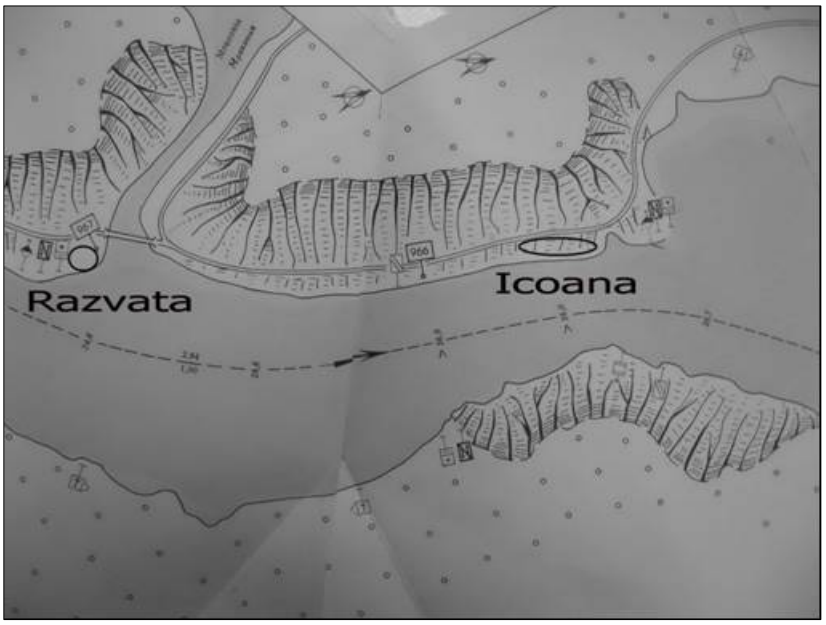
* * * — *Carte du pilotage du Danube du km 1075 (confluent de Nera) au km 981 (Drobeta-Turnu Severin)*, Commission du Danube, Budapest, 1976.

a) 

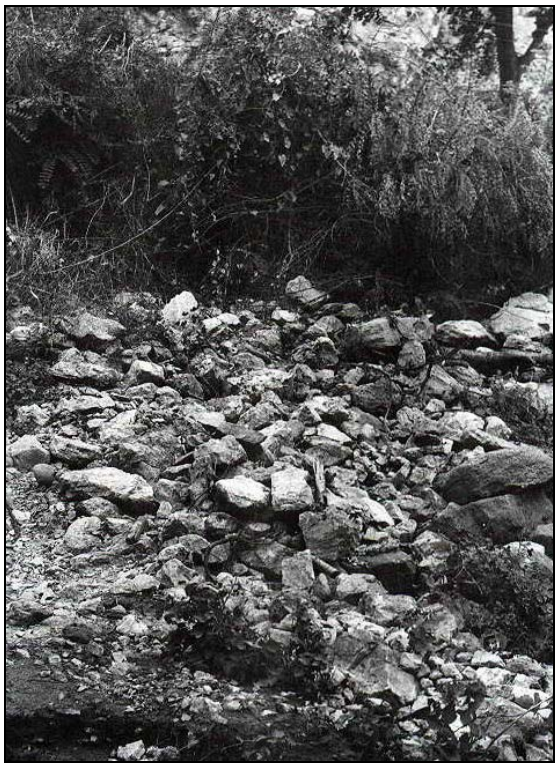
b) 

Fig. 1. a) - Map of the Iron Gates Gorge in the Little Cauldrons area showing the site Icoana and Răzvrata, after *Carte du pilotage du Danube du km 1075 (confluent de Nera) au km 981 (Drobeta-Turnu Severin)*, Commission du Danube, Budapest, 1976, b) – view of the river bank prior to the excavation.
a) Harta Porţilor de Fier la Cazanele Mici cu poziţia siturilor Icoana şi Răzvrata, după *Carte du pilotage du Danube du km 1075 (confluent de Nera) au km 981 (Drobeta-Turnu Severin)*, Commission du Danube, Budapest, 1976, b) vedere a malului fluviului inainte de săpăturile arheologice.

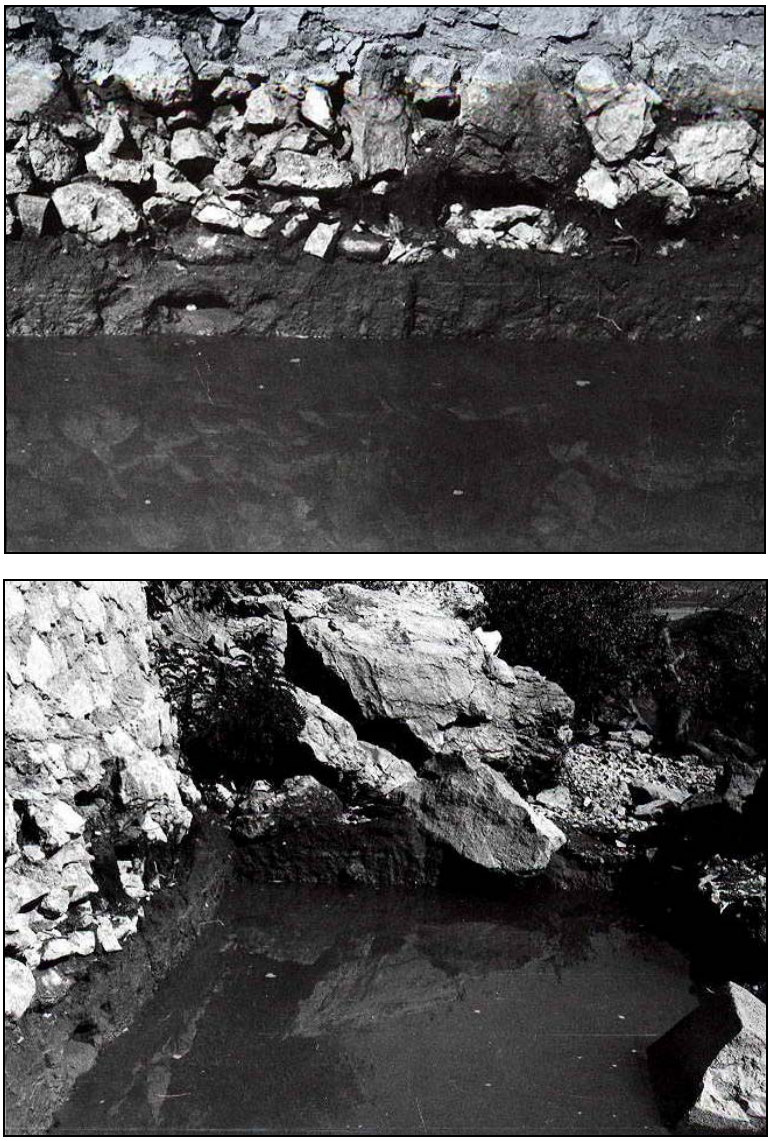


Fig. 2. Images during the excavations in 1968, showing the flooding of the site.
Imagini cu inundarea sitului în timpul săpăturilor din 1968.

Fig. 3. Dry-sieving of the resulted soil.
Cernerea la sec a sedimentului arheologic.

a)

b)

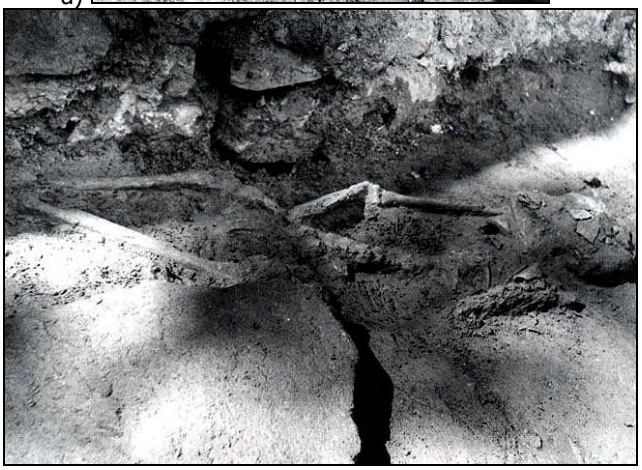


Fig. 4. Images of M2 (a) and M3 (b).
Mormintele M2 (a) şi M3 (b).

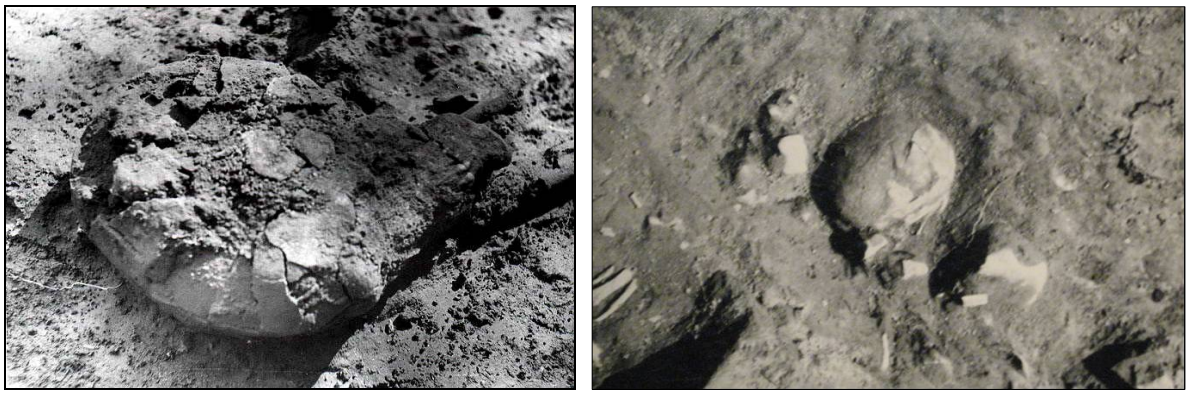


Fig. 5. Detail of the skull of M2 (left) and the isolated skull M1 (right).
Vederi de detaliu ale craniului aparţinând lui M2 (stânga) şi ale craniului izolat al lui M1 (dreapta).

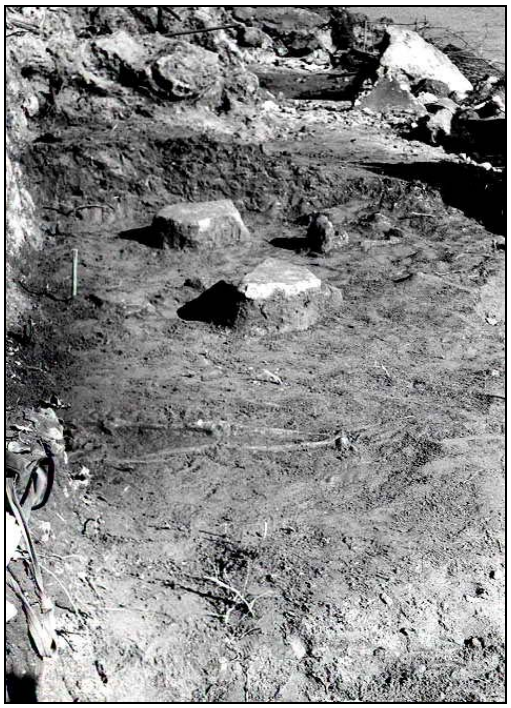


Fig. 6. Image of the trapeze shaped platform and two of the flat slabstones.
Imagine a platformei trapezoidale şi ale celor două lespezi din piatră.

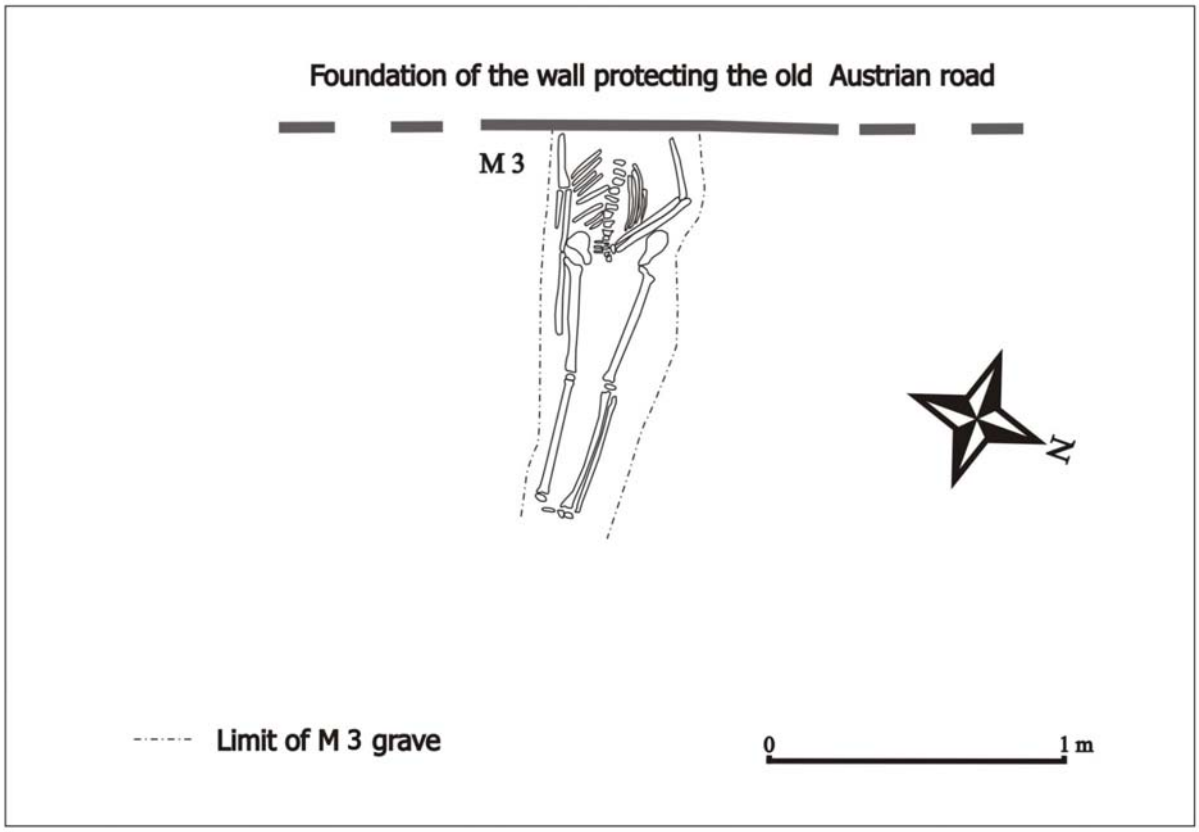


Fig. 7. Plan of M3 in SII.
Planul mormântului M3 din SII.

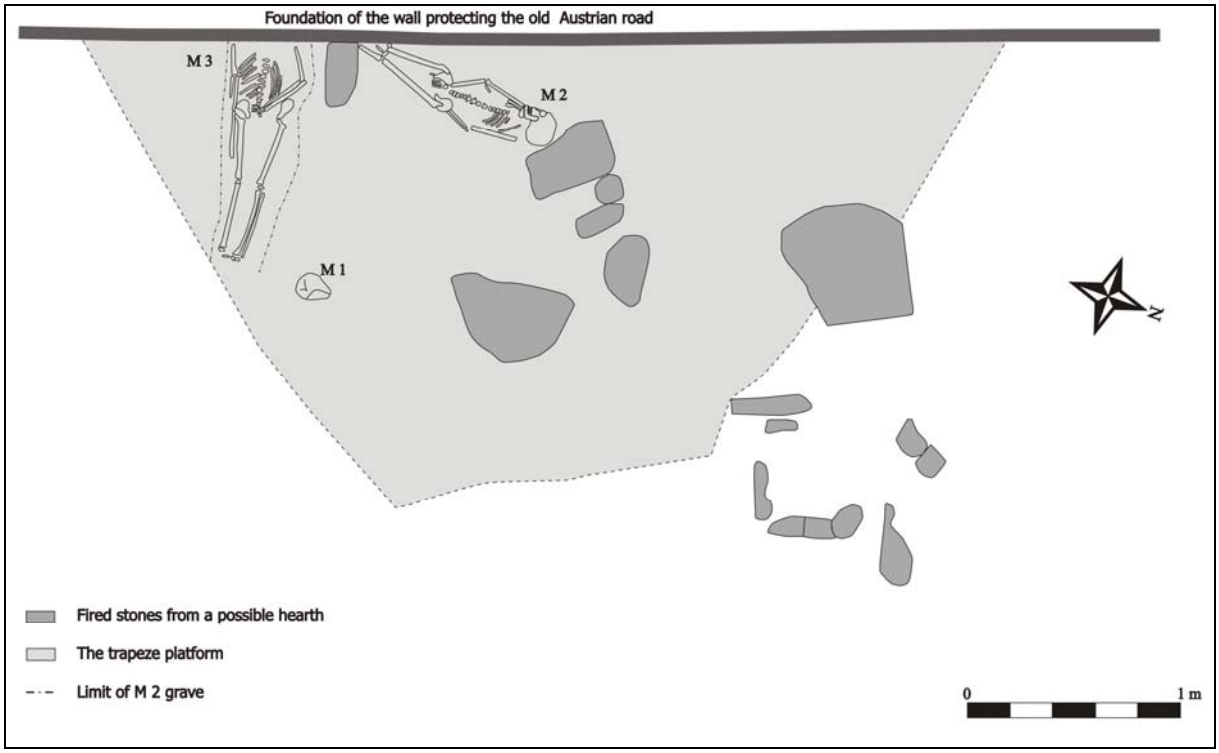


Fig. 8. Trench II: reconstruction of plan with the trapeze platform and the location of the skeletons.
Sectiunea II: planul platformei trapezoidale şi poziţia scheletelor.

The soil micromorphology of enigmatic Early Neolithic pit-features at Măgura, southern Romania

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Abstract: *The site of Măgura*-Buduiasca *on the left bank of the River Teleorman in southern Romania is composed of pit complexes dating to the Early and Middle Neolithic Period (Starčevo-Criş, Dudeşti and Vădastra cultures, the 6th millennium BC). An integrated archaeological and palaeo-environmental study was carried out. Local soils are Mollisols formed in middle-upper Pleistocene loess that is present over similarly dated freshwater marls. A detailed soil micromorphology investigation of twenty-six thin sections (including microprobe analysis) was carried out in order to attempt to understand these pit complexes in terms of their exact origins, function and abandonment history. The combined study found that pits were dug through the loess into the underlying marl, and that fire was employed as a landscape management tool. Human activities included the processing of monocotyledonous plants, including probable wetland plants, the ashed waste of which became part of the pit fills; burned daub, unburned daub, melted phytoliths, aggregates of possible burned dung origin, bone, coprolites and strongly burned soil, all became incorporated into the fills. Pits were re-excavated and back-filled, rather than simply becoming mixed by biological processes, which implies re-visiting and re-use of the pit-complexes. The exact original function and suggested re-use of these pit complexes (pit houses, quarry/storage pits) remains enigmatic, however.*

Rezumat: *Situl Măgura*-Buduiasca*, situat pe malul stâng al râului Teleorman, în sudul României, este constituit din complexe de tipul unor gropi ce datează din perioada neoliticului timpuriu şi mijlociu (culturile Starčevo-Criş, Dudeşti şi Vădastra, mileniul VI BC). Un studiu integrat, arheologic şi de paleomediu, a fost pus în practică. Solurile din zonă sunt din clasa Molisolurilor formate pe loessurile Pleistocen mediu-superior ce suprapun marnele de apă dulce aparţinând aceleaşi perioade geologice. Douăzeci şi şase de secţiuni subţiri au fost analizate printr-un studiu micromorfologic de detaliu (incluzând analize chimice pe microprobe), în scopul înţelegerii acestor complexe în termenii originii exacte, a funcţiei şi modului lor de abandon. Studiul complex a relevat faptul că aceste gropi au fost săpate traversând loessul, în marnele din bază, ca şi faptul că focul a fost utilizat ca un instrument de gestiune a mediului înconjurător. Activităţile umane includ procesarea plantelor monocotiledonate, ce includ probabil plante caracteristice zonelor umede, reziduurile de cenuşă ale acestora devenind parte componentă a umpluturii gropilor analizate; chirpici ars şi nears, fitolite topite, agregate ce-şi au originea, probabil, în bălegar ars, oase, coprolite şi fragmente de sol puternic arse, toate acestea au fost integrate în umplutură. Gropile analizate au fost mai degrabă re-excavate şi umplute din nou, decât să fi fost amestecate prin procesele biologice, ceea ce implică re-vizitarea şi reutilizarea acestor complexe. Funcţia originală exactă şi reutilizarea acestor complexe - gropi ce a fost sugerată (locuinţe adâncite, gropi de extracţie sau de stocaj) rămâne enigmatică, totuşi.*

Keywords: *Early and Middle Neolithic, pit structures, soil micromorphology.*
Cuvinte cheie: *neolitic timpuriu şi mijlociu, gropi, micromorfologia solului.*

Introduction and archaeological questions

A series of excavations and geoarchaeological studies carried out within the Southern Romanian Archaeological Project (R. Andreescu, D. Bailey 2004; 2005; D. Bailey *et alii* 2004) identified early Neolithic (6000-5000 cal BC) pit-huts at the site of Măgura, which were poorly understood in terms of their exact origins, function and abandonment history.

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Environmental background

The site Măgura *Buduiasca* is located just south of Măgura village some 10 km NE of Alexandria (fig. 1, 2), in the 'field of Burnas', the zone of the Romanian plain situated in the South of the country. The Romanian plain has a flat tabular relief, being fragmented by tributaries of the River Danube. This geomorphological unit is covered entirely by loess deposits of different ages, thickness and composition and has a mean altitude of 64 m.

The site is located on the west side of the 'field of Burnas', descending slightly to the Teleorman river valley. The valley is approximately 3 km wide in this area, near the confluence with the Clăniţa valley. Nowadays, the channel is slightly sinuous and modern swamp with wetland vegetation occurs in the area.

The loess deposits of Burnas, which are middle-upper Pleistocene (qp_2^{2-3}) consist of reddish yellowish clay and sandy fine silts, and include carbonate concretions. It overlies the marly complex formed in this area of marls, clays and sands, corresponding to the beginning of the middle Pleistocene (qp_2^{1}). This complex contains a fresh water fauna with *Corbicula fluvialis*, *Valvata piscinalis*, *Planorbis ombilicatus* and *Viviparus diluvianus* (T. Bandrabur *et alii* 1967, p. 18-19). The Burnas loess cover sits on the marly alluvial-lake deposits of the Frăteşti Beds (P. Coteţ 1973, p. 371).

The climate of the area is characterized by the most elevated values of total and annual mean insolation for the whole country and the difference between the warm and the cold season is the most accentuated at 22-26 °C; there are between 30 and 50 days with a 'tropical climate', with temperatures frequently exceeding 30 °C.

The vegetation is characteristic for the steppe and silvo-steppe zone. The soils are represented by Mollisols described as Chernozems, with both cambic and argillic Chernozems occurring (Gh. Blaga *et alii* 1996).

Archaeological background

The site from Măgura-*Buduiasca* is spread over 27 ha on the left bank of the Teleorman River. The importance of the site is related to the existence of several habitations belonging to the Early and Middle Neolithic Period (Starčevo-Criş, Dudeşti and Vădastra cultures, the 6th millennium BC). The site is covered by crops, so the research had to be undertaken at several locations, depending on the kindness of their land owners. A 10x10 m sondage (S 10) was opened in 2003 in the Southern side, where 9 Neolithic complexes had been found.

The C 13 complex (fig. 5) is oval in shape, with the dimensions of 3.80x2.70 m and 1 m maximum depth. Archaeological material was composed of numerous sherds, a fragment of an anthropomorphic statuette, two zoomorphic statuettes fragments, together with flint, obsidian and bone tools. Burnt building material and numerous animal bones were also found. The complex was probably a pit house, abandoned and reused as a refuse pit Starčevo-Criş culture (R. Andreescu, D. Bailey 2004, p. 185).

The C 18 complex (fig. 6) is also oval in shape, with diameters of 2.80 and 2.50 m and 0.6 m depth. Sherds, animal bones, burnt building material, an anthropomorphic statuette fragment, flint and bone tools, and a pendant made of boar defences have been discovered. The complex probably was an abandoned pit house Starčevo-Criş culture (R. Andreescu, D. Bailey 2004, p.186).

A 12x12 surface was opened in 2004 on the North side of sondage S 10, and divided in 4 sondages (fig. 3) of 6x6 m (S 19-22). There are 18 complexes here (fig. 4), 15 of which belong to the Neolithic Age.

The C 22 complex (fig. 7) was identified in the area of S 20 sondage, at 0.90 m depth, and it was also visible in its Northern profile. It has the shape of a circular pit with 2 m diameter and a depth of 1 m. Artefacts include sherds, animal bones, building material and hearth remains, flint, bone and stone tools of the Vădastra culture (R. Andreescu, D. Bailey 2005, p. 225).

The C 35 complex (fig. 8) was found in the Eastern half of sondage 22 at 1.10 m depth. It has an oval shape, with the dimensions of 2.40 x 1.60 m and maximum depth of 0.5 m, and in the north-western area many hearth fragments were concentrated. Archaeological material is composed of sherds belonging to the Starčevo-Criş culture (R. Andreescu, D. Bailey 2005, p. 226).

The complexes were interpreted as storage pits or pit houses that were abandoned and later transformed into refuse pits. They contain: a mix of sherds, but not entire pots; bones; debris from different tools, including fragments; building material fragments; and sometimes, non-*in situ* hearth remains (R. Andreescu, D. Bailey 2005, p. 227).

Research programme and methods

During the summer of 2007, twenty-six resin impregnated soil monoliths (from pit-hut complexes C 13, C 18, C 22 and C 35) were received at UCL from Mr. Haită. These underwent subsampling and additional curing before being sent for thin section manufacture at Spectrum Petrographics, Washington State, USA. Thin sections were systematically described and counted employing standard soil micromorphology descriptive methods and protocols specially designed for archaeological investigations (P. Bullock *et alii* 1985; M-A. Courty *et alii* 1989; P. Goldberg, R. Macphail 2006; G. Stoops 2003). Thin sections were scanned on a flat bed scanner (figs. 11-12) and analysed employing a petrological microscope using plane polarised light (PPL), crossed polarised light (XPL), oblique incident light (OIL) and fluorescent microscopy (blue light - BL), at magnifications ranging from x1 to x200/400. Thin sections were described, ascribed soil microfabric types (SMTs) and microfacies types (MFTs). Natural and anthropogenic inclusions were similarly described. The study was complemented by detailed microprobe analyses employing sample M03-47 from 5200 cal BC Complex 22. This investigation comprised mapping elements (Si, Al, Ca, P, Fe, Mn, Na and K) across the thin section as a whole and from one detailed area, and the quantitative analysis (n=30 max) of these elements from five identified soil microfabric types (SMTs) and anthropogenic materials (see figs. 13-14), in order to more accurately characterise and identify these. This investigation found many characteristics in common with the Early Neolithic site of Ecsegfalva, Hungary in terms of the natural loessic parent materials, daub manufacture and the character of burned daub and anthropogenic deposits (Â. Carneiro, I. Mateiciucová 2007, p. 255-288; J. Crowther 2007, 227-254; R. Macphail 2007, p. 189-226; A. Whittle 2007).

This study commenced during October 2007, and continued into 2008. For two weeks during November 2007 (5^{th}-16^{th} November) C. Haită and R.I. Macphail worked jointly on these thin sections, and were able to discuss the formation processes associated with these complexes and their geoarchaeological background (R. Andreescu, D. Bailey 2004; 2005; D. Bailey *et alii* 2004).

Results

Soil structure, matrix materials (SMTs), natural and anthropogenic inclusions, and pedofeatures were described and counted; examples were recorded in photomicrographs (figs. 15-22). In all 31 (26 thin sections and 5 microprobe analyses) characteristics and inclusions were counted, and 12 SMTs were described during this analysis of the thin section suite. Examples of c. 40 microprobe element maps and c. 100 photomicrographs are given in figs. 13-14 and figs. 15-22, respectively.

Major results include:

- The identification of natural included coarse marl (with trace amounts of tufa) and loess (D. Bailey *et alii* 2004; T. Bandrabur *et alii* 1967). Marl occurs as raw coarse fragments (fig. 11) and as biologically mixed soil (figs. 12-13, 15). The loessic (micaceous) brown earth soil material includes fragments of Bw and Ah horizons, the latter sometimes as 1) burned and 2) fine charcoal-rich variants.
- The coarse anthropogenic materials include much daub and burned daub (figs. 11, 16) manufactured mainly from loessic subsoil material. Also present are aggregates of ash (fig. 12) and small amounts of coarse charcoal, pot, bone/coprolites (and burned variants of these), strongly burned soil (e.g., melted vesicular quartz), ashed plant residues (melted and vesicular phytolith remains) and fused aggregates containing phytoliths and ash/calcium oxalate/faecal spherulites (possible burned dung residues) (see R. Macphail 2007, p. 189-226).

- Fine anthropogenic materials are present as soil microfabric types (SMTs), a chief example being SMT 2b, which is rich in monocotyledonous charred plant remains and charcoal and is often associated with concentrations of phytoliths and articulated phytoliths (figs. 13, 19-21) presumed to be relict of plant processing; this material appears to include probable wetland plants.
- Microstructure, deposit heterogeneity and the very abundant quantity of aggregates, burrows and excrements of invertebrate mesofauna (see figs. 11-14), all indicate very marked mixing of different fill-types. The lowermost fills at and near the junction with the marl substrate is the most heterogeneous, with deposits becoming more homogenised by weathering processes and biological activity, upwards.
- No *in situ* features of burning (hearths, combustion zones) or occupation surface deposits were identified.
- Inwash of amorphous yellow 'cess' that embeds phytoliths and parasite eggs, and which has a Ca-P chemistry probably results from the disposal of faecal material (figs 14, 17-18); this affected fills that had already become mixed.
- Weathering effects in the form of secondary calcium carbonate and probable calcium phosphate (that is autofluorescent under blue light) features, mainly formed by the leaching of overlying deposits.
- The presence of relatively high amounts of sodium (Na) mainly within marly soil (mean 1.35% Na) and as concentrations (max 10.5% Na) in aluminium-silicates (Al-Si-Na), was unsuspected, but probably is due either to natural marl formation in the area and/or the influence of recent soil amelioration associated with cultivation.

Discussion

The early Neolithic site of Măgura occurs in an area of loess soils that overlie marl (a calcareous sediment that includes silt-size quartz), on the edge of high ground overlooking the floodplain of the River Teleorman (D. Bailey *et alii* 2004). The 2-3 m deep pit Complexes are cut into the marl. Soil micromorphology and complementary microprobe analyses were employed to help understand the origins/function and abandonment history of four Complexes.

A preliminary understanding of the fills suggests:

1. Excavation of the features into the marl geological substrate, with local occupation producing burned humic loessic topsoils, presumably associated with combustion zones (cf. Neolithic Windmill Hill, Wiltshire, R. Macphail 1999, p. 121-126); the presence of loessic topsoils that include very abundant fine charcoal testify to the development of landscapes managed by fire (A. Gebhardt 1993).

2. Basal fills tend to be dominated by marl, as coarse raw inclusions, as biologically worked soil and as weathered and burned variants. Fine and coarse aggregates of anthropogenic soil containing various concentrations of charred monocotyledonous plant remains, ash and phytoliths also occur alongside coarse anthropogenic inclusions (figs. 19-21). In addition to food waste and faecal matter (bone, burned bone, leached and iron-stained bone - some of which is coprolitic in origin), daub is a major component. The latter, includes daub and burned daub, and raw materials used in its manufacture, such as loess and rare examples of clay. Daub is commonly plant tempered (as are some pottery fragments); plant tempered daub has been investigated from early Neolithic Ecsegfalva, Hungary (Â. Carneiro, I. Mateiciucová 2007, p. 255-288). Other burned materials include 'fused' phytoliths and ash aggregates that may have a possible burned dung origin (cf. Mediterranean caves and Neolithic stabling; (G. Boschian, E. Montagnari-Kokelji 2000; R. Macphail *et alii* 1997)), melted and vesicular phytoliths residues, and melted and vesicular quartz-rich soil - the last requiring a temperature of 1000-1200 ºC (M-A. Courty *et alii* 1989, p. 110; F. Berna *et alii* 2007). The basal deposits do not contain any laminated sediments that would be indicative of primary silting, hence these dug features could not have been open to the elements for any long period of time.

3. Upwards in the fills, marly soil is less common, and microfabrics rich in fine monocotyledonous plant remains, ash, phytoliths become more dominant, indicating that plant processing and dumping of its associated ashed waste is a major activity. At some other early Neolithic sites, such as Ecsegfalva, charred plant processing waste includes cereal processing residues. It is not clear what the chief plants being processed/burned at Măgura are, but included soil and phytoliths broadly indicate the

use/importation of wetland plants; macrobotanical, pollen, phytolith studies may be able to resolve this question.

Occupation at the site also led to the occurrence of calcium phosphate-rich faecal waste (cess) washing into the fills and this included phytoliths and an example of a *Trichuris* nematode egg (figs. 14, 17-18). Similar cess-like features were found in pits at Ecsegfalva and early Neolithic Huizui, China (R. Macphail, J. Crowther 2007). Disposal and weathering of ash, along with bone and coprolitic material at Ecsegfalva, led to phosphate concentrations measured in bulk samples (J. Crowther 2007, p. 227-254); here burned materials including burned daub enhanced magnetic susceptibility values.

4. The heterogeneity, microstructural characteristics, amount of aggregates of different character, overall fine fragmentation and occurrence of coarse fragments of raw marl especially in the lower fills, cannot be simply explained by bio-working. Such mixing of 'contexts' was not apparent in a major pit studied in detail at Ecsegfalva, and which had similar ashy fills. It therefore seems likely that the features and their fills were re-excavated, and back-filled. In addition, the inclusion of weathered anthropogenic fill microfabrics (e.g., SMT 4a) mixed with comparably unweathered fill material (SMTs 2a-2c) is an anomaly which could also require a similar explanation.

The re-digging of these features would account for their enigmatic morphology, but implies that these sites were returned to and re-used.

5. Speculatively, these features are:

- *Storage pits*, into which occupation refuse was dumped, and that on return to these locations, these pits were re-dug, emptied and re-used.
- *Quarry pits* excavated through the loess soil into the marl, possibly to gain marl for some ritual (body 'painting'?) or industrial purpose (for the manufacture of lime elsewhere; e.g., Y. Garfinkel 1987). (There is no evidence that these were wells).
- *Pit houses*, used after occupation for refuse disposal and site cleaning, and when returned to, re-dug and re-constructed.

In the last case, there is no *in situ* evidence of hearths, occupation or trampled floor deposit development as found in known pit houses (P. Goldberg 2000) or as obvious fragmented inclusions (T. Gé *et alii*. 1993). Occupation material can filter down below suspended floors in typical *grubenhäuser*, where in the 'air space' biologically worked microfabrics can develop (R. Macphail *et alii*. 2006); this still does not fully account for deposit heterogeneity found at Măgura, however. Nevertheless, abandoned *grubenhäuser* are commonly utilised as convenient repositories of cess. Such evidence of domestic occupation activity would have been part and parcel of site occupation. At present, other activities such as the exploitation of wetland for wild plants (as well as for hunting wild animals and grazing of domesticated stock), obviously require further investigation, but as yet there is no one clear explanation for the 'pit house' or 'pit' Complexes at Măgura.

Conclusions

The analysis of 26 thin sections using soil micromorphology, and microprobe studies of 5 different natural and anthropogenic materials, has produced the following preliminary findings and speculations.

1. Pits were dug through the loess soil cover into the underlying marl.
2. Local occupation produced combustion zones where both loess topsoil and marl became burned; fine charcoal-rich loessic topsoils were developed in the local area through the probable use of fire as a landscape management tool.
3. Human activities included the processing of monocotyledonous plants, including probable wetland plants, the ashed waste of which became part of the pit fills; burned daub, unburned daub, melted phytoliths, aggregates of possible burned dung origin, bone, coprolites and strongly burned soil, all became incorporated in the fills.
4. The above listed anthropogenic fills became mixed with marl from the geological substrate, but the overall mixing and fragmentation of the different materials suggests that the pits were re-excavated and back-filled, rather than simply becoming mixed by biological processes. This implies re-visiting and re-use of the Complexes.

5. Although the pit hut theory cannot be dismissed, the possibility that these are multiple used quarry pits/storage pits needs further examination in terms of the ritual, cultural or even industrial activity associated with the site and Early Neolithic activity of the region.
6. The enigmatic Complexes at Măgura are now much better understood in terms of their content, relationship to occupation activity and in terms of the dominant site formation processes but their exact original function and putative re-use function(s), remain unexplained.

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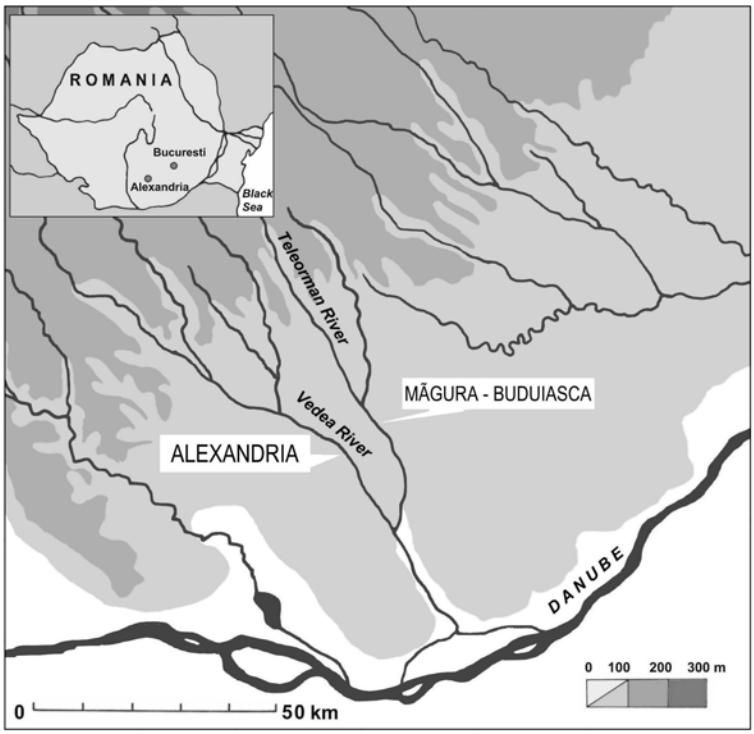


Fig. 1. Location of Măgura *Buduiasca* site.
Poziţia sitului Măgura *Buduiasca*.

Fig. 2. Teleorman Valley. Măgura *Buduiasca* site.
Valea Teleormanului. Situl Măgura *Buduiasca*.

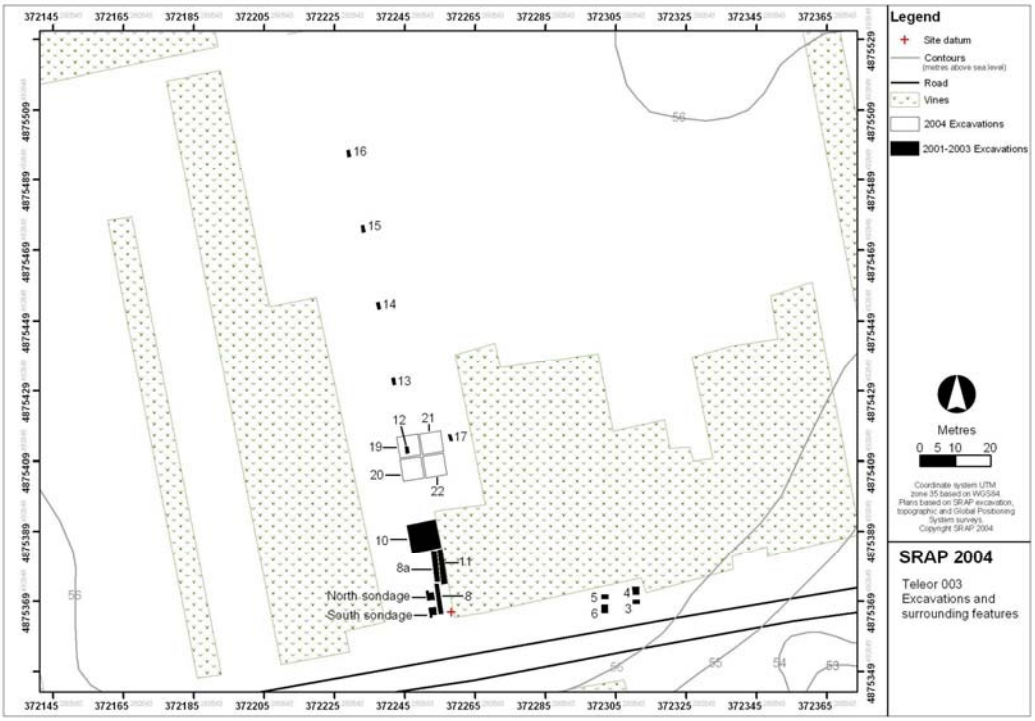


Fig.3. Măgura *Buduiasca*. General map of the sondages.
Măgura *Buduiasca*. Planul general al sondajelor.

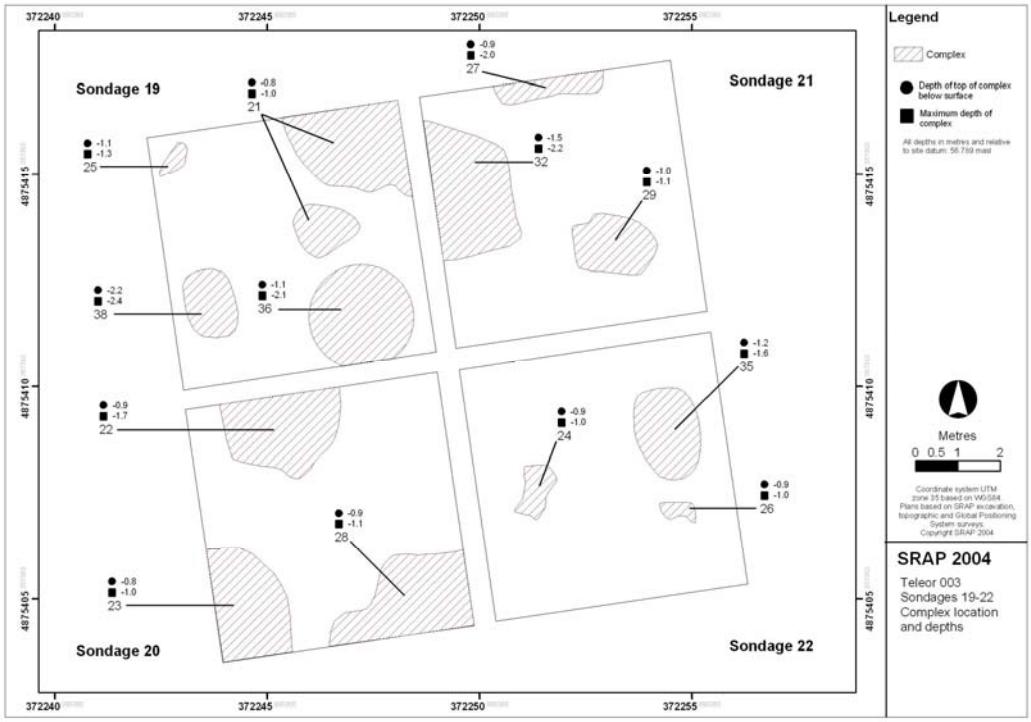


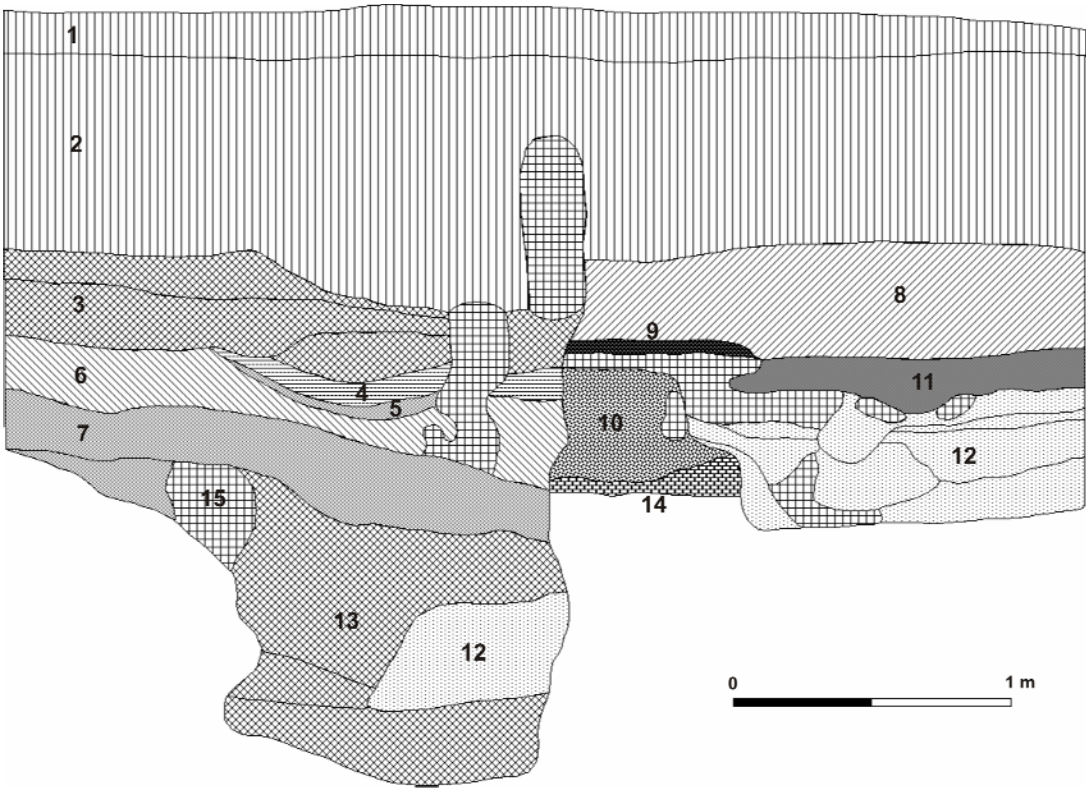
Fig. 4. Măgura *Buduiasca*. Map of the complexes from sondages S 19-22.
Măgura *Buduiasca*. Planul complexelor din sondajele S 19-22.

Fig. 5. Măgura *Buduiasca*. Complex C 13 (with the location of micromorphological samples).
Măgura *Buduiasca*. Complexul C 13 (cu poziţionarea eşantioanelor micromorfologice).

Fig. 6. Măgura *Buduiasca*. Complex C 18 (with the location of micromorphological samples).
Măgura *Buduiasca*. Complexul C 18 (cu poziţionarea eşantioanelor micromorfologice).

Fig. 7. Măgura *Buduiasca*. Complex C 22.
Măgura *Buduiasca*. Complexul C 22.

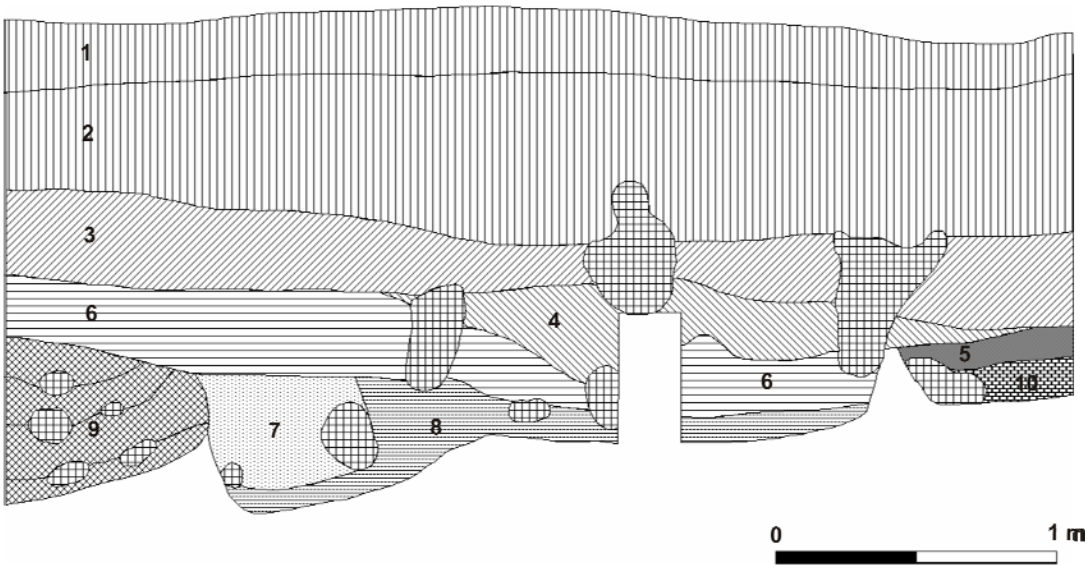
Fig. 8. Măgura *Buduiasca*. Complex C 35.
Măgura *Buduiasca*. Complexul C 35.



Legend:

1. black-gray plough soil;
2. gray soil, mixed layer;
3. gray soil, rough aspect, more or less compact;
4. black-gray soil, fine texture, compact, with ash pigments;
5. gray soil, fine texture, with burnt daub pigments;
6. brown-gray soil, medium granular structure, less compact;
7. gray soil, fine structure, more or less compact;
8. brown-yellowish, compact (ancient) soil;
9. brown-yellowish, compact (unburnt building material);
10. gray-yellowish soil, fine texture, less compact;
11. yellowish soil with sand (falling down of the sterile edges);
12. gray-yellowish soil, fine texture, compact;
13. brown soil, less compact;
14. white-yellowish virgin soil (marl horizon);
15. burrows.

Fig. 9. Măgura *Buduiasca*. The western profile of complex C 13.
Măgura *Buduiasca*. Profilul vestic al complexului C 13.



Legend:

1. black-gray plough soil;
2. gray soil, mixed layer;
3. dark-gray soil, mixed layer (pottery, bones, burnt daub);
4. light-gray soil with archaeological remains: pottery, bones, heart fragments (Iron Age level?);
5. yellowish soil with sand (falling down of the sterile edges);
6. gray soil, moderate compact;
7. dark-gray soil (pit filling);
8. gray soil, fine texture, compact;
9. gray-yellowish soil, more or less compact (pit filling);
10. white-yellowish virgin soil;
11. burrows.

Fig. 10. Măgura *Buduiasca*. The northern profile of complex C 18.
Măgura *Buduiasca*. Profilul nordic al complexului C 18.

Fig. 11. Scan of thin section M04-54 showing marked heterogeneity, in part from biological activity (B=burrow), and coarse inclusions of marl (M) from the geological substrate, and burned daub (BD). Width is ~50 mm.
Imagine scanată a secţiunii subţiri M04-54, indicând o eterogenitate ridicată, parţial datorită activităţii biologice (B=bioturbaţie), şi incluziuni grosiere de marne (M) din substratul geologic şi chirpici ars (BD). Lăţimea imaginii ~50 mm.

Fig. 12. Scan of M03-47 showing locations of quantitative microprobe (grid) analyses: A – marly SMT (Soil Microfabric Type) 1b, B – burned daub, C – amorphous yellow 'cess' stained area, D – burned plant processing waste (charred monocotyledonous material and articulated phytoliths), and E – anthropogenic SMT 2c. A 45mm^2 area of the thin section including areas E and D, and Area C (in detail), were mapped for elements (See Figs 13 and 14). Width is ~50 mm.
Imagine scanată a secţiunii M03-47 ce indică locaţia analizelor cantitative pe microprobe: A – unitate marnoasă SMT (tip de dispunere a constituenţilor din sol, omogen la scara de observaţie) 1b, B – chirpici ars, C – zonă de impregnaţie amorfă galbenă (coprolitică?), D – resturi arse de procesare a plantelor (material de tip monocotiledonate şi fitolite articulate) şi E – facies antropogenic SMT 2c. O zonă de 45mm^2 a secţiunii, ce cuprinde zonele A şi D şi zona C (în detaliu), a fost cartată pentru conţinutul în elemente (fig. 13, 14). Lăţimea imaginii ~50 mm.

Fig. 13. Map of Al, Ca and Si; image analysis shows: ~20% macro voids, ~12% Si (red – quartz sand and silt) and ~16% Al-Si (pink - 'loessic clay'); areas of Ca, Al-Ca and Ca-Si are probably formed of individual and mixed marly, ashy and phytolith-rich microfabrics. Scale bar=5 mm.
Harta elementelor Al, Ca şi Si; analiza de imagine indică: ~20% macro pori, ~12% Si (roşu – nisip şi silt cuarţos) şi ~16% Al-Si (roz – 'argilă loessică'); zonele de Ca, Al-Ca şi Ca-Si sunt formate probabil din unităţi individuale şi amestec de marne, unităţi cu cenuşă sau bogate în fitolite. Scara=5 mm.

Fig. 14. Detail of Area C showing distribution of Ca and P; image analysis records ~72% macro voids, ~15% Ca and ~10% Ca-P (yellow – probable cess formed from calcium phosphate – autofluorescent under blue light). Note finely biologically worked burrow in centre of image. Scale bar=1 mm.
Detaliu al zonei C, indicând distribuţia elementelor Ca şi P; analiza de imagine indică ~72% macro pori, ~15% Ca şi ~10% Ca-P (galben – probabil material coprolitic alcătuit din fosfat de calciu – autofluorescent în lumină albastră). A se observa bioturbaţia biologică cu structură fină din centrul imaginii. Scara=1 mm.

Fig. 15. Photomicrograph of M03-47 (Oblique Incident Light – OIL); microprobe Area A, SMT 1b. Whitish and pale brown colours indicate biologically mixed calcareous (mean 3.48% Ca) marl and loessic soil, and sand. Note SMT 1b contains mean 1.35% Na (Max 10.5% Na). Frame width is ~4.6 mm.
Fotografie la microscop a secţiunii M03-47 (lumină cu incidenţă oblică – OIL); zona de analiză pe microprobă A, tipul SMT 1b. Culorile albă şi brun deschis indică un amestec biologic de marnă carbonatică (medie 3.48% Ca), sol loessic şi nisip. A se remarca faptul că SMT 1b conţine o medie de 1.35% Na (max. 10.5%). Lăţimea imaginii ~4.6 mm.

Fig. 16. Photomicrograph of M03-47 (Plane Polarised Light – PPL); microprobe Area B – burned (moderately rubefied) plant-tempered daub. Darkish brown, ferruginous (mean 2.12% Fe) silt and sand-rich clay (mean 17.0% Si and 4.42% Al). Frame width is ~4.6 mm.
Fotografie la microscop a secţiunii M03-47 (lumină plan polarizată – PPL); zona de analiză pe microprobă B – chirpici cu amestec de vegetale ars (moderat rubefiat). Silt brun închis, feruginos (medie 2.12 % Fe) şi argilă bogată în nisip (medie 17.0 % Si şi 4.42% Al). Lăţimea imaginii ~4.6 mm.

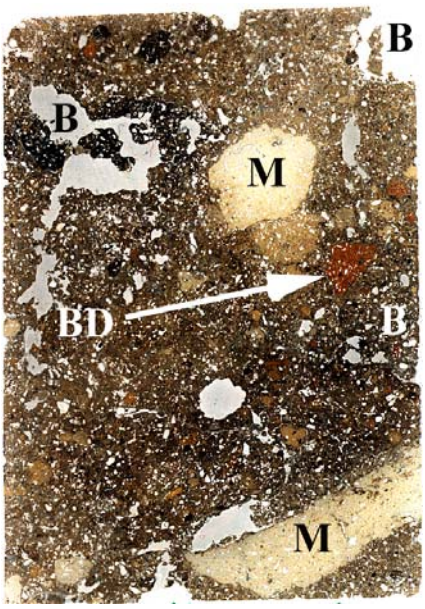


Fig. 11.

Fig. 12.

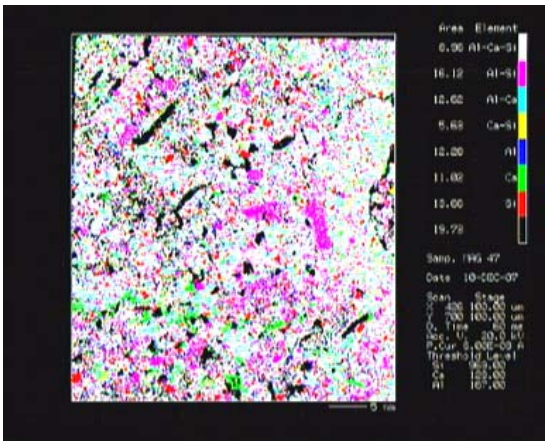


Fig. 13.

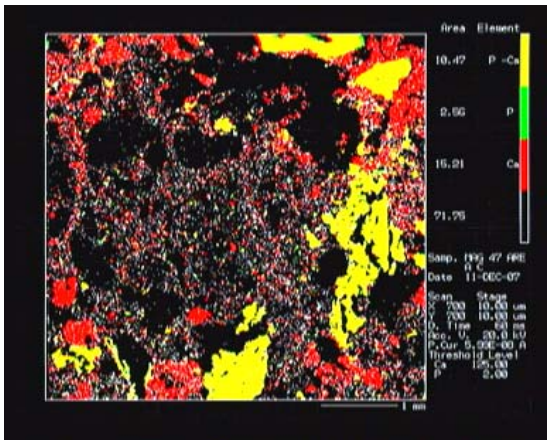


Fig. 14.

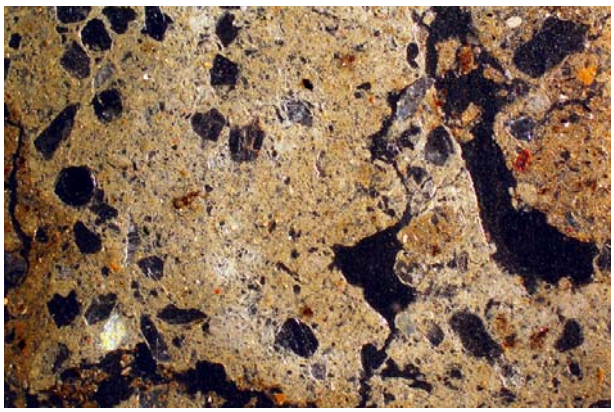


Fig. 15.

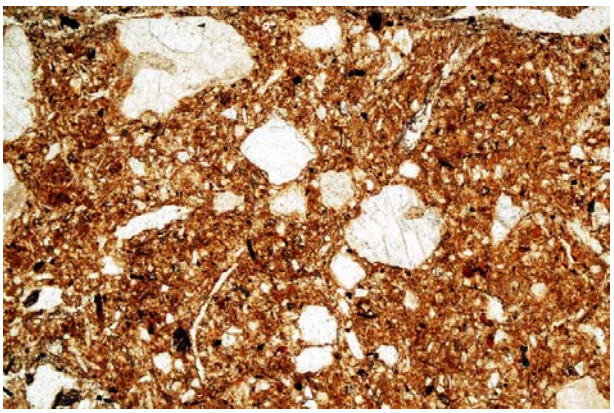


Fig. 16.

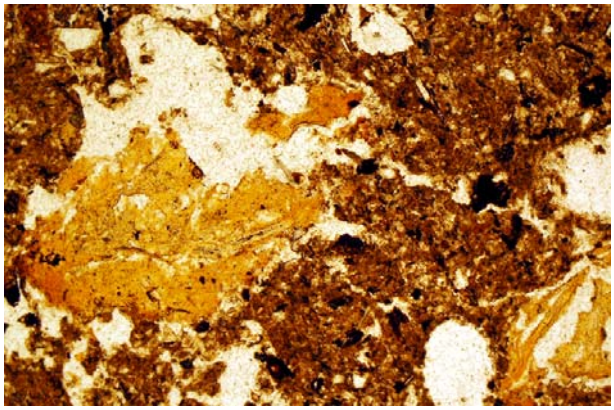


Fig. 17.

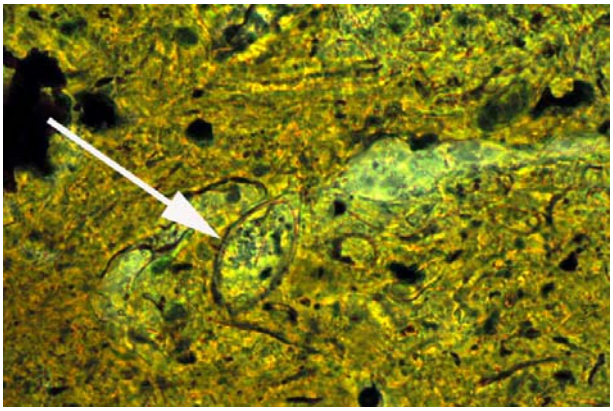


Fig. 18.

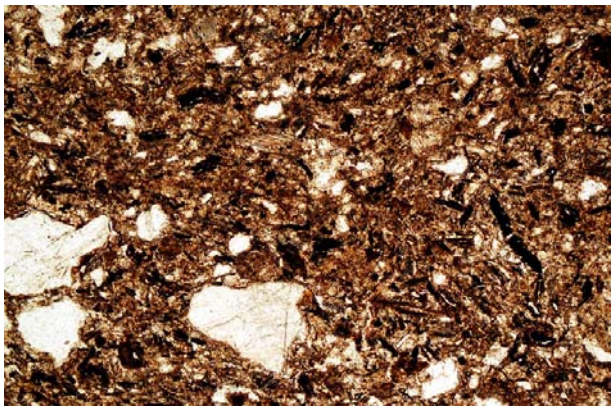


Fig. 19.

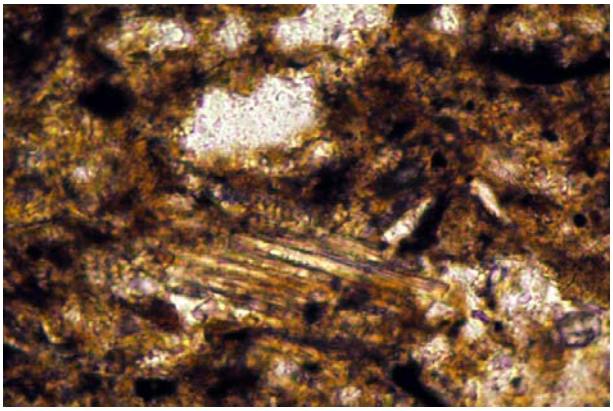


Fig. 20.

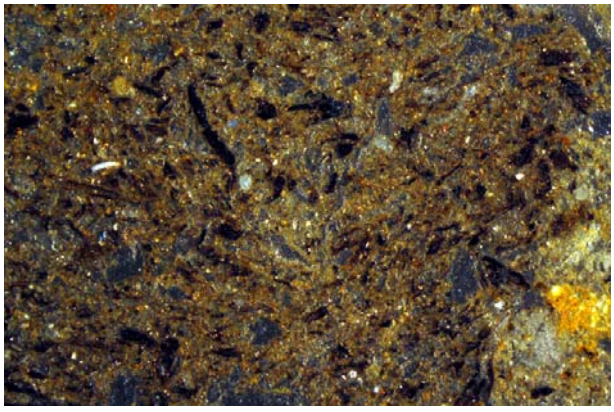


Fig. 21.

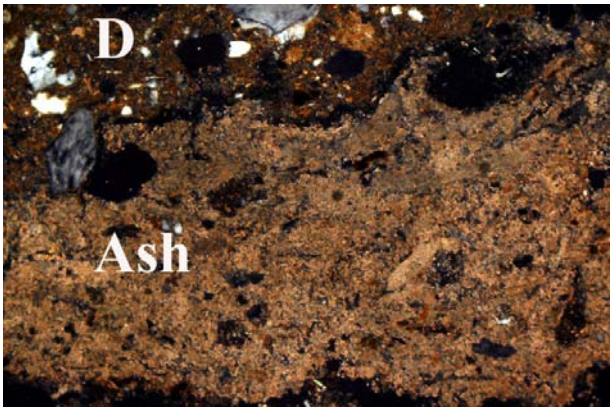


Fig. 22.

Fig. 17. Photomicrograph of M03-47 (PPL); microprobe Area C; amorphous yellow void infills with Ca-P chemistry (see Fig 4; Mean 3.47% Ca, 0.817% P; max 30.4% Ca, 9.93% P), which are anisotropic and autofluorescent under blue light, and are assumed to be cess (phytoliths from ingested cereal material? can be found as inclusions). Frame width is ~2.3 mm.
Fotografie la microscop a secţiunii M03-47 (PPL); zona analizată pe microprobă C; umpluturile amorfe gălbui ale porilor au chimism Ca-P (fig. 4; medie 3.47% Ca, 0.817% P; max. 30.4% Ca, 9.93% P), anizotrope şi autofluorescente în lumină albastră, sunt atribuite unui material coprolitic (fitolite provenind din cereale (?) ingerate sunt întâlnite ca incluziuni). Lăţimea imaginii ~2.3 mm.

Fig. 18. Photomicrograph of M03-47 (Blue Light - BL); microprobe Area C; autofluorescent calcium phosphate (probable hydroxyapatite) contains embedded probable *Trichuris* nematode egg (arrow) implying that this is faecal matter. Frame width is ~0.27 mm.
Fotografie la microscop a secţiunii M03-47 (lumină albastră - BL); zona analizată pe microprobă C; fosfat de calciu autofluorescent (probabil hidroxiapatit) ce conţine ouă de nematode, probabil *Trichuris* (vezi săgeată), ce indică faptul că acesta este un material fecal. Lăţimea imaginii ~0.27 mm.

Fig. 19. Photomicrograph of M03-47 (PPL); microprobe Area D (SMT 2b). Note concentration of charred monocotyledonous charred plant remains and charcoal believed to be relict of plant processing. Frame width is ~2.38 mm.
Fotografie la microscop a secţiunii M03-47 (PPL); zona analizată pe microprobă D (SMT 2b). A se observa concentrarea resturilor de plante monocotiledonate descompuse şi de cărbune considerate a proveni din procesarea plantelor. Lăţimea imaginii ~2.38 mm.

Fig. 20. Detail of fig. 19 (SMT 2b), showing concentration of charred organic matter and articulated phytoliths (lower centre) of monocotyledonous origin. PPL, frame width is ~0.47 mm.
Detaliu al fig. 19 (SMT 2b), indicând concentrarea materiei organice descompuse şi fitolite articulate (centru, jos) la origine plante monocotiledonate. PPL, lăţimea imaginii ~0.47 mm.

Fig. 21. Photomicrograph of M03-43, showing exactly the same kind of monocotyledonous charcoal-rich SMT 2b as in M03-47, and again indicative of plant processing. OIL, frame width is ~2.38 mm.
Fotografie la microscop a secţiunii M03-43, indicând exact acelaşi tip de unitate SMT 2b, ca în M03-47, bogată în cărbune fin de monocotyledonate, ce indică din nou procesarea plantelor. OIL, lăţimea imaginii ~2.38 mm.

Fig. 22. Photomicrograph of M03-49; a coarse fragment of unburned daub (D) embedded in calcitic ash (Ash) that includes fine burned loessic soil. Crossed Polarised Light (XPL), frame width is ~2.38 mm.
Fotografie la microscop a secţiunii M03-49; un fragment grosier de chirpici nears (D) într-o masă de cenuşă calcitică (Ash) ce include un fragment fin de sol loessic ars. Lumină polarizată încrucişat (XPL), lăţimea imaginii ~2.38 mm.

Some observations on the Vidra type axes. The social significance of copper in the Chalcolithic

Cristian Eduard ŞTEFAN*

***Abstract**: The author discusses in this article about an important category of objects from the south east European Chalcolithic, namely the Vidra type copper axes. In addition of chronology, distribution area and origin of these copper pieces, other aspects are also very important: the context of their discovery and the attitude towards copper of the prehistoric man. Although precisely such context, essential in archaeological interpretation, is often unclear, copper axes are present in houses, sometimes under their floor, which could lead us to think at possible foundation deposits.*

***Rezumat**: Autorul discută în contribuţia de faţă o categorie foarte importantă de piese din eneoliticul sud-est european, şi anume topoarele de tip Vidra. În afara originii, ariei de răspândire şi a cronologiei acestor piese din cupru, foarte importante sunt contextul descoperirii lor şi atitudinea omului preistoric faţă de cupru. Deşi uneori tocmai aceste contexte, esenţiale în interpretarea descoperirilor arheologice, sunt destul de neclare, se poate observa prezenţa topoarelor în locuinţe, uneori sub podeaua acestora, mai ales la nordul Dunării, lucru ce ne poate duce cu gândul la posibile sacrificii de construcţie.*

***Keywords:** Chalcolithic, Gumelniţa, copper, axe, Vidra type, social significance, chronology, context.*

***Cuvinte cheie:** eneolitic, Gumelniţa, cupru, topor, tipul Vidra, semnificaţie socială, cronologie, context.*

Copper objects were playing a very important part in Chalcolithic societies, the proof being their presence in various contexts: domestic, funerary and, sometimes, in special places such as sanctuaries, like the one from Mărgineni – "Cetăţuia", Neamţ county (D. Monah 1997, p. 36). Among such objects, the shaft-hole axes are the most widespread and varied in the Copper Age from the typological point of view, having two main variants: axe-hammer (the Pločnik and Vidra type) and two cross-shaped edge axe (axe-adze), with their several subtypes and variants (Al. Vulpe 1973).

The area where the Vidra type axes can be found includes Muntenia, Moldova and north-eastern Bulgaria. Isolated items were also found in Ukraine, Serbia, Hungary and Poland (fig. 1). The way in which this type of object was manufactured raised many controversies among specialists. On the occasion of the discovery of the axe in Vidra the idea of its being manufactured by means of the "lost wax" method was discussed, and later the idea that a monovalve mould had been used. Based on the metallographic analyses and the observations made on such objects, the use of two methods for their manufacturing was ascertained: the „lost wax" and the bivalve mould (E. Comşa 1983, p. 27-28). The copper axes were imitating most probably the ones made of polished stone, produced since the beginning of the Neolithic age (Al. Vulpe 1975, p. 16), between the temperature necessary for painting graphite vases and the beginnings of metallurgy existing most certainly a relationship (D.W. Bailey 2000, p. 227).

For the establishment of the Vidra type axes chronology the context of their discovery is very useful, especially for the items connected to the habitat. In the Gumelniţa-Karanovo VI area such items were discovered in settlements belonging to the last phase of this culture, sometimes even in houses (Teiu, Vidra, Bucşani, Gabarevo, Hotnica), and in the Cucuteni area especially in settlements belonging to phase A3 (Cucuteni, Lupeşti, Izvoare, probably Reci), but A2 phase also (Mărgineni-"Cetăţuia"). Globally, phase B of the Gumelniţa culture fits approximately in the 4250-3950/3900 BC interval, phase A2 of the Cucuteni culture between 4500-4150 BC, and phase A3 of the latter one between 4350/4325-4050 BC interval (C. Bem 2000-2001, p. 37, 43), leading to the conclusion that the Vidra type axes circulated in the above mentioned area during the last third of the Vth millennium and in the first century of the IVth millennium BC.

The length of the axes for which we have available information varies between 10 and 25 cm, no special standard being observed in their manufacturing from this point of view (fig. 2). A certain standard can be observed in respect of the form of such objects, three subtypes being established south of the Danube (H. Todorova 1981, p. 37-39). Even if it becomes quite obvious that every „type" is a creation of the researcher, a convention established by him for the purpose of ordering the huge quantity of archaeological material, a common representation system of the prehistoric manufacturers in creating certain objects can not be denied[1]. Interesting observations could have been made by

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[1] In our case the Vidra type axes, which, without being identical, share however several morphological criteria. A very useful discussion on this topic in A.-D. Popescu 2006, p. 431-432.

comparing the weight of such objects, the PBF volumes, in which the majority of axes of this type are grouped, containing unfortunately no such information.

In respect of the origin of the Vidra type axes, things are far from being clarified. Items from the cucutenian area were considered clear „imports", due to the lack of evidence regarding their production within the area of this culture (Vl. Dumitrescu 1968, p. 44; I. Mareş 2002, p. 56-61). On the other hand, metallographic analyses seem to indicate that items discovered in Reci and Vidra were produced using copper from Transylvania (D. Popovici 1983, p. 15). Until a decisive series of analyses is made on all the existing Vidra type axes and such information is correlated with a possible deposit in Transylvania or in another place, things will remain just a hypothesis. Regarding the items in Bulgaria, some of them may be connected with the mine in Ai-Bunar, Stara Zagora, while others seem to be manufactured using copper from Rudna Glava, in Serbia (H. Todorova 1981, p. 37).

If we return to the contexts in which this type of axe was found we may observe that there are several differences among areas north and south of the Danube. For example, in areas north of the Danube this type of items are present in several settlements and houses but never in burial places[2], while in areas south of the Danube items found in burial places prevail (fig. 3). This probably reflects a difference between social groups present in the two previously mentioned areas, in the sense that a more pronounced stability of Chalcolithic communities is to be found north of the Danube (J. Chapman 1983, p. 33).

Contexts in which the Vidra axes were discovered are very important if we consider their symbolic significance. We already mentioned previously the presence of such an item in a possible sanctuary in Mărgineni „Cetăţuia". We consider it very important to mention also the fact that the axe was „caught in the clay floor and covered by the crumbling walls" (Monah 1997, p. 36, 255; fig. 3/4 and 257, fig. 5).

The item in Bucşani may also gain a special significance, if we think that it was discovered *forced through* the floor of the house, a situation that was recently related to the symbolic "death" of the respective house (Al. Dragoman, S. Oanţă-Marghitu 2007, p. 116). Unfortunately, the context of the Bucşani item is only mentioned in the technical literature, without being clearly stated as such, so that a certain reserve regarding such an interpretation is therefore necessary under the circumstances. Such axes have been previously discovered in Chalcolithic houses, unfortunately their exact position being however not mentioned in the literature. An interesting situation was discovered in the Junacite settlement in Bulgaria. Here two Pločnik type axes were found under the floor of a house, placed side by side, with their top in opposite direction one from the other (V. Mazanova 2004, p. 394, fig. 1). An interpretation thereof as simple objects in the respective house inventory seems too simple taking into consideration their position and the fact that they were placed under the floor of the house. Most probably it seems to be a voluntary placement, related to the building of the respective house (a short discussion in S. Oanţă-Marghitu 2005, p. 382). On the other hand, foundation deposits are relatively widespread in south-eastern Europe, the custom being also mentioned in popular ballads (M. Eliade 2000, p. 40-41). A voluntary positioning also seems to be the answer in the case of the Jászladány type axe in Reşca, Olt county. The item was discovered at the basis of the defense wall of a Sălcuţa III settlement, having probably a *consecratio* role for the respective wall (Al. Vulpe 1973, p. 234, note 63)[3].

Foundation deposits benefited of the specialists' attention since the end of the XIX-th century. In a study dedicated to this phenomenon, the spreading and type of various offerings are analyzed, as well as causes and purposes of such items (P. Sartori 1898, p. 1-54). Purposes of foundation deposits were of 4 types: 1) as a proper offering; 2) for the obtaining of a guardian angel; 3) protection magic; 4) sympathetic magic (P. Sartori 1898, p. 28-46). The latest contribution in this area (I. Beilke-Voigt 2007) contains some useful remarks on this topic. Thus, inter alia, the author stresses the central role of the hearth, wich in traditional folklore was the abode of various spirits (fire demons, ancestral and house spirits) and therefore was related with numerous cults (I. Beilke-Voigt 2007, p. 122). In this context we wish to emphasize that the axe of Teiu was founded near a hearth (I. Nania 1967, p. 17).

[2] With the observation that Gumelniţa type necropolis north of the Danube are fewer, there existing a clear lack of research for this segment. We need to point out that axes exist in the funerary inventory of this culture north of the Danube, but they are made of rock instead (C. Lazăr 2001).

[3] The respective item is only mentioned in the literature, there existing no other evidence of the context in which it was found (drawings or photographs), which would have been very useful for our study.

The Pločnick type axes benefited quite recently of a fairly well documented study (Govedarica 2001, p. 153-164)[4]. From the total of 52 items belonging to this type, 16 have a clear context and 15 come from hoards (Govedarica 2001, p. 157). In respect of the chronologic relation between the two axe types (Pločnick and Vidra), it seems that they overlap for a short period of time, but their spreading areas exclude each other (compare fig. 1 with Govedarica 2001, fig. 1), as it was observed almost four decades ago (Al. Vulpe 1973, p. 225-226).

An essential aspect is represented by the attitude of the prehistoric man towards copper, even if studies in this field are rather few. An exception is the excellent contribution of Joanna Sofaer Derevenski (2000, p. 389-406), who analyses various associations between copper objects and age and gender groups in tombs belonging to the Tiszapolgár and Bodrogkeresztúr cultures, proving in this way permanent changes in the structure of the life course of people along final Neolithic in Hungary. Due to the absence of well investigated Chalcolithic necropolis at the Lower Danube, such type of analysis may be difficult. Varna could be an exception for this matter, but until today this important archaeological monument was not correctly published. On the other hand, most of the Vidra type axes in this necropolis were found preponderantly in cenotaphs, so that a possible statistical analysis correlated with their age group or gender may become impossible, but the special symbolic value of this particular type of artefact is clearly pointed out.

In relation with this last aspect, a paragraph in Mircea Eliade (1996, p. 143-144) seems to us relevant, and we shall consequently quote it here entirely: „But it is evident that a thinking dominated by the cosmologic symbolism created a completely different «experience of the world» than the one of the nowadays modern man. For the symbolic thinking, the world is not only «alive», it is also «open»: an object is not only a presence in itself (as it happens in the case of modern conscience), but also the sign or the gathering place of something further, a reality transcending the level of the respective object manifesting itself. We shall give only one example: the ploughed land is more than a simple strip of land, it is the body of Mother Earth; the digging shovel is a phallus, without ceasing to be a tool used in agriculture; ploughing the land is at the same time a «mechanic» work (done with man made tools) as well as a sexual union ordered for the hierogramic fecundation of Mother Earth."

Some answers regarding the social value of copper seem to become available from the ethnographical research of pre-colonial Africa. Thus, it was observed that both archaeological and artistic written sources suggest four main categories: a) a means of exchange; b) adornments; c) signs of social power and status; d) worshipping objects. Some indications in this respect have reached us also through legends and myths. For example in the middle Niger area copper was explicitly related to a water god as well as to several creation myths (E. Herbert 1973, p. 179-194). In India, high purity copper was considered superior to any alloy, copper objects being used in contexts related to the rituals. Copper manufacturers were also considered superior to the ones producing various other alloys[5] (N. Lahiri 1995, p. 116-132; A.-D. Popescu 2006, p. 449). There is also information coming out of the study of the traces existing on the respective copper axes from the times they had been used. In Bulgaria such analyses pointed out that less than 10% of the total number of such items bear use traces, which would lead us to the conclusion that such objects were not manufactured in order for them to be used, but more probably in order to be exhibited and deposited (D.W. Bailey 2000, p. 214). Returning to pre-colonial Africa, ethnographical and archaeological research lead to a number of conclusions regarding the social role played by metals. Copper and gold were, first and foremost, rare and expensive metals, being used in order to show wealth or the high social status; secondly, the mysterious transformation from ore into metal, usually related to the human process of gestation and birth, helped metals acquire symbols of fertility and productivity; thirdly, the physical properties of metals – colour, brilliance, flexibility – clearly influenced their symbolic and functional potential (S. Terry Childs, D. Killick 1993, p. 331).

One of the relatively recent contributions analyses objects from a very interesting point of view, namely that of their biography. The basic idea is that, as people and objects become older, they circulate more and become the object of trading, undergoing constant transformations. Such transformations of both persons and objects are closely related to one another (C. Gosden, Y. Marshall 1999, p. 169). A crucial matter is represented by the distinction that needs to be made between gift and exchange good. What in the eye of an European may seem an economic

[4] The settlements in Goljamo Delčevo, Vinica and Glina belong in fact to the Gumelniţa-Karanovo VI complex and not to the Cucuteni culture, as they erroneously appear in Govedarica (p. 159).

[5] About the status of the forgerons in various pre-industrial societies in the excellent contribution made by Mircea Eliade, *Făurari şi alchimişti*, Bucureşti, 1996.

transaction, in a society based on kinship relations may be in fact an act related to the „production" of social atmosphere, by means of creating and maintaining social relations. Exchange goods are manufactured in order to be traded without creating special relations between the persons implicated in giving and receiving them; gifts however, as a difference, will always maintain a relationship between the person producing and the other social actors receiving them (C. Gosden, Y. Marshall 1999, p. 173). For this topic, the anthropologic research made by Marilyn Strathern in Melanesia is of utmost importance. Even if such research is valid only for Melanesia and cannot be generalized, a number of conclusions drawn in this work may be useful for our study also. For Strathern the identity of persons and objects at a certain moment derives from their current relations' network. While for Europeans objects exist from and by themselves, for Melanesians they represent parts detached from people, which circulate in various ways through the social body. Thus, a person's act may have effects at considerable distance from the body of the respective individual and may continue to have an effect also after the death of such person. In Melanesia people may be at the same time subject and object, may find themselves in one place or scattered around in several places, acting directly or influencing things from the dark, according to their ever changing position in the network of social relations. This is not valid however for the way in which Europeans perceive themselves, leading therefore to a radical disruption between the two conceptions on life. Implications for the concept of objects' „biography" are important: artifacts no longer represent the measure of an internal life, people and objects have common „biographies", which do unravel themselves in culturally conditioned ways (C. Gosden, Y. Marshall 1999, p. 173).

An interesting approach seems to us the one belonging to Ian Hodder, regarding the opposition *domus-agrios* in the south-eastern European Neolithic age. The previously mentioned author associates the concept of *domus* with the feminine gender, the house, the stove, ceramics decoration, food preparation and storage, weaving and figurines, and the one of *agrios* with the masculine gender, tombs, hunting, **axes**, **copper**, masks, trading, weapons, the manufacturing of stone tools and animals (I. Hodder 1990, p. 69, fig. 3/5). Exhibiting, like any structural approach, a rather schematic structure, this may be however one of the ways to be considered in order to try to understand, even if only in part, this world highly impregnated by the sacred of the prehistoric man.

Catalogue of discoveries:

1. **BEREZOVSKAIA**, Kirovgrad region, Ucraina; b) discovered in a tripolian house; c) L = 13 cm; M = 0,700 kg; d) V. G. Zbenovici 1969, p. 135-142, fig. 1/1 şi 2/3.
2. **BUCŞANI – „La Pod"**, Giurgiu county; b) discovered in the house no. 10 in the Gumelniţa B level; d) C. Bem 2002, p. 67.
3. **CONEVO**, Varna, Bulgaria; a) collections of the Varna Museum; b) discovered in the *tell* settlement; c) L = 18 cm; d) H. Todorova 1981, p. 37, pl. 6/102.
4. **CUCUTENI – „Cetăţuie"**, Iaşi county; a) collections of the National History Museum; b) discovered in the Cucuteni A3 settlement at Cucuteni – „Cetăţuie"; c) L = 20,1 cm; d) M. Petrescu-Dâmboviţa 1965, p. 161, fig.3; Al. Vulpe 1975, p. 22, pl. 3/26.
5. **DĂRZĂNOVEC**, Razgrad region, Bulgaria; a) Razgrad Museum collections; b) discovered randomly at the edge of the settlement in the place called „Praštanica"; c) L = 15,9 cm; d) H. Todorova 1981, p. 37, pl. 7/108.
6. **DRAGOMIREŞTI**, Neamţ county; a) Piatra Neamţ Archaeology Museum collections; b) discovered randomly on the territory of the Dragomireşti village; c) L = 13,5 cm; d) V. Căpitanu 1971, p. 437 and note 7.
7. **GABAREVO**, Stara Zagora region, Bulgaria; a) Stara Zagora Museum collections; b) discovered in Stara Zagora settlement, in the level dated as phase III of the KGK VI complex; c) L = 15 cm; d) H. Todorova 1981, p. 39, pl. 8/128.
8. **GOLJAMO DELČEVO**, Varna region, Bulgaria; a) Varna Museum collections; b) discovered in level XVII of the settlement in Goljamo Delčevo; c) L = 16,8 cm; d) H. Todorova 1981, p. 37, pl. 6/103.
9. **HLUDNO**, Nozdrzec region, Polonia; a) Rzeszów Museum collections; b) discovery made accidentally; c) L = 17 cm; M = 0,457 Kg; d) M. Gedl 2004, p. 20, pl. 1/5.
10. **HOTNICA**, Veliko Tărnovo, Bulgaria; a) Veliko Tărnovo Museum collections; b) discovered in the upper inhabiting level of the Hotnica settlement, near a skeleton placed under the remains of a

destroyed house; dated in phase III of the KGK VI complex; c) L = 15,9 cm; d) H. Todorova 1981, p. 37, pl. 7/104.

11. **HOTNICA**, Veliko Tărnovo region, Bulgaria; a) Veliko Tărnovo Museum collections; b) discovered in the Hotnica settlement; c) L = 14,4 cm; d) H. Todorova 1981, p. 38, pl. 8/125.
12. **HOTNICA**, Veliko Tărnovo region, Bulgaria; a) Veliko Tărnovo Museum collections; b) discovered in the Hotnica settlement; c) L = 13,8 cm; d) H. Todorova 1981, p. 39, pl. 8/129.
13. **IZVOARE**, Neamţ county; a) Institute of Archaeology "Vasile Pârvan" collections, Bucharest; b) discovered in 1989 in Cucuteni A settlement, inside house no. 4; c) L = 17,5 cm; d) information from Silvia Marinescu-Bîlcu; Dumitroaia 1992, p. 291; Mareş 2002, p. 255, 424 pl. 14, fig. 8[6].
14. **JORDANÓW ŚLĄSKI**, Lagiewniki region, Poland; a) belonged to the Wroclaw Museum collections, disappeared; b) isolated find; c) L = 17,5 cm; M = 1,035 Kg; d) M. Gedl 2004, p. 20, pl. 1/6.
15. **KISKÖRE**, Heves, Hungary; a) Local highschool collections; b) accidental discovery; c) L = 24,7 cm; G = 1,724 kg; d) P. Patay 1984, p. 40, pl. 9/156.
16. **LUPEŞTI**, jud. Vaslui; a) „Vasile Pârvan" Museum collections in Vaslui; b) discovered in a Cucuteni A3 settlement; c) L = 13,4 cm; M = 0,385 kg; d) E. Popuşoi 1979, p. 301-302, fig. 1.
17. **MĂRGINENI – „Cetăţuia"**, Neamţ county; a) Piatra Neamţ Museum collections; b) discovered in a Cucuteni A2 settlement in the place called „Cetăţuie", in a sanctuary; c) L = 19 cm; d) D. Monah 1978, p. 39; D. Monah 1997, p. 257, fig. 5.
18. **PRUNDU**, Giurgiu county; a) M.N.A. collections, Institute of Arheology "Vasile Pârvan" collections, Bucharest, inv. no. I 22093; b) isolated find; c) L = 14 cm; M = 0,300 kg; d) E. Tudor 1972, p. 19-30, fig. 1/1, 4/1; Al. Vulpe 1975, p. 22, pl. 2/23.
19. **RECI**, Covasna county; a) Sf. Gheorghe County Museum collections; b) discovered in a Cucuteni-Ariuşd settlement; c) L = 10,5 cm; d) Z. Székely 1962, p. 328-329, fig. 1/1; Al. Vulpe 1975, p. 22, pl. 2/24.
20. **RIPANJ**, Serbia; b) isolated find; d) M. Garašanin 1954, p. 64, fig. 1; E. Comşa 1983, p. 24.
21. **RUMANJA**, Sliven region, Bulgaria; a) Nova Zagora Museum collections; b) discovered in the *tell* settlement in „Bratja Kunčev", in the habitation level; c) L = 19,8 cm; d) H. Todorova 1981, p. 38, pl. 7/111.
22. **„SIBIU"**, Sibiu county; a) Bucharest Museum of History b) isolated discovery, nearby Sibiu; c) L = 13,8 cm; d) D.V. Rosetti 1934, p. 29, note 80; Al. Vulpe 1975, p. 22, pl. 3/27.
23. **SMJADOVO**, Šumen region, Bulgaria; a) Šumen Museum collections; b) isolated find, probably in a necropolis; c) L = 16,2 cm; d) H. Todorova 1981, p. 38, pl. 8/126.
24. **ŠUMEN**, Šumen Region, Bulgaria; a) Šumen Museum collections; b) isolated find; c) L = 18,9 cm; d) H. Todorova 1981, p. 38, pl. 7/107.
25. **TEIU**, Argeş county; a) Argeş County Museum collections; b) discovered in Gumelniţa B level from the *tell* settlement, near a hearth; c) L = 15 cm; d) I. Nania 1967, p. 17; Vulpe 1975, p. 22, pl. 2/25.
26. **VARNA – „Detski Sanatorium"**, Varna region, Bulgaria; a) collections of the Varna Museum; b) isolated find; c) L = 15,9 cm; d) H. Todorova 1981, p. 37, pl. 7/105.
27. **VARNA – „Detski Sanatorium"**, Varna region, Bulgaria; a) collections f the Varna Museum; b) isolated find; c) L = 18 cm; d) H. Todorova 1981, p. 37, pl. 7/106.
28. **VARNA**, Varna region, Bulgaria; a) collections of the Varna Museum; b) necropolis I, tomb 1 (cenotaph ?); c) L = 13,5 cm; d) H. Todorova 1981, p. 38, pl. 7/112.
29. **VARNA**, Varna region, Bulgaria; a) collections of the Varna Museum; b) necropolis I, isolated discovery; c) L = 15 cm; d) H. Todorova 1981, p. 38, pl. 7/113.
30. **VARNA**, Varna region, Bulgaria; a) collections of the Varna Museum; b) necropolis I, tomb 4, cenotaph; c) L = 17,7 cm; d) H. Todorova 1981, p. 38, pl. 7/114.
31. **VARNA**, Varna region, Bulgaria; a) collections of the Varna Museum; b) necropola I, tomb 26, cenotaph; c) L = 15,9 cm; d) H. Todorova 1981, p. 38, pl. 7/115.
32. **VARNA**, Varna region, Bulgaria; a) collections of the Varna Museum; b) necropolis I, tomb 36, cenotaph; c) L = 15,9 cm; d) H. Todorova, p. 38, pl. 7/116.
33. **VARNA**, Varna region, Bulgaria; a) collections of the Varna Museum; b) necropolis I, tomb 39, cenotaph; c) L = 12,3 cm; d) H. Todorova 1981, p. 38, pl. 7/117.

[6] With the remark that the drawing of the axe is wrong.

34. **VARNA**, Varna region, Bulgaria; a) collections of the Varna Museum; b) necropolis I, tomb 53; c) L = 14,7 cm; d) H. Todorova 1981, p. 38, pl. 7/118.
35. **VARNA**, Varna region, Bulgaria; a) collections of the Varna Museum; b) necropolis I, tomb 54; c) L = 15,9 cm; d) H. Todorova 1981, p. 38, pl. 8/119.
36. **VARNA**, Varna region, Bulgaria; a) collections of the Varna Museum; b) necropolis I, tomb 55, cenotaph; c) L = 10,2 cm; d) H. Todorova 1981, p. 38, pl. 8/120.
37. **VARNA**, Varna region, Bulgaria; a) collections of the Varna Museum; b) necropolis I, tomb 57, cenotaph; c) L = 10,2 cm; d) H. Todorova 1981, p. 38, pl. 8/121.
38. **VARNA**, Varna region, Bulgaria; a) collections of the Varna Museum; b) necropolis I, tomb 92, assumed to a man; c) L = 14,1 cm; d) H. Todorova 1981, p. 38, pl. 8/122.
39. **VARNA**, Varna region, Bulgaria; a) collections of the Varna Museum; b) necropolis I, tomb 97, cenotaph, third phase of Varna culture; c) L = 15,9 cm; d) H. Todorova 1981, p. 38, pl. 8/123.
40. **VARNA**, Varna region, Bulgaria; a) collections of the Varna Museum; b) necropolis I, tomb 1, cenotaph; c) L = 17,4 cm; d) H. Todorova 1981, p. 38, pl. 8/124.
41. **VARNA – „Detski Sanatorium"**, Varna region, Bulgaria; a) collections of the Varna Museum; b) isolated find; c) L = 15,3 cm; d) H. Todorova 1981, p. 39, pl. 8/127.
42. **VELIKI CRLJENI**, Serbia; b) isolated find; d) M. Garašanin 1954, p. 66; E. Comşa 1983, p. 24.
43. **VIDRA**, Giurgiu County; b) discovered probably in the Gumelniţa B level from Vidra settlement; c) L = 17,2 cm; d) D. V. Rosetti 1934, p. 29, fig. 42; Al. Vulpe 1975, p. 22, pl. 2/22.

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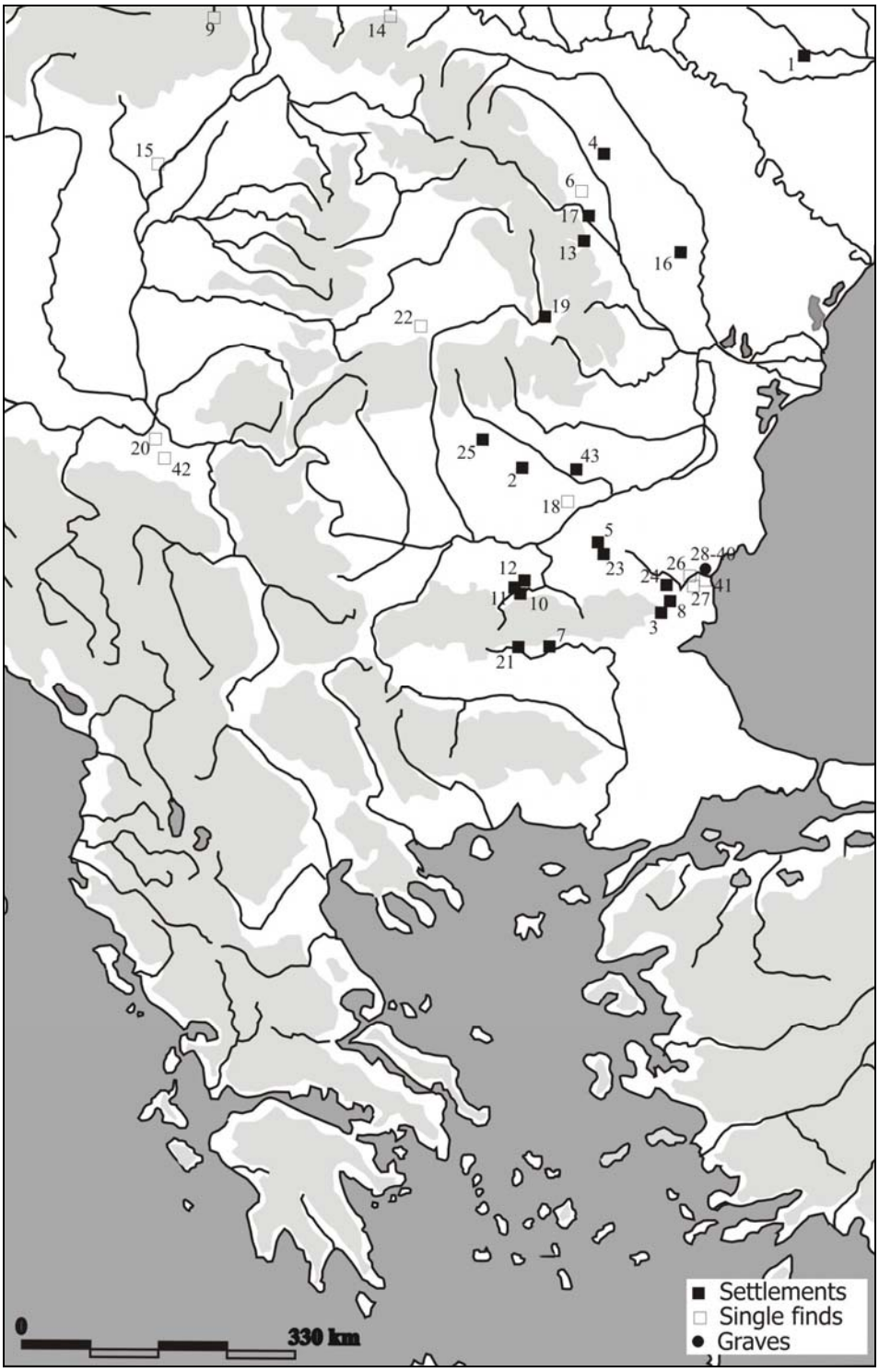

Fig. 1. The spreading of the Vidra type axes in South-East Europe.
Răspândirea topoarelor de tip Vidra în sud-estul Europei.

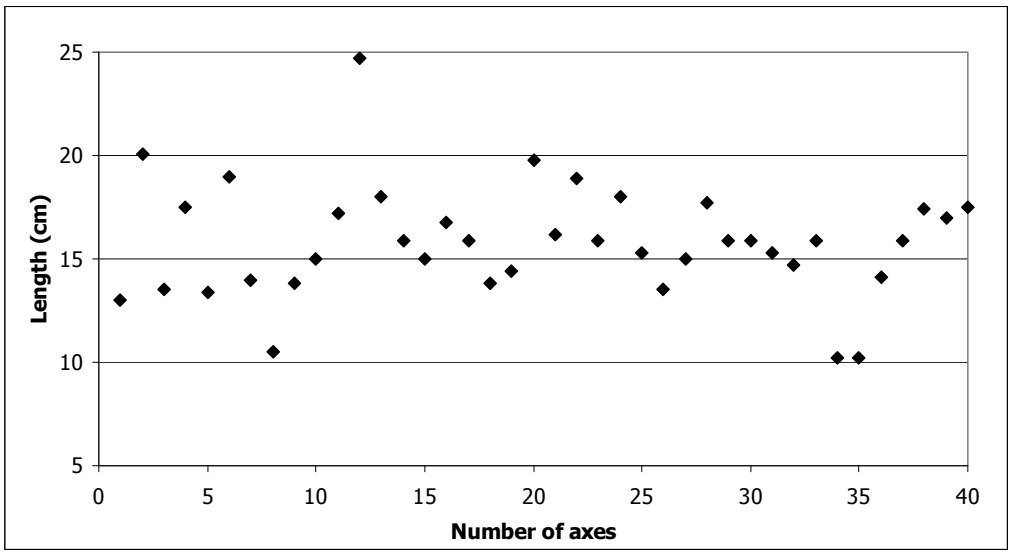

Fig. 2. The comparative dimensions of the Vidra type axes.
Dimensiunile comparate ale topoarelor de tip Vidra.

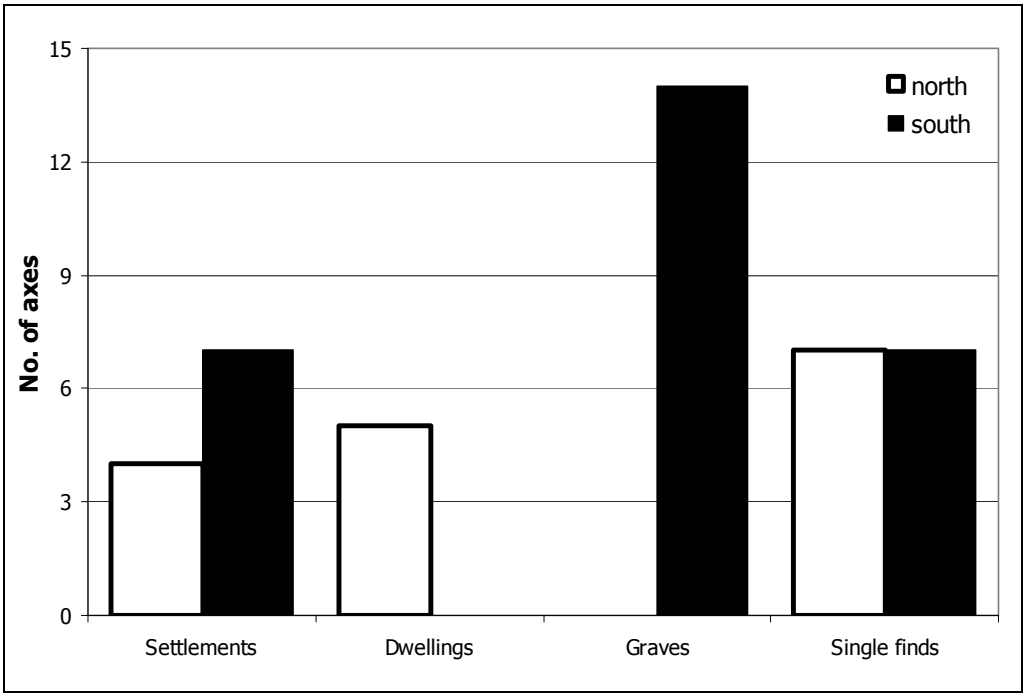

Fig. 3. The contexts of Vidra type axe discoveries at north and south of the Danube.
Contextele descoperirilor de topoare de tip Vidra la nord şi la sud de Dunăre.

Matière, artefact, symbole. Dents percées et imitations en os dans les dépôts d'objets de prestige de la culture Cucuteni

Corneliu BELDIMAN[*]
Diana-Maria SZTANCS[**]

Abstract. *Raw material, artifact, symbol. Adornment on perforated teeth and imitations in the treasures with prestige goods of the Cucuteni culture. The article offer a detailed analysis of the perforated adornment manufactured on animal and human teeth (most of them red deer canines; a human molar; 50 teeth from small unidentified mammals), as well as the bone imitations of the red deer canines. All of them were discovered in the inventory of 6 spectacular treasures discovered on the territory of Romania (Ariuşd, Brad, Hăbăşeşti, Izvoare) and the territory of Republic of Moldavia (Cărbuna, Chetroşica) and belonging to the Cucuteni Culture (V^{th}-IV^{th} millennia B.C.). The methodological issue is based on the actual international approaches and is focused on various quantifiable paleotechnological aspects as: raw materials, specific stages of manufacture, functional role of the artifacts.*

Rezumat. *Materie, artefact, simbol. Dinţi perforaţi şi imitaţii de os în depozitele cu obiecte de prestigiu ale culturii Cucuteni. Lucrarea propune analiza artefactelor din materii dure animale – canini de cerb perforaţi, molari (unul uman şi 50 aparţinând unor mamifere mici de specie nedeterminată), imitaţii în os ale caninilor de cerb – care intră în componenţa a 6 depozite descoperite pe teritoriul actual al României (Ariuşd, Brad, Hăbăşeşti, Izvoare) şi al Republicii Moldova (Cărbuna, Chetroşica), aparţinând culturii Cucuteni (eneolitic, mileniile V-IV î.e.n.). Trama metodologică aplicată ia în considerare abordările internaţionale actuale ale domeniului; se analizează toate aspectele cuantificabile paleotehnologice: materie primă, etapele fabricării, ipotezele privitoare la modul de utilizare şi rolul funcţional al artefactelor.*

Keywords: *adornment; canine; Cucuteni culture; bone imitations; Neo-Eneolithic; paleotechnology; perforated teeth; prestige goods; red deer, skeletal materials; treasure.*

Cuvinte cheie: *canin; cerb; Cucuteni; dinţi perforaţi; depozit; imitaţii în os; materii dure animale; neo-eneolitic; obiecte de prestigiu; paleotehnologie; podoabe.*

Introduction

Dans les dernières deux décennies on constate en Roumanie l'augmentation de l'intérêt pour l'étude systématique des artefacts préhistoriques en matières dures animales (C. Beldiman 1993, 1999, 2004a, 2004b, 2005, 2007; C. Beldiman, D.-M. Sztancs 2005a, 2005b, 2005c, 2006; Al. Bolomey, S. Marinescu-Bîlcu 1988; S. Marinescu-Bîlcu, Al. Bolomey 2000; D.-M. Sztancs, C. Beldiman 2005 – toutes avec la bibliographie).

Dans ce contexte, l'intérêt récemment manifesté pour l'étude poussée des dépôts d'objets de prestige signalés dans l'aire du complexe culturel Ariuşd-Cucuteni-Tripolie (D. Monah 2003; C. Beldiman, D.-M. Sztancs 2005b, 2006) stimule et privilégie en première la démarche détaillée exhaustive des artefacts en matières dures animales présentes dans la structure de ce type spectaculaire de découvertes préhistoriques.

Il s'agit généralement de composantes majeurs de ces accumulations comme les objets de parure (dizaines de perles et de dents percées – canines résiduelles de cerf – et leur imitations en os, des bracelets) et rarement d'armes (poignard en os). Tous ces objets sont particulièrement chargés de significations symboliques, sociales mais pas moins de nature paléotechnologique – en sens large – qui attendent encore à être explorées intégralement et mises en valeur (C. Beldiman, D.-M. Sztancs 2006).

Les 7 dépôts contenant objets de prestige connues jusqu'à maintenant sur le territoire de la Roumanie (Ariuşd, Brad, Hăbăşeşti, Izvoare) et de la République de Moldavie (Cărbuna, Chetroşica, Horodnica) ont été découvert pendant le XIX^{ème} et le XX^{ème} siècles. L'effectif total des artefacts composant ces dépôts compte plus de 11.880 pièces, confectionnées en métal (cuivre, or), en matériaux lithiques, en matières dures végétales (semences de *Lithospermum purpureo coeruleum*) et en matières dures animales (os longs de mammifères, spondyles, dents – croches, molaire humaine, molaires de petites mammifères indéterminées). Selon les effectifs de artefacts on a: petites dépôts (conventionnellement, moins de 100 pièces – dépôts de Hăbăşeşti et Horodnica); dépôts ayant des effectifs moyens (100 – 500 pièces – dépôts de Brad et Chetroşica); grand dépôts (plus de 500 pièces – dépôts d'Ariuşd, Cărbuna et Izvoare).

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Accompagnant des artefacts métalliques divers (haches, bracelets, perles, pendeloques, bagues etc. en cuivre et en or), les objets en matières dures animales constituent généralement de composantes majeurs de ces accumulations. Elles appartenant aux deux catégories typologiques: armes (poignard en os) et pièces de parure divers: croches; imitations en os des croches; molaire humaine; molaires de petites mammifères indéterminées; perles en spondyle et en os; plaquettes en os, en spondyle et sur fragment de défense de sanglier; pendeloques en spondyle; bracelets en spondyle.

Tous ces objets sont particulièrement chargés de significations symboliques, sociales mais pas moins de nature paléotechnologique – en acception large – qui attendent encore à être explorées intégralement et mises en valeur.

On a affaire avec des objets de prestige composites (colliers, bracelets) ou éléments cousus sur supports textiles ou en cuir (équipement cérémoniel?) (D. Monah 2003; C. Beldiman, D.-M. Sztancs 2005c, 2006).

L'ouvrage propose une analyse de l'inventaire des dents percées et leur imitations des 6 dépôts: Ariuşd, Brad, Cărbuna, Chetroşica, Hăbăşeşti et Izvoare (tab. 1).

La trame méthodologique prend en considération les approches internationales récentes; les modèles sont généralement fournies par les publications françaises et particulièrement par le Cahier IV des *Fiches typologiques de l'industrie osseuse préhistorique* (H. Camps-Fabrer 1988-1998; H. Barge-Mahieu, Cl. Bellier, H. Camps-Fabrer *et alii* 1991; C. Beldiman 1993, 1999, 2004a, 2004b, 2005; C. Beldiman, D.-M. Sztancs 2005c; C. Beldiman 2007 – avec la bibliographie; A. M. Choyke 2001; F. D'Errico, M. Vanhaeren 2002).

Les objectifs majeurs de la démarche sont définies par:

- la description morphologiques des artefacts par recours au vocabulaire/lexique contrôlé;
- l'identification exacte de la nature de la matière première des pièces – origine spécifique et anatomique; en ce sens, les dents percées et spécialement celui des croches (canines résiduelles de cerf) présente un intérêt tout à fait particulier; on cherche à préciser si on a des dents qui proviennent du même individu par l'identification du sexe et des éléments de symétrie/bilatéralité anatomique; ces éléments ont une importance majeure pour les conclusions qui visent la modalité de l'accumulation des artefacts dans les dépôts, la circulation des objets, fonctionnement des coutumes liées à l'échange des objets de prestige etc.;
- l'étude technologique – données sur la «chaîne opératoire» de la fabrication (débitage, façonnage, y compris l'aménagement des dispositifs de suspension etc.) et de l'utilisation des artefacts. Le plus expressif dans ce point de vue s'avèrent les perforations des dents et des leur imitations en os. Très importante est la précision, suite à l'observation à l'oeil nue et à la loupe binoculaire des procédées et des étapes de réalisation des perforations: préparation bilatérale des surfaces; percement par rotation sur une (unilatérale) ou sur les deux faces (bilatérale) de l'objet; la perforation par rotation alternative (rotations en sens opposés ayant une amplitude de 180º environ chaque) ou perforation par rotation complète (rotations rapides ayant une amplitude de 360º en utilisant le foret). Importante c'est aussi la constatation liée au nombre des perforations. Dans le cas des dents on constante que la majorité des pièces analysées ont une seule perforation; mais on a aussi des objets avec deux perforations ou des pièces „réparées" après la fracturation au niveau de la perforation initiale, accident produit soit pendant l'opération de percement primaire, soit durant l'usage. Significatif c'est la constatation du recours au même procédée technique de percement pour la réalisation de la perforation secondaire ou à une autre solution technique, ce qui constitue un indice pour les interventions probables avec un décalage chronologique, opérées par des individus différentes;
- le problème de la technologie (fabrication) lié aux imitations en os des canines résiduelles de cerf; on connaît depuis longtemps que les dents en provenance des espèces chassées et particulièrement les croches ont été imitées en matériaux divers (à partir du Paléolithique supérieur en os, calcaire, ivoire, puis pendant le Néolithique en terre cuite, cuivre etc.). Ce fait souligne une fois de plus leur valeur symbolique majeure, mais aussi la difficulté de les procurer pour couvrir les nécessités de l'utilisation selon les contraintes de la tradition et pour souligner le statut social etc. Tous ces problèmes sont illustrés, en plan quantitatif, on pourrait dire, à l'échelle gigantesque par rapport à d'autres époques antérieures par la structure des dépôts de prestige appartenant à la culture Cucuteni. Dans ce sens notre étude peut constituer une contribution à la connaissance des aspects symboliques du comportement social dans la Préhistoire des nos régions;

• les observations sur les traces d'utilisation et leur signification pour l'établissement hypothétique du rôle fonctionnel des artefacts comme éléments d'enfilage: parure unique ou éléments des ensembles plus ou mois complexes: colliers combinant plusieurs types (perles en matériaux divers; dents percées et imitation en os; pendeloques; plaquettes etc.). Les plus importantes traces d'utilisation sont observables au niveau des perforations: fractures partielles/totales, émoussement et lustre des parois et des marges, stries etc.

Lorsque les artefacts en discutions font partie des dépôts il est très difficile de préciser la modalité dans laquelle ils ont été combinés avec d'autres types; en ce sens les contextes funéraires *in situ* peuvent fournir des suggestions ou analogies valables et repères pour une étude comparative de la fonction (C. Beldiman, D.-M. Sztancs 2005b, 2006).

Les dépôts. Dents percées et imitations (tab. 1)

Le répertoire inclut six dépôts découverts par hasard ou pendant des fouilles archéologiques dans les sites appartenant au complexe culturel Ariuşd-Cucuteni-Tripolie. Il s'agit de quatre dépôts apparus sur le territoire actuel de la Roumanie (Ariuşd, Brad, Hăbăşeşti, Izvoare) et de deux dépôts identifiés dans la République de Moldavie (Cărbuna et Chetroşica).

Les dépôts ont offert un nombre total de 563 dents percées et imitations en os (tableau no. 1). On a 330 canines résiduelles de cerf, une molaire humaine, 50 molaires en provenance de petits mammifères indéterminés et 182 imitations en os des canines de cerf. La plupart des pièces a été livré part le dépôt de Brad (183 exemplaires), suivi par celui d'Ariuşd (130 exemplaires) et celui de Cărbuna (125 exemplaires).

Pour le contexte général des découvertes et la structure de chaque dépôt voir D. Monah 2003; C. Beldiman, D.-M. Sztancs 2005b, 2006.

No.	Site	Canines de cerf	Molaires		Imitations en os des canines	Total
			Mammifère	Homme		
1.	ARIUŞD	80	50	–	–	130
2.	BRAD	118	–	–	65	183
3.	CĂRBUNA	112	–	1	12	125
4.	CHETROŞICA	–	–	–	90	90
5.	HĂBĂŞEŞTI	20	–	–	2	22
6.	IZVOARE	–	–	–	13	13
	Total	330	50	1	182	563

Tab. 1. Distribution des dents percées et des imitations dans les dépôts d'objets de prestige de la culture Cucuteni.
Distribuţia dinţilor perforaţi şi a imitaţiilor în depozitele cu obiecte de prestigiu aparţinând culturii Cucuteni.

Ariuşd, dép. de Covasna, Roumanie (fig. 1-2)[1]

Découvert au début du XX^{ème} siècle (1910) pendant les fouilles menées par Fr. László, cet important dépôt a été publie sommairement publié à l'époque. Seulement récemment ont été publié les données disponibles et les objets conservés dans la collection du Musée National des Szeklers de Sfântu Gheorghe (F. László 1911; S. Marinescu-Bîlcu, M. Cârciumaru 1992a, 1992b; D. Monah 2003; S. J. Sztáncsuj 2005). On exprime à cette occasion vifs remerciements au collègue Sztáncsuj Sándor qui nous a fourni les images des objets d'Ariuşd.

Presque 200 pièces ont disparu pendant la deuxième guerre mondiale, situation qui rend difficile une analyse extensive. Les publications de F. László mentionnent le fait que le dépôt a été composé de plus de 2214 objets, parures nombreuses et variées comme matières premières et comme types (pendeloques, perles, boucles d'oreille) confectionnées en matériaux lithiques, cuivre, or

[1] Les photos et les dessins sans spécification en légende de la figure appartiennent à l'auteur principal.

et en matières dures animales: os, bois de cerf, croches, molaires de mammifères indéterminés de petite taille, fragments de défenses de sanglier. Actuellement on conserve un effectif de 2032 pièces de parure dans la collection du Musée National des Szeklers de Sfântu Gheorghe.

L'auteur de la découverte mentionne l'existence de 80 croches (dont 11 encore présentes dans la collection) et 50 molaires de mammifères de petite taille (dont 19 conservés dans la collection). Dans une planche couleur datant de l'époque et publiée récemment (S. J. Sztáncsuj 2005, p. 88, fig. 4/1, 5-11, 13-24) on figure 8 molaires, dont un perforé au niveau de la racine et 12 croches (10 en provenance des cerfs et 2 des biches; 10 munies de perforation unique et 2 fracturés au niveau de la perforation et ayant la perforation réaménagée; une pièce présente une incision transversale sur toute la circonférence de la racine, réalisée probablement par sciage ou par entaillage. En ce sens à voir aussi les planches avec les dessins et les photos des pièces conservées dans la collection du Musée National des Szeklers de Sfântu Gheorghe (S. J. Sztáncsuj 2005, p. 92, fig. 7/6-15; p. 101, fig. 12).

Le dépôt a été attribué par Vladimir Dumitrescu à la phase A-B de la culture Cucuteni.

Les données disponibles et recueillies des publications ne permettent pas d'autres considérations et conclusions d'ordre technologique.

Brad, dép. de Bacău, Roumanie (fig. 3-4)

Dans la structure de ce dépôt, récupéré pendant les recherches systématiques menées en 1982 par Vasile Ursachi on mentionne l'existence des nombreuses canines résiduelles de cerf et des imitations en os (V. Ursachi 1991, 1992).

Le dépôt est datée par l'auteur de la découverte dans la sous phases A_3-A_4 de la culture Cucuteni.

Il faut préciser que les artefacts de Brad ont été étudiées directement par nous à l'occasion d'un stage de documentation dans le Musée d'Histoire de Roman (avril 1993) grâce au grande amabilité du Vasile Ursachi; qu'il soit remercier à cette occasion. On a appliqué ainsi pour la première fois les orientations méthodologiques proposées par le *Cahier IV* des *Fiches typologiques de l'industrie osseuse préhistorique*, réservé à la parure (H. Barge-Mahieu, Cl. Bellier, H. Camps-Fabrer *et alii* 1991).

L'effectif des objets est de 480 environ, déposés dans un récipient en céramique du type *askos* Gumelniţa A_2.

La parure en matières dures animales compte 183 pièces appartenant aux types: dents percées – croches (118); imitations en os des croches (65).

Certaines pièces ont été découvertes en état de conservation précaire: fragmentées et ayant les surfaces corrodées par l'action des acides du sol. Malheureusement les procédées de conservation appliquées ont modifie l'aspect originel des surfaces rendant parfois difficile l'analyse des traces de fabrication et d'utilisation.

D'après les données issues des observations faites *in situ* sur l'ensemble des artefacts on peut conclure que les canines et les imitations ont constitué un seul collier, étant probablement combinés avec les perles en cuivre et en marbre (V. Ursachi 1991, p. 342); en ce sens on a quelques analogies dans les découvertes funéraires de l'Hongrie (A. M. Choyke 2001).

Vasile Ursachi mentionne la présence de 190 canines résiduelles ayant des dimensions variables selon l'âge et la taille de l'animal (V. Ursachi 1991, p. 340-341). On peut ajouter le critère du sexe. Notre étude a été fait sur 183 exemplaires disponibles dans la collection du Musée d'Histoire de Roman. Le nombre total estimé est de 220 pièces (dents et imitations). Selon les données offertes par Vasile Ursachi le plus petit exemplaire mesure 17 mm de longueur et le plus grand 30 mm. Les dents et les imitations sont prévues, en majorité avec une seule perforation proximale; quelques pièces ont été „réparées" après la fracturation au niveau de la perforation initiale. L'auteur de la découverte mentionne aussi l'existence des imitations en os des canines mais sans autres précisions (V. Ursachi 1991, p. 340).

Suite à l'examen directe de l'effectif (BRD 1 – 183) y compris avec la loupe binoculaire nous avons décelé quatre groupes: 1. pièces anatomiques entières munies d'une seule perforation, N = 25 (BRD 1 – 25, 121); 2. pièces anatomiques fragmentaires munies d'une seule perforation, fracturées au niveau de la partie proximale, N = 25 + 62 (BRD 26 – 50, 122 – 183); 3. pièces anatomiques munies de deux perforations, N = 6 (BRD 51 – 56, 122 –183); 4. imitations en os des croches, N = 65 (BRD 57 – 120).

On a ainsi 118 canines résiduelles de cerf et 65 imitations en os.

96 pièces ont permis de faire les observations détaillées des traces diverses: BRD 1 – 25, 51 – 121. Une attention spéciale a été réservée au dispositif de suspension (aménagement et traces d'usure).

Les perforations ont été réalisées sans exception par rotation rapide à l'aide du foret. Elles ont la forme circulaire en plan et biconique ou conique en profil, à l'intérieur avec des stries hélicoïdales spécifiques. Les perforations sont placées dans l'axe des pièces ou vers un des bords de la partie proximale.

Dans le cas des pièces anatomiques (BRD 1 – 25, 51 – 56, 121) on constate statistiquement la distribution des procédées de perforation suivante: • perforation unilatérale, qui a généré la morphologie conique du trou, 10 pièces; • perforation bilatérale, qui a généré la morphologie biconique du trou, 22 pièces; • perforation bilatérale, qui a généré la morphologie cylindrique du trou, 2 pièces. Il faut préciser que parfois il est difficile à déceler d'une manière claire s'il s'agit de la perforation bilatérale ou unilatérale suivie par alésage bilatéral. Les perforations ayant les parois parallèles (cylindriques) sont le résultat possible du même alésage. On constate aussi que l'aménagement des surfaces apicales par abrasion est une solution courante destine à faciliter l'amorce de la perforation.

Un problème spécial pose les pièces „réparées", ayant deux perforations, dont une conservée sur sa moitie inférieure de la circonférence; il s'agit de pièces fracturées durant la tentative de perforation ou durant l'usage. Cette situation caractérise uniquement les canines, ce qui souligne, une fois de plus, leur valeur matérielle et symbolique.

La perforation secondaire a été réalisé par: • la même procédée comme dans le cas de la perforation initiale (perforation unilatérale ou bilatérale): les cas des pièces BRD 55 (deux perforations unilatérales) et BRD 56 (deux perforations bilatérales); • l'application d'une procédée différent: pièces BRD 53 – 54, 121 ont les perforations initiales réalisées bilatéralement et les perforations secondaires réalisées unilatéralement.

On peut tirer ainsi quelques conclusions sur la chronologie de l'aménagement du dispositif de suspension: • immédiatement après la fracturation – qui c'été produit probablement par accident (pièces BRD 55 – 56); • avec un décalage chronologique variable entre les deux interventions techniques – fracturation intervenue probablement durant l'utilisation (pièces BRD 53 – 54, 121).

Le diamètre des perforations varie entre 3 et 6 mm (externe) et 2,5 et 5 mm (interne); la distance extrémité proximale – perforation est comprise entre 2,5 et 9 mm.

Les traces d'usure sont localisées sur trois secteurs des perforations: • secteur supérieur de la circonférence, ce qui correspond au mode d'attache axial sur lien, une pièce; • secteur supérieur/latéral de la circonférence, ce qui correspond au mode d'attache axial/oblique sur lien, une pièce; • secteurs latéraux de la circonférence, ce qui correspond au mode d'attache latéral, probablement en utilisant deux liens (éléments de parure cousus?), 5 pièces.

En ce qui concerne les imitations en os des canines (artefacts BRD 57 – 120) on constate, premièrement, la grande variabilité morphologique, enregistrant des formes très proches de celles anatomiques (rendant parfois difficile, dans la première approche, l'identification des pièces comme copies) mais aussi des formes grossières, géométrisées (trapézoïdales) ayant les deux faces parallèles.

La matière première a été fourni par les fragments diaphysaires d'os longs de grands mammifères, très probablement des bovins domestiques; les métapodes, la tibia, le radius, le fémur, l'humérus sont des os qui ont des gros parois (5 – 20 mm) permettant l'extraction des ébauches pour les copies des croches.

«Schéma opératoire» de la fabrication des imitations suive, en grandes lignes, celui de la réalisation des perles. Malheureusement en ce sens on ne dispose pas des pièces techniques signalées dans l'aire de la culture Cucuteni illustrant divers étapes de la fabrication, très probablement locale.

Les deux étapes principales de la «chaîne opératoire» ont été décelées par analogie et sur la base des observations des traces conservées sur les objets. Il s'agit d'un débitage standardisé, impliquant: la détachement des épiphyses par sciage transversal; extraction des baguettes par sciage axial; fragmentation des baguettes par sciage transversal pour l'obtention des ébauches rectangulaires. Le façonnage affecte intégralement ou partiellement les surfaces anatomiques et implique l'abrasion intense sur meule dormante et à l'aide des polissoirs mobiles (galets de grès). Comme nous l'avons précisé déjà, on obtient ainsi des objets très proches de la morphologie des pièces anatomiques et des objets ayant des formes grossières, géométrisées (trapézoïdales) avec les faces parallèles et seulement les bords façonnés.

Les perforations ont été réalisées sans exception par rotation rapide à l'aide du foret. Elles ont la forme circulaire en plan et biconique ou conique en profil, à l'intérieur avec des stries hélicoïdales spécifiques. Les perforations sont placées dans l'axe les pièces ou vers un des bords de la partie proximale. 18 pièces ont la perforation unilatérale (conique) et 47 pièces la perforation bilatérale (biconique).

Sur la pièce BRD 120 au dessous de la perforation on observe l'entame antérieure d'une autre perforation.

Les imitations réparées manquent; probablement que les pièces détériorées ont été remplacées par d'autres entières.

Les traces d'usure sont localisées sur deux secteurs des perforations: • secteur supérieur/latéral de la circonférence, ce qui correspond au montage axiale/oblique sur lien, 7 pièces; • secteurs latéraux de la circonférence, ce qui correspond au montage latérale, probablement en utilisant deux liens (éléments de parure cousus?), 13 pièces.

Cărbuna, dép. de Cainari, République de Moldavie (fig. 5)

Grand dépôt découvert par hasard dans le site en 1961, daté dans les sous phases A_1-A_2 de la culture Cucuteni (D. Monah 2003, p. 130).

La première publication de la découverte a été faite par G.P. Sergheev (1963) et la monographie par V. Dergacev (1998).

L'ensemble a été déposé dans un récipient en terre cuite couvert avec un autre récipient de la même facture.

Parmi les 851 artefacts mentionnés dans l'inventaire et partiellement illustrés on a 436 pièces en matières dures animales. Il s'agit de: pièces en spondyle (perles, plaquettes, pendeloques, bracelets, bouton); dents percées (canines résiduelles de cerf, une molaire humaine); imitations en os des canines résiduelles de cerf; molaire humaine perforé; perles en os.

Les données disponibles sont issues des publications. Les perforations des dents et des perforations ont été probablement réalisées exclusivement par rotation rapide à l'aide du foret, étant placées sur la partie proximale dans l'axe ou vers un des bords.

Les aspects concernant les imitations sont similaires à celles discutés dans le cas du dépôt de Brad (voir *supra*).

Le problème des pièces réparées munies de deux perforations dont une détériorée ne se pose apparemment pour les canines et les imitations du dépôt de Cărbuna. On relève le cas de la pièce CRB 450, un *unicum* dans la structure de ce dépôt. Il s'agit d'une molaire humaine munie d'une perforation proximale; au dessous on observe l'entame antérieure d'une autre perforation.

Chetroşica, République de Moldavie (fig. 6)

Les données sommaires disponibles mentionnent la découverte du dépôt dans le site à l'intérieur d'une structure (logement) détruite.

Le dépôt, compose par 196 pièces, déposées dans un récipient en terre cuite (G.P. Sergheev 1963 *apud* D. Monah 2003, p. 129-131) est daté „dans une étape post-Cucuteni, durant laquelle les traditions Cucuteni étaient encore très fortes" (D. Monah 2003, p. 131).

Les artefacts en matières dures animales sont en nombre de 90, probablement des imitations en os des canines résiduelles de cerf (D. Monah 2003, p. 133-135, 140, fig. 5).

Hăbăşeşti, dép. de Iaşi, Roumanie (fig. 7-8)

Le dépôt d'objets de prestige de Hăbăşeşti (comm. Strunga, dép. de Iaşi) a été découvert dans le site placé sur l'hauteur nommé „Holm" pendant les fouilles menées par Vladimir Dumitrescu en 1950, parmi les restes d'une construction annexe du logement de surface no. 21. Le dépôt est attribué à l'étape Cucuteni A_2 (Vl. Dumitrescu 1957, 1963, p. 70-73; D. Monah 2003, p. 130). Les objets ont été probablement déposés dans un sac en matériel textile ou en cuir. L'inventaire du dépôt est constitué par des artefacts divers, objets de parure et armes, confectionnés en métal (cuivre), en matériaux lithiques (marbre) et en matières dures animales (canines résiduelles de cerf et imitations en os).

Dans la monographie du site et dans une étude spéciale publiée en 1957, Vladimir Dumitrescu mentionne la présence des 22 «incisives» de cerf, illustrés en dessin (Vl. Dumitrescu *et alii* 1954; Vl. Dumitrescu 1957, p. 74, fig. 1/4); un ouvrage de vulgarisation de 1967 insère dans une figure (photo) seulement 17 pièces (Vl. Dumitrescu 1967, fig. 51). Le dépôt a été conservé dans les collections de

l'Institut d'Archéologie de Bucarest, puis, dans les années '70, il a été transféré au Musée National d'Histoire de la Roumanie, où se trouve aujourd'hui.

En 1993 nous avons eu l'occasion d'étudier un effectif disponible de 18 pièces; on ne dispose pas d'informations sur le reste de 4 objets qui faisaient partie du même dépôt. La plupart des artefacts se conservent en bon état, ce qui permet de déceler sans problème les stigmates d'aménagement et les traces d'utilisation. Le lot est hétérogène comme provenance par sexes et par bilatéralité. On a constaté que les pièces anatomiques ont une morphologie très variable; il n'y a pas des cas de provenance du même individu ce qui est l'indice supplémentaire d'une accumulation en temps (probablement à travers plusieurs générations) ou plus probablement comme résultat des échanges. À cette occasion il faut souligner une fois de plus qu'il s'agit d'uns de plus beaux objets de cette sorte connus jusqu'à maintenant sur le territoire de la Roumanie.

Suite à un examen exhaustif, à l'œil nu, à la loupe et au binoculaire on a pu constaté la présence de 16 pièces anatomiques (canines résiduelles de cerf, indicatifs HBS 1 – 16) et de 2 imitations en os (indicatifs HBS 17 – 18); cette dernière constatation est faite en première dans le contexte de l'analyse du dépôt au fil des années. Les objets ont une belle patine uniforme bénigne verte due au contact avec les artefacts en cuivre. Quelques canines sont remarquables par leurs dimensions qui dépassent 25 mm.

En ce qui concerne les imitations en os des canines on retient la forme approximative, grossière, géométrisée ayant des faces parallèles de la pièce HBS 17, munie d'une perforation double. L'autre imitation (HBS 18) montre l'intention de reproduire de plus proche d'originel présente dans l'ensemble de dents percées. La matière première choisie est constituée par les fragments diaphysaires d'os longs de grands herbivores, probablement les bovinés; les métapodes, tibia, radius, fémur et humérus ont une épaisseur de la diaphyse (5-20 mm) qui se prête à l'extraction de fragments de cette sorte. Sur le débitage on ne dispose pas d'indices préservés indiquant soit la percussion directe lancée, soit le rainurage, le sciage à la ficelle, le sciage transversal etc. Le façonnage a été réalisé par abrasion intense et intégrale probablement sur meule dormante, sans préservation d'aucune trace du support anatomique. D'en point de vue morphologique et dimensionnel les deux imitations sont très proches des pièces anatomiques.

La longueur des artefacts est comprise entre 16 et 27,7 mm.

La grande majorité des pièces (15 exemplaires) est prévue par un seul dispositif d'attache (perforation placée au niveau du *apex* ou la partie proximale, pièces HBS 14, HBS 18). Une seule pièce a deux perforations fonctionnelles (HBS 17, imitation en os de la canine), tandis que trois autres ont les dispositifs de suspension réaménagés suite à la fracturation produite au niveau de la perforation initiale (pièces HBS 11, HBS 15 – 16).

Le diamètre des perforations varie entre 3 et 6 mm (externe) et 2,5 et 5 mm (interne); la distance extrémité proximale – perforation est comprise entre 2,5 et 9 mm.

Sur les aspects de la paléotechnologie les plus expressives sont les dispositifs de suspension constitués par perforations unilatérales ou bilatérales circulaires réalisées après une préparation superficielle des surfaces par abrasion. La solution technique choisie a été la rotation continue rapide (très probablement à l'aide du foret à main ou du foret à archer). Deux objets (HBS 15 et HBS 16) ont été réaménagés après leur fracturation au niveau de la perforation (probablement à la suite d'un accident technique pendant l'aménagement du trou). La pièce HBS 17 (imitation en os) présente une perforation double élargie contiguë, faite probablement en but de permettre la fixation d'un double lien.

A l'intérieur des trous on observe des stries hélicoïdales spécifiques. Les perforations se placent dans l'axe des pièces ou excentrique (à gauche ou à droite).

Le diamètre des perforations varie entre 3 et 6 mm (externe) et 2,5 et 5 mm (interne); la distance extrémité proximale – perforation est comprise entre 2,5 et 9 mm.

Tenant compte de leur morphologie, les perforations des canines résiduelles et des imitations on été obtenues par trois procédées: perforation unilatérale, ce qui a déterminé la morphologie tronconique de la perforation (10 cas); perforation bilatérale, ce qui a déterminé la morphologie biconique de la perforation (7 cas); perforation bilatérale, ce qui a déterminé la morphologie cylindrique de la perforation (un cas).

Toute à la fois il faut préciser que parfois c'est difficile à déceler d'une manière claire si on a affaire avec une perforation bilatérale ou avec une perforation unilatérale et l'alésage bilatéral.

Un cas spécial est celui des réparations des artefacts fracturés au niveau du dispositif de suspension (HBS 11, HBS 15 – 16). On constate que cette solution est appliquée uniquement dans le cas des éléments anatomiques, ce qui suggère, une fois de plus, leur grande valeur matérielle et

symbolique. Avant que les pièces soient percées de nouveau, leurs extrémités cassées ont été régularisées par abrasion transversale. Il s'agit très probablement de pièces fracturées durant l'opération de perforation ou durant l'utilisation. En ce sens les indices peuvent être constitués par la solution technique choisie pour le réaménagement du trou. On a deux situations distinctes, considérées par nous suggestives en plan paléotechnologique et fonctionnel: perforation secondaire par la même procédée technique (perforation unilatérale ou bilatérale); perforation par une procédée technique différent de celui initial. Ainsi les perforations initiales des pièces HBS 11 et HBS 15 sont de type unilatéral, tandis que la perforation secondaire est de type bilatéral; on peut conclure hypothétiquement que la réalisation de la réaménagent s'été effectue après une période d'utilisation quelconque en choisissant une solution technique différente. Les deux perforations de la pièce HBS 16 sont de type unilatéral, ce que peut suggérer que la fracturation a intervenu comme accident technique durant la première étape de réalisation de la perforation.

Les traces d'usure sont représentées par: le lustre et l'émoussement de la couronne sur les deux faces ainsi que la présence sur les mêmes surfaces des stries rares de distribution aléatoire; plages d'usure localisées sur les secteurs latérales des perforations; l'émoussement superficiel des bords des perforations. Au niveau des surfaces autour des perforations on n'a pas constaté des traces susceptibles à être associées avec un éventuel contact fonctionnel avec des perles métalliques ou lithiques. Sur cette base on peut envisager l'hypothèse de la fixation rigide de ces éléments d'enfilage avec ou sans combinaison d'autres objets perforés sur le même lien (perles). En même temps on ne peut pas exclure l'hypothèse de la solution de fixation par lien horizontal des dents et leurs imitations en collier ou sur support textile/en cuir comme éléments cousus.

Comme nous l'avons déjà précisé plus haut, les traces d'usure sont visibles au niveau de la perforation de quelques exemplaires: il s'agit de l'émoussement des bords, plus ou moins marque. Dans le cas des pièces HBS 2, HBS 3, HBS 6, HBS 8 et HBS 18 sur les bords latéraux de la perforation et placées symétriquement on peut observer sur deux faces des petites portions abrasées très probablement par la frottement du lien; ce fait suggère la fixation horizontale par lien simple (éléments cousus sur support textile ou en cuir?) ou double (éléments de collier?).

Izvoare, dép. de Neamţ, Roumanie (fig. 9-10)

Dépôt découvert dans le site pendant les fouilles de 1988 menées sous la direction de Silvia Marinescu-Bîlcu, dans l'inventaire du logement de surface no. 9, détruite par incendie, proche du foyer. Les pièces étaient déposées dans un récipient en terre cuite, cassé *in situ* et fortement affecté par l'action du feu, comme la majorité des objets déposées à l'intérieur.

Le dépôt se conserve aujourd'hui dans la collection du Musée National d'Histoire de la Roumanie à Bucarest. Il appartient au l'étape A_2 de la culture Cucuteni (S. Marinescu-Bîlcu, M. Cârciumaru 1992a, p. 355; 1992b, p. 70).

L'inventaire se compose par: artefacts en matière végétale (environ 8000 semences de *Lithospermum purpureo coeruleum*); artefacts en terre cuite (40 perles); artefacts lithiques (pendeloque rhombique fragmentaire en grès); artefacts en matière dure animale (13 imitations en os des canines résiduelles de cerf munies de perforations à la partie proximale).

Grâce à la grande amabilité de Mme Silvia Marinescu-Bîlcu en mars 1993 on a puisse examiner un effectif de 12 imitations en os des canines de cerf. La 13ème pièce a servi à Mr. Marin Cârciumaru pour la préparation d'une lame mince en vue d'établir la nature exacte de la matière première en vue de publier la découverte. Mr. Marin Cârciumaru nous a fourni la photo de la reconstitution hypothétique du collier; on leur exprime nos très vifs remerciements.

Notre examen a conduit à la conclusion selon laquelle il s'agit des imitations en os des canines résiduelles de cerf (IZV 1 – 12).

Leur état de conservation est acceptable; l'incendie a déformé le récipient en terre cuite et a déterminé la couleur grise intense des pièces en os. Mais les altérations n'empêchent en rien l'étude des traces conservées sur les surfaces des artefacts.

Les imitations des canines ont la longueur comprise entre 23,5 et 28 mm. Elles sont munies exclusivement d'une seule perforation au niveau de la partie proximale.

La fabrication a suivi très probablement la «chaîne opératoire» déjà discuté dans le cas des pièces de Brad. Les deux étapes principales de la «chaîne opératoire» ont été décelées cette fois-ci sur la base des observations des traces conservées sur les objets. Il s'agit d'un débitage impliquant: la détachement des épiphyses par sciage transversal; extraction des baguettes par sciage axial; fragmentation des baguettes par sciage transversal pour l'obtention des ébauches rectangulaires. Le façonnage affecte intégralement ou partiellement les surfaces anatomiques et implique l'abrasion

intense sur meule dormante et à l'aide des polissoirs mobiles (galets en grès). Comme nous l'avons précisé déjà, on obtient ainsi des objets très proches de la morphologie des pièces anatomiques (exemple: la pièce IZV 1) et des objets ayant des formes grossières, géométrisées (trapézoïdales) avec les faces parallèles et seulement les bords façonnés.

Les perforations ont été réalisées sans exception par rotation rapide à l'aide du foret. Elles ont la forme circulaire en plan et biconique ou conique en profil, à l'intérieur avec des stries hélicoïdales spécifiques. Les perforations sont placées dans l'axe les pièces ou vers un des bords de la partie proximale. On des pièces avec la perforation unilatérale (conique) (IZV 2, IZV 4) et pièces avec la perforation bilatérale (biconique) (IZV 1, IZV 3, IZV 5 – 12).

Le diamètre des perforations varie entre 3 et 6 mm (externe) et 2,5 et 5 mm (interne); la distance extrémité proximale – perforation est comprise entre 2,5 et 9 mm.

Les traces d'usure sont localisées sur les secteurs latéraux de la circonférence, ce qui correspond a une attache latérale, probablement en utilisant deux liens (éléments de parure cousus?), 8 pièces.

Conclusions

L'intérêt pour l'étude poussée des dépôts d'objets de prestige signalés dans l'aire du complexe culturel Ariuşd-Cucuteni-Tripolie stimule et privilégie en première la démarche détaillée exhaustive des artefacts en matières dures animales présentes dans la structure de ce type spectaculaire de découvertes préhistoriques. Il s'agit généralement de composantes majeurs de ces accumulations comme les objets de parure. Tous ces objets sont particulièrement chargés de significations symboliques, sociales mais pas moins de nature paléotechnologique – en acception large – qui attendent encore à être explorées intégralement et mises en valeur. L'ouvrage propose en première pour la recherche préhistorique en Roumanie une analyse de l'inventaire en matières dures animales des quatre dépôts découvertes sur le territoire de la Roumanie (Ariuşd, Brad, Hăbăşeşti, Izvoare) et des deux dépôts découverts sur celui de la République de Moldavie (Cărbuna, Chetroşica). Ils contenant de la parure confectionnée sur dents (canines de cerf, molaires) aussi bien que les imitations en os des canines de cerf. La trame méthodologique prend en considération les approches internationales récentes d'extraction française. La plupart des artefacts se trouvent en bon état de conservation, ce qui permet de déceler sans problème les stigmates d'aménagement et les traces d'utilisation. Les lots sont hétérogènes comme provenance par sexes et par bilatéralité. On a constaté que les pièces anatomiques ont une morphologie très variable; il n'y a pas des cas de provenance du même individu ce qui est l'indice supplémentaire d'une accumulation en temps (probablement à travers plusieurs générations) ou plus probablement comme résultat des échanges. À cette occasion il faut souligner une fois de plus que les pièces de Hăbăşeşti sont uns de plus beaux objets de cette sorte connus jusqu'à maintenant sur le territoire de la Roumanie. Suite à un examen exhaustif, à l'œil nu, à la loupe et à la binoculaire on a pu déceler d'une manière définitive les pièces anatomiques et les imitations en os des dépôts examinés (Brad, Hăbăşeşti, Izvoare). Quelques canines sont remarquables par leurs dimensions qui dépassent parfois 25 mm. En ce qui concerne les imitations en os des canines on retient la forme approximative, grossière, géométrisée ayant des faces parallèles des pièces, munie d'une perforation simple ou rarement double. Autres imitations montrent l'intention de reproduire de plus proche les modèles anatomiques présentes dans l'ensemble de dents percées. La matière première choisie est constituée par les fragments diaphysaires d'os longs de grands herbivores, probablement les bovinés; les métapodes, tibia, radius, fémur et humérus ont une épaisseur de la diaphyse (5-20 mm) qui se prête à l'extraction de fragments de cette sorte. Si sur le débitage on ne dispose pas d'indices préservés (soit aléatoire diffus – percussion directe lancée; soit contrôlé – rainurage, sciage à la ficelle, sciage transversal etc.), le façonnage a été réalisé par abrasion intense et intégrale probablement sur meule dormante, sans préservation d'aucune trace du support anatomique. La longueur des artefacts est comprise entre 16 et 27,7 mm. La grande majorité des pièces a un seul dispositif d'attache (perforation placée au niveau du *apex* ou de la partie proximale). Ne manquent les pièces dont les dispositifs de suspension ont été réaménagés suite à la fracturation produite au niveau de la perforation initiale. Sur l'aspect de la paléotechnologie les plus expressives sont donc les dispositifs de suspension constitués par perforations unilatérales ou bilatérales circulaires réalisées après une préparation superficielle des surfaces par abrasion. Les perforations ont une section de morphologie conique, biconique ou cylindrique. La solution technique de réalisation choisie a été la rotation continue rapide (très probablement à l'aide du foret à main ou du foret à archer). A l'intérieur des trous on observe souvent des stries hélicoïdales spécifiques. Les perforations se place dans l'axe des pièces ou excentrique (à gauche ou à droite). Le diamètre des

perforations varie entre 3 et 6 mm (externe) et 2,5 et 5 mm (interne); la distance extrémité proximale – perforation est comprise entre 2,5 et 9 mm. Toute à la fois il faut préciser que parfois c'est difficile à déceler d'une manière claire si on a affaire avec une perforation bilatérale ou avec une perforation unilatérale et l'alésage bilatéral. Les traces d'usure sont représentées par: le lustre et l'émoussement de la couronne sur les deux faces ainsi que la présence sur les mêmes surfaces des stries rares de distribution aléatoire; plages d'usure localisées sur les secteurs latérales des perforations; l'émoussement superficiel des bords des perforations. Au niveau des surfaces autour des perforations on n'a pas constaté des traces susceptibles à être associées avec un éventuel contact fonctionnel avec des perles métalliques ou lithiques. Sur cette base on peut envisager l'hypothèse de la fixation rigide de ces éléments d'enfilage avec ou sans combinaison d'autres objets perforés sur le même lien (perles). En même temps on ne peut pas exclure l'hypothèse de la solution de fixation par lien horizontal des dents et leurs imitations en collier ou sur support textile/en cuir comme éléments cousus.

La démarche présente peut constituer un nécessaire repère pour l'étude comparative des éléments de parure en matières dures animales des dépôts attribués au complexe culturel Ariuşd-Cucuteni-Tripolie.

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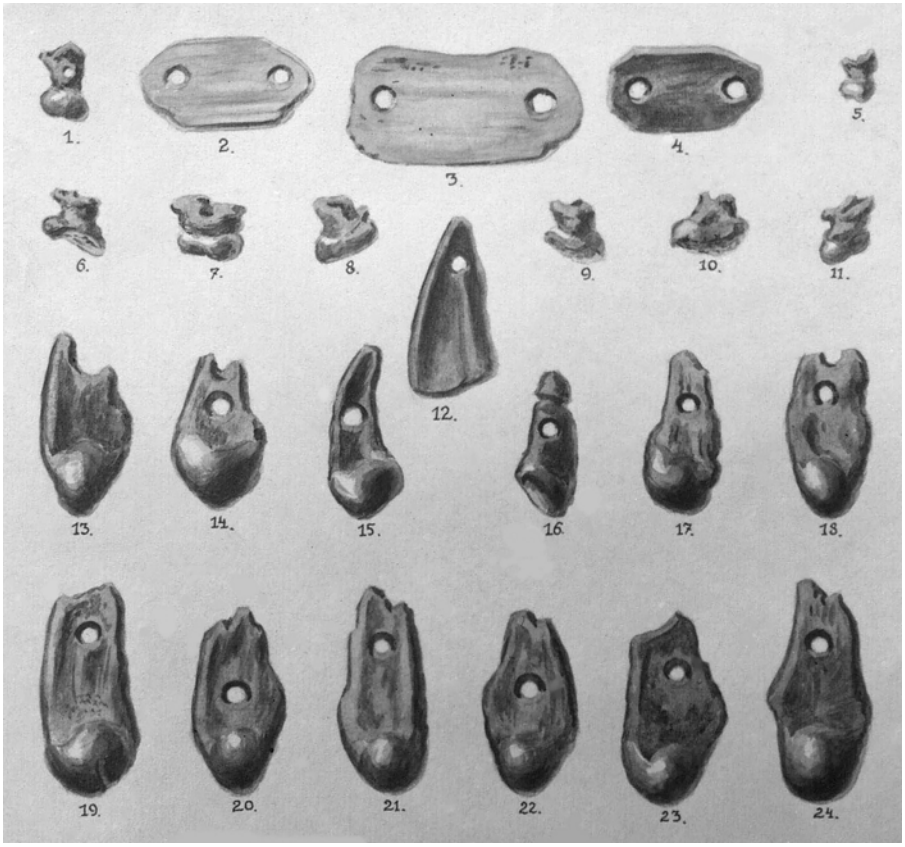

Fig. 1. Ariuşd. Canines résiduelles de cerf et molaires de mammifères (d'après S. J. Sztáncsuj 2005, p. 88, fig. 4).
Ariuşd. Canini reziduali de cerb şi molari de mamifere (după S. J. Sztáncsuj 2005, p. 88, fig. 4).

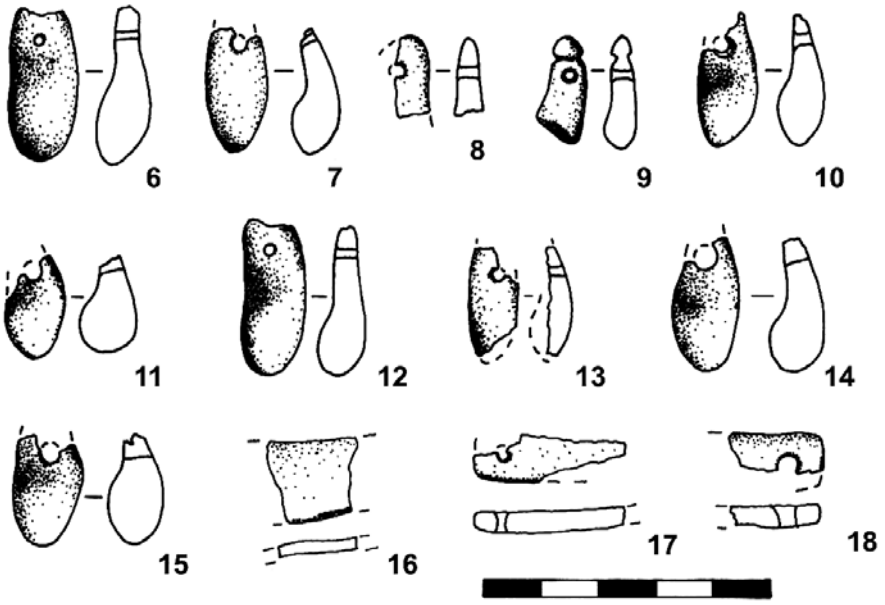

Fig. 2. Ariuşd. Canines résiduelles de cerf (d'après S. J. Sztáncsuj 2005, p. 92, fig. 7).
Ariuşd. Canini reziduali de cerb (după S. J. Sztáncsuj 2005, p. 92, fig.7).

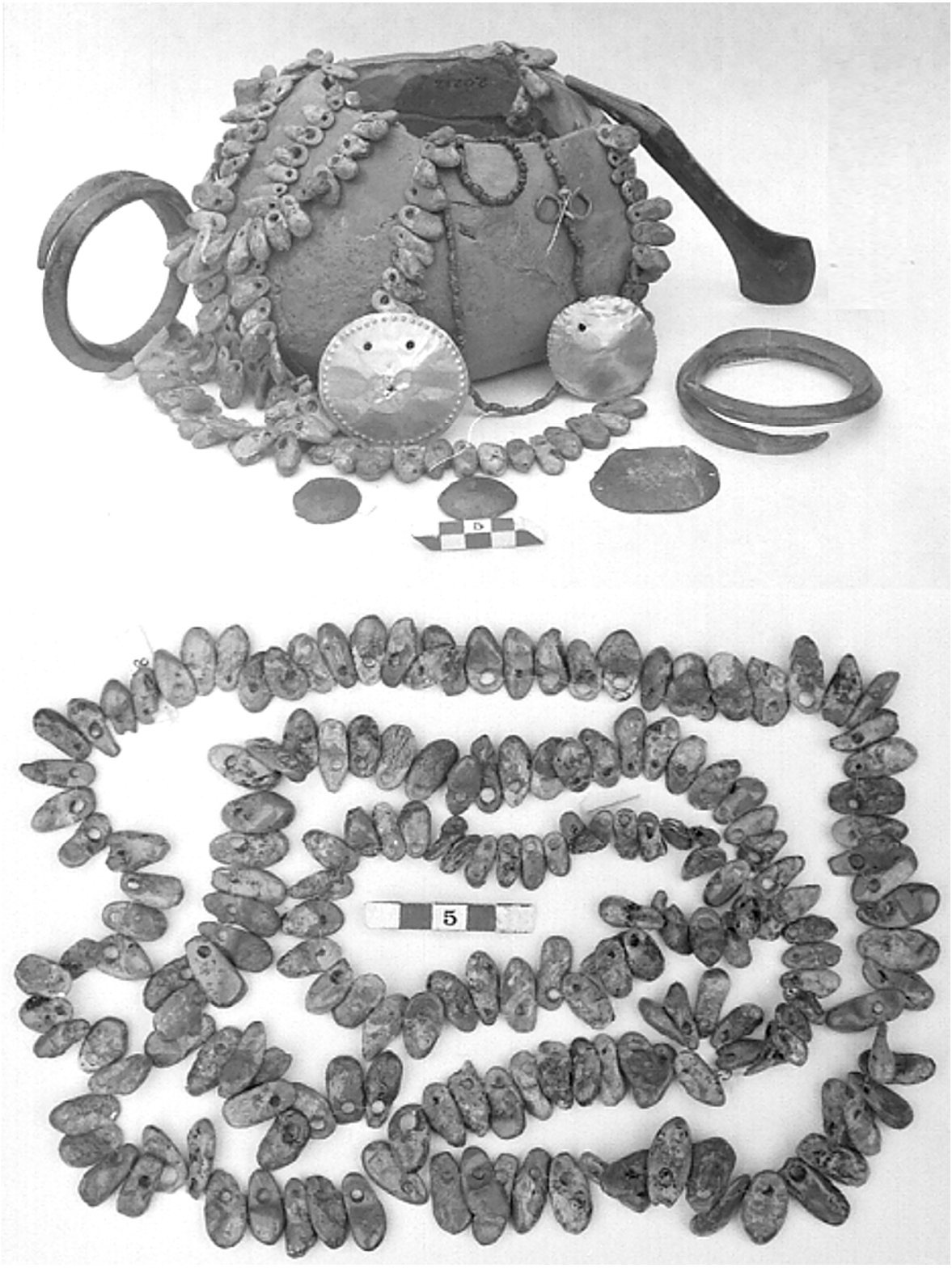

Fig. 3. Brad. Canines résiduelles de cerf et imitations en os.
Brad. Canini reziduali de cerb şi imitaţii în os.

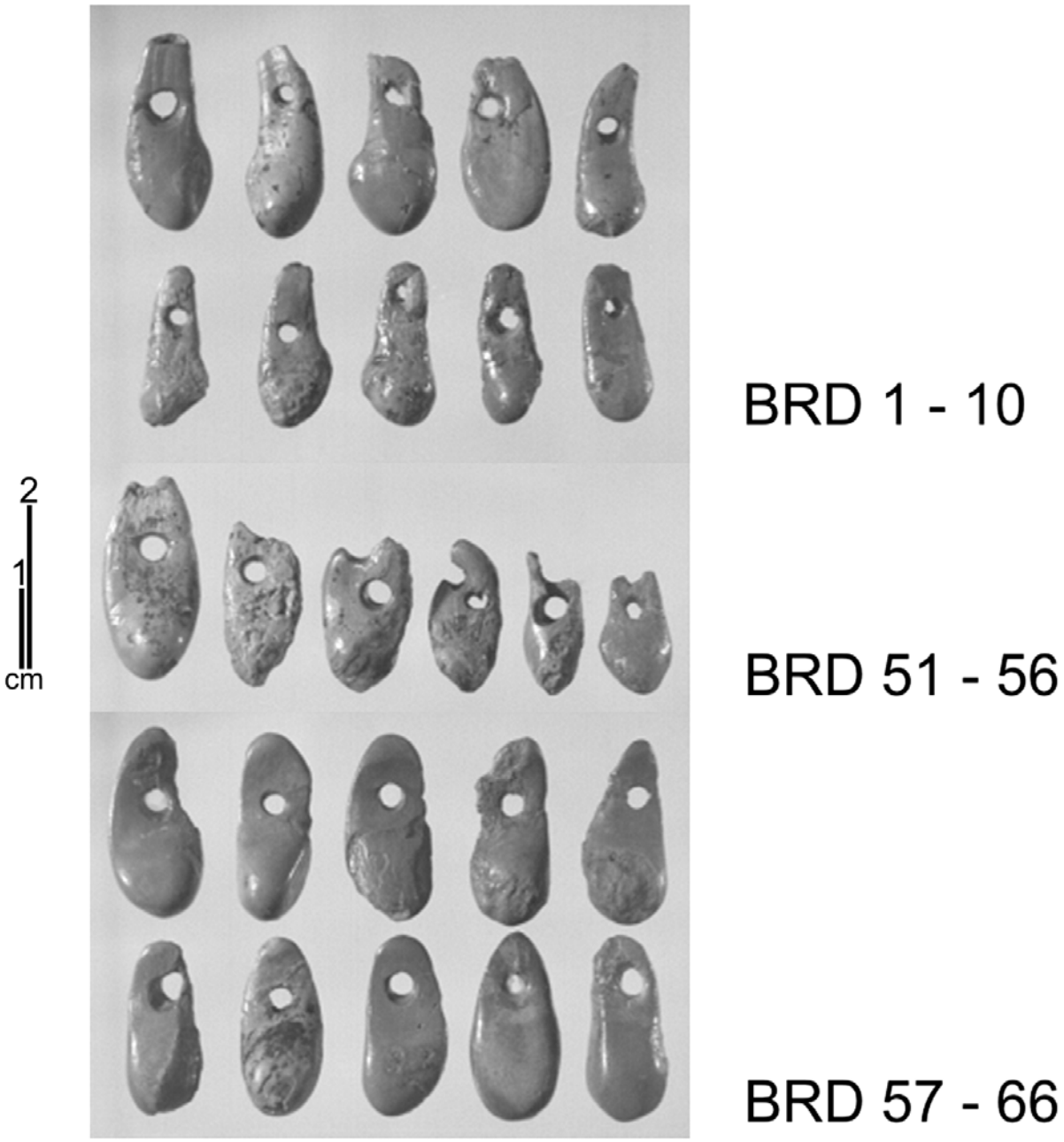

Fig. 4. Brad. Canines résiduelles de cerf et imitations en os.
Brad. Canini reziduali de cerb şi imitaţii în os.

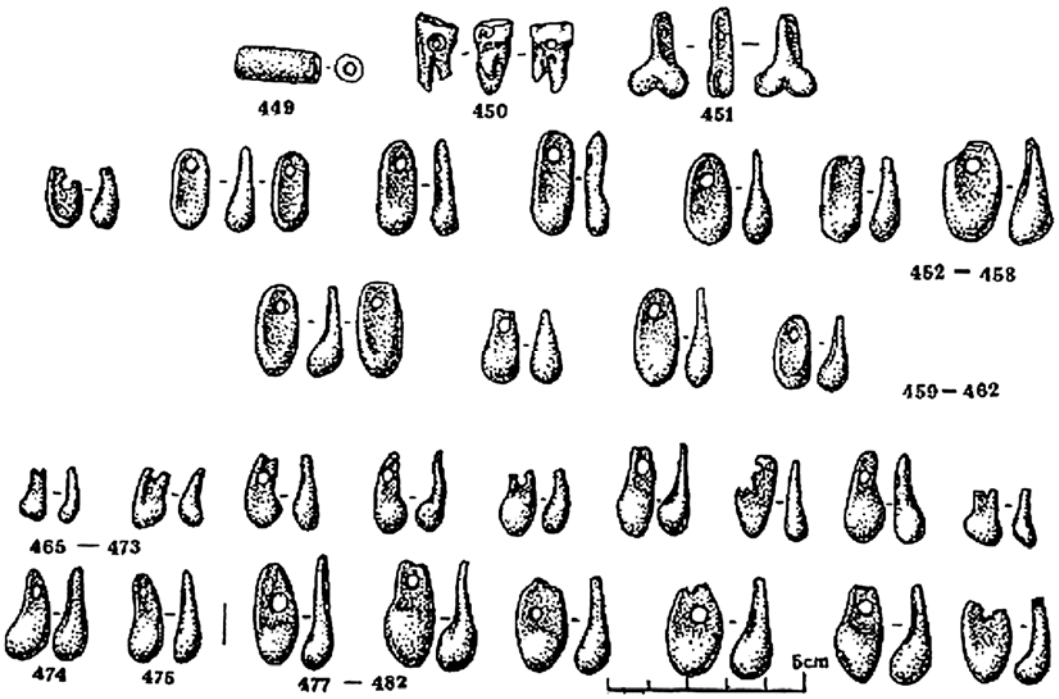

Fig. 5. Cărbuna. Canines résiduelles de cerf, imitations en os et molaire humaine perforé (d'après V. Dergacev 1998, p. 35, fig. 14).
Cărbuna. Canini reziduali de cerb, imitaţii în os şi molar uman perforat (după V. Dergacev 1998, p. 35, fig. 14).

Fig. 6. Chetroşica. Imitations en os des canines résiduelles de cerf (d'après D. Monah 2003, p. 140, fig. 5).
Chetroşica. Imitaţii în os ale caninilor reziduali de cerb (după D. Monah 2003, p. 140, fig. 5).

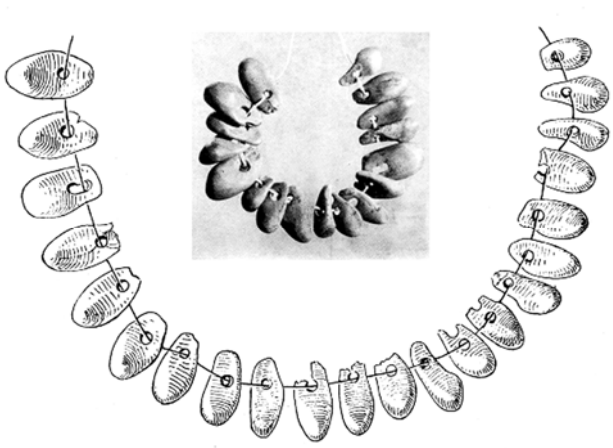

Fig. 7. Hăbăşeşti. Canines résiduelles de cerf et imitations en os
(d'après Vl. Dumitrescu 1957, p. 74, fig. 1/4 et Vl. Dumitrescu 1967, fig. 51).
Hăbăşeşti. Canini reziduali de cerb şi imitaţii în os
(după Vl. Dumitrescu 1957, p. 74, fig. 1/4 şi Vl. Dumitrescu 1967, fig. 51).

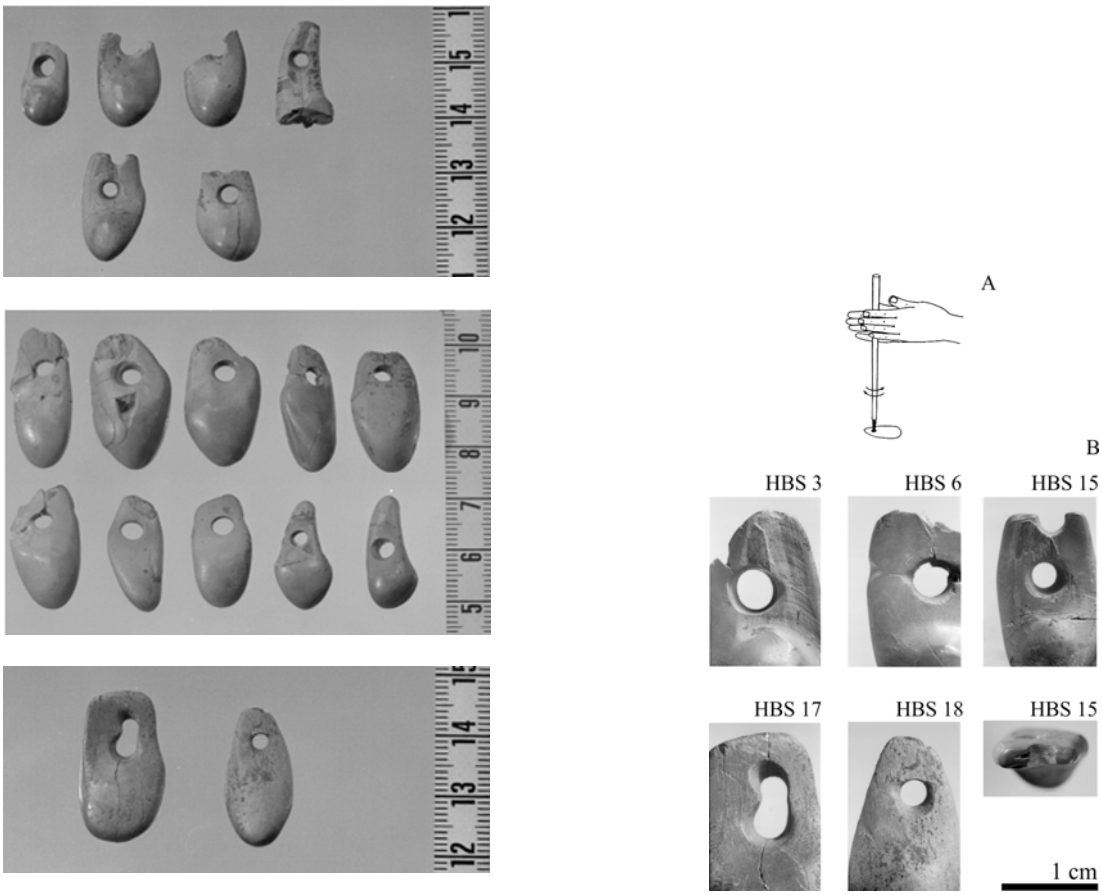

Fig. 8. Hăbăşeşti. Imitations en os des canines résiduelles de cerf. A. Reconstitution du mode de perforation par rotation à l'aide du foret à main (d'après J.-P. Piel-Desruisseaux 1986, p. 134, fig. 132);
B. Hăbăşeşti. Canines résiduelles de cerf - détails des perforations.
Hăbăşeşti. Imitaţii în os ale caninilor reziduali de cerb. A. Reconstituirea modului de perforare prin rotaţie cu ajutorul sfredelului (după J.-P. Piel-Desruisseaux 1986, p. 134, fig. 132);
B. Hăbăşeşti. Canini reziduali de cerb - vederi de detaliu ale perforaţiilor.

Fig. 9. Izvoare. Reconstitution hypothétique du collier composé par semences de LPC et imitations en os des canines résiduelles de cerf (photographie par M. Cârciumaru).
Izvoare. Reconstituirea ipotetică a colierului din seminţe de LPC şi imitaţii în os ale caninilor reziduali de cerb (foto M. Cârciumaru).

Fig. 10. Izvoare. Imitations en os des canines résiduelles de cerf.
Izvoare. Imitaţii în os ale caninilor reziduali de cerb.

Oseminte umane descoperite în aşezări din arealul culturii Gumelniţa

Alexandra ION*

Abstract: *The main purpose of my research was to study the human remains discovered in Gumelniţa settlements in their context of discovery. The working hypothesis was that human bones are always part of a positive selection that is related to elements of the collective view on the past. Although this hypothesis was infirmed by the research's results, it must be highlited that the human bones from the settlements are usually deposited in the same way as those from the necropolis. Besides this, the intentional deposition of the human bones can be demonstrated, at least for some cases. This fact urges the interpretation of these discoveries as funerary deposits.*

Rezumat: *În cadrul acestui articol mi-am propus realizarea unui studiu contextualizat al osemintelor umane descoperite în aşezări din arealul culturii Gumelniţa. Ipoteza cercetării, aceea a practicării unei selecţii şi depuneri intenţionate a indivizilor în aşezări pe baza unor criterii precum vârstă, sex, patologii, asocieri cu alte materiale arheologice nu a putut fi demonstrată. Singurele observaţii care se pot face sunt legate de tratamentul similar al osemintelor din aşezări şi al celor din necropole şi de caracterul probabil al depunerii intenţionate a osemintelor umane în aşezări, cel puţin pentru anumite situaţii, ceea ce impune tratarea descoperirilor de acest fel ca şi descoperiri cu caracter funerar.*

Keywords: *human bones, settlement, Gumelniţa, individual, funerary ritual.*

Cuvinte cheie: *oseminte umane, aşezare, Gumelniţa, individ, ritual funerar.*

În cadrul ritualului funerar, înţeles ca o reprezentaţie (asemenea unei piese de teatru), cu un set prescris de rutine şi formule (M. Parker Pearson 1993), definită cultural şi construită de realităţi sociale, corpul uman devine obiect al manipulării. Acesta poate fi incinerat, înhumat, depus ca un tot (întreg) sau fragmentar (dezmembrat), setul (mormintele organizate în necropole) opunându-se elementelor disparate (oseminte umane descoperite izolate) (J. Chapman 2000). O situaţie interesantă care permite studierea modului în care este înţeles şi manipulat corpul uman, după moarte, o reprezintă descoperirile de oseminte umane în aşezări preistorice. Începând cu perioada mezolitică, apariţia rămăşiţelor osteologice ale unor indivizi în aşezări devine o practică recurentă în diferite zone ale lumii, pentru diferite perioade de timp. Printre acestea se numără şi 161 de descoperiri de oseminte umane în 20 de aşezări din valea cursului inferior al Dunării, atribuite tradiţional culturii Gumelniţa şi aspectului cultural Stoicani-Aldeni[1].

Pe baza datelor existente, am încercat să interpretez descoperirile din aşezările Gumelniţa (oase izolate şi morminte) într-o manieră diferită de cea utilizată până acum în literatura de specialitate din România. Ipoteza de lucru a fost aceea a practicării unei selecţii şi depuneri intenţionate a indivizilor (a întregului corp sau a unor părţi anatomice fără conexiune) în cadrul aşezărilor. Descoperirile de oseminte umane au fost analizate în relaţie cu ansamblul descoperirilor arheologice, fiind integrate în universul specific pe care îl reprezintă *tell*-urile- "construcţii" antropice care marchează rezidenţa comunităţilor pe mari perioade de timp (indiferent dacă sunt abandonate pentru perioade mai scurte sau mai lungi). Principalele coordonate ale analizei au fost timpul şi spaţiul, componente fundamentale ale ritualului funerar (M. Parker Pearson 1999, p. 143); pornind de la modul de structurare a "depozitelor funerare" în cuprinsul aşezărilor, în asociere cu alte complexe şi categorii de materiale (artefacte, oase de animale etc.) şi urmărindu-se relaţiile spaţiale şi temporale (stratigrafia verticală şi orizontală) se poate încerca înţelegerea modului de concepere a spaţiului aşezării (A. Gotherstrom *et alii* 2002, p. 43-69). Apariţia mormintelor şi a oaselor umane izolate în *tell*-uri oferă o nouă perspectivă faţă de dihotomia spaţiului sacru-profan, domestic-funerar, a legăturii dintre vii şi morţi (fizică şi simbolică prin utilizarea spaţiului). Prin prezenţa celor morţi în spaţiul celor vii, în proximitatea locuinţelor acestora, spaţiul şi timpul pe *tell* este conceput într-un mod particular, distinct de spaţiul funerar despărţit de cel al viilor, de "necropolis". Astfel, "arheologia aşezărilor" devine şi o "arheologie a domeniului funerar", cele două dimensiuni devenind complementare şi interdependente.

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[1] Încadrarea analizei la descoperirile atribuite culturii Gumelniţa a avut drept scop delimitarea spaţială şi cronologică a tematicii abordate, textul de faţă reprezentând doar un punct de pornire în studiul fenomenului osemintelor umane ce apar în aşezări. Valoare comparativă pe care ar avea-o o analiză extinsă la descoperirile de tip Gumelniţa din spaţiul sud-dunărean sau la alte paliere cronologice va fi dezvoltată în viitor; de asemenea, în analiză am inclus şi descoperirile din siturile Radovanu şi Izvoarele, publicate ca aparţinând etapei de tranziţie de la Boian la Gumelniţa.

Studii de Preistorie 5, 2008, p. 109-129.

Studiul realizat s-a bazat numai pe informaţiile arheologice şi antropologice publicate[2]. Informaţia arheologică a fost reunită cu cea antropologică pentru a oferi o imagine cât mai completă asupra fenomenului studiat. În general, interpretările specialiştilor au fost respectate, menţionându-se în situaţiile unde a fost aleasă o altă interpretare informaţia originală şi argumentele proprii în sprijinul altei ipoteze. Prin termenul de "oseminte" au fost cuprinse atât descoperirile de oase cât şi cele de morminte, iar în cazul în care se fac referiri doar la una dintre aceste categorii au fost folosiţi termenii "oase", respectiv "morminte". Datele au fost grupate în grafice în funcţie de numărul de menţiuni (nr. menţiuni), respectiv numărul de indivizi (NI).

Probleme metodologice

Din păcate, interpretarea datelor publicate referitoare la osemintele umane descoperite în aşezările Gumelniţa este afectată de o serie de factori care ţin de modul în care s-au desfăşurat cercetările arheologice şi maniera în care au fost ulterior publicate datele. În 13 din cele 20 de situri apar descoperiri[3] cu contextul neprecizat exact, sau în imposibilitatea de a fi asociat celorlalte complexe din aşezare: apar menţiuni precum "*strat arheologic*", sau se fac trimiteri cu caracter general, precum "locuinţă", "zonă menajeră", fără a se preciza alte detalii.

În cazul descoperirilor de morminte sub locuinţe nu este precizat nivelul de săpare a gropii mormântului pentru a se putea observa relaţia stratigrafică dintre acesta şi locuinţă (dacă mormântul a fost anterior locuinţei, săpat în timpul utilizării ei etc.).

O alta problemă o reprezintă lipsa descrierii unora dintre contexte şi implicit a asocierilor de materiale arheologice. În plus, dacă pentru unele descoperiri există o astfel de descriere, aceasta este adeseori incompletă (fără o precizare detaliată a numărului de obiecte, stare de conservare, analize de tafonomie etc.).

Neprecizarea numărului exact de oase sau morminte descoperite, precum şi lipsa aproape generală a analizelor antropologice reprezintă o altă problemă. În şapte cazuri, nu se cunoaşte numărul exact de descoperiri de oase izolate şi de morminte. De asemenea, din totalul de 161 de menţiuni de oseminte descoperite în aşezări, au fost analizate antropologic 57,1%[4]. Trebuie menţionat însă că dintre acestea multe nu au contextul relevant precizat.

În concluzie, se poate spune că doar pentru 13 descoperiri (8% din totalul descoperirilor)[5], informaţia arheologică (contextul de descoperire, însoţit de o descriere care include şi materialele arheologice asociate) şi cea antropologică (număr de oase/indivizi, determinarea sexului, a vârstei, patologii etc.) se completează astfel încât să permită schiţarea unei interpretări a întregii situaţii arheologice.

Contextele de descoperire

În cadrul celor 20 de aşezări Gumelniţa au fost descoperite 41 de morminte de înhumaţie şi 120 de oase umane izolate[6] (Tab. 1). Aceste descoperiri apar în patru tipuri de contexte arheologice[7]: locuinţă, "zonă menajeră", "strat de cultură", groapă (Graf. 1). Asocierea descoperirilor cu diferite

[2] Pentru explicarea unora dintre descoperiri am apelat la ajutorul arheologilor care au participat la respectivele cercetări; de asemenea, am respectat în general interpretarea arheologilor în ceea ce priveşte catalogarea descoperirilor drept mormânt sau oase izolate.

[3] 59,5% din totalul descoperirilor de oseminte umane analizate.

[4] Borduşani (22 oase şi 5 morminte) (A. Bălteanu 1997, p. 93-95.; G. Vasile 2003, p. 95-102), Bucşani (1 mormânt) (S. Marinescu–Bîlcu et *alii* 1998, p.111), Căscioarele (12 oase) (C. Lazăr, A. Soficaru 2005, p.73-81), Chitila-Fermă (campania 2002- 4 oase) (A. D. Soficaru et *alii* 2003, p. 113-122), Gumelniţa (1 craniu) (D. Nicolăescu-Plopşor 1966, p. 109-112), Însurăţei (2 oase), Măriuţa (7 oase) (D. Moise 2001, p. 207-222), Năvodari (1 schelet) (A. Bălteanu 2004-2005, p. 30-31), Pietrele (36 oase) (S. Hansen 2006, p.49-53), Suceveni (1 schelet) (I. T. Dragomir 1984-1985, p. 42); în plus de acestea şi pentru scheletul descoperit la Izvoarele se menţionează o vârstă, fără a se preciza însă cine a stabilit-o.

[5] Bucşani- 1 mormânt, Căscioarele- 3 oase, Gumelniţa- 1 os, Însurăţei- 2 oase, Năvodari- 1 schelet, Pietrele- 4 menţiuni oase, Suceveni- 1 mormânt.

[6] În articolul care prezintă rezultatele săpăturilor arheologice din situl Chitila-Fermă din 2002, autorii (C. Nicolae et *alii* 2003) publică şi alte 79 de oseminte izolate ca fiind descoperite într-un nivel ce conţine materiale Gumelniţa (US 1000). Am decis însă să nu le includ în analiză deoarece contextul descoperiririlor arheologice a fost afectat de nivelări cu buldozerul, ceea ce face nesigură orice atribuire stratigrafică, asociere de materiale arheologice etc.

[7] Pe lângă acestea, mai sunt semnalate în literatură şi alte descoperiri al căror context nu se mai cunoaşte însă.

contexte variază în cele 20 de situri: asociere exclusivă cu un context[8] (13 situri), cu două contexte[9] (4 situri), cu trei contexte[10] (3 situri).

Pornind de la studiul lui Marc Verhoeven (2000, p. 234-235), care interpretează ritualul ca pe o realitate multidimensională, demersul de faţă a încercat să urmărească dacă şi în ce fel osemintele umane descoperite în aşezările Gumelniţa au fost depuse intenţionat şi ce concluzii se pot trage plecând de la modul în care este construit contextul ritualului (J. Chapman 2000a, p. 61-87). John Chapman integrează aceste descoperiri de oseminte umane în ansamblul culturii materiale şi consideră că în perioada neo-eneoliticului sud-est european se poate constata existenţa unei practici sociale aparte, caracterizată prin acumularea regulată şi sistematică a unor categorii diverse de materiale (de la ceramică, obiecte de silex, lut, figurine, cenuşă, scoici, oase de animale etc., dar şi oase umane), într-o serie de contexte închise (de la gropi, depuneri în stratul de cultură sau în locuinţe, până la depuneri sub forma mormintelor). Descoperirile care fac tema prezentului articol au fost tratate, utilizând datele arheologice si antropologice, pe contexte, dar şi în ansamblu, pe situri, pentru a se putea observa dacă există variaţii *intra*-sit (între diferite contexte) sau *inter*-sit: diferenţe între descoperirile din aşezări de oase izolate şi morminte (din punct de vedere al datelor antropologice, al contextelor sau al asocierilor cu materiale arheologice) sau diferenţe între mormintele din cuprinsul aşezărilor şi cele din necropole. De asemenea, am urmărit şi dacă se poate observa un model general de depunere a acestor indivizi în aşezări, dacă sunt preferate anumite contexte sau asocieri de materiale arheologice. Trebuie subliniat faptul că, ţinând cont de problemele metodologice prezentate mai sus, interpretările oferite nu reprezintă altceva decât o încercare de a stimula discuţiile pe marginea acestui subiect şi de a realiza o cercetare reflexivă şi contextualizată a descoperirilor de oseminte umane în aşezări, în cazul de faţă cele Gumelniţa.

Descoperiri	***OASE***					***MORMINTE***		
Sit / Context	**locuinţă**	**zonă menajeră**	**groapă în strat**	**strat**	***alte situaţii****	**locuinţă**	**strat**	***alte situaţii***
Bălăneşti	1	-	-	-	-	-	-	-
Borduşani	8	-	5	9	-	4	1	-
Bucşani	-	-	-	-	-	1	-	-
Căscioarele-Ostrovel	3	-	1	6	2	11	-	-
Chitila-Fermă	-	-	-	7	-	-	5	-
Cuneşti	-	-	-	1	1	-	-	1
Glina	-	-	-	2	-	-	-	-
Gumelniţa	1	-	-	-	1	1	-	-
Hârşova	-	1	-	-	1	3	-	-
Insurăţei	2	-	-	-	-	-	-	-
Izvoarele	-	-	-	-	-	-	1	-
Lişcoteana	-	-	-	-	-	-	1	-
Luncaviţa	2	-	-	-	-	-	-	-
Măriuţa-La Movilă	-	7	-	-	-	-	-	-
Năvodari	-	-	-	-	11	2	-	-
Pietrele-Gorgana	33*	27	-	-	4	-	-	-
Radovanu	-	-	-	-	-	3	3	-
Suceveni	-	-	-	-	-	1	-	-
Sultana-Malu Roşu	2	2	-	1	1	-	1	-
Vidra	1	-	5	1	-	-	2	-
TOTAL	**53**	**37**	**11**	**27**	**21**	**26**	**14**	**1**

Tab. 1. Descoperirile de oseminte umane în aşezări Gumelniţa.

*27 de oase umane descoperite la Pietrele-Gorgana au fost descoperite în "zone menajere", dar acestea se află şi în imediata vecinătate a unor spaţii construite, motiv pentru care au fost incluse în ambele categorii.

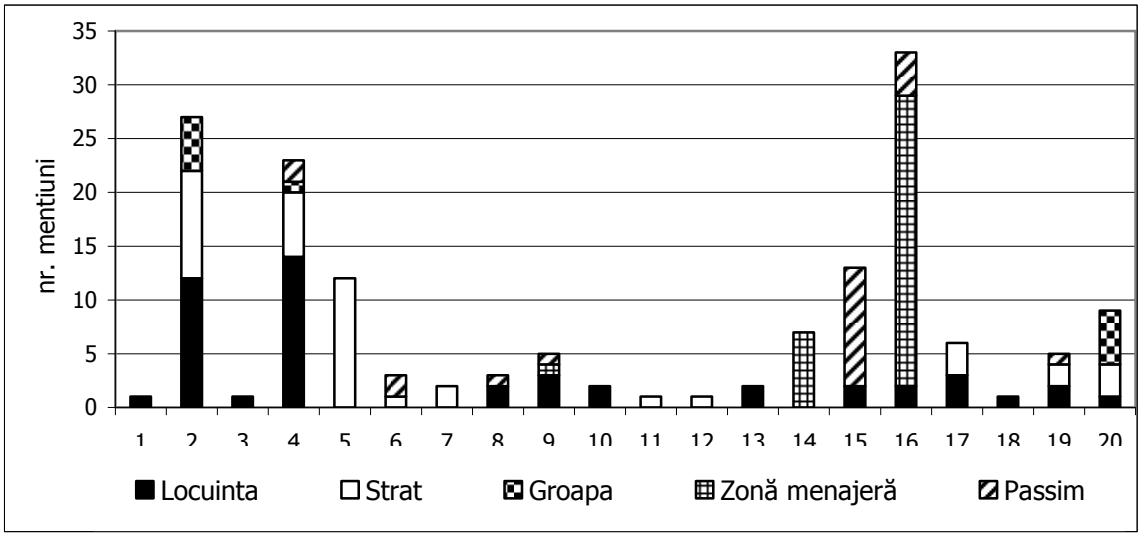
**oseminte umane publicate ca fiind descoperite în stratul Gumelniţa, dar pentru care nu se mai cunosc notaţiile contextelor.

Human bones discovered in Gumelniţa settlements.

*27 human bones discovered at Pietrele-Gorgana were found among "waste areas", but these are also in close proximity to some built areas, reason for which they were included in both categories.

[8] Locuinţă - 7 situri; zonă menajeră - 1 sit; strat de cultură - 5 situri.
[9] Locuinţă - strat, 2 situri; locuinţă - zonă menajeră, 2 situri.
[10] Locuinţă - strat de cultură - groapă.

** human bones published as having been discovered in the Gumelniţa layer, but for which the context references are unknown.



Graf. 1. Reprezentarea osemintelor umane descoperite în aşezări gumelniţene în funcţie de contextele şi siturile unde au fost descoperite. Legendă: 1= Bălăneşti, 2 = Borduşani, 3 = Bucşani, 4 = Căscioarele, 5 = Chitila, 6 = Cuneşti, 7 = Glina, 8 = Gumelniţa, 9 = Hârşova, 10 = Însurăţei, 11= Izvoarele, 12 = Lişcoteanca I, 13 = Luncaviţa, 14 = Măriuţa, 15 = Năvodari, 16 = Pietrele, 17 = Radovanu, 18 = Suceveni, 19 = Sultana, 20 = Vidra.

Representation of human bones discovered in Gumelniţa settlements, based on the contexts of discovery and sites. Legend: 1= Bălăneşti, 2 = Borduşani, 3 = Bucşani, 4 = Căscioarele, 5 = Chitila, 6 = Cuneşti, 7 = Glina, 8 = Gumelniţa, 9 = Hârşova, 10 = Însurăţei, 11= Izvoarele, 12 = Lişcoteanca I, 13 = Luncaviţa, 14 = Măriuţa, 15 = Năvodari, 16 = Pietrele, 17 = Radovanu, 18 = Suceveni, 19 = Sultana, 20 = Vidra (Legende graf.: Dwelling, Layer, Pit, Waste area, *Passim*).

Jumătate dintre descoperiririle de oseminte sunt asociate cu locuinţe, 22,9% cu ceea ce a fost interpretat ca zone menajere (asociate la rândul lor direct sau indirect cu locuinţe), iar restul apar în ceea ce a fost denumit în publicaţii "strat de cultură" (uneori depuse în gropi) (32,3%) sau nu mai păstrează nici o menţiune legată de contextul de descoperire.

Din cele 20 de situri, pentru 14 situri sunt menţionate descoperiri de oase (53 menţiuni), sau morminte (26 menţiuni), în relaţie cu locuinţe, deşi numai în cinci dintre aceste situri asocierea osemintelor umane este exclusivă cu locuinţe (nefiind prezente şi în alt tip de complex în cuprinsul sitului); în şase situri au fost descoperite numai oase fără conexiune anatomică, în cinci situri numai morminte, iar în trei situri sunt prezente ambele categorii. Majoritatea osemintelor au fost descoperite în afara locuinţelor, printre locuinţe sau în apropierea locuinţelor (45%), urmate de cele de sub locuinţe (29,1%), cele din dărâmătura locuinţelor (17,7%), cele din interiorul locuinţelor (8,8%) şi osemintele descoperite pe distrugere (3,7%). Se observă că oasele dezarticulate apar în majoritatea cazurilor în afara locuinţelor (60%), 31% apar pe şi/sau în distrugerea locuinţelor şi doar 8,8% apar sub locuinţe. În ceea ce priveşte mormintele din aşezări, 65,3% sunt sub locuinţe, 19,2% în exteriorul locuinţelor şi restul în locuinţe sau în distrugerea acestora. Cu excepţia oaselor şi a mormintelor descoperite la Hârşova şi Borduşani, toate celelalte apar în asociere cu locuinţe arse[11].

O altă categorie o reprezintă descoperirile de oase umane (37 de menţiuni, 22,9% din totalul de descoperiri) în contexte interpretate ca fiind "zone menajere" (pentru situl Hârşova: D. Popovici *et alii* 2000, p. 13-35, Măriuţa-La Movilă, Pietrele-Gorgana)[12], "poteci" (pentru situl Pietrele-Gorgana: S. Hansen *et alii* 2007, p. 2-21)[13] sau "într-un nivel de amenajare ce suprapune nivelul de distrugere al unei locuinţe" (la Sultana-Malu Roşu: C. Lazăr 2008b). Ceea ce este caracteristic pentru toate aceste descoperiri este asocierea cu diverse categorii de materiale interpretate a fi resturi menajere, dar şi cu

[11] 81% din totalul de descoperiri de acest fel.
[12] Această denumire a fost folosită de către cercetătorii de la Hârşova şi Pietrele-*Gorgana*.
[13] Denumire folosită pentru situl Pietrele.

locuinţe (de cele mai multe ori aceste depuneri fiind pe dărâmăturile nivelate sau nu ale unor locuinţe şi ulterior suprapuse de alte locuinţe). Pentru cercetătorii de la Hârşova si Borduşani, termenul de zonă menajeră a fost interpretat (D. Popovici *et alii* 2000, p. 18) ca : "…*les dépôts anthropiques à caractère ménager qui se présentent comme de véritables complexes archéologiques très bien délimités dans l'espace et comme fonction*". Sub acest termen au fost cuprinse atât zone dintre locuinţe, din afara acestora, sau în unele cazuri locuinţe dezafectate, în care apar depuneri de materiale arheologice interpretate ca fiind "deşeuri menajere", zone care au din punct de vedere sedimentologic următoarele caracteristici (C. Haită, V. Radu 2003, p. 52): rată importantă de acumulare a constituenţilor organici şi minerali ce rezultă din activitaţi domestice (cărbune şi cenuşă, oase de mamifere şi peşte, cochilii de moluşte, coprolite, chirpici ars/nears, sedimente şi roci legate de fabricarea uneltelor), stratificare fină a sedimentelor corespunzând diferitelor tipuri de materii, variabilitate laterală importantă a constituenţilor, grade diferite de compactare şi de modificări fizico-chimice. În cazul sitului Hârşova, cel puţin unele dintre oasele umane (D. Popovici, Y. Rialland 1996, p. 56), au fost descoperite în zona menajeră C 521 (D. Popovici *et alii* 2000, p. 114). Pentru situl Măriuţa-*La Movilă* nu se delimiteaza în raportul arheologic o zonă menajeră, dar se precizează că oasele umane au fost descoperite printre "oase de animale ce intră în categoria deşeurilor menajere" (V. Parnic *et alii* 2001, p. 199-203). La Pietrele-*Gorgana*, oasele umane descoperite apar în două "zone menajere" sau "poteci" (fiind utilizaţi ambii termeni)[14], care ocupă spaţiul dintre locuinţe, spaţii în care acestea apar în asociere cu depuneri cu cenuşă, lentile de pământ verzui şi concentrări de fragmente de chirpici ars, o lutuială arsă la roşu (deasupra şi sub care s-au găsit câteva oase umane), fragmente ceramice, scoici, oase, piese din os, corn, silex, podoabe (din scoici *Dentalium* şi *Spondylus*), obiecte de cupru (majoritatea întregi), figurine antropomorfe şi zoomorfe, fusaiole şi greutăţi de lut, o piesă mică de formă discoidală din aur şi o brăţară din cochilie de *Spondylus*, pietre etc. (S. Hansen *et alii* 2004, S. Hansen *et alii* 2005, S. Hansen *et alii* 2006). În general, aceste depuneri au fost explicate (implicit sau explicit) ca zone de acumulare a resturilor menajere[15]. Cu toate aceste, în continuarea studiilor interdisciplinare realizate, este interesant de urmărit cum sunt construite aceste depuneri, cum şi unde se arunca/ depunea "gunoiul" şi ce semnificaţii pot decurge de aici, având în vedere de exemplu unele cazuri etnografice care indică existenţa unor situaţii particulare[16]. Prezenţa oaselor umane în aceste contexte se poate datora şi hazardului (morminte deranjate, fenomene postdepoziţionale, perturbări ale straturilor arheologice etc.), dar apariţia lor în mai multe situaţii, în contexte asemănătoare, face posibilă şi avansarea ipotezei unor depuneri intenţionate. Este evident însă că această din urmă ipoteză este dificil de demonstrat, în special în absenţa unor studii aprofundate.

O situaţie interesantă legată de descoperirea de oase umane în acest tip de contexte, interpretate ca zone menajeră, o reprezintă situl Pietrele-*Gorgana*[17] (com. Băneasa, jud. Giurgiu), unde au fost descoperite în urma cercetărilor arheologice, în intervalul 2002-2005, 36 de oase umane, atribuite unui număr minim de şase-şapte indivizi (număr estimat) (S. Hansen *et alii* 2006, p. 49-53)[18]. Aceste oase au fost descoperite în asociere cu locuinţe şi "zone menajere"/ "poteci". Interpretând în context oasele umane descoperite la Pietrele-*Gorgana* (pe baza informaţiilor arheologice şi

[14] Ceea ce implică o anumită ambiguitate asupra contextului.
[15] Cu excepţia oaselor de la Sultana.
[16] Cazul comunităţilor Dogon din Mali arată cum depozitarea a ceea ce poate părea pentru europeanul secolului XXI banal şi neproblematic, "gunoiul", se face după principii şi reguli stricte şi variază în funcţie de materialitatea obiectelor, fluidelor etc. ce au ieşit din circuitul comun al utilizării, ajungându-se, prin depuneri intenţionat construite, fie la reintegrarea lor în universul domestic sau cosmologic, fie la expulzarea din perimetrul aşezării (L. Douny 2007, p. 309-331).
[17] Au fost deschise două suprafeţe, B şi F. În secţiunea B din partea nordică a Gorganei au fost surprinse două spaţii construite principale (B-West si B-Ost) separate de o zonă îngustă, orientată nord-sud (cca. 2 m lăţime), cu depuneri de cenuşă şi lentile de pământ verzui (P04B23), care conţineau cantităţi însemnate de cochilii de scoici şi oase de animale, ulterior descoperindu-se în partea estică a suprafeţei încă o construcţie. În partea de sud-vest a *tell*-ului, între "vulcan" (o groapă de mari dimensiuni săpată de localnici care afectează sfertul de sud-est al sitului) şi limita estică a săpăturilor lui D. Berciu (surprinsă de sondajele E2-E10) a fost deschisă suprafaţa F, orientată nord-sud, cu dimensiunile de 8 x 7 m. În plus, măsurătorile geofizice efectuate în 2004 şi 2005 (S. Hansen et *alii* 2006, p. 4-8), arată existenţa pe *tell* a aproximativ 25 de case orientate nord-sud şi aranjate linear în 4 rânduri paralele (orientate est-vest). În exteriorul *tell*-ului, aceleaşi măsurători au dus la identificarea la nord şi sud-vest a mai multor structuri cu aceeaşi orientare ca a construcţiilor de pe *tell*, estimându-se că aşezarea ar fi putut cuprinde la un moment dat aproximativ 120 de clădiri.
[18] La acestea se mai adaugă resturile a nouă indivizi descoperiţi într-o locuinţă din suprafaţa F.

antropologice) şi urmărindu-se asocierile de materiale arheologice, felul în care se structurează "zonele menajere", relaţia cu celelalte depuneri arheologice din aşezare, devine posibilă transcederea explicării lor ca fiind deşeuri care au fost aruncate printre alte resturi. Fără a se putea demonstra neapărat o depunere intenţionată a indivizilor, cel puţin pot apărea alte ipoteze care să explice aceste descoperiri[19].

După cum se poate observa în Tab. 2, cei şase-şapte indivizi sunt reprezentaţi din punct de vedere al numărului de oase şi al elementelor anatomice în mod inegal; la nivel general, indivizii sunt reprezentaţi în special prin fragmente de bazin, femur, schelet axial (coaste, vertebre), oase de la mână (radius, cubitus, metacarpiene, falange), fiind surprinzătoare absenţa fragmentelor craniene. Ceea ce este interesant de semnalat este că oasele acestor indivizi nu au fost descoperite împreună sau într-un singur context: în cazul unui adult tânăr (posibil femeie), reprezentat prin fragmente de femur si humerus, o parte din resturile osoase apar în dărâmătura locuinţei B-West, iar celelalte în afara acesteia, în ceea ce a fost considerat "zonă menajeră", fragmente din cele două contexte lipindu-se între ele (S. Hansen *et alii* 2006, p. 49-53). O situaţie similară cu acest mod de "depunere" a oaselor umane o reprezintă descoperirea unui fragment de lamă de silex depozitat împreună cu mai multe lame într-un vas dintr-o construcţie aflată la estul suprafeţei B (P05B140), care poate fi lipit cu un alt fragment depus sub un alt vas din construcţia B-Vest (P04B11) - cele două contexte erau la o distanţă de 12 m şi la o diferenţă de nivel de 70 cm (S. Hansen *et alii* 2006, p. 11).

În cazul celorlalţi indivizi, reprezentaţi printr-un număr mai mic de oase, fragmentele sunt prezente în "zona menajeră"- din păcate raportul arheologic nu precizează mai detaliat contextul de descoperire, dar fiind descoperite în ani diferiţi se poate presupune că s-au găsit cel puţin la adâncimi diferite; această situaţie e valabilă cel puţin în cazul indivizilor grupaţi în raportul antropologic sub numele "E" şi "F", antropologul afirmând că cel puţin teoretic lor le aparţin diferite fragmente osoase descoperite în campaniile din 2002, 2004 şi 2005 (a se vedea Tab. 2) (S. Hansen *et alii* 2006, p. 53).

În ceea ce priveşte repartizarea elementelor anatomice pe complexe (Graf. 2), datorită numărului prea mic de cazuri nu se poate afirma cu certitudine că există o preferinţă sau selecţie, deşi se constată că în construcţia B-Ost apar numai oase din categoria membrelor inferioare, în B-West doar membru superior, în zona ce desparte cele două locuinţe din suprafaţa F apar doar dinţi, în timp în „zona menajeră" din suprafaţa B apar toate categoriile de elemente anatomice (S. Hansen *et alii* 2006, p. 49). Nu se observă respectarea unui model în ceea ce priveşte selecţia părţilor anatomice în "complexe" de acelaşi fel (locuinţe sau zone dintre locuinţe).

În ceea ce priveşte repartizarea numărului minim de indivizi pe contexte, se poate observa că din cele şase contexte, în patru[20] (66,6%) sunt reprezentaţi cel puţin doi indivizi; în asociere directă cu locuinţele sunt reprezentaţi 12 indivizi, iar în spaţiile dintre locuinţe sunt prezente resturi osteologice de la şase indivizi.

Din punct de vedere al repartiţiei pe vârste a indivizilor, pe complexe de descoperire, nu se poate observa o selecţie clară, fiind reprezentaţi atât indivizi *infans* cât şi juvenil şi adult. Dacă în construcţia B-Ost şi în spaţiul ce o delimitează pe aceasta de locuinţa B-West sunt prezenţi indivizi de diferite vârste (în locuinţa B-Ost- oase de la un *infans* şi un adult, iar în afara locuinţei oase de la un *infans*, un adult şi un juvenil, acelaşi individ cu cel ale cărui rămăşiţe au fost descoperite în locuinţa B-West), în locuinţa B-West apar doar juvenili, iar în "poteca" din suprafaţa F doar *infans*.

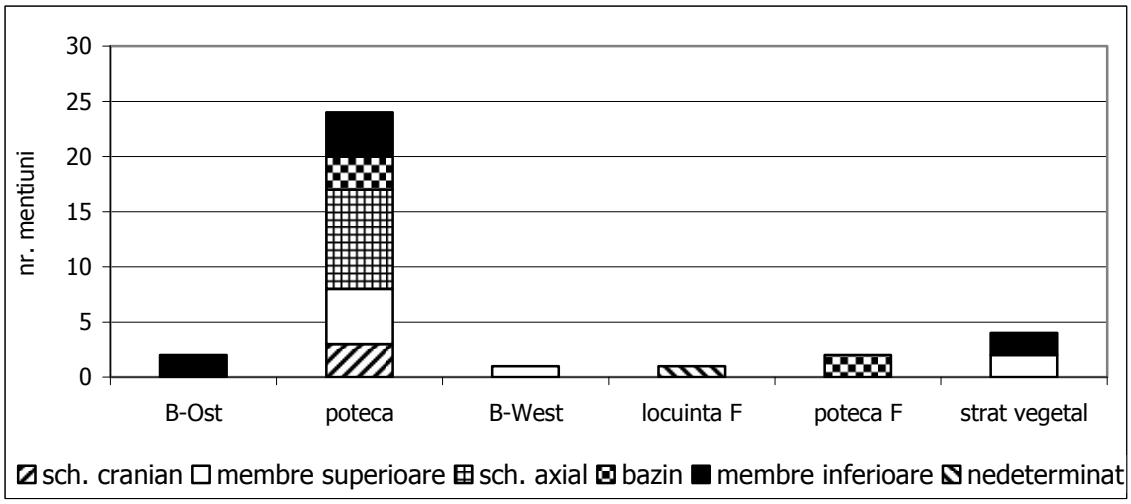
Trebuie menţionat că deşi cinci fragmente osoase apar pe sau în distrugerea locuinţelor arse (un femur de copil pe distrugere, trei fragmente în distrugere/în locuinţa B-Ost şi un metacarpian în locuinţa B-West), nici unul dintre acestea nu are urme care să arate contactul cu focul (S. Hansen *et alii* 2006, p. 49-53) – dintre toate oasele analizate de antropolog, numai în cazul unui coxal dreapta (P05 B113h) care aparţine unui individ adult sau mai bătrân şi a unui corp de mandibulă dreapta, parţial cu dinţi (P05 B123a), ce aparţine unui matur, este sigur contactul cu focul, în cazul unui humerus stânga (P05 F102-140) fiind discutabilă expunerea la caldură (S. Hansen *et alii* 2006, p. 53). Aceeași situaţie se întâlneşte şi în cazul materialelor arheologice asociate locuinţei B-Ost - numai 12% dintre 1618 fragmente ceramice sau oase de animale sunt arse secundar (S. Hansen *et alii* 2007, p. 120).

[19] Este posibilă chiar o extindere a discuţiei referitoare la aceste descoperiri de oase umane la semnificaţia (simbolică sau nu) a arderii caselor (M. Stevanović 1997, p. 334-395; M. Stevanović, R. Tringhman 1997, p. 193-208), sau la categoriile de materiale arheologice care apar în asociere cu ele, materiale asociate şi mediului funerar (statuete, mărgele de scoici, obiecte de cupru).

[20] Locuinţa B-Ost, zona dintre cele două locuinţe din suprafaţa B, locuinţa din suprafaţa F şi "humus".

Indivizi	Vârstă	Sex	Elemente anatomice	Observaţii
A	*Infans I* – 6-12 luni	M?	două fragmente coxal (P04 F12-734, P04 F12-735)	
B	*Infans I* – 3-4 ani	-	femur dreapta (P02 B10-158)	
C	*Infans II* – 9-10 ani	-	ulna dreapta (P04 B44-736)	
D	*Infans II*/Juvenil – 15 ani	F?	mandibulă (P02 B83-146)	
E	Adult batrân	F ?	coxal dreapta şi stânga (P05 B109, P05 B113i)	Există o serie de elemente anatomice izolate care aparţin probabil lui E şi F: un canin izolat (P04B24-739), maxilar inferior (P05B123a), claviculă (P05 B113d), două humerusuri stânga (P05F102-140,?), radius dreapta (P02B11-167), metacarpian stânga (II/III) (P05B109-137), falangă mâna dreaptă (III/IV) (P05 B113-138), falangă mâna dreaptă (II/IV) (P05 B113c), falangă mâna stângă (II/IV) (P05B112a), metacarpian IV stânga (P04B43-738), falangă picior (P04B65-737), cinci fragmente coaste stânga şi dreapta (P02B18-166, P05 B113e, P05 B113f-g, P05 B113-139)
	Adult tânăr	F ?	femur dreapta şi stânga (P05 B113j, P05 B123b), împreună cu cinci fragmente (P02 B35-159, P05 B113a, P05 B125, P05 B112b, P05 B113b)	
	Adult batrân	-	4 vertebre lombare (probabil aparţin aceluiaşi individ reprezentat prin coxalele P05 B109/113i)	
	+ probabil tânară	F		
F	Adult sau mai batrân	F ?	Coxal	
G	Mai mult sau mai puţin adult	M ?		

Tab. 2. Indivizii descoperiţi în aşezarea Pietrele-*Gorgana*.
Individuals discovered in the Pietrele-*Gorgana* settlement.



Graf. 2. Repartizarea elementelor anatomice pe contexte de descoperire (în aşezarea Pietrele-Gorgana). Legendă: B-Ost = construcţia B-Ost, B-West = construcţia B-West, poteca = suprafaţa dintre cele două construcţii din suprafaţa B, locuinţa F = locuinţa din suprafaţa F unde s-au descoperit oase umane, poteca F = suprafaţa dintre cele două locuinţe din suprafaţa F.

Repartition of anatomical elements in contexts of discovery (in the Pietrele-Gorgana settlement). Legend: B-Ost = building B-Ost, B-West = building B-West, poteca = the area between the two buildings in section B, locuinţa F = the dwelling from section B where the human bones were discovered, poteca F = the area between the two buildings in section F (Legend graf.: cranial scheleton, upper limbs, axial scheleton, pelvis, inferior limbs, undetermined).

Asemenea sitului Pietrele-*Gorgana*, o analiză exhaustivă[21] a osemintelor umane descoperite în urma cercetărilor efectuate la Borduşani-*Popină*, analiză care să privească situaţia arheologică în ansamblu, permite conturarea unei imagini mai complexe asupra acestor tipuri de descoperiri decât ar

[21] Atât cât e posibil pe baza informaţiilor publicate.

părea la prima vedere. Aici, în nivelul datat Gumelniţa A2, au fost descoperite cinci morminte şi 22 oase, asociate în general cu locuinţe[22] (Tab. 3). Din păcate, nepublicarea materialelor arheologice pe complexe nu permite o analiza mai detaliată. Totuşi, câteva observaţii se pot face.

Secţiune	Complex	Sector/ Carou/ SU.	Descoperire
Sα	L 20	sector 8, carou I6	M14 M17
		carou I6, -2,70m	tibie stânga, radius stânga, cubitus stânga
		carou H6, SU 1225, -2,70m	3 fragmente de la mână 1 metacarpian, 2 falange I şi II
		carou H6	1 fragment tibie
	L 15	sector 8, carou H5	M15
		sector 3, carou G1	M16
		carou J4	fragmente oase de la antebraţul stâng
Sβ		carou D5, SU 2581, -1,72m	M19
		sector 38, carou D4	4 fragmente craniu M19
	SL 26	sector 39, carou E6, SU 2534 - distrugere SL 26	3 fragmente craniu M19
		sector 39, carou E5, SU 2534, -1,41m, distrugere SL 26	1 coastă pe stânga, 1 fragment mandibulă pe partea stângă, 2 scapule fragmentare, 1 femur aproape complet
	complex 212	sector 31, carou A2, SU 3006, umplutura a 2 gropi, plasate la diferite nivele	1 fragment humerus
	L2-M2-L3-M3, complex 220	sector 35, carou A2, SU 3922 ,umplutura unui şanţ	1 fragment humerus

Tab. 3. Osemintele umane descoperite la Borduşani-*Popină*.
Human bones discovered at Borduşani-*Popină*.

În primul rând, descoperirea a şapte fragmente craniene ce aparţin unui copil al cărui craniu fragmentar a fost găsit într-un mormânt (M19), în afara mormântului – patru dintre ele în strat, iar trei în distrugerea unei locuinţe (neincendiate) SL 26, alături de alte cinci fragmente osoase ce aparţin unui alt individ (cu vârsta cuprinsă în intervalul nou-născut- şase luni). De asemenea, mai sunt de menţionat descoperirile din două zone distincte (una fiind o groapă) a fragmentelor ce compun mâna unor adolescente, iar într-o altă groapă s-au descoperit oase de la antebraţul şi tibia unui copil.

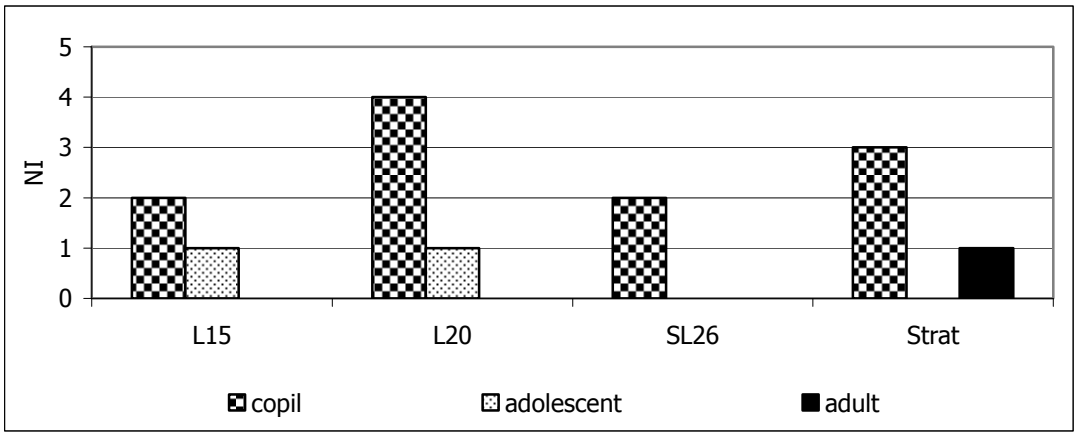
În ceea ce priveşte vârsta celor 11 indivizi descoperiţi, repartizaţi aproximativ similar din acest punct de vedere în cele patru mari complexe arheologice, şapte sunt copii, două adolescente, un singur adult și unul are o vârstă nedeterminată. Toate mormintele sunt de copii. În asociere cu L 20, L 15 şi SL 26 sunt reprezentaţi numai indivizi subadulţi (zece), în timp ce în stratul de cultură apar atât subadulţi (trei) cât şi adulţi (unul) (Graf. 3).

O altă categorie a contextelor în care au fost descoperite oseminte umane o reprezintă ceea ce a fost identificat ca "strat arheologic de cultură", existând 41 de menţiuni pentru 11 situri. În unele cazuri această trimitere poate face referire la o situaţie concretă, în care oasele umane au fost pur şi simplu descoperite izolat în aşezare, iar în alte cazuri această formulă înlocuieşte în fapt o notare mai detaliată a contextului de descoperire. În trei situri, în aşa-numitul strat de cultură, au fost descoperite numai morminte, în patru situri numai oase umane izolate şi în restul de patru situri au fost descoperite atât oase cât şi morminte.

La Borduşani-*Popină*, Căscioarele-*Ostrovel* şi Vidra s-au descoperit oase umane[23] care provin probabil de la trei indivizi, în gropi săpate în "stratul de cultură". În această categorie nu au fost incluse mormintele descoperite în "stratul arheologic" deoarece am făcut distincţia între groapa de mormânt şi groapa săpată cu alte scopuri, în care au fost depuse ulterior oase umane; în literatură au fost semnalate cazuri în care gropile mormintelor au fost săpate în gropi deja existente, dar în lipsa unor astfel de observaţii pentru materialul cercetat am preferat să includ toate mormintele în categoria contextelor de descoperire de tip "strat de cultură arheologică"; scheletul descoperit la Vidra într-o groapă l-am cuprins în categoria descoperiri în stratul de cultură, deoarece arheologul a

[22] 74% dintre cazuri.
[23] 11 menţiuni, 6,8% din totalul descoperirilor de oseminte umane în aşezări.

considerat ca fiind într-o groapă de mormânt, dar oasele umane ale altui individ, descoperite alături de acest schelet în aceeaşi groapă, sunt cuprinse în categoria descoperirilor "în groapă (în strat de cultură)".



Graf. 3. Repartizarea indivizilor descoperiţi la Borduşani-*Popină* pe grupe de vârste biologice, în funcţie de contextul de descoperire.
Repartition of individuals discovered at Borduşani-*Popină* on age groups, based on the context of discovery (Legend graf.: child, adolescent, adult).

La Borduşani-*Popină*, Căscioarele-*Ostrovel* şi Vidra s-au descoperit oase umane[24] care provin probabil de la trei indivizi, în gropi săpate în "stratul de cultură". În această categorie nu au fost incluse mormintele descoperite în "stratul arheologic" deoarece am făcut distincţia între groapa de mormânt şi groapa săpată cu alte scopuri, în care au fost depuse ulterior oase umane; în literatură au fost semnalate cazuri în care gropile mormintelor au fost săpate în gropi deja existente, dar în lipsa unor astfel de observaţii pentru materialul cercetat am preferat să includ toate mormintele în categoria contextelor de descoperire de tip "strat de cultură arheologică"; scheletul descoperit la Vidra într-o groapă l-am cuprins în categoria descoperiri în stratul de cultură, deoarece arheologul a considerat ca fiind într-o groapă de mormânt, dar oasele umane ale altui individ, descoperite alături de acest schelet în aceeaşi groapă, sunt cuprinse în categoria descoperirilor "în groapă (în strat de cultură)".

Indivizii descoperiţi în aşezări

Pe baza informaţiilor publicate, am încercat să identific existenţa unor diferenţe sau asemănări între criteriile de selecţie şi contextul de descoperire a indivizilor reprezentaţi fragmentar (oase fără conexiune anatomică) faţă de indivizii reprezentaţi prin întreg (depuşi în morminte[25]). Pentru aceasta, au fost comparate contextele de descoperire, asocierea cu materiale arheologice şi repartizarea pe vârste şi pe sexe, pentru cele două categorii.

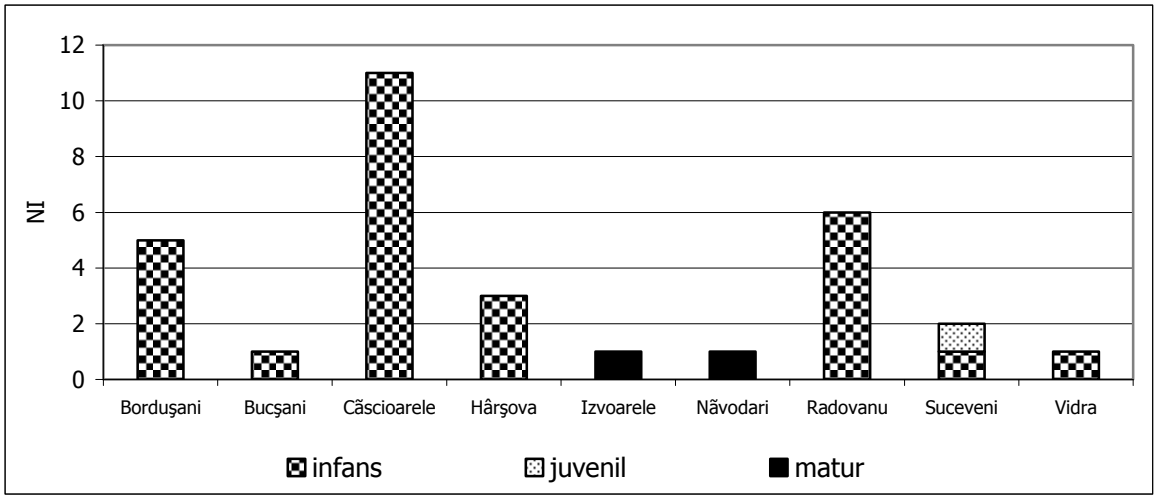
Din punct de vedere al repartizării, pe situri arheologice, a descoperirilor de oase şi morminte, în cinci situri au fost descoperite numai morminte, în şapte situri au fost descoperite numai oase, iar în restul de nouă situri apar atât oase cât şi morminte.

Din punct de vedere al datelor de antropologie fizică, în patru situri sunt reprezentaţi atât indivizi subadulţi cât şi adulţi[26], în timp ce pentru celelalte situri este reprezentată doar una dintre aceste categorii[27].

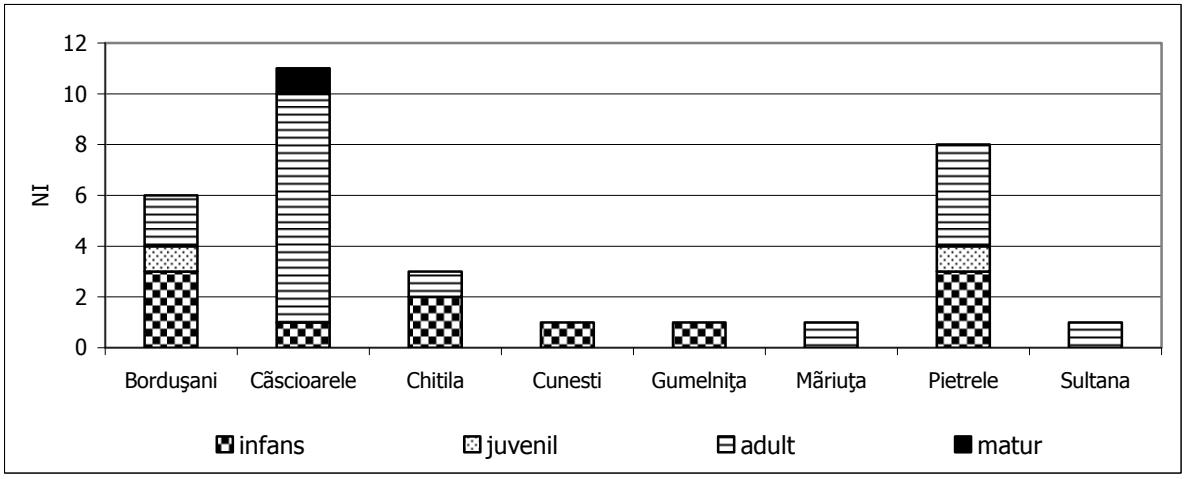
Au fost descoperiţi 63 de indivizi a căror vârstă a putut fi determinată în urma analizelor antropologice sau pe baza menţiunilor arheologice[28]; 32 de indivizi sunt reprezentaţi prin oase fără

[24] 11 menţiuni, 6,8% din totalul descoperirilor de oseminte umane în aşezări.
[25] Pentru această încadrare am respectat interpretarea dată în publicaţiile respective.
[26] Reprezentarea indivizilor pe vârste este singura informaţie care este susţinută de un număr mai mare de date, pentru alte categorii (determinarea sexului, a patologiei etc.) informaţiile nefiind relevante în stadiul actual al cercetării.
[27] Este posibil ca această situaţie să se datoreze şi stadiului cercetării în privinţa analizelor antropologice existente.

conexiune anatomică (Graf. 4) şi 31 de indivizi sunt reprezentaţi prin întregul schelet[29] (Graf. 5). Cei 32 de indivizi reprezentaţi fragmentar se încadrează în toate categoriile de vârstă, numărul de subadulţi (13 din care 11 *infans* şi 2 juvenili) fiind comparabil cu cel de adulţi (18 adulţi şi 1 matur) (Graf. 6). Trebuie menţionat că pentru un număr aproape egal de indivizi nu a fost determinată vârsta (53 de cazuri). Chiar dacă spre deosebire de situaţia acestora indivizii din morminte sunt majoritatea subadulţi (93,5%[30]), nu se poate spune că există o selecţie diferenţiată a indivizilor depuşi în morminte faţă de cei reprezentaţi prin oase izolate în funcţie de criteriul vârstei sau al sexului deoarece în ambele cazuri categoria subadult este reprezentată. E posibil ca analize antropologice detaliate să evidenţieze diferenţe mai subtile între cele două categorii. Tot pe baza datelor existente, se constată că în cazul anumitor situri oasele fără conexiune anatomică aparţin mai multor indivizi, de diferite vârste, atât adulţi cât şi subadulţi, în timp ce indivizii depuşi în ceea ce au fost interpretate ca morminte aparţin întotdeauna unei singure categorii de vârstă (în cuprinsul aceluiaşi sit).

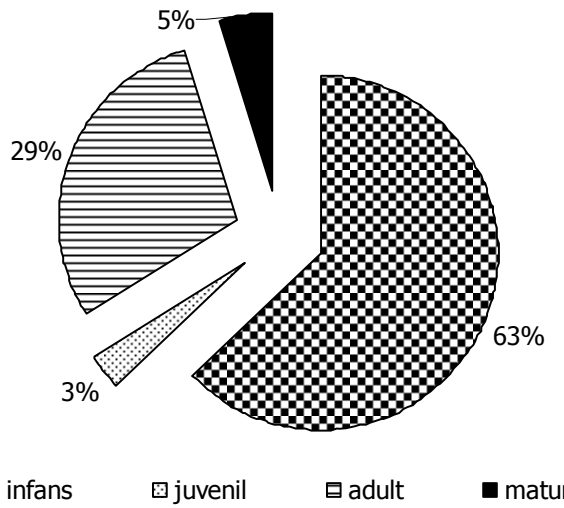


Graf. 4. Repartiţia pe categorii de vârste biologice şi pe situri a indivizilor (descoperiţi în morminte). Repartition of individuals (discovered in graves), based on the age categories and sites.



Graf. 5. Repartiţia pe categorii de vârste biologice şi pe situri a indivizilor reprezentaţi fragmentar (oase fără conexiune anatomică). Repartition of individuals represented by incomplete skeleton (human bones with no anatomical conexion), based on the age categories and sites.

[28] Pentru 23 dintre aceşti indivizi nu există analize antropologice, dar în publicaţii apar menţiuni precum: "morminte de copii".
[29] În această categorie au fost incluşi indivizii depuşi în morminte.
[30] Diferenţa de 6,5% este reprezentată de indivizi maturi.

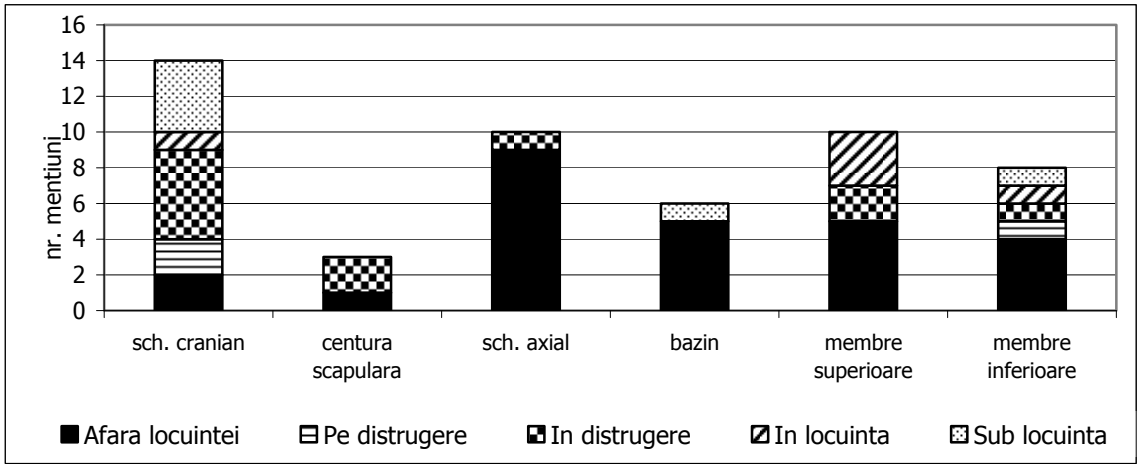


Graf. 6. Reprezentarea la nivel general a grupelor de vârste biologice ale indivizilor descoperiţi în aşezări Gumelniţa.
General representation of the individuals discovered in Gumelniţa settlements, based on the major biological age categories.

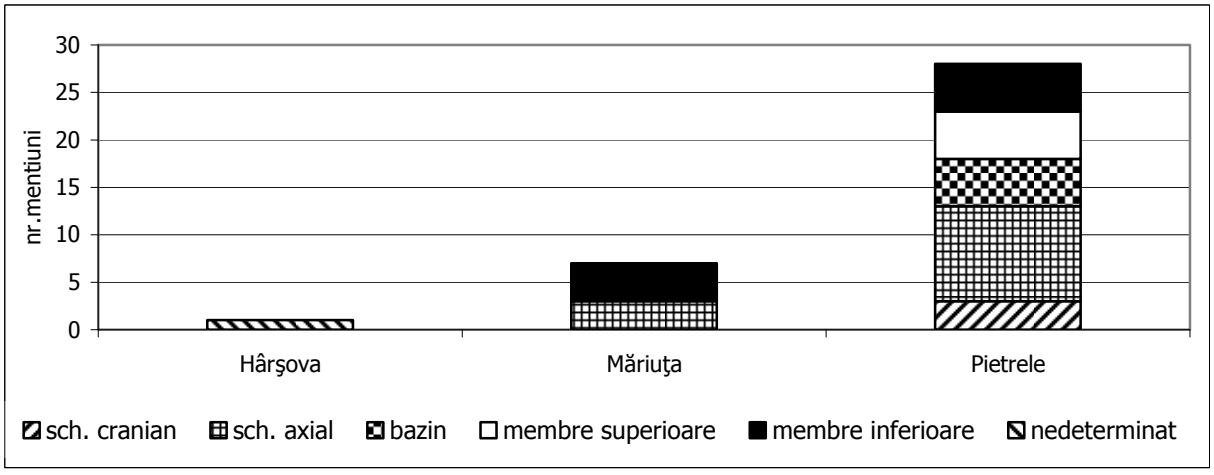
Comparând datele pentru indivizii depuşi în morminte în aşezări cu cele pentru 237 de indivizi depuşi în şapte necropole gumelniţene[31] (E. Comşa 1972; O. Necrasov *et alii* 1990, p. 196-197; S. Marinescu-Bîlcu 2000, p. 115; C. Lazăr 2001; C. Lazăr 2007; C. Lazăr 2008a; C. Lazăr, V. Parnic 2007, p. 135-159; M. Gătej *et alii* 2007, p. 159-169; A.D. Soficaru, A. Ion 2008, p. 296-297) se observă un tratament similar al corpului în ceea ce priveşte poziţia scheletului în groapă (decubitus dorsal sau lateral) sau inventarul asociat[32] (ceramică, figurine, obiecte din lut, silex, piatră, cupru, podoabe). Diferenţele dintre cele două categorii se observă doar la nivelul vâstelor celor reprezentaţi: numărul de indivizi subadulţi este mult mai mic în necropole (24,4%) faţă de cei din aşezare (93,5%), iar majoritatea indivizilor analizaţi din necropole aparţin categoriilor adult şi matur, categorii absente, respectiv slab reprezentate în aşezări. Numai pe baza acestor date şi referindu-ne strict la categoria morminte (din aşezare sau necropolă), este dificilă demonstrarea ipotezei că înhumarea copiilor în aşezări e preferată necropolelor (având în vedere că apar subadulţi în ambele contexte şi că în aşezări au fost descoperiţi şi indivizi maturi). De asemenea, în multe cazuri apar în cuprinsul aceluiaşi sit alături de morminte şi oase izolate, iar acestea din urmă provin de la indivizi încadrabili în toate categoriile de vârstă (similar cu datele pentru necropole). Dacă se iau în calcul datele demografice ale tuturor indivizilor descoperiţi în cuprinsul unui sit, indiferent de modul de reprezentare (întreg sau fragmentar), atunci se modifică raportul dintre categoriile de vârstă reprezentate, pentru aşezări şi necropole. Mai trebuie menţionat faptul că materialele care apar asociate unora dintre oasele umane izolate, care nu au fost depuse în ceea ce a fost considerat în mod tradiţional "mormânt" este identic cu cel din necropole[33].

În ceea ce priveşte indivizii reprezentaţi prin oase dezarticulate, fragmentare în unele situaţii, nu se poate observa la nivel general o selecţie a elementelor anatomice descoperite, indiferent de context. Sunt prezente toate părţile scheletului uman, dar există o mare variabilitate a situaţiilor *inter*-sit (Graf. 7 - 9). Din acest motiv nu se poate afirma că există un model general pentru selecţia indivizilor sau a părţilor anatomice reprezentate, în funcţie de vârstă sau sex. Ceea ce se poate observa este dominanţa elementelor de schelet cranian în asociere cu locuinţe sau cu "stratul de cultură" şi numărul mare de fragmente ce provin din scheletul axial şi centura scapulară[34] sau din bazin pentru descoperirile din "zone menajere" (părţi anatomice fragile, afectate în general primele de procese postdepoziţionale).

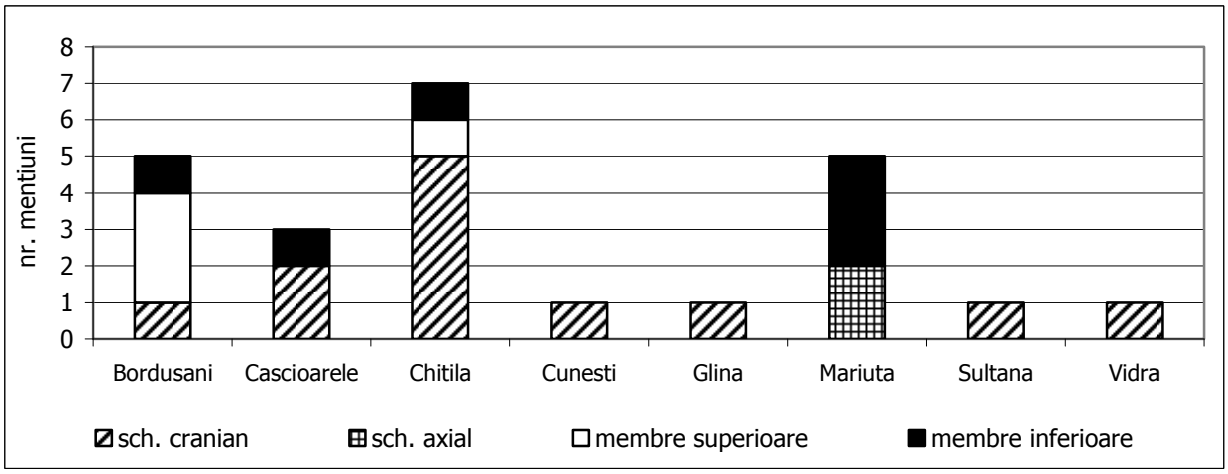
[31] Căscioarele - D'aia parte, Chirnogi - Şuviţa Iorgulescu, Dridu, Radovanu, Măriuţa, Sultana-Malu-Roşu, Vidra.
[32] Lipsa unor date mai precise şi publicarea inegală a descoperirilor nu permit din păcate studierea unei posibile diferenţe, la nivelul mormintelor, în funcţie de vârsta/sexul indivizilor sau în funcţie de alte criterii.
[33] Fără a fi însă specifice domeniului funerar.
[34] În categoria schelet axial au fost incluse vertebre, coaste, stern, iar în categoria centură scapulară – omoplat şi claviculă.



Graf. 7. Repartizarea în funcţie de context a elementelor anatomice descoperite în asociere cu locuinţe.
Repartition based on the context of discovery of the anatomical parts discovered is association with dwellings (Legend graf.: Outside dwelling, on ruins, in the ruins, inside dwelling, under dwelling).



Graf. 8. Repartizarea pe situri a elementelor anatomice descoperite în contexte de tip "zonă menajeră".
Repartition on sites of the anatomical parts discovered in "waste areas" (Legend graf.: cranial scheleton, axial scheleton, pelvis, upper limbs, inferior limbs, undetermined).



Graf. 9. Numărul de oase umane descoperite în "stratul de cultură", în funcţie de părţile anatomice reprezentate/pe situri.
Number of human bones discovered in the "cultural layer", grouped based on the anatomical parts represented/site (Legend graf.: cranial scheleton, axial scheleton, upper limbs, inferior limbs).

Osemintele umane şi alte categorii de materiale arheologice

În cazul a 13 situri indivizii descoperiţi apar în asociere cu alte materiale arheologice[35].

Numai 58% dintre indivizii descoperiţi în asociere cu locuinţele[36] apar în asociere cu alte materiale arheologice. Atât indivizii reprezentaţi prin oase dezarticulate cât şi cei depuşi sub forma întregului schelet apar, uneori alături de oase ce provin de la alţi indivizi, împreună cu: ceramică, obiecte de corn, silex, piatră, dar şi ocru şi oase de animale. După cum am arătat deja, osemintele umane descoperite în zone menajere apar în asociere cu alte materiale. O situaţie similară întâlnim pentru majoritatea cazurilor de oase umane descoperite în gropi. Din cele 11 situri unde au fost descoperite oase umane în "stratul de cultură", numai în trei apar asocieri cu materiale.

Interpretări şi discuţii

Prin această prezentare am urmărit realizarea unui studiu în context al descoperirilor de oseminte umane în aşezări ale comunităţilor din arealul culturii Gumelniţa. Din păcate, pornind de la materialitatea acestor resturi osoase (corpul fizic) este dificilă trecerea la dimensiunea culturală a fenomenului funerar, implicit la reconstruirea persoanei, „on the side of culture" (J.R. Sofaer 2006, p. 54). Această limită se datorează în primul rând problemelor metodologice subliniate, fiind dificilă susţinerea oricărei argumentaţii doar pe baza informaţiilor publicate. Din acest motiv, voi sublinia doar câteva observaţii legate de interpretarea materialelor care au făcut subiectul acestui articol, sperând ca în viitor cercetările să permită o analiză mai aprofundată a fenomenului.

Descoperirea osemintelor umane în aşezări Gumelniţa a fost interpretată în literatura de specialitate din România ca fiind în legătură cu practici sacrificiale (H. Dumitrescu 1944, D. Popovici, Y. Rialland 1996, p. 56; V. Voinea 2001, p. 35-36), canibalism (D. Nicolăescu-Plopşor, W. Wolski 1974; C. Lazăr, A.D. Soficaru 2005, p. 73-81), ca ritual (funerar) care se extinde la întregul complex arheologic (a se vedea posibila ardere deliberată a locuinţelor) (A. Dragoman, S. Oanţă-Marghitu 2007), surprinderea accidentală a unor indivizi sub dărâmături de focul locuinţei (E. Comşa 1960a) sau morminte deranjate etc.

Problema este că unele dintre ipotezele enunţate nu pot fi susţinute în stadiul actual al cercetării şi bazându-se pe informaţiile publicate. Pe de o parte, pentru majoritatea descoperirilor nu se pot formula interpretări deoarece lipsesc informaţii legate de contextul de descoperire, asocierea cu alte materiale arheologice, analize antropologice. De exemplu, este adevărat că există numeroase legende şi ritualuri de construcţie legate de sacrificii umane, în diferite spaţii geografice şi orizonturi cronologice, puse în legătură în special cu spaţii arhitecturale deosebite care necesită prin însăşi viitoarea lor destinaţie un ritual care pe de o parte să desprindă spaţiul din aria naturală şi să-l domesticească, să permită durabilitatea acţiunii umane, dar şi să-l consacre (cazul întemeierii unei aşezări, al unei biserici, fortificaţii, pod)[37]. Cu toate acestea, în absenţa unor date arheologice clare, care să poată preciza nivelul de săpare al gropii mormintelor sau al oaselor izolate (pentru a se stabili dacă aceasta a fost anterioară locuinţei respective, sau a fost făcută în timpul locuirii etc.) şi a unor analize antropologice, este dificilă susţinerea unei asemenea argumentaţii.

Ipoteza canibalismului, problemă intens dezbătută în literatura antropologică încă din secolul al XIX-lea (S. Lindenbaum 2004, G. Obeyeskere 2005, P.R. Sanday 1986, A. Vilaça 2000) este de asemenea dificil de dovedit. De-a lungul timpului s-au făcut mai multe încercări de interpretare a resturilor de indivizi ce apar în aşezări preistorice (şi nu numai), pe baza dovezilor arheologice, ca având legături cu practici antropofagice (T. White 2003): descoperirile de la Sierra de Atapuerca - Gran Dolina (800,000 î.e.n.), Grota Guatari, Mancos – Colorado de sud (perioada precolumbiană) (T. White 1992), precum şi un sit *pueblo* din sudul Colorado (1150 e.n.) unde s-au descoperit resturi de ţesut uman în coprolite (R.A. Marlar *et alii* 2000, p. 74-78). În primul rând, singura formă a canibalismului care poate fi documentată este cea care implică consumul alimentar. Pentru a se putea stabili dacă se poate vorbi de această formă a canibalismului[38] în legătură cu osemintele descoperite în aşezări Gumelniţa sau din orice alt context, primul pas constă în analizarea din punct de vedere antropologic a oaselor umane pentru identificarea indicilor tafonomici ai canibalismului. O serie de

[35] 45% din totalul descoperirilor.

[36] În aproape trei sferturi din numărul siturilor unde oasele şi mormintele apar în contexte asociate cu locuinţe.

[37] A se vedea sintezele lui M. Eliade (2004) şi M. Mauss (1995), care prezintă o serie de exemple etnografice referitoare la această practică.

[38] Şi aici mă refer la acele forme ale practicilor antropofagice care implică afectarea suprafeţei osului, deoarece celelalte nelăsând nici o urmă nu pot fi dovedite arheologic.

cercetători (P. Villa *et alii* 1986, p. 143-171, T. White 1992) au propus modele pentru identificarea unor posibile urme ale practicilor antropofagice. Analizele acestora s-au concentrat pe:

- analize tafonomice pe oasele umane (observarea modificărilor suprafeţei osului: tăieturi, percuţii, fracturi, arderi, modele de spargere a oaselor lungi pentru extragerea măduvei);
- compararea tehnicilor de tranşare şi preparare a oaselor umane cu cele de animale, descoperite în aceleaşi contexte;
- identificarea unor contexte arheologice care să permită interpretarea materialelor descoperite ca fiind aruncate, după consum.

Indiferent dacă aceste analize sunt corecte sau potrivite pentru scopul propus[39] şi ţinând cont de limitele lor (care se datorează atât perspectivei materialiste în care se înscriu cât şi imposibilităţii de a documenta o gamă variată de practici antropofagice pe care paralele etnografice le-au pus în evidenţă), pentru descoperirile Gumelniţa ele sunt inexistente. Doar 56,4% din totalul descoperirilor au fost analizate antropologic[40]. Dintre acestea, cazurile care se pot încadra discuţiei[41] sunt 5 femure de la Căscioarele-*Ostrovel* (C. Lazăr, A. D. Soficaru 2005, p. 73-81) care prezintă tăieturi, spărturi, zgârieturi care indică intervenţii antropice deliberate, postmortem, realizate probabil cu un obiect ascuţit (silex ?) în zona de inserţie a muşchilor şi acţiuni intenţionate de înlăturare a epifizelor şi 3 femure, 2 fragmente de mandibulă, un radius, un humerus, un cubitus şi un coxal de la Pietrele-*Gorgana* (S. Hansen *et alii* 2006, p. 49-53) dintre care şase prezintă fracturi perimortem, în două cazuri s-a documentat contactul cu focul, iar unul a fost considerat un posibil artefact. Aceste date sunt însă insuficiente pentru a demonstra practici antropofagice (pe linia modelelor mai sus menţionate) în lipsa unor analize care să compare tehnicile de "tranşare" şi preparare a oaselor umane cu cele de animale, descoperite în aceleaşi contexte, precum şi fără identificarea unor contexte arheologice care să se preteze la interpretarea materialelor descoperite ca fiind aruncate, după consum. De asemenea, chiar dacă acest criteriu este îndeplinit, etapa antropologiei fizice trebuie depăşită pentru a înţelege semnificaţia acestor descoperiri. Indiferent dacă există urme ce pot trimite la canibalism, studiile antropologice au subliniat că interpretarea fenomenului este complexă, ajungându-se la situaţii în care prin ritual, aparentul consum alimentar este în fapt un consum simbolic, care transcede dimensiunea umană a "victimei" (a se vedea de exemplu articolul lui A. Vilaça 2000).

În esenţă, datorită aspectelor teoretice (a varietăţii formelor de manifestare ale practicilor antropofagice) şi metodologice (analiza descoperirilor arheologice) e dificil a atesta în contextul siturilor arheologice preistorice analizate manifestarea unor practici antropofagice.

Pe de altă parte, nu cred că se poate oferi o explicaţie generală pentru osemintele umane descoperite în aşezări, având în vedere varietatea tipurilor de depuneri: comparând datele din cele 20 de situri şi pe acestea cu datele existente pentru necropole nu se observă o selecţie clară în ceea ce priveşte tipologia indivizilor înhumaţi din punct de vedere al sexului, vârstei, contextului de descoperire etc. Exceptând posibilele cazuri care pot fi explicate ca datorându-se hazardului, luării de trofee etc. şi plecând de la presupunerea că osemintele umane sunt contemporane cu funcţionarea aşezării, ceea ce este semnificativ este asocierea osemintelor umane cu structuri de locuire (gropi, locuinţe etc.) în cuprinsul aşezărilor, tendinţa de a concentra în jurul locuinţelor întreaga existenţă umană, de la deşeuri, până la morţi "*which imply,...,living on a continuously developing accumulation of cultural debris*" (J. Chapman 2000b, p. 83). Acest fapt anulează, indiferent de motivaţiile care au stat în spate, graniţele dintre spaţiu şi timp, sacru şi profan, morţi şi vii, trecut şi prezent. Cei morţi (fie că sunt reprezentaţi de schelete întregi sau prin anumite elemente anatomice) împart acelaşi spaţiu cu cei vii (fiind posibil chiar să intermedieze legătura între aceştia şi strămoşi, universul mitic al comunităţii etc.), ceea ce deschide posibilitatea reinterpretării conceptelor de "locuinţă", "mormânt", "aşezare" etc.

[39] Deşi fiecare caz trebuie studiat cu grijă deoarece se cunosc cazuri de descărnare a oaselor fără consumul cărnii-indienii Huron, Ontario, practici funerare secundare ce se manifestă prin descărnare, luare de trofee, dezmembrare rituală, fragmentare etc.

[40] Deşi peste jumătate dintre acestea nu au contextul de descoperire relevant precizat.

[41] Am inclus (fără a le considera ca exemple de situaţii în care se demonstrează prezenţa unor urme ale practicilor antropofagice) cazurile în care este prezentă cel puţin una dintre caracteristicile tafonomice ale canibalismului, sau care au fost interpretate în literatura arheologică ca fiind legate de această practică.

În loc de concluzii

Acest articol a avut în primul rând scopul de a contura un cadru de analiză pentru problema osemintelor umane ce apar în aşezări, de a reuni informaţiile arheologice cu cele antropologice, pornind de la un interval spaţio-temporal delimitat. Pe baza acestui model am încercat să descriu contextele în care apar resturile osteologice ale indivizilor în aşezări pentru a mă putea apropia de semnificaţiile care stau în spatele acestor descoperiri. Din păcate, interpretarea acestor descoperiri a depins de modul în care informaţiile au fost publicate, ceea ce a făcut dificilă în majoritatea situaţiilor urmărirea criteriilor de analiză propuse.

Două dimensiuni definitorii trebuie subliniate pentru descoperirile de oseminte umane în aşezări Gumelniţa: cea spaţio-temporală (*intra-sit* şi *inter-sit*) şi cea antropologică. În interiorul aşezării e "construit" un spaţiu în care cei vii trăiesc printre cei morţi, distanţele temporale dobândind o altă valoare prin materialitatea prezentă a celor morţi între cei vii[42]. În acelaşi timp, există un spaţiu funerar distinct, în afara aşezării- e de presupus că sunt selecţionaţi anumiţi indivizi, dar nu consider în stadiul actual al cercetării şi strict pe baza a ceea ce a fost publicat că sunt semnificative pentru această selecţie criteriile de antropologie fizică (vârstă, sex, patologii)[43].

În ceea ce priveşte indivizii (dimensiunea antropologică a descoperirilor), se poate observa o opoziţie între cei reprezentaţi prin întreg (oase în conexiune anatomică) sau prin parte. Este interesant însă că din punct de vedere formal sunt foarte asemănătoare contextele de depunere a oaselor izolate şi a mormintelor - de exemplu: asocieri cu acelaşi tip de materiale arheologice, depunerea în groapă (în strat sau în necropolă), asocierea locuinţă arsă sau abandonată (încetarea locuirii, a vieţii) cu mormânt (în spaţiul necropolei). Atunci se impune întrebarea de ce unii indivizi sunt depuşi în aşezări şi alţii în necropole? E posibil ca în spatele selecţiei să se afle criterii şi valori sociale şi culturale. John Chapman integrează aceste opoziţii (2000a), în contextul neo-eneoliticului sud-est european, în cadrul unei practici sociale ce leagă oameni de obiecte prin producţie, schimb, consum, practică construită prin procese ce implică fragmentarea şi acumularea şi determină construirea identităţii individului. El propune înlocuirea noţiunii de individ ("individual") cu cea de "dividual" (J. Chapman 2000a; C. Fowler 2001, p. 137-163). Pentru J. Chapman "identitatea preistorică" este construită pe baza seturilor de relaţii, credinţe, practici şi experienţe, cu obiectele, lucrurile, lumea. În această relaţie sunt integrate şi oasele umane, care prin fragmentare sau acumulare în seturi (în cimitire) devin parte a strategiei de construire a coeziunii sociale. Încercarea lui J. Chapman de a asimila tratamentul comportamentului uman cu tratamentul diverselor categorii de cultură materială, ca manifestări diferite ale aceleiaşi practici sociale este interesant deoarece acest tip de analiză permite integrarea corpului în universul material, cultural şi social al sitului şi un anumit mod de înţelegere a indivizilor, ca entităţi variabile şi "mutabile", deschise radical unor forme diferite de constituire, în timp şi spaţiu, în diferite societăţi, la graniţa dintre simbolic şi imaginar (M. Shanks, C. Tilley 1988, p. 62-63). Cu toate acestea, asimilarea oaselor umane cu cultura materială e valabilă până la un punct: a anula dihotomia material-biologic, precum şi a relativiza interpretarea acestora nu trebuie să înseamne şi a anula "umanitatea"[44]- este discutabil în ce măsură omul poate fi asimilat culturii materiale[45] şi nu trebuie pierdută din vedere, dincolo de consideraţiile de ordin sociologic, componenta spirituală a ritualului funerar. Se poate ca anumiţi indivizi să fie dezmembraţi şi oasele lor să fie împărţite între diferite situri (situaţie ce ar explica lipsa celorlalte elemente anatomice din scheletele reprezentate), dar mai mult ca parte a unor comportamente cultice (care să implice şi o componentă socială), asemănătoare cu cele care stau în spatele cultului moaştelor; în sprijinul acestei ipoteze ar sta marea varietate a tipurilor de părţi

[42] Chiar *tell*-ul în sine nefiind altceva decât o imagine vizuală şi materială a trecerii timpului peste comunitate.

[43] Majoritatea mormintelor din aşezări sunt de copii, dar există numeroşi copii şi în necropole, iar în ceea ce priveşte oasele izolate ele au aparţinut unor indivizi din toate categoriile de vârstă; puţine oseminte din aşezări au urme de traumatisme sau patologii care să justifice o depunere sacrificială.

[44] A se vedea şi punctul de vedere al lui A.B. Knapp şi al lui P. van Dommeln (2007, p. 15-34) – criticând relativizarea totală pe care definiţia identităţii de tipul celei susţinute de J. Chapman o implică, aceşti autori consideră că dincolo de relaţiile şi contextul cultural în care se formează o individualitate, condiţionând-o şi construind-o, este la fel de importantă experienţa individului (determinată de sex, vârstă, statut social, clasă, etnicitate, identitate, religie, de propriile dorinţe şi motivaţii), care îi conferă o libertate şi originalitate în raport cu societatea şi-i permite să-şi manifeste unicitatea, transformând la rândul lui lumea de simboluri în care există.

[45] Studii etnografice pun în evidenţă că această distincţie nu are semnificaţie pentru anumite societăţi premoderne, totul integrându-se într-o unitate care face inutile diferenţe de tip modern precum cele între om-obiect. Cu toate acestea, consider că există şi în aceste medii o anumită conştiinţă a "individualităţii" omului în raport cu lumea, indiferent cum se exprimă ea şi că cel puţin din acest punct de vedere a manipula un obiect sau corpul unei rude decedate nu are aceeaşi valoare (chiar dacă se poate să aibă aceeaşi semnificaţie).

anatomice reprezentate în situri. Este evident însă că fără analize ulterioare această ipoteză nu poate fi demonstrată. De asemenea, interpretarea oaselor fragmentare ca simbolizând întregul ("pars pro toto") trebuie nuanţată, cel puţin pentru anumite cazuri, deoarece, chiar dacă selecţia elementelor anatomice variază în funcţie de sit sau context, paralele etnografice subliniază alegerea anumitor părţi anatomice, pentru calităţile întruchipate- elementul anatomic, chiar dacă este menit a simboliza întregul este semnificativ şi prin sine însuşi, pentru alegerea lui şi nu a altuia.

Indiferent însă de semnificaţiile care au stat la baza acestor descoperiri, anumite caracteristici (numărul mare de situri în care apar, contexte şi asocieri de materiale similare, paralele etnografice, dar şi istorice etc.) care nu se pot explica doar prin hazard mă determină să le consider ca descoperiri cu caracter funerar. Rămâne ca cercetările viitoare să permită aprofundarea analizei acestui fenomen, atât din perspectiva dimensiunii interpretative, cât şi din punctul de vedere al informaţiilor existente.

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The Eneolithic Cemetery from Sultana-*Malu Roşu* (Călăraşi county, Romania)

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Abstract: *The Sultana*-Malu Roşu *Eneolithic* tell i*s located 400 m North-East of Sultana village, commune of Mânăstirea, in the Călăraşi county, South-East Romania. This is a settlement from the second half of the fifth millennium (Kodjadermen-Gumelniţa-Karanovo VI complex). Sultana*-Malu Roşu *was the first Gumelniţa site to be submitted to scientific research, in the 1920s. After 1975 the site was researched almost entirely. The excavations were resumed by the National History Museum of Romania and the Lower Danube Museum Călăraşi in 2001. In 2002 new excavations were started on the terrace, near the tell. The goal of these new excavations was to discover the cemetery of the tell. It was not an easy task, because at the moment we don't have a solid method for identification of cemeteries. The methodology used at the Sultana*-Malu Roşu *cemetery took into account the size of the terrace (about 3.5 ha) and the particular aspects posed by the research of a prehistoric cemetery. In 2003 a series of geo-magnetic prospects were conducted on the terrace, near the* tell, *in order to identify the necropolis. The area of terrace was divided in a grid of 50 m x 50 m units for a better management of the excavation. Between 2002-2007 we accomplished to dig 22 sections. In this sections we found 12 inhumations graves. The graves were from Kodjadermen-Gumelniţa-Karanovo VI period and contained human skeletons in crouched (fetal) position, laying on the left or on right side. Funerary inventory was found in four graves only. The burials from Sultana-Malu Roşu cemetery and the elements of funerary treatment identified here confirm similitude to the standard mortuary practices of the Kodjadermen-Gumelniţa-Karanovo VI complex.*

Rezumat: *Aşezarea gumelniţeană de la Sultana*-Malu Roşu *este situată pe malul drept al Mostiştei, la 400 m nord-est de satul Sultana, com. Mânăstirea, jud. Călăraşi. În anul 2002 s-a deschis un nou sector pe terasa de lângă* tell*, în vederea identificării necropolei aparţinând aşezării gumelniţene. Pentru o bună gestionare a situaţiei suprafaţa terasei a fost împărţită în carouri de 50 x 50 m. În secţiunile realizate s-au descoperit 12 morminte de inhumaţie, care aparţin culturii Gumelniţa. Mormintele conţineau schelete depuse în poziţie chircită, pe partea stângă sau pe partea dreaptă, orientate pe direcţii apropiate de est. Picioarele erau flexate moderat sau accentuat. Bunuri funerare au fost identificate doar în patru morminte. Pe baza observaţiilor făcute asupra acestor complexe funerare, putem afirma că terasa pe care au fost făcute aceste descoperiri, a fost folosită de locuitorii* tell-*ului drept spaţiu funerar. Mormintele din necropola de la Sultana*-Malu Roşu *prezintă aceleaşi elemente de tratament funerar constatate şi în cadrul altor necropole aparţinând complexului Kodjadermen-Gumelniţa-Karanovo VI.*

Keywords: *Kodjadermen-Gumelniţa-Karanovo VI complex, cemetery, burials.*
Cuvinte cheie: *complexul cultural Kodjadermen-Gumelniţa-Karanovo VI, necropolă, morminte.*

The Eneolithic settlement of Sultana (commune of Mânăstirea, Călăraşi County, South-East Romania) (fig. 1), is a special case for the Romanian research of the Eneolithic. It was the first Gumelniţa site submitted to scientific research, in the 1920s. After 1975 the site was researched almost entirely. Unfortunately, the results of these researches remain unknown. Instead, the archaeological material that remained, by its originality and value makes of Sultana a unique site within the Eneolithic period (R. Andreescu 2001).

The settlement lies about 400 m North-East of the village of Sultana, in the location named *Malu Roşu*, on the high terrace of the Iezerul Mostiştea lake (fig. 1, 2/a).

From a geographical perspective, the Eneolithic settlement from Sultana-*Malul Roşu*, is located in the eastern part of the Romanian Plain, on the bank of Mostiştea River in a plain area (fig. 2/a-b). The soil is formed on loess deposits and in some areas there are small sand hills. The underground water layer may be found at a low depth. The altitudes for this area are between 4 and 80 m above Black Sea level (V. Mihăilescu 1969, p. 139-140).

Since 2002 a new excavation area was opened on the terrace near the *tell*, with the purpose of identifying the settlement's necropolis (R. Andreescu *et alii* 2002; 2003; 2004; 2005; 2006). The targeted area was located on the high terrace of the Iezerul Mostiştea lake, west to the *tell* (fig. 2/a-b). Between 2006 and 2007, 12 graves were researched (R. Andreescu *et alii* 2006, 2008; G. Trohani *et alii* 2007).

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Methodology

The methodology used at the Sultana-*Malu Roşu* cemetery is a special one, taking account the size of the terrace (about 3.5 ha) and the particular aspects posed by the research of a prehistoric cemetery.

In our approach for finding the Eneolithic cemetery from Sultana-*Malu Roşu* we have considered the necropolises South of the Danube, from Bulgaria (D. Ovcharov 1963, p 53-56; H. Todorova *et alii* 1975, p. 53-65; I. Ivanov 1978a, p. 13; *idem* 1980, p. 25; *idem* 1988, p. 49; 1982, p. 166; A. Radunčeva 1976, p. 69-92; T. Dimov *et alii* 1984, p. 74-88; I. Angelova 1986, p. 49-58; H. Todorova, T. Dimov 1989, p. 291-310; H. Todorova 2002), and the two primary elements in establishing a funeral area – the topographic and the visual factor (C. Lazăr, V. Parnic 2007, p. 137).

Geo-magnetic prospecting. In 2003, a series of geo-magnetic prospects were conducted on the terrace, near the *tell* of Sultana-*Malu Roşu* in order to identify the cemetery (fig. 3). Two methods were used for prospecting the soil: electric tomography and magnetometry. An area of about 2 ha was researched through magnetometric method. There were also 3 resistivity profiles made. Recorded magnetic field values and their amplitude seem to indicate for some sectors of the terrace a small intensity of the habitation, but of an uncertain age. These are indicated by groups of anomalies that could be interpreted as piles of burnt constructions material (burnt clay, brick, tile, etc). Unfortunately, the passing of time affects the structure of the artefacts, therefore it is hard to distinguish their size and shape (C. Nemeş 2004).

Considering the approximation in outlining our archeological objectives we only determined the main traceable elements in the major interest area according to interpretative maps. It needs to be mentioned that the indicated anomalies could not be clearly outlined (R. Andreescu *et alii* 2003, 2004, 2005, 2006; G. Trohani *et alii* 2007).

Unfortunately, our main objective, finding the remains of the inhumation cemetery belonging to Sultana-*Malu Roşu* site by geomagnetic prospecting was not achieved. We only found remains of later habitation. The presence of metal waste in the ground, as result of (modern?) farming, became a major impediment in finding the extremely fine clues, generated by the material remains specific for such a cemetery, which the researchers think to be present on this terrace (C. Nemeş 2004; R. Andreescu *et alii* 2004).

Planimetry and Altimetry. The area of terrace was divided in a grid of 50 m x 50 m units for a better management of the excavation (fig. 3). The altimetry measures were taken with refernce to zero point.

The archaeological survey conducted in 2007-2008 had also focus on the digital integration of the archaeological data that were obtained so far. The final aim is to create a cartographical platform which can be managed through a Geographic Information System (GIS) and those first years of researches represent an important step toward this achievement. The topographical delimitation of the archaeological site as well as mapping and inventorying the archaeological interventions made inside of the archaeological site (both in the *tell* settlement and in the necropolis) where the key objectives of the research until now.

In order to accomplish the field research, the following instruments were used:

- Total station Leica TCR 410
- GPS Thales Mobile Mapper with data post-processing capacities
- GPS Garmin GPSMAP 76CS, WAAS/EGNOS enabled
- GPS Garmin Etrex Vista.

Another important point in our labour was to verify the accuracy of the already existing documentation which was used for the topographical and geodesic researches developed in the area[1]. This operation was necessary in order to ensure that all the researches are compatible with the Stereo'70 (National Romanian Topographical System 1970) with reference level Black Sea. All in all, the topographical survey covered a surface of appreciatively 16.60 Km^2 (fig. 2/a).

As a preliminary step of the archaeological excavation, it has been designed a grid (50 x 50 m) which will be implemented also on field (fig. 3), in order to facilitate archaeological material registration. In this way, it will be possible for the archaeologists to maintain a correlation with the former vegetal level and also to correlate the level of the necropolis with that of the settlement.

Excavation. The initial research method consisted in digging 3 m x 1 m or 2 m x 1 m sections, placed at 10-20 m one from another, in order to cover as much terrace surface as possible.

[1] For the topographical and geodesic surveys on the archaeological area were used data from previous studies realised by SC Azimuth SRL Călăraşi.

Some of the sections were placed to verify the areas where geomagnetic research found magnetic anomalies.

After the first graves were uncovered, bigger sections were made (8 x 2 m or 10 x 2 m), and even areas of 8 x 6 m, divided into squares of 2 x 2 m, for systematic and complete research of the targeted areas (fig. 4).

Microstratigraphic method was used to record the stratigraphic data, by a thorough analysis of the stratigraphical units (s.u.).

Aerial survey. In the summer of 2007 Sultana-*Malu Roşu,* benefitted from an investigative aerial research. Corroborated with older aerial photographs, this has led to results regarding the evolution of the landscape, the evolution of the archaeological diggings over time, the erosion of the lakes banks and the presence of anthropic interventions (C. Bem *et alii* 2008).

Other analyses. The human remains from Sultana-*Malu Roşu* cemetery were anthropologically analysed and the data is the subject of an article in this issue (A. Ion, Soficaru 2008).

Also to be sure that we have collected all the small bones, seeds, charcoal, and small artefacts, we have collected and wet sieved the sediment from the funeral pits.

We also collected soil samples from the hip (coxal) area from all the graves, for parasitological analysis. The results will be available soon. From the skeletons DNA and ^{14}C samples were also taken, to be analyzed in 2009.

Graves

Grave 1 (fig. 5/a). Was discovered in Son[2] 1/2006, at a depth of 0.95 m (fig. 4). The funeral pit had an oval shape (1.37 x 0.76 m) (fig. 5/a). In its NW side, this pit was cut by another pit (C7/2006)[3] (fig. 5/a). The *terminus post quem* of the pit was -1.29 m (s.u. T1003). The filling of the funeral pit (s.u. T999) consisted of a yellowish-brown, homogenous, medium granulated, less compact, that contained carbonates (fig. 9/c).

The grave contained the skeleton of an adult male (40-45 years), laid in a fetal position, on the left side, oriented 80° E – 260° W (fig. 5/a). The legs were moderately flexed. The right arm was rested aside the body, with the hand on the right femur. The left arm was bent with the hand towards the skull.

The funeral inventory was generous – around the fingers, forearms, but also around the neck, over 40 *Spondylus* beads and 60 malachite beads were discovered (fig. 5/a, d-l). We also found a flint blade near the right shoulder (fig. 5/a, c), and an unperforated, polished stone axe near the left arm (fig. 5/a-b).

Grave 2 (fig. 6/a). Was discovered in Son 9/2006, at a depth of 0.83 m. This grave was located at about 25 m WSW of Grave 4 (fig. 4). The funeral pit had an oval shape (0.86 x 0.49 m), 329° NNW – 149° SSE orientation, and its base lays at -1.06 m (s.u. T1003). The filling of the funeral pit (s.u.T995) consisted of a gray-brown, homogenous, less compact, that contained carbonates. The grave contained the remains of a very young individual (*Infans 1*), with an estimated age of 1 year. The human remains consisted of some skull fragments and some long bones diaphyses (fig. 6/a). It was not possible to determine the position of the body in the grave. Along with the human bones, two animal bones were discovered (a horncore and metatarsus of sheep).

Grave 3 (fig. 6/b*)*. Was discovered in Son 8/2006, squares 3 & 4. This grave was located at about 0.15 m S from Grave 4 and 0.22 m S from Grave 5 (fig. 4). The funeral pit was identified at -0.95 m (s.u. T1003), without finding the *terminus post quem.* The base of the pit was at -1.30 m, in the *loess* layer (s.u. T1004). The funeral pit had an oval, irregular shape (1.10 x 0.90 m), and a 25° NNE – 262° SSW orientation (fig. 6/b*)*. The filling of the funeral pit (s.u.T993) consisted of a yellowish-brown, homogenous, less compact, medium granulated, that contained carbonates. The content of the grave consisted in the remains of an adult female, with an estimated age of 40 years. The osteological remains consisted in left hand bones, left foot bones, thoracic vertebrae, fragments of left and right femurs, left ulna, left humerus, hip bone, right ribs. This feature probably represents a „re-interment" [4] without anatomic position. There was no funeral inventory.

[2] Son = sondage.

[3] This had a circular shape (0.54 x 0.58 m) and did not contain any archaeological materials. The level of excavation of this pit was the same with the excavation level of the graves.

[4] We use the term „re-interment" in a conventional way because these complexes have some particular features that not allow us to sustain the certainty of this meaning. We will debate the problem related to them in a future study.

Grave 4 (fig. 6/c). Was discovered in Son 8/2006, squares 3 & 4, at -0.95 m (fig. 4). The funeral pit had an oval, irregular shape (1.25 x 0.70 m), and it's base was at -1.12 m.

The filling of the funeral pit (s.u.T991) consisted of a yellowish-brown, homogenous, less compact, medium granulated, that contained carbonates. The grave contained the skeleton of an adult female (45 - 55 years) laid in a fetal position, on the left side, oriented 82° E – 262° W (fig. 6/c). The legs were moderately flexed. The right arm was found aside the body, with the hand on the right femur. The left arm was bent with the hand towards the skull. In the thoracic area a Gumelniţa potsherd was discovered (fig. 6/c).

Grave 5. (fig. 6/d). Was discovered in Son 8/2006, squares 3 & 4 (fig. 4). The funeral pit was identified at -0.95 m (s.u. T1003), without finding the *terminus post quem.* The base of the pit was at -1.14 m. The funeral pit had an oval, irregular shape (1.29 x 0.96 m). The filling of the funeral pit (s.u.T899) consisted of a yellowish-brown, homogenous, less compact, medium granulated, that contained carbonates. The grave contained an adult female (20 years) placed in a fetal position, on its left side, oriented 69° ENE – 249° WSW (fig. 6/d).

The legs were moderately flexed. The left arm was bent with the hand towards the skull. From the right arm only the humerus and the radial and ulna epiphyses were found. We can only assume that the arm was laid along the body. There was no funeral inventory.

Grave 6 (fig. 7/a). Was discovered in Son 2/2007, square 1 (fig. 4), at -0.90 m. The funeral pit had an oval shape (1.24 x 0.72 m), and its base was at -1.19 m (fig. 7/a, 9/b). The filling of the funeral pit (s.u.T1010) consisted of a yellowish-brown, homogenous, less compact, medium granulated, that contained carbonates and disturbed by burrows (fig. 9/b). The grave contained the skeleton of an adult female (40-45 years) placed in a fetal position, on its left side, oriented 81° E – 261° W (fig. 7/a). The legs were strongly flexed beneath the pelvis. The right arm was probably placed along the body. The left arm had a poor state of conservation, with some parts missing and was probably bent towards the skull (fig. 7/a). The grave inventory was represented by a ceramic pot (fig. 7/b), placed face down, near the skull (fig. 7/a).

Grave 7 (fig. 7/c). Was discovered in Son 1/2007, squares 3 & 4 (fig. 4). The funeral pit was identified at -0.85 m, had an oval, irregular shape (1.29 x 0.82 m), and its base was at -1.29 m (fig. 7/c, 9/d). The filling of the funeral pit (s.u.T1005) consisted of a yellowish-brown, homogenous, less compact, medium granulated, that contained carbonates and disturbed by burrows (fig. 9/d). The grave contained the remains of an adult male (30-35 years) placed in a fetal position, on its left side, oriented 81° E – 261° W (fig. 7/d). The upper part of the skeleton was heavily disturbed by burrows. Therefore, the bones from this part were not in anatomic connection, some of them even missing. There was no funeral inventory.

Grave 8 (fig. 7/d). Was discovered in Son 2/2007, squares 6 & 7 (fig. 4), at -0.86 m. The *terminus post quem* of the pit was at -0.65 m (s.u. T1003), its base being at -1.03 m (fig. 9/a), in the *loess* level (s.u. T1004). The funeral pit had an oval shape (1.33 x 0.68 m). The filling of the funeral pit (s.u.T1008) consisted of a yellowish-brown, homogenous, less compact, medium granulated, that contained carbonates and disturbed by burrows (fig. 9/a). The grave contained the skeleton of an adult female (35-40 years) placed in a fetal position, on its left side, oriented 65° ENE – 245° WSW (fig. 7/d). The legs were strongly flexed beneath the pelvis. The right arm was found aside the body, with the hand on the right femur. The left arm was bent with the hand underneath the skull. There was no funeral inventory.

Grave 9 (fig. 8/a). Was discovered in Son 2/2007, squares 8 & 9 (fig. 4), at -0.90 m. The funeral pit had an oval, irregular shape (1.29 x 0.83 m), and its base was at -1.12 m (fig. 8/a), in the *loess* level (s.u. T1004). The *terminus post quem* of the pit was at -0.70 m. The filling of the funeral pit (s.u. T1008) consisted of a yellowish-brown, homogenous, less compact, medium granulated, that contained carbonates and disturbed by burrows. The grave contained the skeleton of an adult female (45-55 years), placed in a fetal position, on its left side, oriented 80° E – 260° W (fig. 8/a). The legs were moderately flexed. The left arm was bent, with the hand underneath the skull. The right arm was bent towards the inferior members. In the coxal area a Gumelniţa potsherd was discovered (fig. 8/a).

Grave 10 (fig. 7/e). Was discovered in Son 8/2006, squares 3 & 4, at 0.20 m NNE from Grave 8 (fig. 4), during the digging of the extension for Grave 8. The *terminus post quem* of the pit was at -0.65 m (s.u. T1003), and its base was at -0.95 m (fig. 9/a). The funeral pit had an oval, irregular shape (0.84 x 0.78 m), with a 109° E – 289° W orientation (fig. 7/e). The filling of the funeral pit (s.u.T1008) consisted of a yellowish-brown, homogenous, less compact, medium granulated. The grave contained the remains of an adult female (45-55 years). It is a „reburial" in an anatomical order

(fig. 7/e). The anatomical elements found in the grave were: fragments of skull and left leg (femur and tibia). There was no funeral inventory.

Grave 11 (fig. 8/b). Was discovered in Son 2/2007, squares 9 & 10 (fig. 4), at -0.90 m. The funeral pit had an oval (fig. 8/b), irregular shape (1.47 x 0.72 m). The *terminus post quem* of the pit was at -0.85 m (s.u. T1003), and its base was at -1.18 m, in the *loess* level (s.u. T1004). The filling of the funeral pit (s.u.T1013) consisted of a yellowish-brown, homogenous, less compact, medium granulated, slightly disturbed. The grave contained the skeleton of an adult male (40 years) placed in a fetal position, on its left side, oriented 80° E – 260° W (fig. 8/b). The legs were moderately flexed underneath the pelvis. The right arm was found aside the body. The left arm was bent with the hand underneath the skull. The funeral inventory consisted in a flint blade (fig. 8/d) found at 5-6 cm from the left humerus epiphysis (fig. 8/b).

Grave 12 (fig. 8/c). Was discovered in Son 2/2007, square 6 & 7 (fig. 4), at -0.95 m. The grave was located in short proximity of Grave 8, at about 0.42 m SSW of it (fig. 4). The funeral pit had an oval, irregular shape (1.32 x 0.85 m), and its base was at -1.12 m, in the *loess* level (s.u. T1004). The filling of the funeral pit (s.u.T1014) consisted of a yellowish-brown, homogenous, less compact, medium granulated, that contained carbonates. The grave contained the skeleton of an adult male (35-40 years) placed in a fetal position, on its left side, oriented 71° ENE – 251° WSW (fig. 8/c). The legs were moderately flexed underneath the pelvis. The right arm was found aside the body, with the hand on the right femur. The left arm was bent with the hand underneath the skull. In the SSW edge of the funeral pit a river shell was discovered. The funeral inventory consisted in a flint blade discovered underneath the skull (fig. 8/e).

Position and orientation

Most of the graves from Sultana-*Malu Roşu* cemetery contained skeletons laid out in a fetal position (laterally, dorsal or ventral), on the left side (fig. 5/a, 6/c-d, 7/a, c-d, 8/a-c). Graves 3 and 10 represented "reburials" (fig. 6/b, 7/e), and Grave 2 was of a very small child, with remains in a very precarious state of preservation (fig. 6/a). This fact prevented us from establishing his position in the grave. The deposition of the dead in this fetal, left side position, is also characteristic for other necropolis belonging to Kodjadermen-Gumelniţa-Karanovo VI cultural complex. We bring to mind the discoveries from Goljamo Delčevo cemetery, where only one of 14 deceased was placed in a fetal, right sideway position, the other 13 being placed in a fetal, left side position. (H. Todorova *et alii* 1975, p. 59-65). In Durankulak cemetery, 119 individuals were found crouched on left right side, and 17 crouched on left side (H. Todorova *et alii* 2002, p. 31-88). At Vărăşti-*Grădiştea Ulmilor,* 63 individuals were left side crouched, and 6 right side crouched (E. Comşa 1995b, p. 58-96). In the Tărgovište necropolis most of the individuals (8) were left side crouched (I. Angelova 1986, p. 50-58). At Kubrat, the dead were placed both left (18 cases) and right side crouched (3 cases) (V. Mikov 1927, p. 280-282). Graves from Chirnogi-*Terasa Rudarilor* (D. Şerbănescu 1988, p. 2) and Chirnogi-*Şuviţa Iorgulescu* (C. Bălteanu, P. Cantemir 1990, p. 3) necropolises only had ventral and left side crouched individuals. The deads from Dridu were placed both left side (4 cases) and right side crouched (5 cases) (E. Comşa 1980, p. 25). In the Măriuţa-*La Movilă* cemetery were also placed both left side (3 cases) and right side crouched (1 case) (C. Lazăr, V. Parnic 2007, p. 142).

If we take a look at the orientation we notice that the individuals from this cemetery have a common case. Most of the individuals are oriented to directions close to East (fig. 4, 5/a, 6/c-d, 7/a, c-d, 8/a-c). Even some of the "reburials" (e.g. Grave 10; fig. 7/e) seem to have the same orientation. Only Graves 2 and 3 have a different orientation, which is closer to North (fig. 4, 6/a-b). This way of placing the deads eastwards is also known in other necropolises belonging to Kodjadermen-Gumelniţa-Karanovo VI cultural complex. For example, most of the individuals from Vărăşti-*Grădiştea Ulmilor* cemetery had their skull oriented towards ESE (41 cases), ENE (38 cases) or E (11 cases) (E. Comşa 1995b, p. 58-97). In the Vinica necropolis most of the individuals were oriented towards SE-NW (34 cases), NE-SW (1 case) or E-W (2 cases) (A. Radunčeva 1976, p. 69-92). In the Chirnogi-*Şuviţa Iorgulescu* cemetery, the deads had an ESE-WNW orientation (C. Bălteanu, P. Cantemir 1990, p. 3). The majority of the deads from Kubrat were eastwards oriented (12 cases) (V. Mikov 1927, p. 280-282). At Dridu a preference was revealed for burying the deads with the head oriented close to East, having a fluctuation comprised between 45° NE and 157° SSE (E. Comşa 1980, p. 26). In the Durankulak cemetery the proportion of the individuals eastwards oriented is very small (NE – 15 cases, SSE – 1 case, E – 2 cases, NNE – 29 cases, ENE – 1 case), relative to other orientations. (K. Dimitrov 2002b, p. 281-282; H. Todorova *et alii* 2002, p. 31-87). In the Goljamo Delčevo cemetery

most of the skeletons had closer to East orientations: E-W (16 cases) and SE-NW (8 cases) (H. Todorova *et alii* 1975, p. 59-65). At Măriuţa-*La Movilă* the dead were also eastwards oriented, the fluctuation being comprised between 65° ENE and 109° ESE (C. Lazăr, V. Parnic 2007, p. 143). The deads from the necropolis of Tărgovište (I. Angelova 1986, p. 51-58), Radingrad (I. Ivanov 1982, p. 166), Chirnogi-*Terasa Rudarilor* (D. Şerbănescu 1988, p. 2-3) and Căscioarele-*D'aia parte* (D. Şerbănescu 1997) were E-W oriented.

We must not ignore the fact that the orientation is a disputable criterion because, even if we consider that those communities placed their dead after the sun, is a known fact that the sun has a cycling trajectory, depending on the season. Also, we establish our north with the help of a compass, which guides itself after the magnetic pole, which is also migrating (V. Sîrbu 2003, p. 50-51).

Therewith, based on some well documented ethnographic observations, it has been proven that the presumption according to which the deceased were oriented after the cardinal points or according to the sunrise/sunset, is, in many cases, unsubstantiated.

In reality, the guide marks for the orientation of the dead were completely different, varying in time and space (P. J. Ucko 1969, p. 271-272; F. McHugh 1999, p. 43-44; M. Parker Pearson 2001, p. 54).

This fact is also valid for the Sultana-*Malu Roşu* cemetery. So, on a closer analysis of the graves with closer to - East orientations, we have noticed that the variations in positioning are well determined (fig. 4): the deceased are placed with the head towards the *tell.*

Funeral inventory

The archaeological research in the cemetery of Sultana-*Malu Roşu* is an ongoing project, with 12 graves discovered till present. Only a few of these graves have funeral inventory (G. Trohani *et alii* 2007; C. Lazar *et alii* 2007; R. Andreescu *et alii* 2008). In some cases, like Grave 4 or Grave 9, only a potsherd was found (fig. 6/c, 8/a); it's difficult to consider that a funerary object.

On the other hand, for the graves without any materials, we do not exclude the possibility that they had possessed perishable grave goods, made of wood, leather, coat, vegetal fibres etc. This idea totally changes the coordinates of our analysis.

Ceramic artefacts. Only in Grave 6 we found a ceramic artefact. A small pot was placed by the head of the dead (fig. 7/a-b). The vessel in question is a small bowl. It has a rim diameter of 10.4 cm, with a maximum diameter of 10.8 cm, and a base diameter of 4.2 cm. The total height is 7.5 cm. The upper height is 3 cm and the lower height is 4.5 cm (fig. 7/b). The state of preservation is relatively good, the pot being around 80% complete.

Considering the shape, the pot can be placed in the "*opened form*" (V. Voinea 2005, p. 35) or "*truncated category*" (D. Popovici *et alii* 2003, p. 16). The rim is slightly pulled outwards, and the shoulder is pointed. The lower part of the vessel is slightly curved outwards and the base is curved inwards. It presents a plastic decoration. The rim has a grate number of slots, and the upper part of the vessel, between the rim and the maximum diameter ("shoulder"), is decorated with a fine, horizontal groove. On the shoulder there are two small buttons, diametrically placed.

The surface was treated by applying a fine, brown colored engobe which was later smoothened, both on the inside and outside of the pot. The vessel was made out of fine, homogenous clay, with fine sand used as a lean material. The pot was fried in a reducing environment, thus making the color of the paste appear black. In spite of the fine paste and the reducing environment the bowl is extremely fragile. Considering that, it is possible that the bowl was made in a hurry, probably especially for the funeral.

The shape and decoration of the vessel are not funeral characteristic, looking more like settlement ceramic. This is not an unusual fact for the Gumelniţa culture. The ceramic from Goljamo Delčevo necropolis is not any different from the one in the settlement (V. Voinea 2005, p.44).

The characteristics of the pot (shape, decoration) are common for the beginning of the phase A1 of the Gumelniţa Culture.[5]

We have found several analogies in the cemetery of Durankulak (vessels in Grab. 41, Grab. 394, Grab. 413 Grab. 506, Grab. 537, Grab. 540, Grab. 588[6]) (H. Todorova *et alii* 2002). When we took a closer look at the analogies, we have noticed two things. One of them is that the majority of the graves belong to Hamangia IV and Varna I cultures. The other interesting observation is that 6 out of 8 individuals are females (H. Todorova *et alii* 2002). This suggests that the inventory of the

[5] We would like to thank to Valentina Voinea for the help provided with the dating of the ceramic pot.
[6] Hamangia IV is chronologically contemporary with Gumelniţa A1.

tomb is related to the person buried there. This practice was also revealed by some ethnographical studies (see J. Lips 1958; N. David 1995; J. Sterner 1995; M. Parker Pearson 2001).

Other authors speak not of the relationship between the grave inventory and the status of the individual, but of their relationship with the persons who buried the deads (G. Barretto-Tesoro 2003, p. 299).

When we consider a vessel inside a grave we ask ourselves about the purpose of that vessel. Probably many of the vessels contained food or some other offerings for the deceased. But the vessel in Grave 6 was placed upside down. We can only speculate the purpose and meaning of the vessel. At the Mendora communities, "*At the end of life, pots that speak of gender or achieved status are placed upside down upon their owner's tomb…*" (J. Sterner 1995, p.66)

The pot in Grave 6 is the only ceramic object discovered in the necropolis. That makes a quantitative analysis impossible. We can only hope that further research will enrich the collection of funeral vessels.

Lithic artefacts. Only four lithic artefacts were discovered, in three graves (Grave 1, Grave 11 and Grave 12; fig. 5/a, 8/b-c), from the 12 graves excavated at Sultana-*Malu Roşu*. Three of them are chipped and one is a polished stone tool. The description of chipped stone tools follows N. Sirakov's analysis of the lithic artefacts from the Durankulak cemetery (N. Sirakov 2002). The artefacts are described according to the graves in which they were discovered.

Grave 1 - Polished stone axe (fig. 5/b) made from fine textured, beige limestone. The axe is flat and slightly trapezoidal, with a rectangular cross-section and an oblique arched cutting edge. There are three accidental flaking negatives on the surfaces of the tool, with re-polish attempts. Hafting use-wear traces are visible on both surfaces of the axe. The axe dimensions are: length = 14.5 cm; bottom width = 2.5 cm, width of the active part = 4.1 cm; maximal thickness of the tool = 1.7 cm, and maximal thickness of the lateral edges = 1.2 cm.

Grave 1 - Blade (fig. 5/c) made from light, glossy, yellow-brownish flint with small white spots. The proximal part of the blade is white grayish with very small white and yellow inclusions. Typologically, it is a small blade with fine, marginal, bilateral retouches. Only the proximal and medial parts of the blade are preserved. Technical traits seem to indicate indirect percussion flaking. The dimensions are: length = 3.7cm; maximum width = 1.4cm; thickness = 0.3 cm.

Grave 11 - Blade (fig. 8/d) made from yellow-brown flint with darker (reddish-brown) irregular strips and streaks. It is a long plane blade, entirely preserved. The most probable flaking technique used was indirect percussion. The dimensions are: length = 15.5 cm; maximum width = 2.6 cm; the thickness varies from 0.5 cm in the proximal part to 0.6 in the medial part to 0.7 in the distal part.

Grave 12 - Blade (fig. 8/e) made from matte yellow-brown flint. Typologically, is a small blade with fine marginal, semi-abrupt retouches in proximal part and denticulate retouches in medial part. Both retouch types cover the right edge of the tool. Only the proximal and medial parts of the blade are preserved. The blade features reveal that the pressure flaking technique was used. The dimensions are: length = 4.8 cm; maximum width = 1.5 cm; thickness = 0.4 cm.

On the basis of just four items no complete conclusions can be provided regarding the role of the lithic artefacts in the cemetery from Sultana–*Malu Roşu*. However, some observations can be already offered. In this way, it is a fact that the lithic inventory from Sultana-*Malu Roşu* presents similarly traits with inventories of other Kodjadermen-Gumelniţa-Karanovo VI necropolises, like Durankulak (N. Sirakov 2002) or Vărăşti-*Grădiştea Ulmilor* (E. Comşa 1995b): long and small blades, as well as polished stone axes. The so-called "superblades" are missing on the investigated part of Sultana cemetery. Raw material for chipped stone tools consists on variants of good quality yellow brown flint from the pre-balkanic platform. The polished stone axe is made from limestone, rock found in the same region. Additional research must be undertaken to identify the most probable location of these raw materials. The lithic artefacts from Sultana were discovered in adult male graves only, but their position in relation to the bodies varies: near the left arm (the axe), near the right shoulder (the blade in Grave 1), near the arms (the blade in Grave 11), and under the skull (the blade in Grave 12).

Ornaments. Ornaments were found only in Grave 1, consisting of 131 beads, of which 101 are whole, and 30 are fragments (fig. 5/a). 76 beads were made out of shells of *Spondylus gaederopus*, and 25 out of lithic material (marble, malachite) (fig. 5/d-l). These artefacts were probably part of a necklace and a bracelet (fig. 5/m-n) . We can not retrace the initial association of the different types of beads or their order on the thread. It is very rarely found *in situ* pieces „welded" by the lime crust, revealing the primary association and threading of the beads on a single strand (C. Beldiman, D. M. Sztancs 2008). The position of the beads in relation to the body suggests that they were assembled (probably on simple, one thread string) in a necklace and a bracelets, as already mentioned. Some of

the beads were found out of context, probably as a result of subsequent perturbation. The beads were found as follows (fig. 5/a, d-l): pieces 1-48 + 7 fragments – in the area of the right hand fingers; pieces 49-55 – near the right forearm bones (cubitus and radius); piece 56 – near the elbow of the right arm; pieces 57-59 + 1 fragment – on the mandible; piece 60 – near the left hip (coxal) bone; pieces 63-71 + 1 fragment – in the neck area; pieces 72-73 + 3 fragments – underneath the skull. Some of the beads were recovered when wet sieving of the sediment from the thoracic and both superior and inferior members area (pieces 61-62 + 4 fragments) and from the neck area (pieces 74-101 + 14 fragments) (C. Beldiman, D. M. Sztancs 2008).

Typologically, considering the shape of the axial section, the beads can be grouped into the following classes (fig. 5/d-l): biconvex (barrel shaped) beads (N = 8); bi-truncated beads (long and short) (N =4); cylindrical beads (long, medium, short, thin) (N = 64); prismatic beads (long, medium, short, thin) (N = 25).

The most numerous are the cylindrical beads, followed by the prismatic, biconvex and bitruncated ones. The thin cylindrical beads (disc/washer shape), are the most frequent, being made both from *Spondylus* shells and marble stone. These are followed by the thin prismatic beads, with a square or rarely rectangular profile. The third place is taken by the short cylindrical beads, and the fourth by the short biconvex, barrel shaped ones. The inventory is clearly dominated by the thin beads (length = 1-3 mm), the long ones (length = 20-29.5 mm) being less represented (fig. 5/d-l).

All the pieces are axially perforated (fig. 5/d-l). The perforation diameter is between 1 and 4 mm, with an average of 3 mm. The wear marks (in the form of polish of the surfaces and of sinuous/irregular micro-fractures at the extremities) are visible especially on the long beads. The beads wear suggests the fact that the strands were worn before they were buried together with the dead. From here we can presume that the pieces were either worn by the individual during its lifetime, or placed as an offering for the dead.

Spatially, the beads were discovered grouped in three distinct regions in relation to the body (fig. 5/a, d-l): in the neck area, the right forearm area, towards the elbow, and in the right hand area. Based on these observations we can assume that there were three strands of breads, probably of the same length (15-20 cm), worn by the deceased when it was buried. One strand was placed at the neck, one at (in?) its right hand, and the third on the forearm or the wrist (C. Beldiman, D. M. Sztancs 2008).

Animal bones. There were only two graves where we found animal remains. In Grave 2 we found a horncore and a metatarsus of sheep (*Ovis aries*), and in Grave 12 we found a river shell (fig. 6/a, 8/c).

These remains were probably placed as offerings. Similar situations are found in other necropolises in Kodjadermen-Gumelniţa-Karanovo VI cultural complex: Durankulak – 3 cases (M. Avramova 2002, p. 122, 125; N. Spassov, N. Iliev 2002, p. 314, 315), Goljamo Delčevo – one case (H. Todorova *et alii* 1975, p. 62), Vinica – 3 cases (A. Radunčeva 1976, p. 70, 75-81, 90-91), Gumelniţa – one case (C. Lazăr 2001b, p. 174).

Conclusions

The necropolises are an exceptionally source of information, throwing light on many aspects of life and death in the prehistoric societies (H. Todorova 1978, p. 74).

25 extramural Eneolithic (Bereketskata Moghila, Căscioarele-*D'aia Parte*, Chirnogi-*Şuviţa Iorgulescu*, Chirnogi-*Terasa Rudarilor*, Demir Baba Teke-*Sboryanovo*, Devnja, Dridu, Durankulak, Goljamo Delčevo, Gumelniţa, Gumelniţa-*Valea Mare*, Liljak, Măriuţa-*La Movilă*, Poljanica, Pomoštica, Omurtag, Ovčarovo, Radingrad, Smiadovo, Spanţov-*Cetatea Veche*, Sultana-*Malu Roşu*, Tărgovište, Varna I, Vărăşti-*Grădiştea Ulmilor*, Vinica) and three intramural (Kubrat, Ruse, Yunatsite) cemeteries on the area of Kodjadermen-Gumelniţa-Karanovo VI have been partially or completely studied (V. Mikov 1927, p. 277-282; G. Georgiev, N. Anghelov 1952, p. 182-186; 1957, p. 112-121; E. Comşa 1960, p. 5-30; 1980, p. 23-32; 1995b, p. 55-103; D. Ovcharov 1963, p. 53-56; H. Todorova 1971, p. 3-40; 2002; A. Radunčeva 1976, p. 69-92; H. Todorova *et alii* 1975, p. 53-65; T. Dimov *et alii* 1984, p. 74-88; H. Todorova, T. Dimov 1989, p. 291-310; I. Ivanov 1978a, p. 13; 1980, p. 25; 1982, p. 166; 1988a, p. 49-66; 1989, p. 49-56; 1991, p. 125-149; D. Şerbănescu 1982-1992a; 1982-1992b; 1985, p. 25-35; 1988; 1997b; I. Angelova 1986, p. 49-58; 1991, p. 101-105; C. Bălteanu, P. Cantemir 1990, p. 3; V. Mazanova 2000, p. 121-131; C. Lazăr 2001a; 2001b, p. 173-183; C. Lichter 2001, p. 416; J. Bojadjiev 2001, p. 20-21; 2006, p. 13-51; K. Băčvarov 2003, p. 1-3; C. Lazăr, V. Parnic 2007, p. 135-157; G. Trohani *et alii* 2007; R. Andreescu *et alii* 2008).

The standardization of mortuary practices in the Kodjadermen-Gumelniţa-Karanovo VI culture seems to reveal a complex society with well developed social structure and religio-mythological concepts about the afterworld (K. Bǎčvarov 2003, p. 6).

The recently discovered cemetery from Sultana-*Malu Roşu* completes the image of the funerary practices and eschatological conception of this society.

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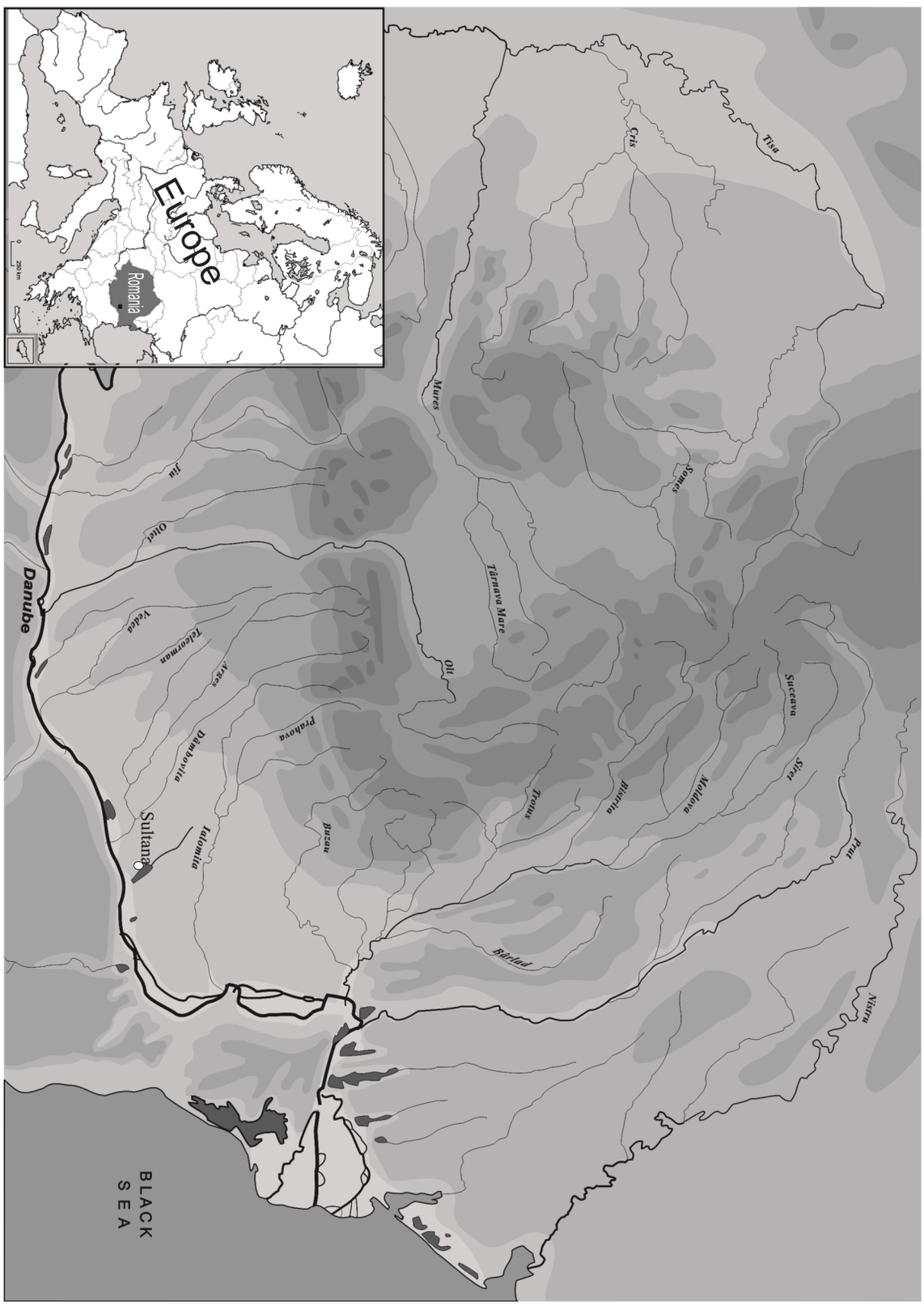
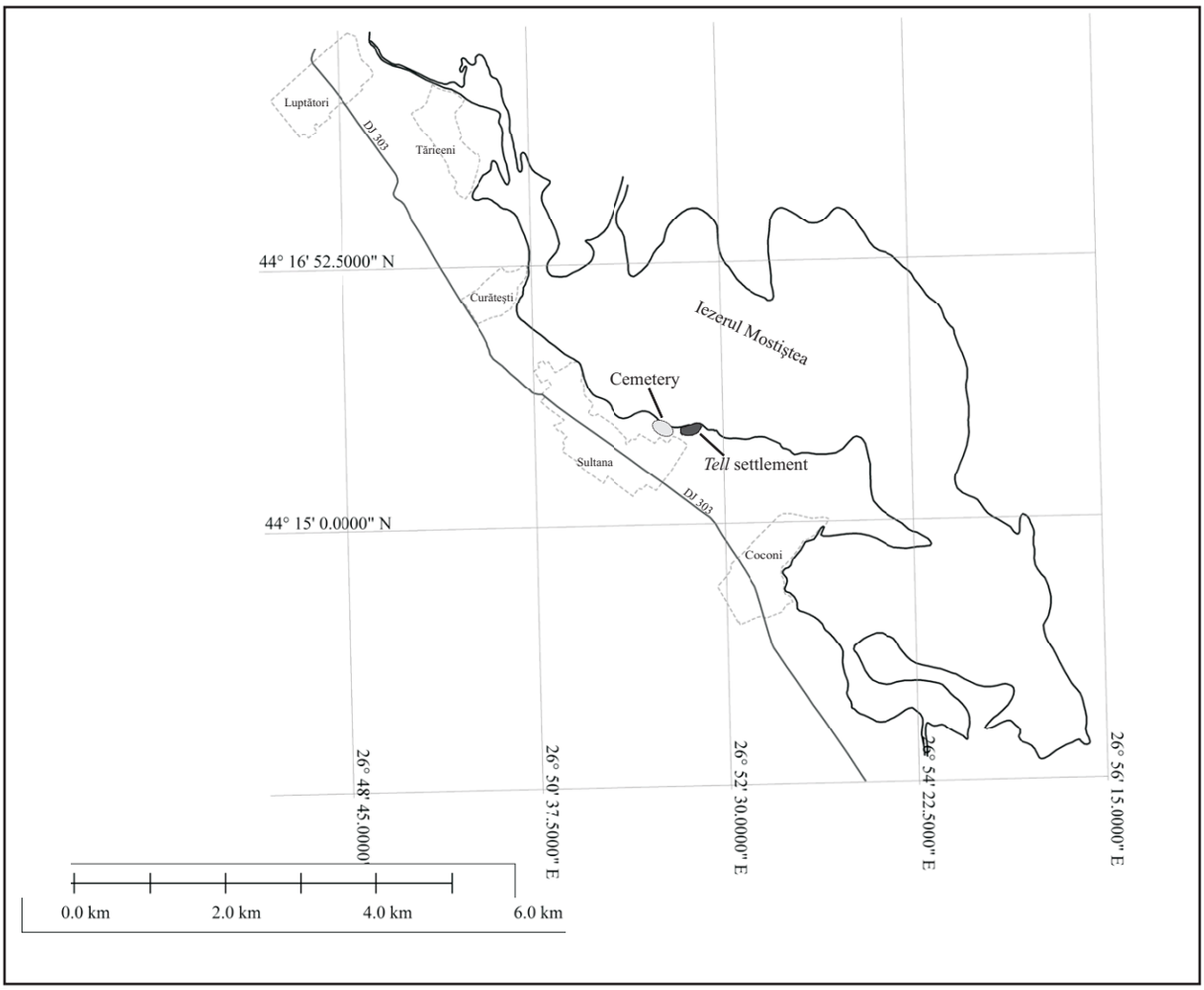


Fig. 1. Map of Romania and location of the Sultana-Malu Roşu site.
Harta României şi localizarea sitului de la Sultana-Malu Roşu.



a.

b.

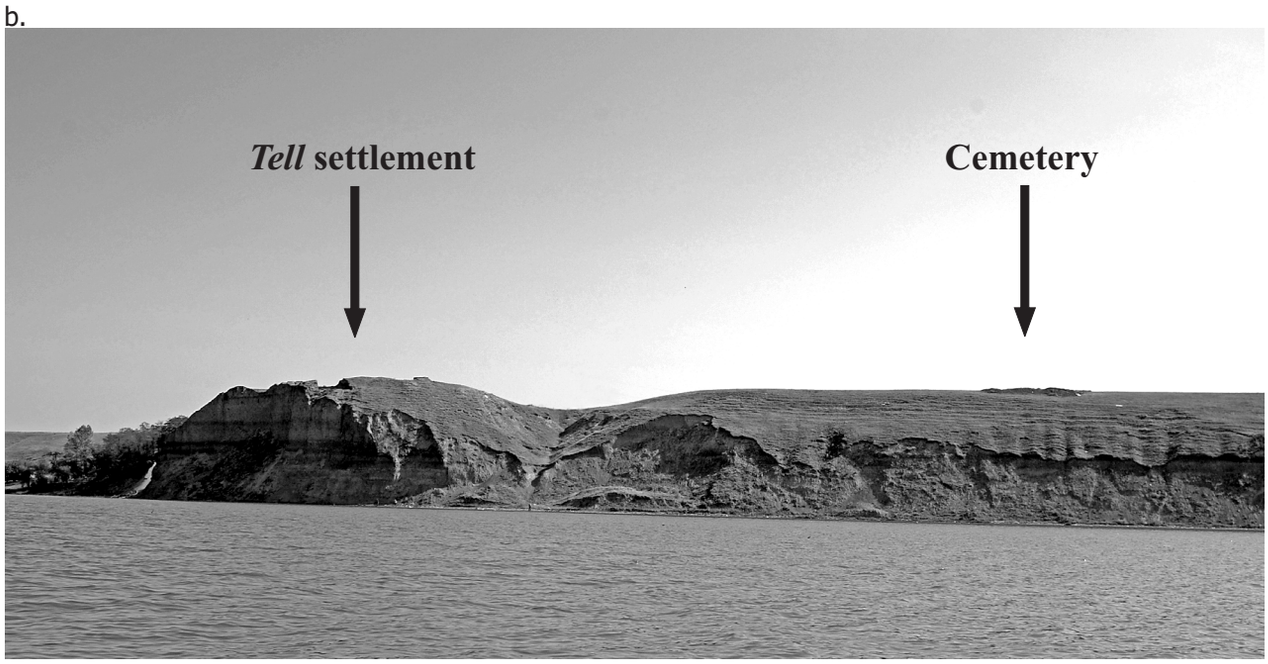


Fig. 2. a-b. Location of Sultana-Malu Roşu tell settlement and cemetery.
Localizarea aşeării de tip tell şi a necropolei de la Sultana-Malu Roşu.

Fig. 3. Topographic plan of Sultana-Malu Roşu site. I-V Geo-magnetic prospects areas.
Planul topografic al sitului de la Sultana-Malu Roşu. I-V Zonele prospectate geo-magnetic.

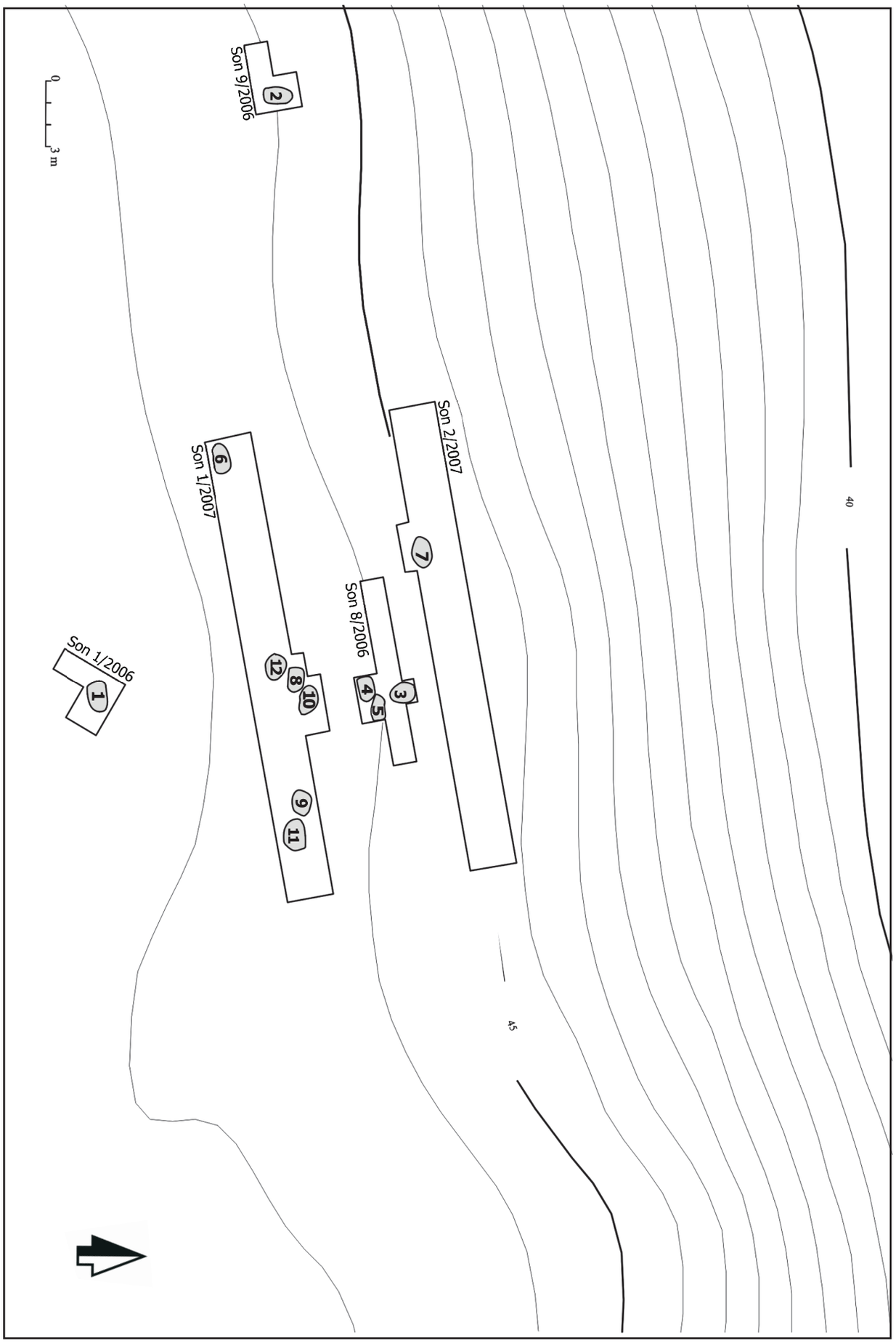


Fig. 4. Plan of Sultana-Malu Roşu cemetery (2006-2007).
Planul necropolei de la Sultana-Malu Roşu (2006-2007).

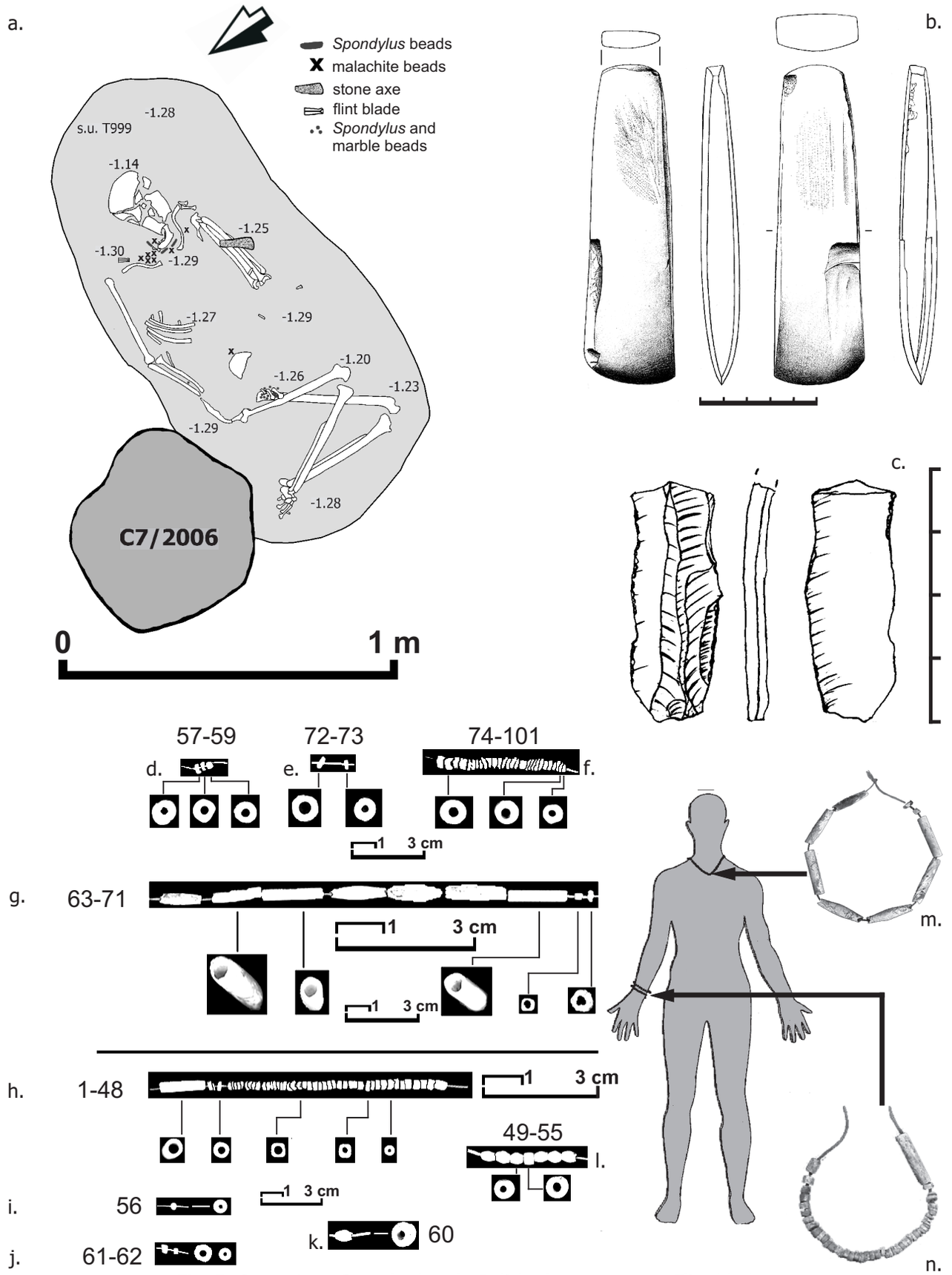


Fig. 5. Grave 1: a. Grave's plan; b. Polished stone axe; c. Flint blade; Ornaments - d. pieces 57-59 (malachite beads); e. pieces 72-73 (marble beads); f. pieces 74-101 (malachite beads); g. pieces 63-71 (Spondylus beads); h. pieces 1-48 (Spondylus beads); i. piece 56 (Spondylus bead); j. pieces 61-62 (marble and malachite beads); k. piece 60 (Spondylus bead); l. pieces 49-55 (Spondylus beads); m. necklace; n. bracelet (after C. Beldiman, D. M. Sztancs 2008). Mormântul 1 şi obiectele de inventar din acesta.

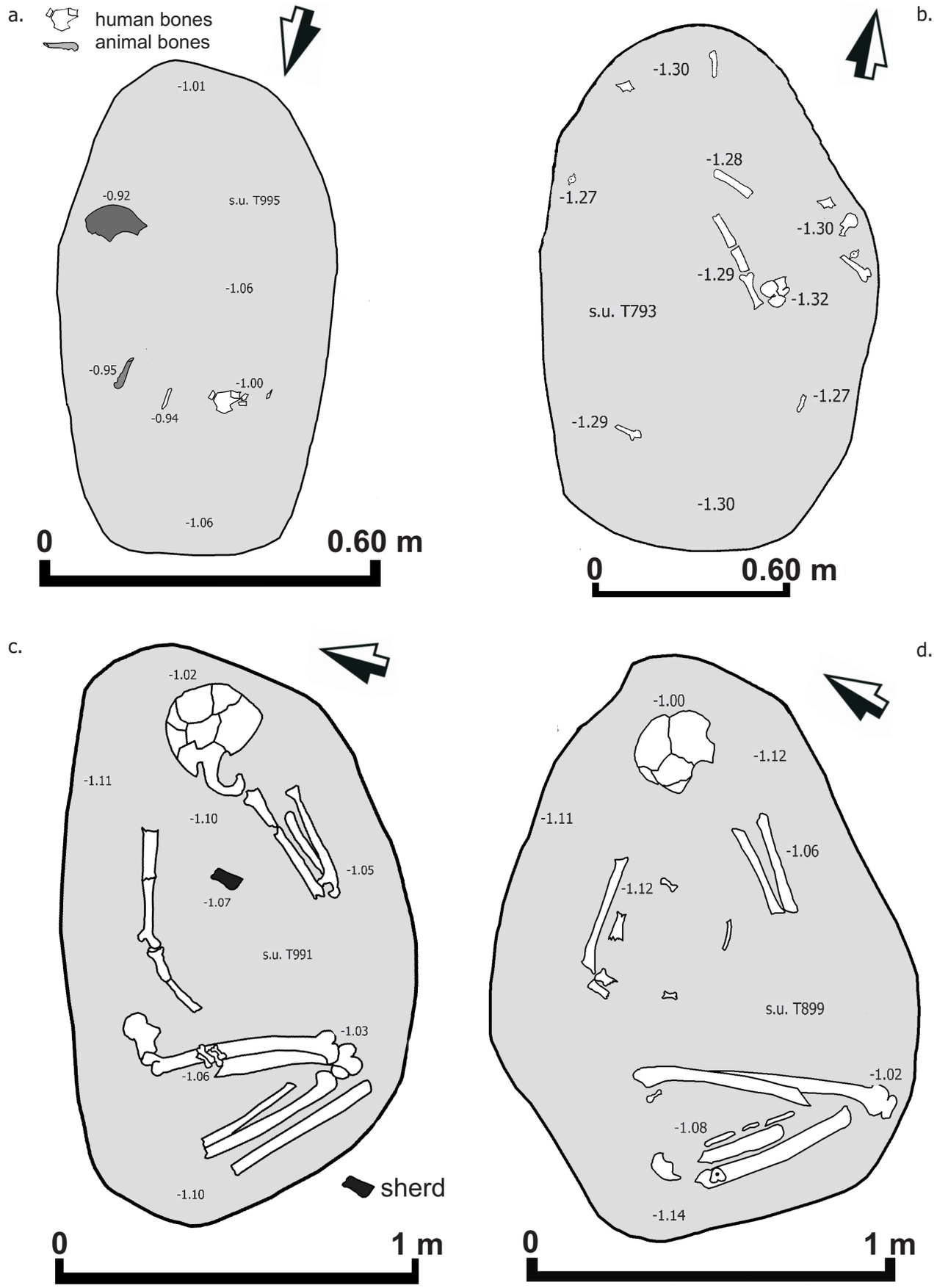


Fig. 6. a. Grave 2; b. Grave 3; c. Grave 4; d. Grave 5.
a. Mormântul 2; b. Mormântul 3; c. Mormântul 4; d. Mormântul 5.

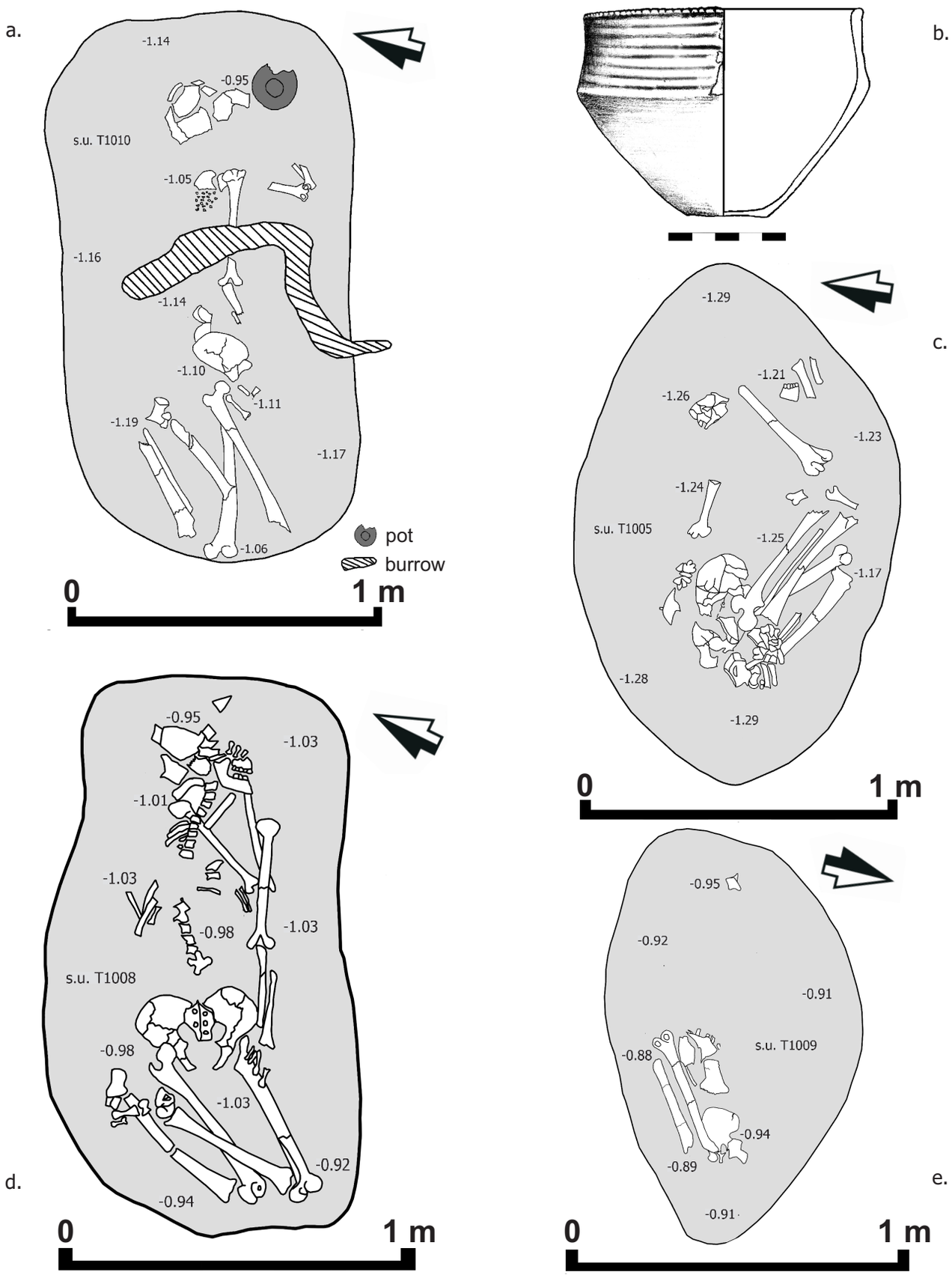


Fig. 7. a. Grave 6; b. Pot from grave 6; c. Grave 7; d. Grave 8; e. Grave 10.
a. Mormântul 6; c. Mormântul 7; d. Mormântul 8; e. Mormântul 10; b. vasul din M6.

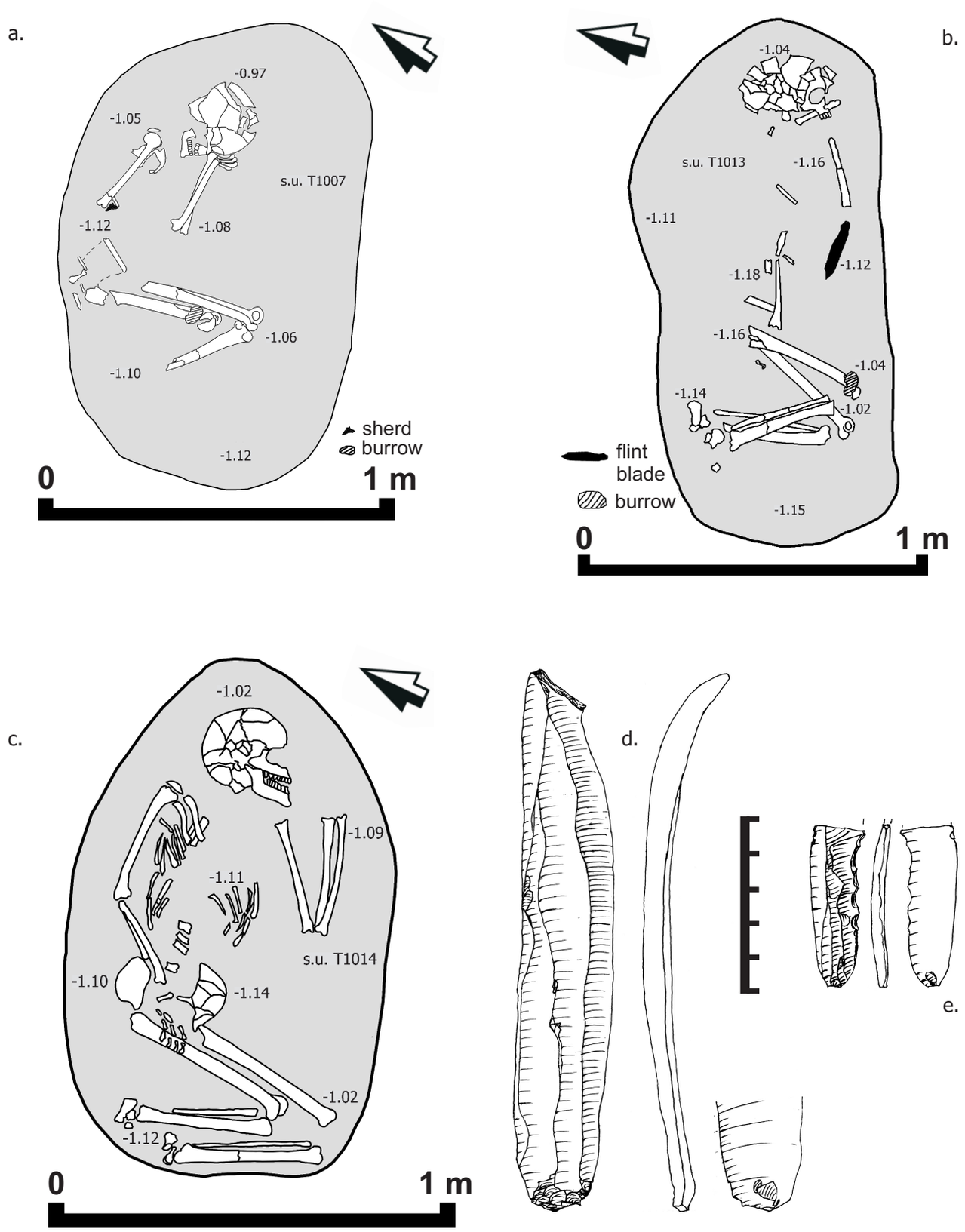


Fig. 8. a. Grave 9; b. Grave 11; c. Grave 12; d. Flint blade from the grave 11; e. Flint blade from the grave 12.
a. Mormântul 9; b. Mormântul 11; c. Mormântul 12; Lamele de silex din M11 (d.) şi M12 (e.).

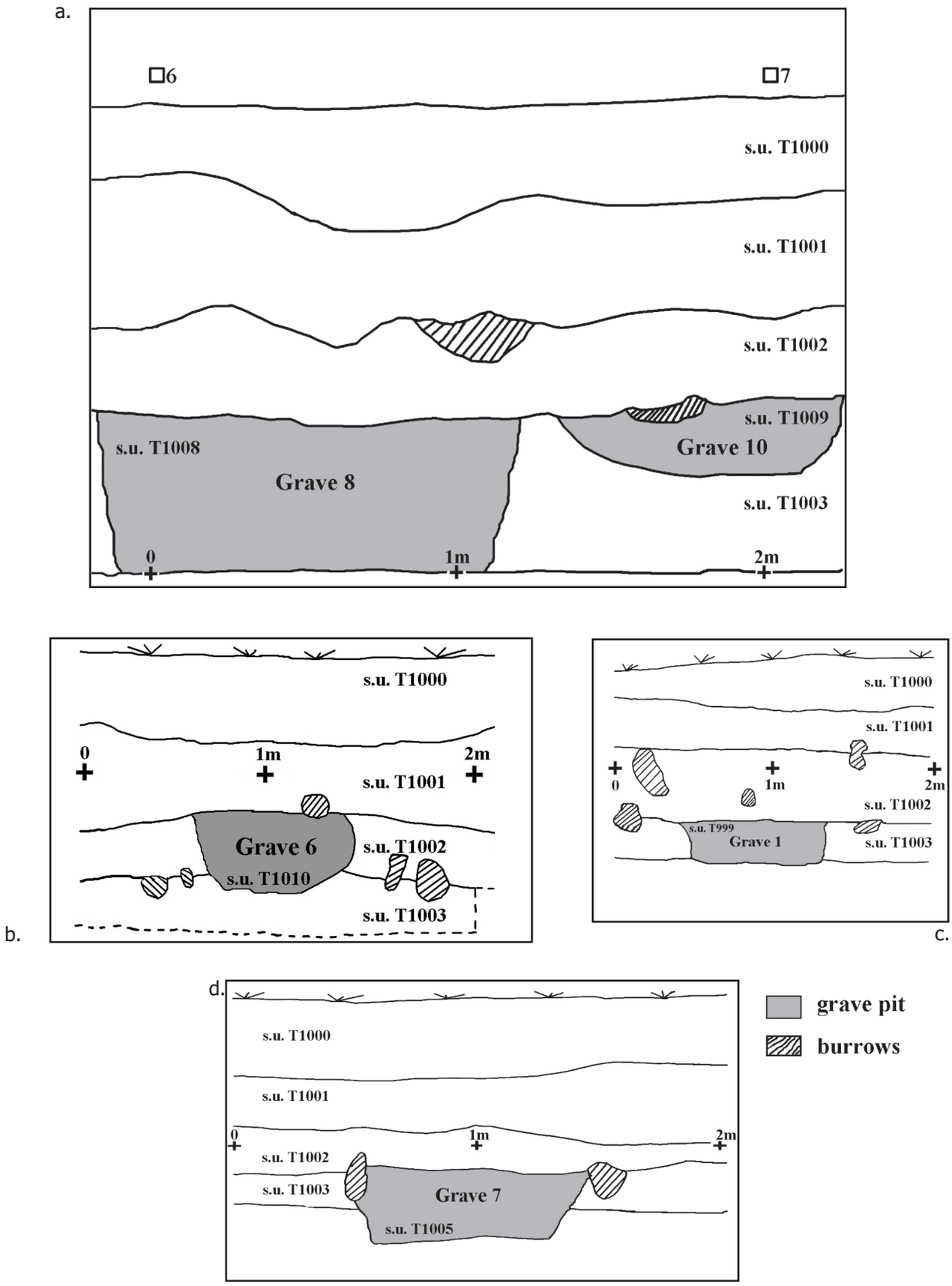


Fig. 9. a. Graves 8 and 10 - NNE profile; b. Grave 6 - WSW profile; c. Grave 1 - ESE profile; d. Grave 7 - SSW profile.
a. Profiul NNE al mormintelor M8 şi M10 (a.), 6 (b.), 1 (c.) şi 7 (d.).

Paleopathological conditions in an Eneolithic Community from Sultana - *Malu Roşu*

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Andrei D. SOFICARU*

Abstract: *The present article provides an anthropological research regarding 12 graves from Sultana –* Malu Roşu *(Călăraşi County), excavated in 2006 and 2007. Eleven of the 12 analysed individuals were adults (5 males and 6 females) and one was an infans I. The purpose of the research was to highlight paleopathological aspects of this neolithic individuals sample, by studying some pathological conditions in the human skeleton (like teeth problems, cranial infectious reactions, the presence of osteoperiostitis or degenerative joint diseases).*

Rezumat: *Acest articol rezumă cercetarea antropologică a 12 morminte descoperite la Sultana –* Malu Roşu *(jud. Călăraşi), în campaniile 2006 şi 2007. Dintre indivizii analizaţi 11 sunt adulţi (5 bărbaţi şi 6 femei) şi unul este un infans I. Scopul cercetării l-a reprezentat evidenţierea unor aspecte de paleopatologie ale acestui grup de indivizi, pornind de la identificarea unor indici specifici (precum afecţiuni ale danturii, patologie craniană, prezenţa osteoperiostitei sau a afecţiunilor degenerative ale articulaţiilor).*

Keywords: *Neolithic, individual, paleodemography, paleopathology.*

Cuvinte cheie: *Neolitic, individ, paleodemografie, paleopatologie.*

Introduction

The present study provides an anthropological research regarding 12 graves from Sultana – *Malu Roşu* (Călăraşi County), excavated in 2006 and 2007. The main goal of our article is to establish the skeletons inventory, to estimate sex and age, and to identify some elements of paleopathology.

Materials and methods

Materials consist of 12 skeletons with different stages of preservation. Many of them have calcium carbonate crust deposition on bones or they are fragmentary due to the soil conditions.

For the stage of preservation and identification of bones sides was used the manual of T. White, P. Folkens (2005). The age and sex were established using the *Standards* (J. E. Buikstra, D.H. Ubelaker 1994, p. 15 – 38), adding other methods (C. Masset 1989, p. 71 – 103; S.R. Loth, M.Y. Iscan 1989, p. 105 – 135; R.S. Meindl, C.O. Lovejoy 1989, p. 137 – 167).

The paleopathological conditions were used according to the *Global History of Health Project* (http://global.sbs.ohio-state.edu/). In the tab. 1 was recorded the presence of absence of bones; in tab. 2 and 3 was indicated each element used for establishing sex and age; tab. 4 contains the number of teeth on categories; for the tab. 5, 6, 7 were used numbers to refer to the absence or presence of the pathology (0 = absent; 1 = present; 2 = unobservable); in tab. 8 the abbreviations are: diam. = diameter; max. = maximum; a/p = antero – posterior; m/l = medio – lateral.

The stature was calculated according to the methods and recommendations of F.W. Rösing (1988).

Paleodemography

According to the tab. 2 sex determination was assigned in 11 cases: 5 males and 6 females; for one of them was impossible to establish it due to the missing bones.

Regarding the age at death, one died at 1 year, one at 20 years, one at 30-35 years, three at 35-40 years, two at 40 years, two at 40-45 years, two at 45-55 years (table 3).

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Element / Grave	1	2	3	4	5	6	7	8	9	10	11	12
Cranium	2	2	3	2	2	2	3	2	2	2	2	2
Mandible	2	3	3	2	3	3	2	2	2	3	3	2
Hyoid	3	3	3	3	3	3	3	3	3	3	3	3
Cervical vertebrae	2	3	3	3	3	3	3	1	3	3	3	2
Thoracic vertebrae	3	3	2	3	3	3	2	2	3	3	3	2
Lumbar vertebrae	3	3	3	3	3	3	3	2	3	3	3	2
Sacrum	3	3	3	3	3	3	3	2	3	3	3	2
Os coxae	2	3	2	2	3	3	2	2	3	2	3	2
Left ribs	2	3	3	3	3	3	3	2	3	3	3	2
Right ribs	2	3	2	3	3	3	3	2	3	3	3	2
Sternum	3	3	3	3	3	3	3	2	3	3	3	3
Left clavicle	1	3	3	3	3	3	3	3	3	3	3	2
Right clavicle	2	3	3	3	3	3	3	2	3	3	3	2
Left scapula	2	3	3	2	3	3	3	2	3	3	3	2
Right scapula	2	3	3	2	3	3	3	2	3	3	3	2
Left humerus	2	3	2	2	2	2	2	1	2	3	3	2
Right humerus	2	3	3	2	2	2	2	1	2	3	2	1
Left radius	2	2	3	2	2	2	2	2	2	3	3	1
Right radius	2	3	3	2	2	2	2	2	2	3	2	2
Left ulna	2	3	2	2	2	2	3	2	2	3	2	2
Right ulna	1	3	3	2	2	2	2	1	2	3	2	1
Left hand bones	1	3	1	3	1	3	3	1	3	3	1	1
Right hand bones	1	3	3	3	1	3	3	1	3	3	1	1
Left femur	2	3	2	2	2	2	2	1	2	1	2	2
Right femur	2	3	2	1	2	2	2	2	2	3	2	2
Left patella	1	3	3	1	3	3	3	3	1	3	1	3
Right patella	1	3	3	3	3	3	3	3	3	3	1	3
Left tibia	2	3	3	2	2	2	2	1	2	1	2	1
Right tibia	2	3	3	2	2	2	2	1	2	3	2	1
Left fibula	2	3	3	2	2	2	2	2	3	3	2	2
Right fibula	2	3	3	2	2	2	2	2	3	3	2	2
Left foot bones	1	3	1	1	1	1	1	1	1	3	1	1
Right foot bones	1	3	3	1	1	1	1	1	1	3	1	1

Tab. 1. Skeletal Element Preservation (1 = present complete; 2 = present fragmentary; 3 = absent).
Skeletal Element Preservation (1 = present complete; 2 = present fragmentary; 3 = absent).

Element / Grave	1	2	3	4	5	6	7	8	9	10	11	12
Cranial morphology	X	-	-	X	X	X	X	X	X	-	X	X
Long bones morphology	X	-	X	X	X	X	X	X	-	X	X	X
Os coxae morphology	-	-	X	X	-	X	-	X	-	X	-	-
Sex	M	?	F	F	M	F	M	F	F	F	M	M

Tab. 2. Sex determination.
Determinarea sexului.

Element / Grave	1	2	3	4	5	6	7	8	9	10	11	12
Cranial sutures	X	-	-	-	X	X	-	X	X	X	X	X
Tooth attrition	X	-	-	X	X	-	X	X	X	-	X	X
Sternal extremity of the ribs	X	-	-	-	-	-	-	-	-	-	-	-
Pelvis morphology	-	-	X	-	-	-	-	X	-	X	-	-
Age (years)	40-45	<1	40	45-55	20	40-45	30-35	35-40	45-55	35-40	40	35-40

Tab. 3. Age estimation.
Estimarea vârstei.

Teeth, presence and pathology (tab. 4)

The teeth were counted by *erupted permanent tooth positions* (109), *erupted permanent teeth observed* (110), *permanent teeth with caries* (1), *permanent teeth lost premortem* (1), and *dental abscesses* (0).

Dental caries and tooth loss are very important to establish the exposure of a community to infectious agents (C. Larsen 1997, p. 65 – 82). In this case the small number of samples is not enough to determine a pattern. Future excavations could offer new data.

Type / Grave	1	2	3	4	5	6	7	8	9	10	11	12
Erupted permanent tooth positions	20	0	0	9	0	0	6	29	20	0	5	20
Erupted permanent teeth observed	13	0	0	8	6	1	6	26	23	0	9	18
Permanent teeth with caries	0	0	0	1	0	0	0	0	0	0	0	0
Permanent teeth lost premortem	0	0	0	1	0	0	0	0	0	0	0	0
Dental abscesses	0	0	0	0	0	0	0	0	0	0	0	0

Tab. 4. Teeth, presence and pathology.
Dinţi, prezenţă şi patologie.

Cranial pathology (tab. 5)

Cribra orbitalia and *porotic hyperostosis* are two skeletal changes associated with iron deficiency anemia caused by lack of iron in human blood (C. Larsen 1997, p. 29 – 40). In this sample there is a case of *cribra orbitalia* (grave 9, female, 45-55 years old) and one of *porotic hyperostosis* (grave 8, female, 35-40 years old).

Enamel hypoplasia is a macrodefect of the incisors or canines caused by growth disruption (C. Larsen 1997, p. 43 – 46). It was identified in two cases of permanent enamel hypoplasia (grave 5, male, 20 years old; grave 8, female, 35-40 years old).

Pathology / Grave	1	2	3	4	5	6	7	8	9	10	11	12
Cribra orbitalia	2	2	2	2	2	2	2	2	1	2	0	0
Porotic hyperostosis	0	2	2	2	2	2	2	1	0	2	0	0
Permanent enamel hypoplasia	0	2	2	0	1	2	2	1	0	2	0	0

Tab. 5. Cranial pathology (0 = absent; 1 = present; 2 = unobservable).
Patologie cranianã (0 = absentă; 1 = prezentă; 2 = neobservabilă).

Osteoperiostitis (tab. 6)

Osteoperiostitis represents a skeletal lesion involving the periosteum, the cortical bone and medullary cavity, being the result of a bacterial infection or traumatic injury (C. Larsen 1997, p. 82 – 93). Usually the femur, tibia, and fibula are being affected by the periosteal reaction.

In this sample there are 6 cases: 3 males with ages about 30 – 40 years, and 3 females with ages about 35 – 55 years; femora and tibiae were the most affected.

Element / Grave	1	2	3	4	5	6	7	8	9	10	11	12
Left femur	0	2	0	1	2	0	2	0	1	1	1	0
Right femur	0	2	0	1	2	0	2	0	1	2	1	0
Left tibia	0	2	2	1	2	0	1	0	2	1	1	1
Right tibia	0	2	2	1	2	0	1	0	2	2	1	1
Left fibula	0	2	2	0	2	0	0	0	2	2	0	0
Right fibula	0	2	2	0	2	0	0	0	2	2	0	0

Tab. 6. Osteoperiostitis presence (0 = absent; 1 = present; 2 = unobservable).
Prezenţa osteoperiostitei (0 = absentă; 1 = prezentă; 2 = neobservabilă).

Degenerative joint disease (tab. 7)

Osteoarthritis or degenerative joint disease (DJD) is produced by mechanical stress and physical activity, affecting the joints (C. Larsen 1997, p. 162 – 167). Our sample shows 6 skeletons with DJD: 3 males, with ages about 30 – 45 years and 3 females, with ages about 35 – 55 years. Recording by joints, the elbow and knee represent 5 cases, shoulder and ankle/foot 4 cases, hip and wrist/hand 3 cases.

Element / Grave	1	2	3	4	5	6	7	8	9	10	11	12
Left temporomandibular joint	2	2	2	2	2	2	2	0	2	2	2	0
Right temporomandibular joint	2	2	2	2	2	2	2	0	2	2	2	2
Left shoulder joint	2	2	1	2	2	0	2	1	2	2	2	2
Right shoulder joint	1	2	2	2	2	2	2	1	2	2	2	1
Left elbow joint	1	2	2	1	2	0	1	1	2	2	2	1
Right elbow joint	1	2	2	1	2	0	1	1	2	2	2	1
Left hip joint	2	2	0	0	2	2	1	1	2	0	2	1
Right hip joint	2	2	0	0	2	2	1	1	2	2	2	2
Left knee joint	0	2	1	2	0	0	1	1	2	0	2	2
Right knee joint	1	2	2	1	2	0	1	1	2	2	2	1
Left wrist/hand joint	1	2	0	2	2	2	2	1	2	0	0	1
Right wrist/hand joint	1	2	0	2	2	2	2	1	2	0	0	1
Left ankle/foot joint	1	2	0	0	2	2	1	1	2	0	0	1
Right ankle/foot joint	1	2	0	0	2	2	1	1	2	2	0	1
Cervical vertebrae	1	2	2	2	2	2	2	2	2	2	2	2
Thoracic vertebrae	2	2	2	2	2	2	2	2	2	2	2	2
Lumbar vertebrae	2	2	2	2	2	2	2	2	2	2	2	2

Tab. 7. Degenerative joint disease presence (0 = absent; 1 = present; 2 = unobservable).
Prezenţa afecţiunilor degenerative ale articulaţiilor (0 = absent; 1 = prezent; 2 = neobservabil).

Stature (tab. 8)

Stature was calculated using Pearson method's for the maximum length of femur (F.W. Rösing 1988, p. 586 – 599). In three cases were obtained the values: 149.0 cm for skeleton 4, 148.6 cm for skeleton 8, and 149.6 cm for skeleton 10.

Metrics / Grave	1	2	3	4	5	6	7	8	9	10	11	12
Femur (head diam.)	-	-	39	38	-	-	46	40	-	37	-	-
Femur (max. length)	-	-	-	397	-	-	-	395	-	400	-	-
Femur (a/p diam.)	24	-	23	22	24	24	27	25	25	24	27	27
Femur (m/l diam.)	28	-	26	27	26	22	30	27	26	23	26	30
Humerus (max. length)	-	-	-	-	-	-	-	290	-	-	-	320
Humerus (a/p diam.)	18	-	-	19	20	-	21	19	-	-	17	22
Humerus (m/l diam.)	20	-	-	21	22	-	21	19	-	-	20	23

Tab. 8. Metrics (mm).
Date metrice (mm).

Conclusions

The purpose of this research was to highlight paleopathological aspects of a neolithic individuals sample, by studying some health related changes in the human skeleton. Although the number of individuals is not enough to determine a pattern regarding the health conditions in the neolithic community, there are some observations that can be made. With the exception of two individuals (2, 6), one being a child under 1 year, all the others present at least one of the pathological conditions - 3 individuals have teeth problems, 2 show cranial infectious reactions (cribra cranii, porotic hyperostosis) and 9 present pathological modifications in the long bones and articulations (osteoperiostitis or degenerative joint diseases).

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Public patriarchy in contemporary Romanian archaeology and the image of women in the Romanian Neolithic and Bronze Age

Nona PALINCAŞ*

Abstract: *By writing this article I intended to initiate in the Romanian archaeology a debate on the issue of the 'genderless epistemology' and its consequences for the archaeological research and for the life course of Romanian archaeologists. By way of several examples I showed that irrespective of the quantity (large in the Neolithic, small in the Bronze Age) and variety of the artefacts easy to relate to the feminine gender, Romanian archaeologists see Neolithic and Bronze Age women according to the present patriarchal pattern dominant in the vision of male archaeologists on women in general: women were preoccupied by fertility and children; men, warriors and preoccupied by sexuality, were the real agents in social life. Since, as I tried to demonstrate, much of the archaeological record is evidence to the contrary and that other interpretations are more plausible, why does this traditional patriarchal image of prehistoric women appear in the works of female archaeologists as well? My conclusion: the profoundly patriarchal character of the relationships between men and women in Romanian archaeology are responsible for the fact that, at almost one hundred year after the first women entered this profession, the men still stand for the universal, the androcentric vision of the world is taken to be scientific and the female-archaeologists are not preoccupied with the construction of an identity of their own.*

Rezumat: *Am scris acest articol din dorinţa de a iniţia în arheologia românească o discuţie cu privire la 'epistemologia fără gen' şi consecinţele sale asupra cercetării arheologice şi cursului vieţii arheologilor din România. Pe baza mai multor exemple am arătat că indiferent de cantitatea (mare în neolitic, mică în epoca bronzului) şi varietatea artefactelor uşor de pus în legătură cu genul feminin, arheologii români aplică femeilor din neolitic şi epoca bronzului tiparul patriarhal contemporan, dominant în viziunea arheologilor bărbaţi asupra femeilor în general: femeile erau preocupate de fertilitate, fecunditate şi copii; bărbaţii, în schimb, erau războinici şi preocupaţi de sexualitate şi constituiau elementul activ în viaţa socială. Arătând că mare parte din informaţia arheologică este în defavoarea acestor interpretări şi că altele sunt mai plauzibile, mă întreb de ce imaginea patriarhală tradiţională despre femeile din preistorie apare şi în scrierile arheologilor femei din România. Concluzia mea: caracterul profund patriarhal al relaţiilor dintre bărbaţii şi femeile care practică arheologia în România face ca, la aproape un secol de la intrarea primelor femei în arheologia noastră, bărbaţii să stea încă pentru universal, viziunea androcentrică să fie luată drept ştiinţifică, iar femeile-arheologi să nu se gândească la construcţia unei identităţi proprii.*

Keywords: *genderless epistemology, figurines, Neolithic, Bronze Age, contemporary gender relationships, patriarchy.*

Cuvinte cheie: *epistemologie fără gen, figurine, neolitic, epoca bronzului, relaţii de gen contemporane, patriarhat.*

This article is a first draft of a study that I intend to write on the issue of genderless epistemology in the Romanian archaeology: why is it that we think that a genderless epistemology is a *sine qua non* condition of the objectivity of a study, of the scientific character of an investigation? and if we had gendered epistemologies, what would they change in our research of the past and in the lives of present researchers? These questions were already raised by archaeologists in other countries, by feminist archaeologists in the first place, with important consequences for archaeology and archaeologists (e.g. M. Díaz-Andreu, M. L. S. Sørensen [eds] 1998; L. Prados Torreira, C. Ruiz López [eds] 2008), but they are still absent in Romania. I shall start the discussion here, by trying to examine the prevailing image of Neolithic and Bronze Age women in Romanian archaeology.

First, on women in the Bronze Age (2600-1200/1000 BC). With small exceptions Romanian archaeologists working on the Bronze Age hardly ever mention women in their interpretation, to the point the reader is left with the image of a social life that went on perfectly without any participation of women.

The large amount of weapons is considered to stand proof for the idea that in the Bronze Age war was of primary importance. All warriors were men – that seems to be unquestionable. Power and warfare were inseparable; some weapons are also prestige goods and insignia of power: e.g. the golden sword, golden daggers and silver axes from Perşinari, various richly decorated bronze weapons (I. Nestor 1960, p. 122-124; A. Vulpe 2001, p. 353-361 with illustration).

Since changes in material culture are considered to be – in the prevailing, culture-historical research tradition - the result of influence of human groups one upon the other as well as the result of penetration of groups of population into the territory of other groups, it becomes clear that men are

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seen as the great and only agents of social life in the Bronze Age. And since men are conceived as physically strong, all larger tools must have been used by them, i.e. men are the main agents in economic life as well. This is the image delivered among others by the *History of the Romanians*, a treaty edited under the aegis of the Romanian Academy in 2001; the chapter on social life does not mention women at all (*Ibid.*, p. 353-369). In the archaeology of the Bronze Age women appear usually only when one deals with their skeletons: then the reader is told of the differences in burial rite between men and women (M. Şandor-Chicideanu, I. Chicideanu 1989). In the few cases these difference are accounted for, they are invariably considered to mirror the men-women relationships characteristic for patriarchy (I. Nestor 1960, p. 121; I. Chicideanu 1986, p. 28). Even in cases where women's graves are clearly richer than those of men the attention is quickly diverted from the possible meanings of this fact to the preoccupation with demonstrating the social superiority of men (L. Bârzu 1989, p. 49-51).[1]

In fact, in verbal discussions, many argue that women's role in the Bronze Age social life is absent from the archaeological studies because, unlike men, women didn't leave any important traces in the archaeological evidence. There are some exceptions however: the numerous female figurines stemming from the Žuto Brdo-Gârla Mare (LBA) cemeteries and settlements (Vl. Dumitrescu 1961, p. 244-279; pl. 152-161; M. Chicideanu-Şandor, I. Chicideanu 1990; Şandor-Chicideanu 2003, p. 101-112). They were variously interpreted from replacing the mother in the graves of deceased children to a feminine goddess associated with a particular social group (as summarized in M. Şandor-Chicideanu, I. Chicideanu 1990, p. 70-75), but again they didn't trigger a discussion on female identity and social role in the period, at least not otherwise than in such vague terms as women submitted to men's authority (I. Chicideanu 1986, p. 28). At the same time, artefacts and aspects of the archaeological remains relevant for women's life were ignored. E.g. Radu Vulpe noticed in his diary that during the 1954 excavation campaign in the settlement from Popeşti-"Nucet" a clay fragment in the shape of a female breast was found (Diary no. 1/1954, Section Ω, p. 127), but he didn't publish it (see the sherd in N. Palincaş 2004-2005, fig. 3/1) in the excavation report following the campaign, where he picked out other pieces as relevant for the site (R. Vulpe 1955); Vl. Dumitrescu noticed that many Žuto Brdo-Gârla Mare vessels, especially cups and mugs, were decorated with nipple-like protrusions (1961, p. 147), but the fact has received no further attention ever since.

That women are visible in the archaeological record is shown by a study of the Late Bronze Age in the Lower Danube: the integration of the small scale local communities into very large exchange networks favoured the social recognition of the importance of women's roles in economy and politics; women used the new context to challenge the old power relationships (N. Palincaş 2004-2005; *eadem* 2007). In other words: women were capable of understanding and being effective not only in their relationship with children, but also in economy and politics. Although no one brought arguments to the contrary, the articles were received with reluctance.[2]

Women in the Romanian Neolithic. But if the lack or scarcity of obviously women related objects is the issue, what difference is there when we consider an epoch with thousands of objects representing the female body and only few representing the male body? Such an epoch is the Neolithic, dated in Romania between ca 6600 and 3700 BC (M. Petrescu-Dîmboviţa 2001, p. 121).

Archaeological evidence and its interpretation:

1. There are thousands of female figurines known from the Neolithic period in Romania and a very large number anthropomorphic vessels and scenes consisting of women, animals and vegetation depicted on pottery: e.g. in his book from 1997 Monah illustrated at least 1,000 figurines from the Cucuteni-Tripolije area alone (i.e. including the Ukrainian territory), while in 2002 Andreescu mentions having personally examined about 1,200 Gumelniţa figurines and anthropomorphic vessels. Despite the fact that only few are represented in state of pregnancy[3] or as breast feeding children, female

[1] "En dépit de la position privilégiée des femmes qui transmettent sans doute aussi bien la richesse que le statut social, on peut démontrer que les chefs effectifs de la communauté sont des hommes." (L. Bârzu 1989, p. 50).

[2] This was clearly visible in the reactions of the auditory as the first article (N. Palincaş 2004-2005) was presented as a talk: both during and after the talk most of those present laughed, some, more benevolent, considered this interpretation as useful only in that stage of archaeology where there is no more archaeological material to be dug out from the earth, while only a minority considered it interesting.

[3] E. g., only 4% of the total number of Gumelniţa figurines represent pregnant women (R.R. Andreescu 2002, p. 89, 93).

figurines (fig. 1/1) were generally considered to be related to a fertility cult:[4] Neolithic women were concerned with their fertility either qua women or, less directly, as related through their sex to the Mother Goddess/Great Mother, the creator of all life (fig. 2) (D. Monah 1997, p. 203-208; C. M. Lazarovici 2006, p. 57-58; N. Ursulescu *et alii* 2006). Here are some examples of this obsession with fertility:

- 21 slightly differing female figurines found together at Isaiia were interpreted as representing the days of increase and decrease of female fertility; on this basis a 21 days long menstrual cycle of Neolithic women was reconstructed, followed by the conclusion that the Cucuteni population was about 30% more fertile than the present-day population; however, we are told, even if the menstrual cycle were of 28 days the 21 figurines can still be interpreted as representing it (N. Ursulescu, F.A. Tencariu 2006, p. 61-64).
- The Pre-Cucuteni figurines from Târgu Frumos and Căscioarele (fig. 3) were interpreted as representing women in "birth giving position", by analogy with the figurine with the prominent vulva from Achilleion (N. Ursulescu *et alii* 2006, p. 116); apart from other possible interpretations of the figurine from Achilleion itself (D.W. Bailey 1994; *idem* 2005, p. 181-196), N. Ursulescu *et alii* completely ignored the fact that the figurines from Romania they referred to do not have the vulva represented at all and every possible sign of pregnancy is missing; no attention at all is paid to the reasonable similarity of the position of the legs of these figurines with that of the famous and contemporary Thinker from Târpeşti (comp. *Ibidem*, especially fig. 3/1, but also fig. 3/2 with S. Marinescu-Bîlcu 1981, fig. 107/4) and I suspect that we have here a gender stereotype at work since the figurines from Târgu Frumos and Căscioarele are female while the Thinker from Târpeşti (even if in fact it has no indication of sex) was taken from the very beginning to be male (S. Marinescu-Bîlcu 1981, p. 40).
- The Vinča C–D female figurine with the head broken off in antiquity and bearing a mask in her left hand and an askos-like vessel in the right is considered to inform us on rituals carried out as part of a fertility cult simply because of the female sex of the figurine: 'Libation is carried out in correlation with the fertility cult, a fact suggested in the first place by the female sex of the statuette' (my translation of A.S. Luca, I. Dragomir 1987, p. 40).[5] The logical consequence of this is that whatever the props of a female statuette would be, they would invariably inform us on fertility cult.

2. A large number of anthropomorphic vessels in shape of the female body or figurines in shape of a female body with vessels attached to their lower abdomen are also seen as connecting women with the fertility of the vegetation and livestock (N. Ursulescu *et alii* 2006, p. 116-118).

3. A similar number of couples consisting of two females, of which one is always larger than the other was seen are lying at the origin of the Demeter and Kore cult (D. Monah 1997, p. 212, who takes over this idea from P. Levêque).

4. A considerable number of couples consist of one female and one male or one female and one androgynous person – interpreted as scenes of *hieros gamos* (D. Monah 1997, p. 206, 210-211).

Representations the male body or body parts are strikingly rare; e.g. only 1% among the Gumelniţa (R.R. Andreescu 2002, p. 89) and less than 3% among the Cucuteni figurines (D. Monah 1997, p. 208) are male (fig. 1/2). Apart from the men represented in the *female + male* couple there are:

5. Figurines with 'garment typical for the warrior', considered to indicate the existence of a male divinity related to warfare (D. Monah 1997, p. 209; see also C.-M. Lazarovici 2006, p. 59). As far as I know there are hardly any weapons represented with the figurines, so the garment might very well be one typical for men and not necessarily for warriors.

6. Figurines in shape of phalli (fig. 4), seen as attesting to the connection between men and sexuality (D. Monah 1997, p. 209).

[4] The fact that some authors doubt that *all* female representations are related to a fertility cult (e.g. R.R. Andreescu 2002, p. 93-95; E. Comşa 1995, p. 121) – usually based on the argument of the great variety of the representations and the low number of women represented in state of pregnancy – does not change much of the general image of women in the Neolithic since they suppose that the variety of the representations is due to the variety of ritual contexts those figurines were used in and do not relate female figurines to women's lives in other ways.

[5] In Romanian, "Libaţia se efectuează în corelaţie cu cultul fertilităţii şi fecundităţii, fapt sugerat în primul rând de sexul feminin al statuetei" (A.S. Luca, I. Dragomir 1987, p. 40).

7. Representations of stags, bulls and rams, considered to stand for the male sex (C.-M. Lazarovici 2006, p. 77).

The ideas summarized above share a few traits:

A. On the whole, in whatever shape or context they appear in the archaeological record, it is considered valid to say that women were preoccupied by their fertility and that of the living world around them, while men were interested in warfare and sexuality.

B. The absolute dominance of an essentialist concept of woman – and of men for that matter –, as obvious in considerations like: "The woman, as discoverer of the phenomenon of germination and inventor of agriculture, is considered in archaic cultures solidary with the fertility of the earth, the women being assimilated to the soil"[6] (my translation of D. Monah 1997, p. 206). In other words all archaic cultures are taken to have had the same concept of women.

C. The authors do not feel they should answer questions such as:

- Why only women were concerned with fertility, and men were not?
- Why only men were concerned with sexuality and women were not?
- How reproduction was conceived by, say, those who produced and used the Cucuteni figurines and if reproduction involved only women then what was its bearing upon women-men relationships.

This just to question the inner logic of their interpretations.

D. Compared to the large quantity and variety of the representations they refer to these interpretations consist of astonishingly few ideas. As my colleague Alexandru Dragoman noticed, there is hardly anything to deconstruct (pers. comm.). There is no real difference between what male and female archaeologists wrote; even more, the same ideas have been repeated since generations (maybe excepting the idea of sexuality, which might be only one or two decades old).

As somebody who worked for about 18 years in Romania's archaeology I easily recognized in these interpretations the main ideas of male senior archaeologists about the roles of men and women in society. They are at the same time widely spread patriarchal ideas:

1. "Women rear children; this is such a difficult task that they cannot do anything else" (After all, I myself, at the beginning of my career, was told by my PhD supervisor "If you do not marry and have children you shall inherit the scientific rights on the settlement at Popeşti").

2. "Men are by their nature interested in war". The oldest generation still active as I entered archaeology was too young to directly participate in World War II, but they were fascinated by the idea of war somewhat in the same infantile manner as Virginia Woolf's Mr. Ramsay, who emphatically recited scenes of war from poems (P. Bourdieu 1998, p. 99 = *idem* 2003, p. 63).

3. "Archaeological practice requires order of a type akin to military discipline". Discussion over theory is useless small talk; as Alexandru Niculescu put it: theory is seen as feminine (Gh. Al. Niculescu, lecture on archaeological theory held in 2003 at the Faculty of History, Bucharest University); improving technique and producing without much talk is what real men do.

4. On several occasions, as I asked senior male colleagues "But are you not bored with these old ideas?", the answer was: "Well, what else can be said? Archaeology is so limited in possibilities of interpretation!" But there was an obvious delight in this powerlessness, or as P. Bourdieu would put it there was a cruel pleasure of disappointing (1998, p. 102 = *idem* 2003, p. 65).

But why do women archaeologists write the same things as male archaeologists do?

The first generation of Romanian female archaeologists was borne around 1900. They studied on abroad, stemmed from the middle class, were only two (Ecaterina Dunăreanu-Vulpe and Hortensia Dumitrescu) and were married to colleagues of middle class origin (Radu Vulpe and Vladimir Dumitrescu, respectively). Hortensia Dumitrescu worked more for her own career but was less diligent than her husband and limited her interpretations to cultural assignment and dating of the excavated materials. Ecaterina Dunăreanu-Vulpe worked less for herself. At the beginning of the career she taught art history at the University of Iaşi. She was acquainted with archaeology from her student years, but she was employed as an archaeologist only after she had to move from Iaşi to Bucharest for family reasons. In her own words "I gave up working for myself not because I married, but because I became a mother" (pers. comm.). Thus, from an early stage of her professional life she

[6] "Femeia, ca descoperitoare a fenomenului de germinare şi inventatoare a agriculturii, este considerată în culturile arhaice solidară cu fertilitatea pamîntului, femeia fiind asimilată cu glia" (D. Monah 1997, p. 206).

conceived herself as a helper of her husband[7] and had no personal ambitions or goals as an archaeologist. She was very useful for, at that time, and ever since, there was no specialist stuff to help in the primary stages of the elaboration of an extensive publication. This was approximately the generation of Simone de Beauvoir (1908-1986), but instead of striving to find a voice of their own, as Beauvoir did (1949; T. Moi 1998, p. 3-263), these Romanian women archaeologists spoke with a man's voice or strove to help their husbands speak. This first stage in the history of women archaeologists in Romania was of particular importance since Ecaterina Dunăreanu-Vulpe had a son that became not only a well-known archaeologist (Prof. Alexandru Vulpe) but also a very influential one. The model of the research assistant related to the professor/senior researcher was thus established: the patriarchal family was transferred into the field of archaeology and it turned out that it was there to stay. This is a typical case of unintended consequence, since Ecaterina Vulpe never really wanted to be an archaeologist[8], let alone to represent a model for female archaeologists; nevertheless she ended up by representing the model of *the* female archaeologist in the (masculine) vision of her son. Hortensia Dumitrescu's model, who seems to have been a more individualized type of archaeologist (S. Marinescu-Bîlcu 1982), by not having heirs in archaeology[9], was soon forgotten.

The second generation of female archaeologists was borne in the mid 1920's mid 1930's: Eugenia Zaharia, Alexandrina D. Alexandrescu, Silvia Marinescu, Ligia Bârzu etc. They were students in the post WW II period; the communist regime being installed, study on abroad was out of question. As specialist higher education in archaeology was nonexistent in the country, they studied history; anyone wanting to work as an archaeologist had first to undergo a period of intellectual apprenticeship around the first generation of archaeologists. Under the circumstances one became an archaeologist not in virtue of a diploma, but by mere recognition by the community of archaeologists: to this end one had to write as "the archaeologists" did; since by that time all outstanding archaeologists were male, women wrote like men did. They wrote when they had time to do so, since for a considerable part of their working day they functioned as unofficial research assistants for their professors; this division of work fitted well into the logic of the communist regime for according to the communist ideology people were expected to work not for money or some other personal interest, but for the welfare of the society. The archaeological practice reinforced the idea that a woman's vocation in life was to sacrifice herself for her colleagues, in case she was an archaeologist, for her husband and children in case she had a family. It was an either–or situation (and it goes without saying that the system produced this kind of female *curricula vitae*, which it then used to confirm its basic assumptions). If one is to rely on hearsay, some of the female archaeologists of the second generation were involved in life long affairs with their – married – professors, thus entering into a kind of extended family; fact is that each and every female archaeologist of real importance was – at least officially – single. This is a particularly week position in a patriarchal society: men and women are suspicious about the ethics of single women, and single women are constantly afraid of being suspected of unethical, dishonourable conduct. So in order to be taken seriously as a woman you had to be married, but if you were married – as some were[10]-, you didn't manage to produce enough archaeological work, so you were not taken seriously as an archaeologist. Women archaeologists were living in a social environment where it was better for them not to mention, let alone to theorize, the fact that they were women as well; they wanted to be considered archaeologists, not female archaeologists. This second generation of women archaeologists related to archaeology and to archaeologists the same way male archaeologists did, but for the fact that they didn't have research assistants, not even during their senior years: one was not assigned as somebody else's *de facto* research assistant, one slowly slid into this position; female *habitus* predisposed women to this role, male *habitus* did not (P. Bourdieu 1980, p. 88-89; *idem* 1998, p. 84 = *idem* 2003, p. 54); the model of somebody working of her own will for the benefit of a woman was absent in the Romanian society as a whole.

[7] 16 years ago it happened that I stayed for four months in the same house with Ecaterina Dunăreanu-Vulpe; she has just turned 90; every time I wanted to help out in the kitchen she would send me away and say: "I gave all my life so that others could work. Let me now do the same for you!"

[8] A considerably different view on her career as a professional archaeologist can be found in C. Mateescu 1993.

[9] She had one daughter that emigrated from Romania.

[10] From the female archaeologists of the second generation only Maria Bitiri (not mentioned above because she didn't work on the epochs here of interest) had a longer lasting marriage and children. However, apart from her PhD thesis (1972) her contributions to the Romanian archaeology are rather modest.

All later generations of female archaeologists inherited this system of values, this model of a woman archaeologist's life and this understanding of 'the normal archaeological practice', a fact that was very much favoured by the poor specialist education in the Romanian universities:

1. Even if in the meanwhile everyone is aware of the multiple changes in the world archaeology, the respected archaeological publication still consists of the thorough description of the circumstances of discovery and extensive illustration of finds; more recent directions in archaeology, such as the inquiry into gender relationship, are no priority, not even for the sake of being fashionable.

2. Tasks usually assumed by female archaeologists (the so-called "kitchen table archaeology" [L.H. Dommasnes *et alii* 1998, p. 110, 116]) have become overwhelming: primary documentation became an exhausting task, tones of archaeological material piled up over decades and it has to be cleaned, labelled etc., excavation plans and note books dispersed to the members of various excavation stuffs must be gathered and interpreted; and there are many other tasks. These tasks became nearly impossible to fulfil: the more a woman strives to contribute to the welfare of the system, the more she moves away from a successful career.

3. Since these activities are absolutely necessary many archaeologists, including females, argue that even more work is needed: engaging with feminist theory would only keep them away from the most urgent.

And to these one has to add the hardships of the transition from communism to capitalism.

4. Things changed very little from the interwar period to this day: we have basically the same gender relationships and the same principles of interpretation and much more archaeological material to deal with. My colleague Alexandru Dragoman noticed that not only is there only one Romanian female archaeologist working in prehistory that had received a festschrift volume – i.e. Dr Silvia Marinescu-Bîlcu – but the author of the introduction presented her primarily as a continuator of her mentor, the late Prof. Vladimir Dumitrescu (M. Neagu 2005, p. 9). That old habits die hard or do not die at all one can also see from the booklet *În spatele arheologiei: o poveste sub tăcere*[11] (2008). According to the CIP description of the National Library of Romania it is a publication of the History National Museum of Romania. It has an editor - Cătălin Bem -, two authors of the (otherwise less than mediocre and with various mistakes) text - Alexandru Ciornei and Cătălin Bem - and many photos, taken by the same two: from their order we understand that most of them are authored by Cătălin Bem. The intention of this publication is to show the public, who is considered to be ignorant of other aspects of archaeology than specialist literature and ancient objects exhibited in museums, a complete image of the archaeological practice. Since this is not the place for a complete review I shall only discuss the issue of gender relations as part of power relations in the profession.[12] Leafing through the booklet one can notice that both the photos and the text present the archaeological practice as full of rewarding hardships, with both a scientific and a romantic, adventurous side; archaeology is basically a male profession as one can take from the photos, even if the text makes no reference to the gender of archaeologists; but more precisely it is for these (all male) authors a profession suitable for macho men, so macho that some men in the photos resemble the Neanderthal's depiction as known from museum exhibitions from the earlier part of the 20th century; these macho men do all the important things, while women are relegated to modest auxiliaries. We are thus left with:

- man the founding father (photo on p. 15: men setting up the camp) – woman the housekeeper (photo on p. 44: a female person is cleaning up a tent);
- man the scientist - woman the "kitchen table archaeologist" (p. 29, 47; on p. 29 the photo presents us with a young man measuring animal bones and a young woman washing bones, i.e. preparing them for a higher stage of analysis);
- man the physically strong (photo on p. 31, with men sieving sediment; photos on p. 51-52 with men shovelling and carrying buckets with earth) – woman the physically week (photo on p. 57: woman cleaning a small surface with a brush);
- man the excavator (p. 45) – woman cleaning up a small surface where nothing of any significance can be seen (p. 57);
- man fighting with the laws of nature (on p. 53 we see a man near a fire lit to dry the sherds quicker) – female counterpart missing;

[11] In (my) English translation: *Behind archaeology: a silent story*.

[12] For a critical discussion of power relations in the archaeological practice and the place of the 'romantic' side of archaeology see Palincaş 2006.

- man the tool maker (p. 22; actually it is not clear at all what the sitting archaeologist was doing; the image evokes Palaeolithic stone chipping) – female counterpart missing;

- man the negotiator with other communities (p. 23-25, photos and texts) – female counterpart missing;

- man the hunter (or whatever is left of him: see p. 38-39, with a male archaeologist roasting meat) – woman the dishwasher (p. 32 with a photo of a female archaeologists washing dishes; the text suggests other maintenance activities as well);

- men in their leisure-time (p. 37 presents four men bathing in a river, after a long day of work, according to the text) – female counterpart missing;

- tired man (p. 33 with an archaeozoologist fallen asleep during work, surrounded by a bone atlas, a large number of recording sheets, measurement and writing implements, animal bones) – tired woman (p. 3 with a young woman fallen asleep with her head on a table; however it is not quite clear why she was tired: the surrounding objects suggest that she washed either dishes or sherds);

- man the visible (on all photos men are recognisable as such) – woman the invisible; or more precisely women are easily recognizable on photos where they wash dishes or animal bones or clean up after a heavy rain (p. 29, 32, 44), less easily recognizable on the photo presenting the tired women (p. 34), and hardly recognizable on the photo presenting a working scene on excavation (p. 57; actually one realizes that the person with the brush is a woman only after careful consideration of the image).

The long and the short of it is that in 2008 the History National Museum of Romania published a booklet authored by archaeologists in their mid 30's who think of archaeology and present it to the public in terms of 'man the dominant' (see also the fact that from the 22 photos with people involved in archaeology or just visiting the site 17 present only men, four present only women and one presents a man and a woman).

In conclusion, unless we engender the theory of archaeology these gender relationships will go on as one can easily see from the photo on p. 30 in the History National Museum's booklet, where a female child, the daughter of Cătălin Bem, is helping out with the washing of sherds, thus being inadvertently socialised into a gendered activity. And there is then no wonder that the image of the Neolithic and Bronze Age women in the Romanian archaeology has much more to do with contemporary gender relationships than with the archaeological remains from the Romanian Neolithic and Bronze Age. In other words, the real, even if not conscientious, purpose of research in Romanian prehistoric archaeology is not to find out things about men and women from prehistory for a better understanding of humanity, but to offer a field in which contemporary gender relationships are played out and justified.

Acknowledgements: I thank my colleague Alexandru Dragoman for useful comments on this text and to Dr. Silvia Marinescu-Bîlcu for pressing me to publish this article in this stage of my research, so it will not have the fate of other studies of mine that took too long to finish.

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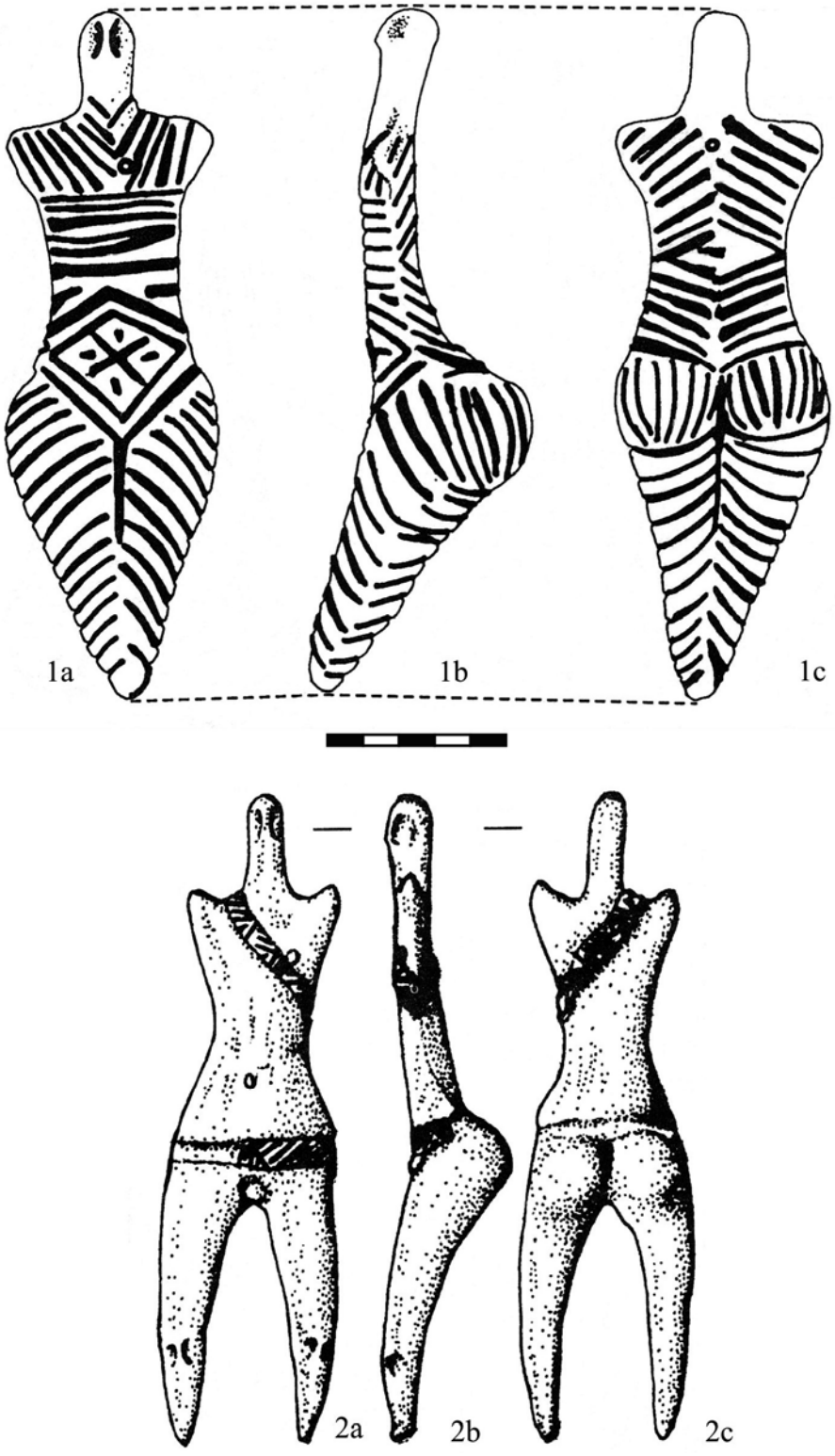

Fig. 1. 1: Female figurine from Igeşti-Scândureni; 2: male figurine from Dumeşti (from D. Monah 1997, fig. 61/1 and 41/1, respectively). Note at fig. 1/1b the flat abdomen contrasting with the prominent buttocks of this typical female Cucuteni A figurine as well as its similarity in terms of bodily shape with fig. 1/2b, a typical male Cucuteni A figurine.
1: Figurină de sex feminin de la Igeşti-Scândureni; 2: figurină de sex masculin de la Dumeşti (după D. Monah 1997, fig. 61/1 şi respectiv fig. 41/1,). De observat în fig. 1/1b contrastul între abdomenul plat şi bazinul proeminent tipic figurinelor feminine Cucuteni A ca şi similaritatea din punct de vedere a formei corpului cu fig. 1/2b, o figurină masculină tipică Cucuteni A.

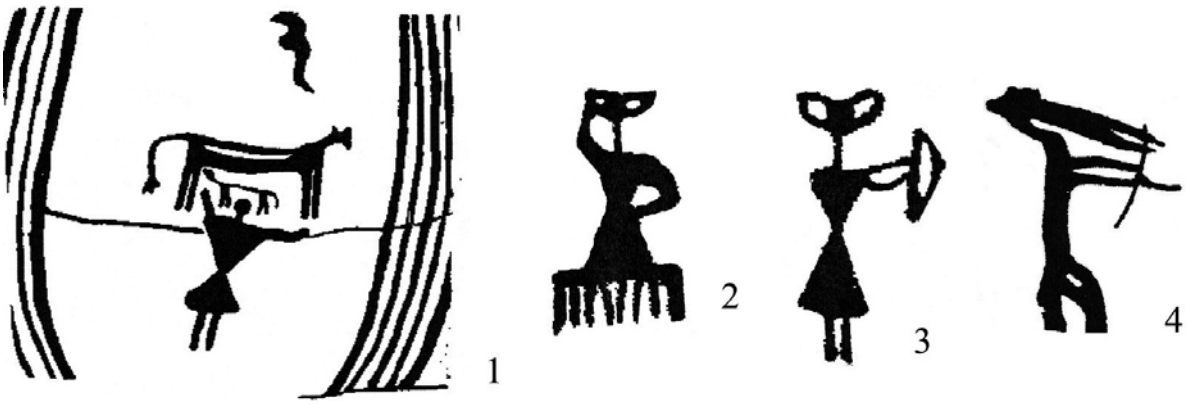

Fig. 2. 1-3: Female character often seen as the Great Mother, always considered as related to fertility cult; 4: male character with an arrow in his hands. All paintings on clay vessels. 1, 4. Brânzeni; 2-3. provenance not specified (from C.M. Lazarovici 2006, fig. 12/8; fig. 10 on p. 66 and fig. 15, lower row).
1-3: Reprezentări feminine vazute adesea ca Marea Mamă, întotdeauna legată de cultul fertilităţii; 4: Reprezentare masculină cu un arc în mâini. 1, 4. Brânzeni ; 2, 3. provenienţă nespecificată (după C.M. Lazarovici 2006, fig. 12/8; fig. 10 pe p. 66 şi fig. 15, rândul de jos.

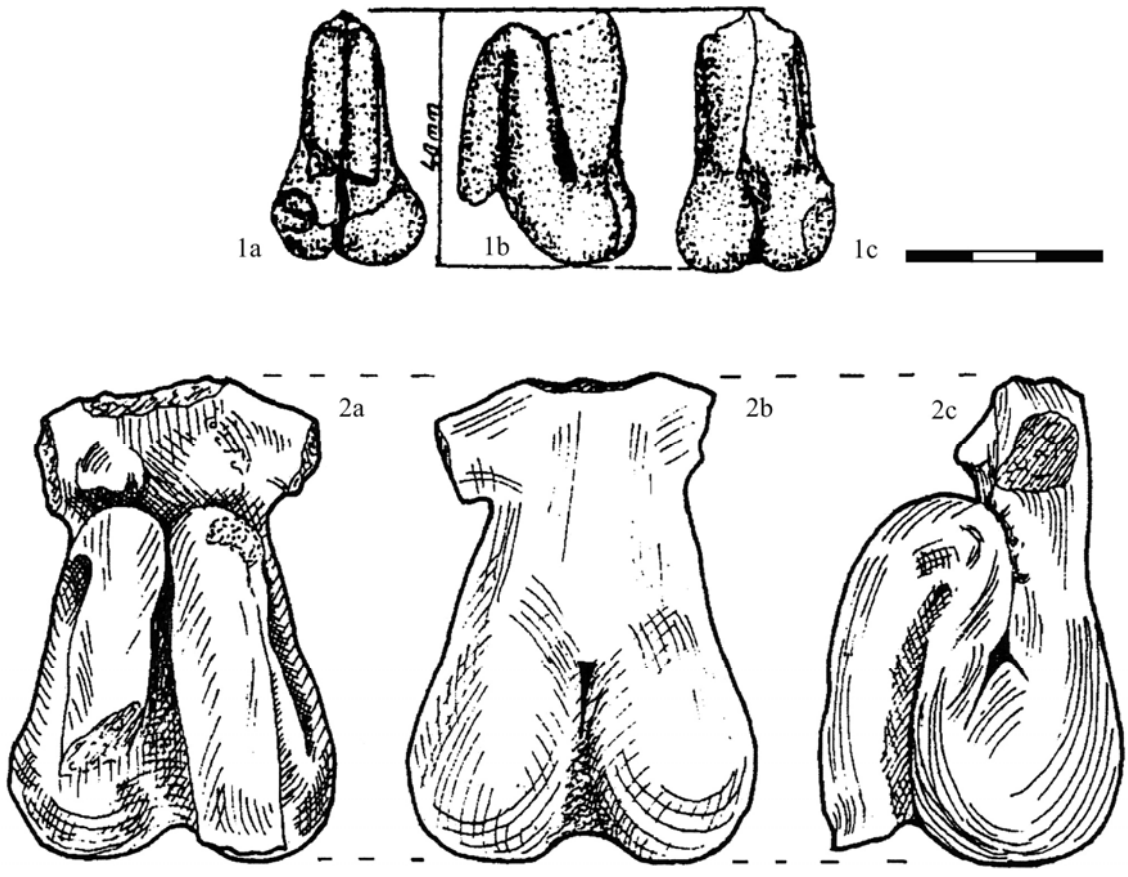

Fig. 3. Fragments of female figurines from: 1. Târgu Frumos (Pre-Cucuteni III) and 2. Căscioarele (Gumeniţa B1) (1. from N. Ursulescu *et alii*, 2006 fig. 1/1; 2. after Vl. Dumitrescu 1974, fig. 245).
Fragmente de figurine feminine de la: 1 Târgu Frumos (Pre-Cucuteni III) şi 2. Căscioarele (Gumeniţa B1) (1. după N. Ursulescu *et alii*, fig. 1/1; 2. după Vl. Dumitrescu 1974, fig. 245).

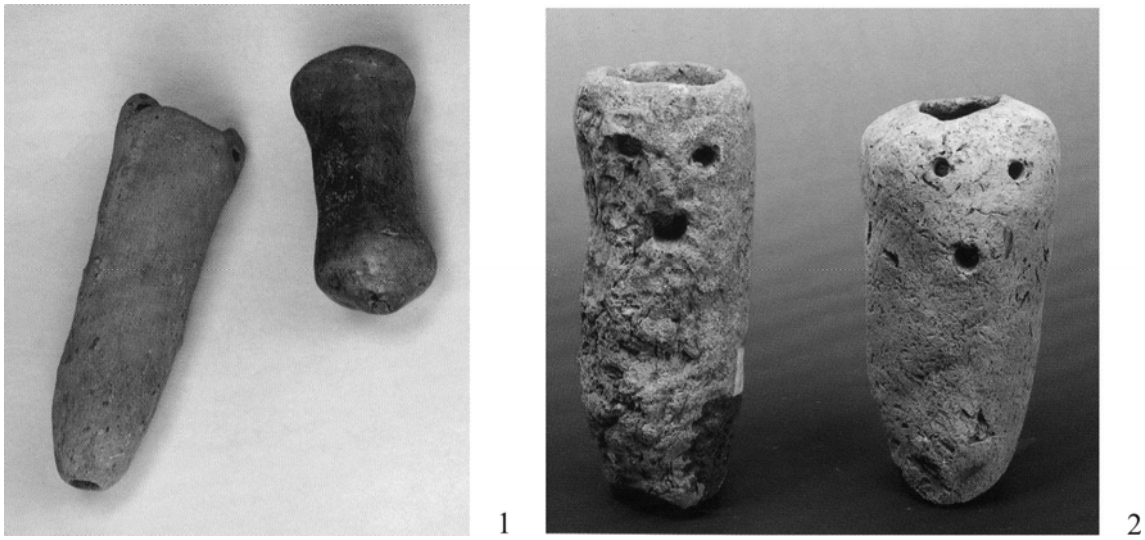

Fig. 4. Phallus-shaped Cucuteni clay objects: 1. Văleni (left) and Poduri-"Dealul Ghindaru" (right); 2. Truşeşti-"Ţugueta" (from C.M. Mantu *et alii* 1997, fig. 116-117, 121).
Obiecte din lut în formă de falus din cultura Cucuteni: 1. Văleni (stânga) şi Poduri-"Dealul Ghindaru" (dreapta); 2. Truşeşti-"Ţugueta" (după C.M. Mantu *et alii* 1997, fig. 116-117, 121).

Before the End of the World: archaeological investigations about Maya Terminal Classic processes on the Middle Candelaria River, Campeche, Mexico

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Abstract: *After my undergraduate studies in the Faculty of History (Archaeology Section) of the "Babeş-Bolyai" University in Cluj-Napoca, Romania, after my graduate studies in Mexico-City and my employment as full-time professor-researcher at the University of Zacatecas in northern Mexico, I continued my investigations about certain aspects of the history and social dynamics of the Maya society in one of its poorly-known regions: the southwest of the Yucatan Peninsula, in the southern part of the state of Campeche, along the Candelaria river and near to the Guatemalan border; a research commenced in 2003. Maya culture is, for sure, one of the most famous, spectacular and public manifestations among the ancient human societies. I intentionally avoid the word "civilization" because that one can be considered as an effect of the racist, Eurocentric and colonialist point of views. This amazing culture developed during at least two millennia in a fascinating natural environment full of difficulties and challenges. Despite the great amount of anthropological, archaeological, historical, ethnographic or linguistic research undertaken along more than a century in the jungles and savannas of Mexico, Guatemala, Belize, El Salvador or Honduras, there are still empty spots on the map of our relevant knowledge about this ancient society. Traditionally, archaeology focused more on spectacular settlements, on the sites full of monumental pyramids, plazas, platforms and elite residential centers, leaving aside the more humble settlements, the secondary centers and rural areas. Archaeologists' attention oriented more toward the so-called "Classic" period (3rd to 9th centuries A.D.), when the architectural, sculptural and epigraphic climax gave birth to the most impressive monuments. I had at least three initial reasons to start this project in that remote area of the Candelaria River, in a zone characterized by wetlands, swamps and anthropic savannas. First, because I noticed the necessity for a multi-site regional investigations meant to fill a great regional and theoretic gap in the Lowlands Maya archaeology. Second, the need to study a less monumental, less spectacular zone, to understand more deeply second-range settlements and rural sites. Third, I looked for answers in a region that had previously captured my attention several years before. Starting from the settlement known as El Chechen, the surveys led to the discovery of four important archaeological sites apparently dated to the end of the Classic period. After a couple of seasons focused on the use of surface archaeology techniques (air photos, usual and digital cartography, GPS, GIS, surface material collecting), we started the detailed topographic survey of the sites and the elaboration of digital maps. During the topography of the site called El Astillero, we noticed the presence of human bones into the profile cut by a machine that had recently affected a small architectural platform during the construction of a rural path. The rescue digging revealed the presence of various human burials, which were excavated extensively during a subsequent season. This happened to be one of the most important funerary contexts in that part of the Yucatan Peninsula. It is important especially because of its direct connection with one of the most disturbing aspects of the Maya history: its "collapse", its passing to a new age, the Postclassic, the phase before the arrival of the Spanish conquerors. Several theories came out related to this problem, but I adopt the hypothesis that assumes that the "collapse" occurred because of a chain of social rebellions initiated by lower class social groups in a context of environmental crisis, hunger and crescent exploitation over the poor sectors of the society. In our specific case, the excavations show a probable small temple buried under a fill made of dirt, many sherds and other artifacts, and on top of that fill they built a few huts made of perishable materials. Into the fill, beneath the huts, dead were buried during several generations; their bones show physical stress and bad nutrition. This is only the beginning of a research planed to continue for a few more years on a wider scale, with extensive excavations focused on the problem of the collapse and its social implications.*

Rezumat: *Dupa absolvirea Secţiei de Istorie Antică şi Arheologie a Universităţii "Babeş-Bolyai" din Cluj-Napoca, România, urmată de studii post-universitare în Mexico-City şi apoi angajarea mea cu normă întreagă de profesor-cercetător la Universitatea Autonomă a Statului Zacatecas, în central-nordul Mexicului, am continuat în mod mai extins cercetările asupra anumitor aspecte ale istoriei şi dinamicilor sociale ale culturii Maya în una din zonele cele mai puţin cunoscute ale acesteia: sud-vestul Peninsulei Yucatán, în sudul statului Campeche, de-a lungul fluviului Candelaria, foarte aproape de frontiera cu Guatemala, cercetare începută in 2003. Cultura Maya este fără îndoială una dintre cele mai faimoase, spectaculoase si mediatizate manifestări ale societăţii umane. Mă feresc de folosirea termenului "civilizaţie" dat fiind că acesta poate fi considerat, fără îndoială, ca o manifestare a punctelor de vedere rasiste, eurocentriste si colonialiste. Această admirabilă cultură s-a desfăşurat de-a lungul a cel puţin două milenii într-un mediu natural fascinant dar plin de provocări şi dificultăţi. În ciuda marelui număr de cercetări istorice, arheologice, etnografice şi lingvistice desfăşurate de-a lungul a mai bine de un secol în junglele şi savanele din Mexic, Guatemala, Belize, Salvador sau Honduras, persistă destule pete albe pe harta cunoştinţelor noastre relevante asupra acestei societăţi. Arheologia s-a orientat în mod tradiţional mai ales asupra aşezărilor antice spectaculoase, pline de piramide, enorme pieţe, platforme şi centre rezidenţiale ale elitelor politice ce guvernaseră complexa şi misterioasa societate mayaşă, lasând la o parte aşezările mai umile, centrele*

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Studii de Preistorie 5, 2008, p. 171-205.

de rang secundar sau zonele rurale. Atenţia s-a axat cu precădere asupra epocii numite "clasice" (secolele III – IX d.Hr.) când splendoarea arhitectonică şi epigrafică a creat cele mai importante monumente. Motivul pentru care am ales acea zonă specifică, de-a lungul impunătorului dar prea puţin cunoscutului râu Candelaria, într-o zonă inundabilă de mlastini şi savane, se datorează înainte de toate necesităţii de a realiza un proiect de cercetare arheologică regională, axat pe mai multe situri, care să umple în primul rând golul geografic din acea regiune şi în al doilea rând să abordeze caracteristicile unei zone prea puţin monumentale, rurală, marginală într-un anumit fel. În plus, căutăm să aprofundez cercetarea unei regiuni care îmi atrăsese în mod special atenţia în urmă cu câţiva ani. Plecând de la situl numit El Chechen, explorările de suprafaţă şi perieghezele au dus la identificarea a patru aşezări importante mayaşe aparent databile către sfârşitul epocii clasice. După câteva sezoane iniţiale în care am aplicat tehnici specifice arheologiei de suprafaţă (fotografie aeriană, hărţi cartografice clasice şi digitale, GPS, GIS, recolectare de materiale arheologice de suprafaţă), ne-am dedicat realizărilor ridicărilor topografice detaliate a tuturor aşezărilor descoperite, catalogarea structurilor arhitectonice şi elaborarea hărţilor digitale. În timpul realizării topografiei în situl numit El Astillero, am notat prezenţa oaselor umane în profilul creat recent prin tăierea accidentală a unei mici platforme arhitectonice de către un buldozer în timpul construirii unui drum rural. Săpăturile de salvare au revelat existenţa mai multor morminte umane care au fost apoi săpate în mod extensiv într-o campanie ulterioară. Acesta este cel mai important context funerar din sud-vestul Peninsulei mai ales datorită importanţei sale în legătură cu unul dintre aspectele cele mai neliniştitoare a „civilizaţiei" mayaşe: colapsul său, trecerea sa la o altă fază, cea a Postclasicului, fază anterioară sosirii spaniolilor. Mai multe teorii s-au enunţat asupra acestei problematici, dar eu înclin asupra aceleia care susţine că a fost vorba de o revoltă socială desfăşurată în mod complex, într-un crescendo temporal şi geografic, pe fondul unei puternice crize a mediului inconjurător şi a exploatării excesive a grupurilor sociale inferioare. În cazul nostru, cercetările sugerează probabil existenţa uni templu care a fost „înmormântat" în foarte scurt timp cu un strat de umplutură bogat in materiale arheologice ca bază pentru ridicarea unor colibe din materiale perisabile proprii segmentelor sociale ne-elitiste. În acelaşi strat de umplutură şi nivelare au fost înmormântate mai multe persoane, probabil de-a lungul câtorva generaţii, arătând clare indicii de sărăcie şi efort fizic. Acesta este doar începutul unei cercetări care va continua pe parcursul a câtorva ani în viitor, pe o scară mai extinsă şi orientată în mod expres asupra problematicii „colapsului" şi implicaţiilor sale sociale.

Keywords: Maya, archaeology, settlement patterns, Candelaria, Mexico, collapse, funerary contexts, social processes.

Cuvinte cheie: Maya, arheologie, modele de aşezare, Candelaria, Mexic, colaps, contexte de înhumaţie, procese sociale.

Introduction

This article intents to present, in a succinct manner but as completely as possible, some advances of the archaeological research I currently undertake in a forgotten region of the Mexican Southeast, in the southwestern part of the well-known Yucatan Peninsula, along the impressive Candelaria river. That region is just a part of the world-famous Maya Area, land of fascinating nature, amazing archaeological sites and inspiration for adventurous dreams. The "El Chechén Archaeological Project" started in 2003 under my direction, two years after my employment as full-time professor-researcher in archaeology at the University of Zacatecas, a city in northern Mexico, far away from the Maya heartland.

Since my undergraduate studies in "Babeş-Bolyai" University of Cluj-Napoca, Romania (from 1994 to 1998), I developed a vivid interest for the Maya culture and its inherent mysteries. I came to Mexico in 1999 to start my graduate studies at the most prestigious school in anthropological disciplines in Latin America[1], and during a two or three-year period I focused more on theoretical and epistemological issues. Once I get the job in the above-mentioned university, I felt free to develop my own archaeological project wherever I wanted, as liberty of decision in scientific fields is one of the most precious treasures of the Mexican schools. During my master studies in Mexico-City, I had the opportunity to participate briefly as practice student in an excavation campaign in the Maya Area, the region I have always wanted to study, although that short-lived project was developed in a very poorly known region of the famous culture, an almost unknown region along a river that was seldom mentioned in texts and almost absent from the popular conscience, the Candelaria (Gamboa *et alii* 2000). It was a small site called Pozas de Ventura, lost in the jungle amidst swamps and mangroves, in the Candelaria County of the state of Campeche, far away from Chichen Itza, Palenque, Uxmal, Calakmul, Tikal, Bonampak or other worldly famous Maya sites. It is also away from the traditional tourist routes and the Maya-speaking indigenous towns; a region destroyed by the intensive cattle farming and deforestation. Nothing resembling the usual idyllic image a European young man could

[1] Escuela Nacional de Antropología e Historia (ENAH, National School of Anthropology and History), in Mexico-City, a prestigious institution that since 1938 prepares the new generations of archaeologists, anthropologists, historians, ethnographers and linguists from Latin America and all over the world.

have about the lost cities of the Mayans and their surrounding environment. Nevertheless, my meteoric participation in that extinct project opened my eyes toward a series of interesting issues of the Maya society, beyond any clichés induced by the popular visions on that culture. In that winter of 1999 I discovered (or guessed) the enormous scientific potential of that forgotten and apparently marginal micro region. Moreover, I knew that perhaps more than one crucial question about the Maya world could find their answers there, among the swamps of the Candelaria wetlands.

This investigation rests both on scientific and personal motivations, as all the scientific initiatives use to. Scientifically it promised a lot of knew and unusual data about social processes and cultural manifestations of the northwestern zones of the Maya Lowlands. Personally, it allows me to satisfy a long time passion about a culture that attracted me since my childhood, and because I felt an intimate compromise with an almost forgotten area of that remote part of Mexico. Under my direction, there are always students from our faculty of archaeology in Zacatecas as well as graduate archaeologists and colleagues from other institutions who occasionally collaborate on specific matters. The financial aspect of this research is a recurrent difficult problem, something that reflects a wider situation visible in many parts of the world in academic milieus. The work team is large, the distance to the research place is long (about 1800 km), and the campaigns use to be extended. Therefore, the investigation is expensive and requires still more field seasons. That means continuous and exhausting negotiations for funding with federal, state and local institutions, as our University can only support a small part of the needed money. We can see, in nowadays archaeology, a clear and conflictive contrast between the incrementing expectation of sophisticated and expensive field and laboratory techniques and the decreasing available money for archaeological investigations. Nevertheless, we hope we will complete the rest of the research up to 2011. Because the archaeologist cannot simply wait for funds to show up, he has to look for it and almost invent funding[2].

In this text, I will categorically avoid the use of the word "civilization". I consider it is a term whose meaning became chaotic and empty, and it has colonialist and racist manifestations. It was born inside the European (especially British) colonial mentality and it assumes there is a qualitative distinction between "civilized" and "no-civilized" (barbarian-like) societies. I largely agree that unilineal evolutionism is an obsolete idea in modern historical and anthropological postures. I also consider it is highly inappropriate to assume that the human society is divisible in less or more civilized, mainly because it assumes that the causes of that qualitative separation are to be found in the internal characteristics and potential of the societies themselves; and that is wrong. It also assumes that there is a single frame of reference in evaluating societies and it always happens to be the European or the Occidental way of life. In our daily conversations, we will always employ this term, as it is part of the universal language and it is an easy and comfortable etiquette when we speak about the sophistication and material splendor of ancient people. However, we cannot delete it from our vocabulary. I have no intention to insist on this problem, so I simply affirm that the word "civilization" is no longer appropriate for an academic use.

Some general words about the Mayans

The cumulus of cultures we generically call "Maya" occupied a wide territory of more than 320000 km² over a large variety of landscapes[3]. It extended from the actual southern and southeastern Mexico including the Yucatan Peninsula, partially the wetlands of Tabasco, and the Highlands of Chiapas, continued over the entire territory of modern Belize and Guatemala and marked its easternmost borders in El Salvador and Honduras (fig. 1). This vast extension of land has no precise inland frontiers. The oceanic coasts mark clear limits of this culture around the Yucatan Peninsula, the northern coasts of Guatemala and Honduras, and the southern coasts of Chiapas (Mexico), Guatemala and El Salvador. We could trace the western border slightly west of the Grijalva

[2] As a tip, it worth mentioning that money for field investigations can be obtained from local county administrations (for example money for food, rent, and transportation), small companies as tax-free donations, wealthy individuals, etc. Projects should convince local governments and city counties about the importance of the research and the benefits it might bring to the community. The famous foundations (in America the most common are the National Geographic Society, Foundation for the Advancement of Mesoamerican Studies and Investigations, Wenner-Gren Foundation, etc.) give very little amounts of money (about 10 thousand dollars) that will not satisfy the entire cost and they do not cover very important aspects of field costs, as salaries and food. The funding from this kind of institutions is more suitable for specific laboratory analyses.

[3] Some of the best and most complete recent general studies about Maya culture are Sharer 1994, Freidel *et alii* 1993, and their subsequent editions and translations.

River and the monumental settlement of Comalcalco (the westernmost major Maya site) on the Gulf of Mexico shore and going southward across the Tehuantepec Istmus to the Pacific coast. To the east, the inland border could be drawn connecting the Lempa River valley on the Salvadorian Pacific coast up to the opposite Ulúa valley and the Caribbean coast in Honduras.

This extended and heterogenic territory can be roughly divided in several regions whose environmental and cultural characteristics impact on our archaeological comprehension of the ancient societies. I will simplify the divisions here. First, the most important and the most notorious geographical and cultural component of the Maya territory are the Lowlands. It stands in the very heart of Maya land and it represents low plains covered by abundant tropical rainforests and drained by a number of rivers and minor streams. The southern Lowlands start in northern Guatemala, in the exuberant jungles of the Petén region and extend northward to Belize and the Caribbean Sea, to the center of the Yucatan Peninsula (including most of the Mexican states of Campeche and Quintana Roo), and westward till the coastal wetlands of Campeche and Tabasco. Most of the Classic development of the Mayans took place inside this subdivision. A second territorial component points to the Highlands, mountains and plateaus situated in the southern half of the Maya Area in the Mexican state of Chiapas, on most of Guatemalan territory and close to the above-mentioned easternmost periphery. This is a less known zone, with richer cultural development during the very early and the very late stages of their history. The third grater division is the drier northern half of the Yucatan Peninsula, which is a part of the Lowlands but differentiated by the lack of surface watercourses and a much drier climate, where droughts are frequent and the forests are low, alternating with large extensions of short bushes adapted to lack of water. Instead of rivers, northern Yucatan has subterranean water courses that carves invisible rivers through carstic geology. It is the land of the famous *cenotes*, wide and deep holes formed by the collapse of calcareous domes, with circular mouths on surface level, usually filled with water and used as ceremonial centers especially during the late Maya history. The coasts could stand as a fourth subdivision, but the settlements along the seashore could be culturally included in specific cultural divisions that partition the above-mentioned regionalization.

Properly speaking, there is no such thing as Maya ethnicity. "Maya" is a generic name that in the Colonial times started to name a large number of ethnic groups that inhabited all those territories. Maya does not refer to a nation or an ethnic group. It rather refers to a great linguistic group: a plurality of languages with a common background. There were more than 30 different Mayan languages during the late part of their history and only about thirteen of them survived today. There are about three million people still speaking Mayan languages today across southern Mexico and Central America. The speakers of two different Mayan languages can hardly understand each other. Nevertheless, there are also very similar languages according to their geographic vicinity. There is probably less linguistic and cultural similarity between all the ethnic groups we call "Mayas", than between the nations we use to call "Romanic". People living today in those regions would never define themselves as Mayas, but using the ancestral names of their ethnicity: yucatec, chontal, lacandon, chol, tzotzil, tzeltal, mam, mopan, cakchiquel, chortí, tzutujil, quiché, tojolabal… Visible competition and conflicts occur sometimes between the different Maya-speaking ethnic groups. Still there are numerous cultural, behavioral and ideological traits shared by all the ancient inhabitants of the Maya Area, as well as by their modern grandchildren.

The various aspects of the Maya culture (architecture, settlement patterns, artifacts) manifest clear heterogeneity through space and time. Not only the transformations from the Preclassic to the Postclassic times make this vast area look differentiated and complex, but also the internal regionalization expressed through the distinct manners of architectural manifestation we use to call *styles*. There are many characteristics in Mayan architecture, city planning, artifact production and settlement patterns, which are common to all the regions and even across the chronologic segmentation. Nevertheless, the styles are a reality, in spite of the historical-cultural assumptions that background their definition; they divide the Maya Area in another scale of variations, although we still cannot understand the meanings and implications of those styles into the rest of the aspects of their lives.

The Peten style defines a cumulus of features typical for the Early Classic times and proper to Guatemalan lowlands and the southern Yucatan Peninsula: very high and abrupt pyramids with stone temples on top, staircases that lead to the upper ceremonial chamber where the thick walls left very

little space inside the sacred room. Tall *cresteria*[4] rest over the posterior wall of the superior temple, as a support for official imagery and ideology. This feature replaces the anterior fashion in Preclassic times when stucco figures molded in bas-reliefs displayed along the stairs and platforms of the ceremonial buildings. Elites, kings and nobles, lived and ruled in palaces constituted as successions of *patios* (courtyards) enclosed by structures of multiple rooms. Further north, the Rio Bec style, slightly later and typical for the southern peninsular lowlands shows lower structures with more emphasis on width and less on height. The basements of the pyramids have rounded corners. This style borrows from the Peten the shape of the vertical pyramids in order to use them as decorative item like towers in form of fake pyramids on top of low, elongated buildings. The impressive Rio Bec façades display fine masonry bas-reliefs depicting telluric monsters whose opened jaws encircle the doorways: the temple becomes a metaphor for the access to another world. Going northward, on the northern half of the Yucatan Peninsula, starting from the western coast, the Puuc style marks the step during the end of the Classic and the initial Postclassic times. In sites like Uxmal, Edzná or Labná, the use of porches and columns stands as a new tendency in local architecture, as well as the so-called "triumph arches", ceremonial portals that seem to be passages between different spaces inside the settlement. The *cresteria* returns, while massive pyramids alternate with enormous palace-like structures characterized by large courtyards closed between by one-storey buildings. Finally, the northern end of the Peninsula, in the area of the famous site of Chichen-Itza, we can admire the last manifestations of the Maya architecture, the late Yucatec style with obvious and vivid influences from the central Highlands of Mexico, especially Toltec influences. There are few other styles, but these are the most important.

We cannot assure that the territorial distributions of the style signify any other kind of territory like ethnic distribution. I have serious doubts about the supposed relationship between ethnicity and cultural (artifactual) manifestations and I am very skeptic about the archaeology's capability to identify ethnicity through material remains. In the Maya case, as well as in many archaeological cases around the world (with special emphasis on Europe), the pertinence of a community to a specific style (ceramic, architectural, artistic styles) is caused by political rather than ethnic reasons. Therefore, I do not think these regional styles reflect any ethnic distribution across the territory, as the spatial extension of the styles is clearly larger than the territory normally occupied by an ethnic group in the Maya area.

It is precise now to clarify a few aspects about the chronology. The chronological divisions we use in Maya archaeology are the same as for the rest of Mesoamerica. *Mesoamerica* is a concept first defined some six decades ago as "Mesoamerican complex" by Paul Kirchhoff (1943) and represents the biggest cultural-history inheriting in Mexican archaeology. This concept refers to a geographical extension and a sum of cultural traits shared over that territory, as for example: pyramidal basements with temples on top, architectural monumentality, ballgame courts, the employment of combined solar and lunar calendars, hieroglyphic writing, sunken patios, corn cultivation, fine arts, the practice of human sacrifice, polytheism and the dual symbolic systems, etc. Geographically, it goes as far south as the eastern limits of the Maya area in Central America, while the northern frontier approaches the vast northern Mexican deserts where the cultural traits shift into a shape more similar to the southwestern United States archaeological cultures. In spite of many critics, polemics, discussions around the relevance of this concept, it survived for convenience. The reader can easily notice that it resembles the Gordon Childe's famous "prescription" for the identification of a state, a city or a civilization, altogether. Anyway, Mayans are part of this Mesoamerican macro region, then. Moreover, they are proud holders of the majority of its diagnostic characteristics.

The Mesoamerican chronology is the same as Maya's and it clearly manifests strong cultural-history hues tracing back to Winckelmann. The main Mesoamerican period is the Classic (*El Clásico*). This is a time of splendor, of climax, the high development of states, of arts, of artifact manufactures, of trade networks between the Mesoamerican regional components. It usually goes between 200 and 800 AD. Before it, the Preclassic (from about 2000 BC until 150/200 AD), an epoch of crystallization of complex societies and chiefdoms, the emergence of monumental architecture, of trade networks and the incipient constitution of the future classic features. After the Classic, we obviously have the Postclassic, considered as a time of militarization, the effect of the "collapse" of the Classic way of life, the time for empires, the reordering of the Mesoamerican world. It is the time of the Toltec and later

[4] *Cresteria* is the term used for a false wall made of masonry and covered in platered materials, which usually rests on top of the upper temples of the Maya pyramids and contains molded and colorful images of religious and political nature, in order to continuously communicate the official ideology to the masses.

of the Aztecs. It is the time of their influence on the Maya. It starts around the year 1000 and ends with the Spanish conquest. Two buffer periods are usually managed. One, the Protoclassic (about 100 BC – 150 AD), marks the transition between Preclassic and Classic. Second, the Epiclassic (called *Terminal Classic* by Mayanists) resumes the transition processes to the Postclassic and it occupies about two centuries, 9th and 10th AD. Actually, today nobody believes in the historic and processual relevance of this time partition, especially because the criteria for their definition are obsolete. Anyway, everybody use them merely as comfortable time referents. When I say Classic, I do not necessarily mean anything in valuation terms; I simply use a synonymous for "3rd to 8th centuries".

Mayans formed part of the complicated and highly sophisticated trade system of the ancient America. In a world without coins, it is still difficult for us to understand the concrete mechanisms of functioning of this system, the equivalencies in the markets, and the agreements between political entities. Nevertheless, they surely existed. Black, grey and green obsidian, greenstones, clay, ceramics, timber, precious feathers, animal furs, fruits, cacao for making chocolate where just some of the articles Mayans exchanged between themselves and with the outside world. On tough land roads, through the jungles, across the Gulf of Mexico and the Caribbean Sea, but, especially, by rivers. There where three main high-traffic aquatic routes: the Usumacinta, the Grijalva, and the Candelaria rivers. They all flow into the Gulf of Mexico and form the principal outward communication route for the Mayas. There where important rivers flowing eastward into the Caribbean, like Hondo and Belize Rivers. However, none of them could compare to the size and traffic intensity on the former three. Among them, Candelaria River is the one we are interested in for the purpose of this discussion. It born in the Peten region Guatemala as Río San Pedro and flows northward into southern Campeche where it joins Caribe River and together they form a new course, Candelaria, flowing eastward into the Terminos Lagoon and Gulf of Mexico. A route that permits connection with all the numerous settlements of the Totonacs along the coast and northward into the US southeast, while indirectly it forms a shortcut to the Mexican Highlands. The importance of this river as major trade route is still poorly understood mainly because this region remained almost unknown for more than a century after the beginning of the first explorations in the Mexican southeast. The irregular topography, the sudden changes in the altitude of river's bed, the unusually fast accumulation of calcareous material on top of any sediment or heaping of vegetal remains inside the water, these are all factors that transform Candelaria into a difficult-to-navigate river and simplifies the local's work to control, supervise and tax the commercial traffic.

For nearly a century, scholars liked to believe that Mayas were a sort of peace-loving people, interested in religion, philosophy, mathematics, astronomy and so on, far away from warfare and crimes. The writing was deciphered starting with the late 60's of the 20th century and before that the Maya monuments with epigraphy seemed to depict only priests and calendar information. Now we know they are kings, generals, priestly monarchs, warriors. Perhaps some other factors influenced in that idyllic image about the Mayas: the need to discover a "wise civilization", a different one, a pacific one; the mathematic perfection of their calendars and their astronomic calculations; the beauty and fascination of the monuments and architecture; the great number of temples. Today we know the Mayan's life was full of wars, conflicts, military expeditions, the destruction of enemy cities, shifting alliances, human sacrifices, ritual self-mutilations, and excessive social exploitation.

The Maya settlement pattern has a few general characteristics and many local particular traits. B. Trigger (1968) considers there are three analytical levels of the settlement patterns: i) the regional level (and the interaction between different sites), ii) the site level (the internal spatial organization inside a settlement), and iii) the structure level (the spatial and physical features that constitute a habitation unit). On regional level, Mayans had three main site levels. First, enormous political, administrative, religious, economical centers, the famous Maya metropolis with throusands of buildings and dozens of thousands of inhabitants. Those were the residence of the fierce *ahau*, the king, the lord[5]. Second, the middle-range settlements, the provincial centers, monumental sites on a lower scale, residence of the vassal lords. Finally, the rural settlements, agricultural and hunter hamlets scattered through the landscape; some of them later got included into the major centers as they grew enormously by the end of the Classic. The general image of a Maya settlement is that of clusters of buildings dispersed over a determined territory. The pattern shows relatively low density, but there is a clear contradiction between the disperse pattern on the site level and the highly dense pattern inside the spatial compounds. There are different kinds of spaces and articulations of proxemic

[5] The plural for the maya word *ahau* is *ahauo'ob*.

patterns and proxemic levels (C. Ardelean 2000-2001). The old centers, those settlements that had continuous occupation for centuries or millennia show high nucleation in their cores, literally buildings over buildings. I recently stressed the importance of proxemics and of property relationships in the internal formation of ancient settlements, and I am sure Maya is one of the best examples. The causal factors that contribute to the internal constitution of ancient sites go from property relationship and territory management, ecological factors, culture and technology, and ideological traits (C. Ardelean 2000-2001, 2003, 2004). Mayans had specific areas designated for religious, administrative, or residential buildings, so they apparently intended to fit into those spaces, perhaps originally sacred spaces like the Roman *templum*. Moreover, every new king or every new dynasty needed to rebuild the temples, to add new parts to previous constructions, to emphasize their own power, so every certain time new pyramids showed up in the center of the Mayan cities, on top of older temples, covering the older buildings with the very core of the new ones. In addition, the Mesoamerican cosmic cycles of 52 years required the renewal of certain religious buildings and; in some cases the Mayans were not the exception to that ritual. That is why the tourist remains astonished with the amazing puzzle of buildings in the great Maya centers.

In older scientific and divulgation literature, authors divide the Maya history into Egyptian-fashioned periods: Old and New Empires. We now know for sure that there never existed such thing like empires in Maya history nor an empire-based historical division. In fact, the Mayans have never had any sort of territorial unification. Their political organization pretty much resembled that of city-states in Sumer or Greece. They had independent political organizations led from a major urban center and having in its territory a number of similar or lower-range centers gathered through alliances and conquest. Those were states, incipient forms of states. Actually, I prefer to consider them *archaic states*, not from chronological but structural point of view, as defined by modern theory (G. Feinmann, J. Marcus 1998, W. Wiesheu 1996, 2002). An archaic state occurs when a certain political entity shows evident characteristics of a state but conserves clear features of chiefdoms: theocratic power, kinship-based organization, vertical articulation of lineages, among others. Maya society showed such traits along its whole history. The kings were monarchs, gods and priests, the iconography shows an exaggerated emphasis on political ideology and state manipulation of the masses, the rituals show the primacy of worshiping ancestors and elders, the religion remain chamanic even on its institutionalized levels, the state survived through the successful articulation of the lineages. Another eternal polemic in Maya archaeology is whether the major settlements were cities or not. That is a complex and rich problem, so I will not intend to deepen into it here. I will simply affirm that Mayan settlement were not only ceremonial centers, they really were cities, real urban centers despite their lack of planning and shallow density.

We know more about the social and political organization during the Late Postclassic and the Colonial times, but virtually nothing about these aspects during earlier times. Archaeologists use to assume that the organization during Classic can be inferred from the information of later historical documents. We know for sure that the king (*ahau*) was the top of the hierarchy and the main contact with the other world, with the dimension of the ancestors. The king was an archaic priest, a shaman, he led ascetic dances and self-sacrifices by bloodletting and self-induced pain while drinking or eating stimulating substances able to open his communication channels with the ancestors. On the *stelae* displayed in public plazas and platforms and on wall paintings, we see lords executing, humiliating or torturing prisoners or captured foreign kings, decapitating them, receiving embassies and sharing meals with court in royal feasts. The dynasties had emblems that were used as glyphic names of the capital cities. Exhausting wars occurred all the time between the main territorial powers, involving all the secondary and tertiary centers. The lineages seemed to have been arranged transversally to the social hierarchy, that means that a single lineage could include royalty, nobles, middle-class and poor people. That allowed kings and nobles to manipulate through the kinship discourse the low-class mass in order to use the people in public activities and monumental construction campaigns. When the social structured collapsed at the end of the Classic, the inferior levels of the "sacred blood" lineages inverted the hierarchy and raised at the top of the society preparing the Maya world for a completely new and reformed epoch.

One of the most delicate and complicated issues of the Maya history and archaeology is the religion. At a first glimpse, there seem to be far too many gods in the Maya pantheon, complicated by the typically Mesoamerican syncretism and dual religious system. With so many temples, everyone would expect a multitude of deities. Nevertheless, we can name some of Maya gods: Itzamnah (dual god, god of the heaven, creator, god of the original swamps), Ix Chel (goddess of the Moon, of the catastrophic rains, of birth), K'awiil (spirit or god of the royalty, protector of the dynasties), K'inich

Ahau (god of the Sun, of the day, possible hierophany of Itzamnah), Nal or Yuam Kax (god of maize), Yum K'imil (god of Death and Underworld), Chaak (rain god), Ek Chuak (god of the roads and traders), Kukulcan (the feathered quetzal, the Late Maya version of the Toltec and Aztec Quetzalcoatl) and many others. These are supposed to be the Maya gods as recognized by the today literature. Nevertheless, there are some serious problems with this pantheon. First, all the information we have about these gods comes from Postclassic and Colonial sources. They all seem to have Mexican influences from the Highlands and, in addition, only during the last part of the Maya history we can notice certain ordering of a polytheist pantheon. Second, during Preclassic and Classic times we do not even have clear information about specific gods! None of the thousands of Maya temples alludes to any of the known gods or to any other anthropomorphic gods. The only category of supernatural beings alluded in epigraphy and iconography is formed by kings, ancestors, spirits and hermetic calendar deities. The temples were dedicated to kings, to dynasty events, to cosmic events, but not to gods. Until the Postclassic and the arrival of Central Mexican influences, the Maya religion was a shamanic one, a religion based on the continuous communication of shaman-priests and shaman-kings to the world of spirits and ancestors. A religion that rose around the sacred image of the monarch. After the radical transformations suffered by the Maya society at the end of the Classic, the crescent influences from the Highlands brought the polytheism and systematized pantheons (Baudez 2004).

Some cosmological elements were clearly common to all epochs, as iconography and epigraphy show. Maya universe was divided into two major dimensions, the Heaven and the Earth, the Sky and the Underworld. The Sun, always a major deity in Mesoamerican religions, climbed the six steps of the day pyramid from sunrise to zenith and then the next six down to the dawn, crossing the critical threshold and entering the opposite dimension, the night, stepping over the nine-stepped stair of the underworld back to the sunrise. The earth was square, with the angles oriented to the cardinal points. Every corner had a color: east is red, west is black, south is white, and north is yellow, while the center is of bluish green, the color of jade. On the center of the world, there was an axis, represented as a maize plant or as a *seiba*, the sacred Maya tree. That was the main support of the Earth and the ascending ladder for the souls. In Maya imagery, we can see the dead kings climbing up that axis to the celestial world. On the top of the sacred tree, the Mwuan Bird, metaphor of the skies. Among the tree's roots, the hideous face of the Kawak monster, the telluric spirit. Four other seiba trees supported the four corners of the Earth, with four protective *bacab* deities as sentinels. As mentioned above, the famous Quetzalcoatl (Kukulcan, in Maya), the "Feathered Serpent", did not exist during the Classic Maya history. It is a Postclassic introduction from the Highland cultures of central Mexico. Before it, another snake-like element was present in their beliefs: the sacrificial snake; that was the image of a snake, sometimes only the skeleton, which represented the path that opened during the sacrificial ceremonies between the two worlds. Finally, the famous Mesoamerican ballgame (*juego de pelota*, in Spanish) was not a sport, it was a ritual, a cyclic one. Its function was to represent periodically the epic of one of the most important Maya religious books, the *Popol Vuh*,[6] as we known it today in its Colonial quiche language version. In that text, two primordial twin brothers, repeating their fathers' adventure, went to the Underworld to play ballgame with the Death Lords. After a series of dangerous tests, they are defeated during the play and their bodies chopped and scattered on the infernal waters. They finally reborn as different beings and destroy the Death Lords. A victory of life over death, the same message as in Christianity. That cosmic magic game was played in the majority of Maya settlements and human sacrifices reproduced the ancient defeats.

The subsistence base of that ancient people was, as it remains today, the maize (*Zea mays*). There are many discussions about how much this plant actually involved subsistence, if it was the absolute dominant in the diet or just an important crop among others. Despite any conflictive ideas, corn was a fundamental part of Maya's life. There where many other cultigens of high importance, as squashes, beans, peppers, fruits. Although many of the fruits that anyone can find today in the Maya area (as banana, coconut, lemon, oranges, etc.) were introduced by the Europeans, there were other excellent trees of tasty and nutritive fruits, like mango, zapote (sapodilla), mamey, avocado and so on. One particular tree was of enormous utility to the Mayans: the *ramón* (*Brosimum alicastrum*), a very tall jungle tree whose fruits resembling small yellowish cherries contained a seed perfect for

[6] *Popol Vuh*, in Maya Quiché language (still spoken today in the mountains of Guatemala) literally means "The Book of the Counsel". It was written down in Quiché with Latin characters, perhaps during the 16th century, as a petition from Spanish evangelizers. It is an example of the very few ancient literature that survived. During the Classic Period it probably circulated as an oral tradition in many different regional versions.

making flour. The agriculture was complemented with recollection and hunting. Maya culture did not know domestic animals but dogs, and they used to eat them. Sometimes, Maya residential units had small poultry yards where some captured birds or animals were occasionally raised. Inside the jungle, the white-tailed dear, the peccary (a wild pig), the tepezcuintle (a marsupial) and the armadillo were hunted for food; the jaguar or the puma were holly beings associated with the telluric spirits, but they were also hunted for their skins and trophies used for high-status and ceremonial clothing.

The common Maya agricultural system, still used today in those regions, is known as swidden or slash-and-burn technique. It means people cut trees down, burned them and cleared the space for agricultural field, the *milpa*. Jungle soils are poor and shallow and depend on their forest burden. When forest disappears, there is no source for the nutrients necessary to maintain soil alive and productive, so it decays and washes away. The renewal cycle of an abandoned milpa before becoming a jungle again is of about twenty years, so every year or every second year Mayans had to destroy another parcel while leaving the anterior to be slowly swallowed by jungle again. Nevertheless, there were also intensive techniques, like terraces and raised fields used for agriculture in wetlands, but those systems were very localized and rare.

Maya artifact universe is extremely rich and varied, more than in most of the cultures of the world. For example, there are literally hundreds or perhaps more than a thousand ceramic types and varieties. Mayans seemed to have been obsessed with distinguishing themselves through ceramic types. We have everything: common wares designated for everyday cooking and storage, most of them very simple vessels, nevertheless impressively successful over the time as Maya types survived for centuries; fine common use vessels, for serving food in special occasions and delighting with drinks as chocolate and *balché*[7]; ceremonial high-valued pottery as the extraordinary polychrome bowls (called "Codex-style vessels") incredibly well painted with epic scenes and used in funerary offerings, high rituals and symbolic exchange. There is an interesting contradiction between the amazing number and variety of ceramics and the relative homogeneity of lithic complexes. Ceramics vary during time and especially in space, as every region, every city, every town and village seem to have contributed to the infinite corpus of Maya pottery. Perhaps that is why there is no general study about Maya ceramics in American archaeology, not even one synthetic publication. All we have are particularistic work about the ceramic discoveries in specific sites, usually with bad and contradictory descriptions of the types and very bad illustrations. The study of this kind of artifacts becomes a personal odyssey for every archeologist intending to involve into that field.

From the lithic point of view, things could be considered slightly easier in certain manner. There are clearly less taxonomic units and there seem to be a sort of commodity among the ancient Maya artisans, as the lithic types repeat over time and use to inscribe in a reduced number of forms. One detail is very important: Mayans did not know the bow and arrow during most of their history. Archery appeared in Maya world only during the Postclassic, after the 9th century, when the Mexican influences penetrated the Peninsula. Before that, Maya stone tools used to fit into several large categories: spears, *atlatl* darts[8], hand axes (called *celts*), knifes and grinding stones. Microlithic pieces were common too, but they din not have too much use before Postclassic neither. All Maya stone tools were multifunctional and there are far too few studies about the actual functionality of those artifacts. Archaeological typologies use to elaborate morphologic-technomic taxonomies, assuming implicitly some general functions for the material but without clear scientific approaches about their actual former use. A stone projectile could have been used as a spear or as a knife; a celt could have been hafted in different ways and used for land or wood. Some versions were chipped in form of adzes almost surely used for carpentry and canoa making. Obsidian was a precious trade article, but its use as labor device remained restricted to the upper social groups, while the most elaborate obsidian artifacts normally formed part of ritual offerings and high-status exchange objects. Maya warfare required direct-contact strategies, the battles were carried out with spears and knifes only and almost none body protection, an elite kind of war. By the end of their history, Maya land was almost completely deforested, as they needed more and more space for settlements and agricultural fields. The fire and that simple and magic artifact, the "hand ax", did it all.

[7] *Balché* is one of the most common Maya alcoholic drinks. Mayans did not have a much extended alcohol culture as the societies in Mexican Highlands or South America. But this beverage could offer the needed stimuli in social or ritual circumstances and they obtained it from the juice of a local tree combined with honey as ferment.

[8] *Atlatl* is the Mexican thrower or launcher, the device used to launch short spears to a grater distance than naked arm.

Hypothesis and mysteries of the Maya "Collapse"

It is common to hear in divulgation texts or in TV documentaries: "What happened to the Maya civilization? Why did they disappear?" A list of astonishing reasons from catastrophic diseases to alien abductions helps to keep the mystery alive. Well, first, Mayans did not disappear; there are millions of Maya-speaking people living in Mexico and Central American countries. Second, the "collapse" of Maya world did not mean its destruction, but its transformation into something else around the 9^{th}-11^{th} centuries AD. Third, the problem of Maya`s Terminal Classic mutations remains fascinating even without thinking in extraterrestrial interventions.

An increasing literature about the so-called "collapse" exist today, most of it in English (J.E.S. Thompson 1954, P. Culbert 1973, A. Demarest 2004, A. Demarest *et alii* 2004, A. Demarest 2006, D. Webster 2002, L. Wright 2006). During the last decades, scholars debated if there really has been a collapse, or if the phenomenon does not deserve such a drastic name. From one point of view, we cannot actually talk about a collapse, because that would mean a complete destruction of a structure. From another point of view, the depth and quantities of transformations inside the Maya society by the end of the Classic would properly correspond to a collapse, because the entire social, cultural, economic and political structures became seriously affected and mutated. I agree this last posture, so from now on I will use the word collapse without quotation marks.

Traditional studies about the cumulus of processes and historical facts that led to the final strike against Terminal Classic Mayas use to take into account three major symptomatic characteristics of those times: the failure of the elite-class structure, the apparent rapid depopulation of rural and urban centers, and the fast development of the facts over a period perhaps no longer than a century. The most important archaeological indicators about this events are: the obvious rapid abandonment of major urban and ceremonial centers, especially of temples and palaces; the reoccupation of former religious and political buildings by low-class people using them as homes; the cessation of the major dwelling campaigns and the cancellation of the manufacturing processes of luxury items; the cessation of monumental architecture, of epigraphic stelae and Classic writing systems (R.E.W. Adams 1973, p. 22). In fact, *all* the archaeological data we have about the collapse show it occurred only (or especially) on the high-class levels. It means that when we talk about Maya collapse, in fact we must refer to the plunge of the upper levels of Maya social structure.

Hypothesis about the collapse could be classified in different ways using several distinct criteria. One analytical separation would be between hypotheses that emphasize one or more causes for the collapse. The single-cause theories are proper to older interpretations and the plural causality theories are more common in recent years. As the post-processual archaeological theory sustains, our approaches on archaeological contexts and socio-historical processes must base on the principles of equifinality and pluricausality. That means that one single phenomenon could have been caused by several different causes, and that completely different processes could generate identical archaeological data. A view I agree with, a radically different view from that previously sustained by the now old "new archaeology". A second categorization envision hypothesis that proclaim internal versus external causes. It succeeds the same as in the previous case; in older studies, scholars used to work with internal causes or exclusively external causes, while today we try to integrate models that connect these phenomena with wider regional processes. Many authors preferred to understand the collapse as a strictly Maya event, isolated from the rest of the Mesoamerican world. Now we understand that what happened to the Mayas was the effect of a much larger process that occurred throughout entire Mesoamerica but with more particularized expressions (cf. J. Sabloff 1973, p. 35-38).

There are two great and opposite sides of the collapse problem: the ecological versus the social explanations. There is not necessarily an ontological rather political separation between them. Most of the profound studies and reflections on Maya collapse developed during the three decades following the half of the twentieth century, especially by U.S. scholars, during the Cold War. Julian Steward (1955) had opened new theoretical and methodological perspectives in archaeological founding the cultural ecology and, indirectly, the modern environmental archaeology. His studies further formed the base for Binford's statements that launched the New (Processual) Archaeology. Climate, nature, environment were strong words during the 60's until the 80's of the last century, so most of the investigations on Mesoamerican social and cultural aspects followed that path. Moreover, the social theories (that inevitably would have involved the picture of social movements, revolutions, rebellions, class conflicts, etc) sounded much too "red", much too socialist, and such postures would not have been too dear to American archaeologists living on the western side of the Iron Curtain.

Thompson's social theory was the first and remained for long the most cohesive explanation of that kind (J.E.S. Thompson 1954).

The ecological theories insist mainly on climate changes, droughts, hurricanes, earthquakes, and diseases. Actually, some archaeological data in the southern Maya Lowlands show that some climate changes manifesting in major droughts may have been a cause contributing to serious environmental crisis. All the other mentioned causes are very improbable as the phenomena they refer to only occurred on localized spots across the Lowlands. There is no trustful data about any ecological catastrophe able to shake by its own the entire Maya social construction. The ecological causes obviously contributed to the final of the Classic Maya, but they must be considered in combination with social causes.

The Mayans were not perfectly but well adapted to their environment. There are curious theories as Meggers' (1954) that assume that there is a contradiction between the reduced agricultural potential of that region and the increased complexity of the society, and that led to an inevitable disequilibrium; in addition, probably Mayas developed their cultural sophistication outside the Lowlands in some other more prolific areas and settled it there a posteriori. Such theories practically situate outside the common sense. Maya culture survived successfully for at least two millennia before its major transformation and continued to create impressive developments afterwards, during Postclassic until the Spanish arrival. Thompson's theory alluded above considers that by the end of the Classic the exploitation over the peasants and low-class social groups increased too much and that caused a final rebellion against the ruling class, destroying the former social and political order. This famous author, one of the great pioneers in Maya studies, also added external causes as the use of Mexican mercenaries in order to restore the order, followed by an increasing militarism and the transformation of the traditional values, the loss of trust in rulers and gods (J.E.S. Thompson 1954). I have doubts about these last arguments, but fully agree the main aspect of thompsonian theory: the excessive exploitation of the inferior social groups by a parasite ruling class depending on the trans-mesoamerican trade routes of status items and on the fragile ideology of the holy lineages.

The collapse actually occurred in the Lowlands, mainly. It affected less the Maya Highlands or at least in a different and less known manner. Moreover, the northern Yucatan Peninsula remained as peripheral during the Classic developments in the southern Lowlands of Mexico (Campeche, Tabasco, Quintana Roo), Belize and Guatemala. The Yucatan region (roughly corresponding to the modern state of Yucatan) was the place where the Maya culture revived after the collapse and where the Central Mexican influences manifested stronger. Chichen Itzá, the most famous archaeological and tourist site, flourished during the Postclassic, centuries after the Lowlands collapsed. During the Classic, the contacts between Mayas and the rest of Mesoamerican were strong although little known by archaeologists. Teotihuacan, the enormous metropolis in Valley of Mexico, next to modern huge Mexico-City, was the cultural and economic capital of ancient Mesoamerica, especially from first until 7th centuries. Teotihuacan had emporia in Maya lands and monopolized trade routes and obsidian mines in Guatemala and elsewhere. Complicated traffic routes depended on Teotihuacan leadership and those routes moved not only subsistence goods and raw materials, but also something equally important: status items. Feathers, furs, precious stones, precious metals (although gold was scarcely used by Maya), jade, high-value obsidian artifacts, power and authority emblems, elaborate hairdresses, all of them vital objects for the maintenance of the official "show-business" in the ceremonial parades of Mesoamerican centers. Elites depended on them, because the elites were interconnected by alliances and by showing off powerful contacts and vassal ties. By the year of 700 AD, Teotihuacan collapsed, as many other states, across the entire Mesoamerica, begun to plunge. The Maya collapse is the particular manifestation of a continent-scale phenomenon.

When the regional networks started to shortcut, elites in Maya region felt the absence of special foods, special items, special treatment and the vanishing of fancy political shields. Wars between Mayan states became pathological as archaeological data show in more and more sites every year. Genocides and massive executions of members of royal families prove extreme political crisis. The environment had already been destroyed in previous decades by excessive slash-and-burn agriculture, by enormous need for timber because of dwelling campaigns, because of alarming demographic increase, and cities practically unite one to another over a nude landscape transformed in savannah (C. McNeil 2005). By the 9th century, in Terminal Classic times, the jungle had disappeared, the humidity decreased, droughts became common and the winds increased from both coasts. In this context, ruling groups increase their exploitation, ask peasants for more food, more rituals, and more offerings. Common people, who probably practiced slightly or radically different

familiar religious beliefs, lost any faith in their rulers and in the official religious system based on the praise of the rulers. The wars must have been the perfect milieu for the social uprising. The bottom levels of the sacred lineages must have led the rebellion. We will never know where and when it started, but it swallowed the entire region extremely fast. The destruction of the socio-political structure of the major states (Tikal, Calakmul, Palenque, etc.) must have conducted to a snowball effect among the rest of political entities. The few skeletal remains of low-class inhabitants of that period show bad nutrition, infections, anemia, hunger, extreme physical effort. The image of a social collapse.

The archaeological research I undertake along the Candelaria River in southwestern Yucatan has lots to do with the collapse. My discoveries begin to sustain the social explanation of the phenomenon, as the findings of other similar projects do. It had started as a regional survey project, when an accidental discovery led to an emergency excavation and from there the entire story changed and absorbed us into an intriguing history.

The region of study and the reasons for starting a research there

Candelaria once was a heavily forested ecosystem, with numerous areas of wetlands along the riverbed. The average altitude of the region goes from only a few up to 50 meters above sea level. Smooth hills plot the landscape; they are of maximum 100 m high. The river is long and sinuous. As told above, it comes from Guatemala as San Pedro River and joins the Caribe River in a place called Bocas Santa Isabel, forming together the Candelaria. It snakes across the southwestern corner of the Yucatan Peninsula changing its direction from west to south, from north to west and it finally reaches a small lagoon, Laguna de Panlao, connected to a bigger one, the Terminos Lagoon, the entering door to the Gulf of Mexico. The riverbed is wide and deep, from 50 to 200 m wide and up to 30 m deep, a true scar into the calcareous yucatecan bedrock. The wetlands (*humedales*, in local terms) border the river especially on its north shore and become more dominant just on the middle part of the basin where this investigation is undertaken. There are wetlands also on the upper and inferior course of the river, but their incidence is not as important as on the middle sector where the river actually disappears and melts into hundreds of capillary channels, swamps, lagoons and mangrove tunnels. That is the El Chechén Wetlands region, a labyrinth of aquatic paths crossing a magic and fascinating landscape with surviving jungle patches, mangroves, and *cibalares*, the vast extensions of tall aquatic grasses full of crocodile nests and dangerous snakes, animals that are far away from extinction.

The temperatures average 28ºC during a year, but during the humid summers or during the dry winters, the thermometer seldom raises up to 55º or 60ºC where we do our fieldwork, combining with 90 per cent humidity. These extreme values became usual in the region because of the accelerated and aggressive deforestation during the last century. Candelaria city and its rural surroundings were founded during the third up to the seventh decades of the twentieth century. Before that, the region had stayed uninhabited for three hundred years. After the Spanish conquest, the catholic monks faced great difficulties in penetrating the area, in crossing the enormous jungles and sail over a river full of natural traps, so the evangelization seemed practically impossible. Consequently, they persuaded the Crown to decide the complete move of the entire local Maya population to the coastal harbor of Tixchél, a former Postclassic successful economic center. From the seventeenth century, the region remained human-free until the official colonization during the twentieth century when the federal Mexican government decided to populate the Candelaria region as a solution for the land and agrarian crisis in the northern desert regions of the country. That was the beginning of the end for the native ecosystems, because the new colons, unfamiliar with the exuberant local vegetation and accustomed to the open spaces of the northern deserts, began to cut all the trees around in order to create pastures or simply because they could not stand so many trees in front of their eyes[9]. Today, Candelaria county is mainly a cattle-ranching region (especially cows and sheep, and exclusively for meat), with almost no agriculture at all, but with a good exploitation of aquatic resources by fishing. Despite the five decades of extensive cattle-farming and continuous deforestation, the jungle survived in distinct portions of the area, especially around the wetlands. The swamps are not good for cattle raising neither for agriculture, so the humid ecological niches (swamps, mangroves, lagoons and rainforest) remained almost untouched over important surfaces.

[9] It might sound incredible, but this reason is sustained by the very inhabitants of the Candelaria River. The jungle was something bad, evil and annoying for the desert-born people arriving to the region, so everybody started to make the jungle vanish.

The first explorers and professional archaeologist invaded the Maya Area almost a century after the official and spectacular discovery of that culture by the adventurers J. L. Stephens and F. Catherwood during the nineteenth century (J.L Stephens 1843[10]). Curiously, the Candelaria River remained almost unexplored for nearly another half of century. There are two main causes for the situation. First, because the region has been depopulated centuries before and there were no locals available to guide the explorers into the renewed jungles. Second, because the archaeological sites in the region were not as big and monumental as the rest of the Yucatan Peninsula and the Peten Lowlands, so it did not attracted the explorers the same way. Of course, local people and traders knew about the presence of great number of lost cities along the Candelaria River, as chicleros[11], hunters, looters and wood traders wandered the zone. Nevertheless, the information did not reach the academic circles.

E. W. Andrews (1943) approached the area while surveying the southwestern Campeche and traveled along the river. However, he did not reach the El Chechen Wetlands, perhaps because of the difficult access in those times when no roads existed in the region. Later, several other surveying projects envisioned the region and reported a great deal of archaeological sites, but none of them insisted on the specific micro region we are investigating now. There were mentions about the existence of the sites, some authors even named them, recollected surface sherds, and elaborated quick incipient planimetric maps (A. Siemens and D. Puleston 1972, J. Eaton 1978, S. Pincemin 1989, L. Ochoa, E. Vargas 1985, S. Pincemin 1993, E. Vargas 2001).

The first reason for commencing an archaeological research on the middle course of the Candelaria River was the lack of any systematic studies on that part of the Maya territory. The abundant and lasting investigations in northern Yucatan or Petén or any other surrounding region contrasted with the lack of knowledge about the archaeology of the wetlands of Candelaria. A second reason was that the ancient settlements in the region seemed to be of less size and monumentality than the usually explored Maya sites and I wanted to contribute to the study of minor settlement levels. A third reason was personal, as I knew the region from a previous participation in a research and I maintained a close interest to that unusual area. Finally, a political reason: there was little or no academic struggle in the region, so I felt it was a peaceful territory from that point of view.

The Candelaria basin was more familiar to the historians than it has been to the archaeologists. That was because the region used to be mentioned in connection with Late Postclassic, Contact and Colonial Events. That was the legendary Acalan Kingdom of the Putun people. The Putun (also known as Chontal) were a Maya group that probably came from the Caribbean coast during the intense migrations that followed the Collapse. As Maya oral tradition compiled during Colonial times affirms, the Putun conquered local political entities and established their urban centers in Potonchan, Tixchel, and Itzamkanac, their capital. Fellow archaeologists consider that the original Itzamkanac, capital of the Acalan-Putun people is the actual site of El Tigre, some 40 km upstream from our research area. The name of Acalan actually comes from nahua language, spoken by the Mexica people (the Aztecs), and it means "place of canoes", alluding to the main art of the putun: sailing. The Putun Mayas were the major traders of the Postclassic world. They also worked for the Aztec Empire, a superpower dominating inclusively the Maya region from the remote capital in Tenochtitlan, where the modern metropolis of Mexico-City. The classic wonderful work of F.V. Scholes and R.L. Roys (1968, 1996) present us an historic and analytic view about the Postclassic and post-contact historical picture of the Candelaria River. The Spanish conqueror Hernan Cortés was in Candelaria, he lived briefly in Itzamkanac while traveling to Honduras in order to suffocate an internal army rebellion against him. In that very city or somewhere closely he executed the last Aztec king Cuauhtemoc, a prisoner in his cortege. Nevertheless, the amount of historic data referring to the Postclassic strongly contrasted the actual lack of Postclassic material in the archaeological data recovered in the region. That was another intriguing cause for my decision to investigate the region.

The first steps of the research

In 2002, I started to analyze the available bibliography for the southwestern Campeche and the Candelaria region and I began to delimit the future investigation area. I noticed there was one archaeological site previously visited by modern explorers (S. Pincemin 1993), El Chechén, and I

[10] That was the first edition of Stephen's astonishing book *Incidents of Travel in Yucatán*, but today the interested reader can consult the 1963 Dover edition or any subsequent original and translated editions.

[11] "Chiclero" is the word used to name the people who collected the natural rubber (chicle, caucho) from the bark of a special zapote tree.

decided to start my project from that point. With funds from my university, I bought topographic charts and air photos from the Mexican National Institute of Statistics, Geography and Informatics (INEGI), a federal institution that owns and maintains an amazing database. They have actualized maps, charts and aerial photographs, in impressed and digital formats, for the entire national territory. Together with my undergraduate students, I started to analyze stereoscopic air photographs and identify the major architectural basements (the pyramids) visible as small round elevations. In Mesoamerican archaeology, we have that advantage: almost all the cultures erected their buildings on top of short or tall platforms trying to avoid flooding and stress status. These platforms survived for thousands of years, so most of the architectural units stay visible on surface. Air photographs analyses is useless if the sites are covered by dense vegetation like jungles. In our case, the region is deforested in more than fifty per cent, so the archaeological features are visible on the anthropic savannas covered by grass. Anyway, this technique is only useful for marking the presence or absence of a settlement, because only large structures are visible from the standard flying altitude (about 3500 m). In this initial phase, we confirmed the existence of a major settlement where previous scholars mentioned the site of El Chechen and discovered the existence of at least two other important concentrations of large structures to east and southeast. That helped us define the general shape of our surveying area, so that the three main pyramid concentrations fall inside.

In the summer of 2002 and the spring of 2003, I made my first initial trips to the region, 1800 km away from my University. The scope was to observe on field the actual existence of the sites and establish the first contacts with the local people. All the land is private property, large *ranchos* of dozens or hundreds of hectares entirely used for extensive cattle farming. That means that cows roam freely over large extensions of pasture introduced after the systematic destruction of the jungle. The contacts were positive, owners gave me permission to trespass their lands and the local city council offered us logistic and financial support. After that, I wrote the project design and presented it to the National Council or Archaeology (CNA), the superior organ in archaeological matters included in the National Institute of Anthropology and History (INAH). No surveying, excavation, or artifact analyses can be done in Mexico without the written permission of this institution. And the permit must be renewed for every campaign.

The fieldwork

From 2003 to 2005, we had four field seasons (see C. Ardelean 2005, 2006). The investigations commenced in the site of El Chechén, the eponym site of our project. There is no connection between its name and the former soviet country; it is just a strange phonetic coincidence. "Chechen" is a Maya word referring to a species of tree, common in the region. In Maya, *che* means wood, timber, and *chen*[12] means well, water hole. This is a sort of an oak, a precious wood that grows in tropical environments near to rivers, lakes and swamps. There are two variants, the black chechén (*Metopium brownei*) and white chechén (*Sebastiana longicuspis*). This tree was long exploited for expensive furniture manufacturing. There is a special detail about the tree. Its sap is highly caustic and it may cause serious burning-like injuries on skin, penetrating into the flash. The name of the ranch that contains the site comes from the tree, and it extrapolated to the site itself. During one of the field seasons, I decided to give this name to the entire wetland region, and that is how this regional project got its name.

The main methodological component of the project was surveying. The first objective was to identify the totality of the visible architectural units of the sites, the site limits, to name and register the structures[13]. Starting from the core of the sites where the main buildings concentrate, we investigated every inch of the site until where no structure was visible anymore. The structures were named with the letter E and a number: E1, E2, …, E45, etc. In each case, a label was provisionally attached to a nearby tree for further visual identification. Every structure was recorded on GPS, by standing on the top of the mound for about five minutes, allowing the device to obtain correct signal and stabilized data from the satellites. During the surveys, we had to employ a few locals or members of the owner's family who knew the place perfectly. We all used machetes all the time because we seldom needed to cross extremely dense portions of high tropical pastures and young jungle segments.

At the same time as surveying and mapping, we did surface material collecting. We recovered every possible ceramic fragment or lithic instrument visible on surface, recording its precise location.

[12] In Romanian, the word must be pronounced "cecen".
[13] We use the term "structure" (*estructura*, in Spanish) to refer to any archaeological dwelling visible on surface.

Those were our first cultural and chronological indicators. From the very beginning, we noticed the dominating Late and Terminal Classic stuff, especially common ceramics. Nevertheless, there were also Preclassic materials showing up, the clearly diagnostic Sierra Red ceramics, good quality fine-slipped sherds indicating Preclassic occupation all over the region. That meant our sites had occupations from as early as 2nd century BC until at least 9th century AD, the time of the collapse. In several occasions, we had the fortune to discover *chultuns*, the Maya's subterranean storage rooms. Those are bottle-shaped holes carved into the soft calcareous bedrock beneath the thin soil, with narrow circular mouth on surface level. The internal walls could be covered in mud or plaster for isolation, but that was not a rule. Originally, they had a capstone sealing them, but in most cases, the lid is missing. Mayans used them to storage food, water jars and personal belongings. Today, farmers fill them with earth or garbage in order to avoid accidents for their cattle. That is a good practice, because it prevents or slows further damage. We numbered chultuns like CH1, CH2, and so on.

We also explored the wetlands properly. Using an engine boat, we studied the swamps, the mangroves and the flooded jungle fragments. No isolated structures or ancient farming facilities were discovered, but it is highly probable that the wetland conditions might have mitigated their presence. Nevertheless, we discovered an important but small settlement on a sort of island, a spot of dry land among swamps and mangroves.

The result of our surveys consisted of four Maya archaeological sites, and all the information suggested by the previous cartographic and air photo analyses was confirmed on the field. The four main sites are El Chechen, El Astillero, Las Palmitas and Isla Montuy (fig. 2). The last one is the small village discovered beyond swamps. Two other sites were recorded, but they surely are peripheral sectors of the major sites. El Palmar is an individualized northwestern sector of El Chechén, while El Achotal is a specialized craft sector of Las Palmitas. More than four hundred architectural structures were recorded in the four settlements together. That number indicates a very low population even if all the structures were all in use at the same time. Of course, many perishable non-platform huts must have existed across the surveyed territory, but there is no way to identify them by naked eye. The approximate limits of our surveying area enclosed about 50 km². It is not much, but it marks a clearly definable area with a relevant concentration of settlements inside an ecological niche.

It is probably worth mentioning that the architectural units we discover in those sites show no constructive and architectural elements on surface. Everything we see is a mound, a small artificial hill covered by grass and dense vegetation. The medium-size and large structures are easily visible not only because of the size (from 2 to 12 meters high) but also because the farmers do not use to clean them off because the cows do not climb them, so their vegetal cover contrasts the surrounding pastures. Nevertheless, there are extremely low mounds, sometimes only 20 cm tall that are very difficult to identify through the tropical vegetation. In some cases, there are tiny structures that become visible only after the elaboration of the detailed topographic maps. Anyway, the experienced eye can identify even the smallest ruin beneath the dense jungle cloth.

After the complete structure recording, surface collecting and GPS positioning, we reach an important step that happens to be ignored in everyday archaeological practices. Every site must receive its "zero point", the reference point. That is a physical point on the ground that must be permanent and it is indispensable for the future topographic process and excavations, because the entire horizontal and vertical values of the research will be referred to that particular point. This mark has precise geographic coordinates and a registered altitude above sea level. The "zero point" must be carefully chosen, because it must be visible from most of the angles and from most of the important structures. We looked for a good sight position, normally on the floor of the characteristic Maya plazas (squares) but never on top of the pyramids. The zero point must be situated on inferior altitudes so that the pyramids may have higher altitudes than the point, and also because the future excavations on the pyramids could affect or remove the point. Once chosen the approximate location of the bank, we use the GPS receiver to identify the right position[14]. For that purpose, we first set the device on UTM coordinates, because those are metric values, more precise and more easily to manage than geographic degree coordinates. It is recommended to establish the final point where the

[14] It is very important to select the right Datum from the receiver's Menu options. For example, in Mexico archaeologists were used to employ the NAD27 datum (North American Datum from 1927) in GPS and analogue cartography. Today we know that this is not correct, because the starting point of the grid is physically situated on the ground and during the last century has moved about 200 meters on south-north direction. All the GPS coordinates obtained with that datum result displaced from the correct position. So, it is recommended to use more recent virtual grids like WGS84 or ITRF92 datum.

UTM coordinates finish in zeros or easy-to-recognize values. The GPS needs to rest for as long as half an hour on that place so that the computing result more precise and with less error. After its recording as zero point by GPS, some permanent element will be placed to mark the point definitively. It could be a pile of concrete with a PVC tube vertically settled in the middle and filled with concrete. The use of metal is forbidden, because it will affect the compass and transits.

Before topography, we made simple plans of the sites using a Brunton-type professional compass and a tape. The mapping took into account the inferior and the superior contours of the mounds. These plans are very useful in field before the elaboration of digital maps. For the proper topographic mapping, we used two theodolites, an optic and a digital one. I decided not to employ the in-vogue total station because of several reasons: the digital transits do exactly the same job like the extremely expensive total station, the extreme heat, the humidity and the rainfalls would have menaced the integrity of the apparatus, and also because the dense vegetation could have interfered with the laser beam. We had to employ micro-topographic techniques able to reflect the most subtle topographic differences. Back to the university, the field data was processed in specialized software and digital tridimensional maps were obtained[15].

During the explorations in the core area of El Astillero, we noticed that one small structure, an ancient platform, has been recently affected by the construction of a rural road inside the ranch. The bulldozer actually cut it off by the middle. I believe worker's arguments when they say that they did not know that was a structure, because it is very low and almost invisible on the surface. The road left a good vertical profile so I asked my students to clean and draw it. Several plastered floors were visible and more than one occupational episode manifested on the stratigraphy. During cleaning, distal parts of human femurs appeared on the upper levels of the profile suggesting the presence of at least one human burial. The National Council authorized us to dig as an emergency excavation, because the rains could have washed the bones away. That event, in January 2005, changed my project's perspectives and led it to the complex problems of the Maya collapse. There were two skeletons were we dug first and an extensive systematic excavation was planned for the next summer. That operation started with a grid that covered the entire surface of the structure, using a reticule of more than 40 squares of 2 x 2 meters each. A funerary complex showed up and we were facing interesting questions.

The preliminary results of the investigation

This research is only at its beginnings. The high costs and the difficulty to obtain funds in a country where there are literally hundreds of thousands archaeological sites waiting to be studied made us keep away from fieldwork during the last couple of years. The problems and challenges resulted from the first seasons are waiting for their resolution in future campaigns that are about to start soon.

The settlements. It is neither possible nor recommended to start a full description of the Maya sites we work on, as it would take a lot of space. Anyway, some characteristic traits must be presented in order to offer a resumed image of the discovered settlements.

El Chechén, the first site we surveyed and mapped, manifests the intelligent use that Candelarian Mayas made of the topography in order to defend their structures against flooding. The site is located exactly on the actual border of the wetlands, and probably in Late Classic times the shore of the water was even closer. The core of the settlement consists of two main spatial compounds separated by wide *bajos* (low terrains suitable to flooding and conserving water after rainy seasons). The main structures are not very tall, actually short by general Maya standards, and do not surpass 8 or 10 meters in height. The spatial distribution of the mounds respects the typical Maya model, with two to four structures closing a small patio (yard) between. A wide and long plaza end with two major structures on its northern and southern extremes; the northern is one of the most representative mounds of the region in shape and size, a good candidate for future excavations (E12). The southern one (E1) is a large and massive rectangular platform with another platform on it. A slightly elevated cluster dominated by the structure 2 defines the western side of the plaza. The type of that structure is a particular characteristic of the region: a rectangular platform that supports the actual ceremonial building on one of its short sides, having an additional small structure on one of the corners. Confusion persists about the architectural styles of the El Chechén region. As we have not developed yet extensive excavations in any major structure, we do not know if they are only stone-

[15] For that purpose, we use the ArcView and Surfer programs.

and-earth basements supporting upper structures entirely made of perishable materials or if they really contain, beneath the debris, the remains of masonry buildings.

The "sunken patios" are an interesting characteristic of the site. These are small patios whose floor level appears to be much lower than the rest of the surrounding areas; they are bordered by small structures and seem to have funnel-like shape on one corner. I think these are a sort of artificial bajos, artificial depressions as additional water-managing devices made for absorbing the excess of water during flooding. The water could have been used to simulate mythical aquatic environments for ceremonial purposes.

El Chechén has several residential sectors, some of them very close to the nuclear area and others located at considerable distance, across the great-flooded area that occupies a major surface southeastwardly. The spatial pattern is of very low density. Nevertheless, the most important residential compounds situate immediately south and southwest from the core and present good-size mounds which might have supported large pole-and-thatched houses, probably an elite residential sector.

At about one and a half km to the northwest, the small sector called El Palmar ("place of palm-trees", as the rancho is called) seems to be a related site, probably a specialized sector or a residential compound separated because of political, religious or kin-related criteria. It has several medium-size mounds and about a dozen of very small, almost invisible residential platforms. The typical swampy intrusion separates the site in two groups; the northern one has a very long and narrow platform, probably supporting a series of perishable huts. More to the north, close to the edge of the dry land, there seem to be an area presenting debitage debris, probably the remains of stone tool manufacturing workshops.

About five km to the east, the settlement of Las Palmitas ("the small palm-trees", by the name of the nearby hamlet) raises its acropolis-like nucleus at the periphery of the site, on a natural hill, between a stream and a small lagoon. That lagoon is now dry most of the time, but in prehispanic times it probably connected with the rest of the wetland system allowing Palmitas an access to the riverbed. There are several interesting features about this settlement. It has its ceremonial core up on a small hill, like a veritable acropolis, not a very usual trait in the area. Moreover, this ceremonial core is located on the southern periphery of the settlement; the site develops northwardly, along the lagoon shores and over the slopes of the smooth hills facing the lagoon. The site goes for more than two km in that direction; at least that was the reach of our survey. Usually, the ceremonial nucleus is located in the center of the settlement or at least there are residential compounds all around it. In this case, there is no archaeological presence across the small seasonal river that borders the nucleus on its southern and western sides.

The monumental core itself has a typical Peten-like aspect: great plaza surrounded by tall structures. The main pyramids rest on large massive platforms around the Great Square. We assume them as temples, as the usual interpretative inertia in Maya archaeology. E1 closes the plaza on the western side; it is 12-meter tall, steep-sloped and well-preserved contours beneath the ruin shell that covers it (fig. 3). Worked stone blocks seen between the debris suggest there are masonry walls and stone platforms under the dirt. E2, on the northern side, is of that typical local style, a large platform sustaining a pyramid just on one of the short sides and that leaves room for a wide surface on the resting platform floor facing northward. There are visible staircases on the western slope of the platform. A large pyramid severely looted during the 70's of the twentieth century (as the locals confess) forms the eastern closing together with another two smaller structures. Behind those buildings, the eastern slopes of the acropolis descend into a posterior and lower plaza that connects the ceremonial core to a fascinating building: the Palace. This is the structure 23 and I consider it a "palace" because it closely resembles the typical residential and administrative elite building of the Lowlands, as there are in Tikal, Calakmul, Palenque and elsewhere. It consists of two and a half groups of low buildings enclosing inner patios between them. They link together as the patios share structures. A human femur found on surface suggests human burials inside. That probably was the residence of the local ruler and the siege of the political power. As far as I know, it is the only building of its kind in the Candelaria region.

The small site of El Achotal ("place of achiote", the name of a bush whose fruits are used to elaborate a spice) was thought to be a small village dedicated to stone tool production. It situates to the northwest of Las Palmitas, on the shore of the wetlands. Our surveys during the last field season proved that it actually might have been a sector of Palmitas' urban area. El Achotal is a very interesting site, because it is almost surely a complex of lithic workshops. It consists of several small mounds but all of them are associated with debitage accumulations and lithic pre-forms of flaked

cherts in various stages of production. Actually, most of the mounds could have been storage facilities where raw material and nuclei where kept. There is a close analogy between the Achotal mounds and the famous "chert mounds" reported in Becan and around the Río Bec region (P.M. Thomas 1981, M. Thompson 1991).

A similar settlement is Isla Montuy ("island of Montuy", the name of one of the first colons in the region), located about three km north from El Chechen, across a vast portion of the wetlands. The settlement rests on a small dry portion of land surrounded by mangroves, swamps and river channels. It consists of three groups of structures separated by *bajos*. Here the surface materials seem to support an exclusively Postclassic occupation. That means that probably this settlement lived long after the other towns disappeared. The mounds are very small and low, although some of them are almost 2 m high. The distinctive feature of the site is the great number of native chert flourishing from the bedrock and accumulations of debitage in numerous spots over the island. Despite that, very few unfinished tools were recovered from surface. Careful analyses and excavations could further establish the function of this late village.

El Astillero is perhaps the most important site of our area and it is about 3.5 km southeast from El Chechén in straight line. Its name usually means shipyard, the place for making boats, but in this case, it refers to a homonym, a place for "astillas", the Spanish for splinter, chip. A name that alludes to the accelerated deforestation started from the first decades of the twentieth century even before the massive colonization. Mexican and foreign companies exploited the rainforest for timber and "palo de tinte", a precious wood used for extracting natural pigments for cloth industry. The El Astillero stream, which during dry season is simply a dry bed scattered with puddles, while in rainy seasons it grows enormously, reaching more than 50 m wide and 2 m deep, crosses the site. In ancient times, it must have had a more stable and equilibrated hydrological behavior. The locals affirm that during the peak of the wood exploitation, the large and heavy logs were transported floating along the stream to the Candelaria River and then to the Terminos Lagoon and the Gulf of Mexico to be shipped to Europe and other parts of the world. That could suggest that in pre-Columbian times the Astillero riverbed was even more active and suitable for navigation as the main connection route of the inhabitants with the rest of the basin.

The little river forms the axis of the settlement and crosses its most important area. First coming from east it turns north, borders the eastern side of the low platform that sustains the core of the site and then forms a loop pointing west; inside its trajectory it delimits the nuclear sector of the site that unites the majority of the civic-ceremonial buildings. We already see an interesting sharing feature of the three main settlements of the region: El Chechén erected its temples and civic buildings very close to the swamps, bordered by large natural bajos and artificial water-regulating patios; Las Palmitas has its administrative and ceremonial sector on the southern periphery of the site close to the local stream that connects it with the lagoon and the wetland system; El Astillero repeats the model and approaches its nucleus to the available communication artery.

There are about two hundred mounds in El Astillero. They cover about eight km², four km from east to west and about two from north to south. It is not much for Maya standards but it is a usual, even large size for the local referents. If the majority of the structures were in use at the same time and adding at least half that number of perishable non-platform huts inside the jungle, then the original population of the site could have reached about one thousand inhabitants, but definitely not more. When we hear about approximations of sixty thousands or hundreds of thousands in major Maya metropolis like Tikal or Calakmul, the estimations for El Astillero sound ridiculous. Nevertheless, we must consider several factors, as for example that the traditional demographic estimations use to be exaggerated and ignore the problem of the functionality and time-correspondence of the structures. Moreover, as I will stress below, the sites we study along the Candelaria River seem to have lasted less and managed different socio-political dynamics than in the core of the Maya Lowlands. El Astillero divides its nuclear area in two: one is west and south of the loop of the river, the other is east and north from that. The architectural structures south of the river seem to be of higher importance in civic and ritual activities, while the opposite side was useful for elite residential purposes. The local pyramids are of similar or perhaps slightly less height than in Las Palmitas and they dispose in two different manners. On one hand, those pertaining to the main concentration in the core, as the E1, E4, E7, massive structures of about 8-10 meters high. On the other hand, lower pyramids dispose along an east-west line tangent to the core in the south, in an "autonomous" clustering. The small architectonic group including the E27 (where burials were found) is part of that elongated southern cumulus of relevant buildings.

Crossing the stream to the east, the last residential mounds are behind the modern facilities of the ranch, that is no more than 400 m. To the west, the shallow border of the site consists of the constant decreasing in mounds density until there are only a few small platforms on top of low natural elevations. It is interesting to say that a final architectural group dominated by a fine pyramidal dwelling close to a natural water-containing depression marks the northern periphery of the site. Beyond that, there is not a single hut. This is a characteristic settlement pattern trait shared with its neighbor Palmitas, whose northernmost clusters mark the extreme extensions of the site close to the river. The presence of these possible temples on the margins of the sites is an interrogation that will be worth investigating in the future.

South from the nuclear zone and south from the stream and the modern infrastructure of the site, on the northern smooth slope of a low natural hill, there is an important residential complex formed by articulations of platform-and-patio groups of medium and large residential structures. Some of the mounds, more than 30 m long and about one and a half meters high, resemble the residential sector located south of the ceremonial core of El Chechén. Still southward, where the residential complex seems to finish, there is a large segment of the original jungle, curiously intact among completely deforested savannas. Inside the jungle, there is only one mound. Then another small stream running from east to west, probably connecting somewhere with the Astillero stream. Beyond that small stream, there is not a single archaeological trace. Perhaps like in Palmitas, this might be a stream that marks a border, the final reach of the community, its buffer zone with neighboring sites. It is important to remember that about 10 or 13 km southward from that point, starts the great settlement of El Ruinal ("place of ruins"), one of the most impressive ancient settlements of the region.

The surface archaeological materials consisting as usual of many potsherds and intact or fragmentary lithic instruments show the same general cultural and chronological panorama as in the previous cases. All the materials are typically Maya artifacts corresponding to Late Preclassic and Late or Terminal Classic epochs. Practically, as the excavations also confirmed, there are no truly Postclassic materials, so the sites were abandoned by that time. In general terms, our settlements were surely inhabited with more density from the 2nd century BC to the 3rd century AD and then from the 7th to the 10th centuries AD. That does not mean there was an occupational gap during the period between, but the surface materials show only weak presence. Anyway, surface archaeology by itself is never a trustful confident.

A few hypotheses about the spatial relationship between the settlements. I mainly think about the relationship between the three major sites: El Chechén, Las Palmitas and El Astillero. The small village of Isla Montuy probably forms part of distinct dynamics from later times. The three mentioned sites have similar sizes, comparable structure and probably equivalent number of inhabitants. Maybe around four thousand people, as a maximum, inhabited the territory defined by the three urban or proto-urban centers to the end of the Late Classic. There is no enough space to commence a polemic and never-ending discussion about the pro and contra arguments of the urban character of these sites. But something is sure: they had a small population, a reduced number of monumental building, they had still wide-opened and sufficient public spaces in their core areas and were the residence for elites and commoners. The interesting aspect is the blind separation between sites; that means there are wide structureless territories separating the settlements. There are no visible mounds between El Chechén and Las Palmitas, or between El Chechén and El Astillero, neither between Las Palmitas and El Astillero. Small archaeologically invisible huts could have plotted the zone, but I seriously doubt that those would have been residential facilities counting for the demography. In 1999, I excavated a Late Classic temporary agricultural hut on a small island in the middle of the swamps close to Pozas de Ventura, a site located upstream, some distance from our research area. That hut, even as a little temporary facility used as a storeroom and a refuge against storms, had a strong basement. In a wet environment like Candelaria, it is expected that any dwelling had at least a small solid platform beneath. Moreover, such a neat spatial separation between sites is unusual for such late dates, as in the most part of the Maya area the Terminal Classic was marked by overpopulation.

I believe that there must be a direct and common-caused relationship between the empty spaces between sites and their relatively not crowded nuclei. I manage a series of hypothesis to approach the issue. First and the most important hypothesis, is that the Middle Candelaria settlements were relatively young. The population did not grow too much and there was no necessity to expand beyond some traditional borders and invade neighboring territories. I am sure that property relationships functioned well in Maya society although we have little possibility to identify them archaeologically. Verbal agreements and customs established the territoriality of the communities

inhabiting the various settlements. Rivers, lagoons, streams must have been obvious territorial markers. The low population allowed the three neighbors maintain their frontiers. Inside the city, the political and social situation could have been more stable than in the major Mayan metropolis. Less dynastic shifts and less socio-political segregation allowed them maintain a more quite spatial anatomy in the nuclei. There was no need for continuous public building construction, as the rulers did not change so often. In addition, the religious spectrum might have been less construction demanding. That relative stability maintained the settlement pattern less crowded. This conjuncture could be tested by further fieldwork and very careful analyses of the data. A second plausible hypothesis claims that the sites were of inferior range and the population did not congregate in minor centers because of the socially absorbing effect of the major cities from Peten and other densely populated regions. The minor rank did not allow the local elites to develop large architectural works or made no necessity for it. Politically speaking, the three sites were vassals of larger political units and their territorial politics depended on higher decision-making levels. A third hypothesis might suggest that, independently from the socio-political aspects, the apparently empty spaces between the sites were agricultural fields and forests used for subsistence means. These crop fields and jungle segments for hunting and gathering were subject to territorial and use agreements. This is a verifiable hypothesis by palaeobotanic and soil analyses. A fourth hypothesis, the less probable one, claims that the empty territories were frontiers, buffer zones implemented to separate three potentially conflictive political entities. This is a hard-to-contrast hypothesis and the less probable if we see it through the facts we already know about Maya political and territorial behavior. Anyway, some other new hypothesis could occur during the next phases of this research, because, as K. Popper suggests from the positions of the falibilist epistemology, the data we find during our scientific investigations generate conjunctures that are further contrasted with empirical data on field and so on.

The excavations

During the surveys of the nuclear zone of El Astillero in late December of 2004, we noticed an almost perfect profile cut through the middle of a small platform during the construction of a road a couple of years before. The owners of the ranch decided to move the original road on a higher position to avoid its flooding and the bulldozers destroyed the entire northern half of the low structure we named E27. The small structure rests on the northern side of a compound formed by a relatively tall pyramidal structure and three low rectangular structures arranged around a plaza. The group stands over a large terrace just above the eastern shore of the Astillero stream. My students cleaned the vegetation and the profile and proceeded to the drawing of the 12 meters-long stratigraphy recording ten stratigraphic units corresponding to successive *sascab*[16] floors and filling layers associated to distinct constructive and remodeling phases. The small building knew at least four construction phases but there are no clear traces of demolition or abandonment (C. Ardelean 2006).

There are at least four sascab floors visible on the profile. Between them, there are different kinds of fillings, generally consisting of dirt, garbage, potsherds and riverbed stones. The most recent floor (stratigraphic unit 2) is about 15 cm thick, very compact and of smooth polished surface. On the profile, that irregular hard and compact fill made of earth, stones and rich broken ceramics covered that floor. The fill seemed to be directly under the humus and there was no trace of posterior floors on top of it. We felt strange that such a compact layer had nothing but humus above and started to suspect that some other posterior phase existed on top but was washed away by the high erosion parameters of the region. That last sascab floor had had an immediately previous phase represented by a similar floor covered by a thin leveling of clay and small stones as a preparation for the next thick floor. At about the middle of the profile there was an erosion cone produced by the material accumulated by water erosion after the falling of a major stone or maybe a tree from the edge of the profile. That deposit was full of mixed archaeological material, mainly ceramics and bone fragments. Above that, just a few centimeters below surface, two long human bones, apparently femurs, were clearly visible. That was how we decided to program a rescue digging in order to retire the human bones or perhaps a burial menaced by imminent further erosion. At the beginning of that excavation, we did not think about anything else but a fast rescue excavation, mainly because that was a survey project with no excavations among its immediate goals. We were in the middle of the topographic mapping of Las Palmitas and El Astillero simultaneously and there was still lot of work ahead.

[16] The *sascab* is a fine and soft calcareous rock typical for the Yucatan Peninsula. It is of bright white color and is extracted as white dust from the low hills of the region. In Mayan language, it means "white earth".

We started with a simple 2 x 2 excavation hoping that there was only one buried body. After removing the humus, the extremely compact fill showed up. The earth in that Maya region becomes hard like concrete when dehydrated. It requires slow micro-excavation and continuous careful humidifying because otherwise the large resulting clods destroy the archaeological material inside. The sieving becomes almost impossible, so the careful excavation must replace its function. In addition, the ancient builders had mixed the dirt with stones, sascab pieces and enormous amounts of potsherds, up to a thousand fragments per cubic meter. The intention was to create a solid fill. The first skeleton appeared buried in that fill and we named it Skeleton 1 (figs. 4 and 10)). It was lying on flexed right lateral decubitus, head to the south, face looking east, and the arms along the body; the right arm beneath and the left arm resting over with hands on the pelvic area. The feet and legs were missing from the knees, cut off by the bulldozers and the subsequent erosion. This body and all the posterior similar discoveries have something in common: large and medium-size stones were used to delimit the inhumation hole and fix the body in position. Many heavy coarse stones were put on the head and along the body. The skull resulted flattened. That was a curious practice; it is little known in the Maya area and that is mainly because we normally discover elite burials and these seemed to be low-class people with particular inhumation customs less reported in the archaeological record. The rock material that covered the bodies worked as grinding stones, it fit inside the bodies as flesh decayed and crushed and pounded the bones. It was closely associated with a large cooking pot of the Terminal Classic types, although the horizontal relationship did not made clear if it really belonged to the funerary context or if it simply was thrown in the fill during the construction. The stratigraphic analyses of the funerary contexts of E27 is very difficult because all the dead were buried in the same fill but in different periods of time, and the fill normally contains many ceramics, so sometimes it is difficult to say which artifacts came with the dead and which were thrown with the fill. Inside its mouth, actually behind the chin, we found a tubular bone bead, 4 cm long. It probably was part of a necklace or they placed inside his mouth as payment for the passage to the Underworld. The shape of the section suggests it could be made of human bone (a forearm).

The skeletal analyses have been done recently by Dr. Vera Tiesler Blos from the Department of Bio-Archaeology of the Autonomous University of Yucatan in Merida, a world-famous authority in skeletal anthropology of the Mayans (V. Tiesler 2008). All the related information resulted from her observations. The skeleton one was a medium age adult male with a robust body and some indicators of physical stress as a healed impact on his forehead. It has skull deformation, a widely-used cultural practice among the Mayans. They loved to modify the shape of their skulls by applying increasing pressure over the skull bones during the early infancy, manipulating the form and growth direction of the bones. The practice related to social status but ended as a common practice among all social layers motivated by aesthetic values (see V. Tiesler 1998). Most of the burials in our excavation presented that bio-cultural practice. Another usual practice was the teeth intentional mutilation, present in this skeleton as well in all the other adult individuals. It consisted in the shaping the form of the teeth by filing them down with some instruments (fig. 9). It usually involved canines and incisives and presents various different types. This individual, as well as the rest of the sample, had cronic infectious processes manifested in his bones probably because of diseases encouraged by nutrition deficiencies.

Close to that body, another skeleton appeared soon, lying in extended dorsal decubitus, hands together on the abdomen and with a fine orange bowl inverted over the face. We called that Skeleton 2 (fig. 4). It is another adult male, with serious infectious affections on his legs. He is oriented in diagonal with respect to the first individual with the head pointing northwest, and his skull almost touched skeleton one's skull. This man had worked hard with his hands as the phalanges show and bad nutrition left hypoplasic strays on his teeth. We modified the trace of the excavation in order to uncover this body and the laborious process together with the imminent end of the season obliged us to stop at that level in February 2005. The lack of visible posterior phases maintained the interpretational challenge until the following season in the summer of that year.

Because of the short remaining time and the fragility of the bones, the skeletons were kept on "witnesses" obtained by the deeper excavation of the surrounding space. We dug tunnels beneath and introduced wooden planks through them in order to elaborate the bottom of a sort of coffin. Then we built up the box's walls over the bottom and around the skeletons still resting in their original position. The students and our local employees manufactured everything using locally available wood from fallen trees. When the lids were ready, the coffins were complete and the two skeletons traveled to the Campeche State INAH offices in Campeche City, 300 km north. They remained in custody there and the rest of the bodies joined them few months later. More than a year passed until we had the

necessary funds to transport them, in coordination with the Institute, from Campeche to Zacatecas at the university's facilities.

In that second 2005 season, the only methodological goal was the extensive excavation of E27. Starting from the contours of the first digging, we traced the grid for the extensive excavation. From the very first day, we found out the truth about the posterior phases. There really has been an architectonic occupational phase posterior to that of the thick sascab floor. We discovered a compact and continuous layer of stones forming the substructure for the now-disappeared floor of at least two huts made of perishable materials (fig. 5). Why have we not noticed that in winter season? Simply because we were digging in the yard, right between the structures. Therefore, the compact fill containing the burials was the preparing layer for these final residential huts. Over the filling, they settled many medium size stones (from 10 to 30 cm, approximately), and that was the substructure of the floor probably made of clay, now washed away by centuries of erosion. There are no visible traces of pole holes or walls. Actually, I still have serious doubts about the interpretation of that context, but there is no better explanation. The whole west half of the mound was covered by those stones, while on the other half there were fewer. As the machines had destroyed the mound, any high expectations about the function of the stones made no sense at all. Provisionally, I maintain the residential huts version, hoping that future diggings will corroborate the hypothesis. Anyway, there was another architectural phase following the thick with floor phase.

New skeletons began to show up (fig. 6). Very close to the first two bodies, there was an incomplete adult body, Skeleton 3, probably the remains of an inhumation affected by later burials or other kind of intrusions. Close to it, the remains of a young infant, Skeleton 4, in extended dorsal decubitus, oriented to the northwest, and badly preserved. Just a meter to the south, a double inhumation, probably of a pair of adults, apparently man and woman. These two remained in situ, awaiting a future season to be rescued and analyzed. Just next to them, to their right and only centimeters away from second skeleton's feet, Skeleton 11 is perhaps the best preserved one (fig. 8, fig. 9). Its inhumation pit crossed the entire layer of fill and affected the sascab floor. This is an old-aged woman lying in extended dorsal decubitus, head to the north, and the arms along the body. Just as the rest of the burials, stones forming a small tumulus inside the filling had covered it. Across the excavation to the east, but only about six meters away, another similar inhumation reveals the remains of a middle-aged adult female, Skeleton 10, lying in the same position as number 11 but with the hands resting on the belly (fig. 7). Twelve stone axes (celts) have been deposited over and along the body. They mark the contour of the body or of the pit, but it remains unclear if they are meaningful offerings or were conceived like stones covering a body. On the center of the excavation, close to its southern side, the contours of an inhumation pit cutting the floor surface indicates the presence of an adult. Nevertheless, a few fragile bones of a baby's arms stood on a higher level, perhaps revealing a female buried with her baby. The young creature seems to wear a small bracelet made of three fish vertebras.

As a general consideration, some of the bodies might have been buried tied up in funerary wrapping or deposited in very narrow pits as the position of the skeletons show, while others were freely deposited in wider holes. There are scattered human remains across the excavation, as teeth, phalanges, an infant skull (skeleton 5), fragments of bones, and that could mean that the place represented an inhumation site for several generations. At least two other burials were hypothetically identified by us, following the characteristics of the stone interface that marks an inhumation pit. A very interesting feature is the concentration of shells close to the inhumation area, to the northern side of the excavation. Hundreds of oyster shells buried in the fill. Most of them are marine comestible oysters, but we also have a species that lives among the mangrove roots[17]. The shells seem to have been in contact with fire, so we think they were cooked for some funerary feast.

Most of the skeletons were extracted in block from the excavation, together with the surrounding earth. In 2006 all the materials arrived to Zacatecas and we started the final excavation of the burials, as well as the treatment and analyses of the rest of the findings, as ceramics, lithics, bone, shell. The soil inside the wooden boxes had dehydrated during the storage time and cracked, increasing the fragmentation of the bones. The in-doors micro-excavation was difficult and slow. After the complete removal of the soil and stones, we washed the human remains and prepared them for study. The skulls were practically kept as they were extracted from the excavation because the complete removal of the earth would have caused the separation of the fragments. During the study,

[17] The majority of the shells are *Crassostrea virginica* (marine) and *Crassostrea rhizophorae* (mangrove).

we extracted bone samples for further laboratory specific analyses. The samples were intact teeth, arm and leg bones as well as ribs, and they will be used to do DNA, strontium stable isotope and hystomorphology analyses. These studies will allow us know the relationship between the buried individuals, their precedence as and their precise ages. Nevertheless, these analyses will proceed when the future excavations will provide more mortuary material.

The connection with the Collapse

This funerary complex is perhaps one of the most important among the recent discoveries in the southern Yucatan Peninsula and the only multiple inhumation context in the Candelaria region. But how does it relate to the Terminal Classic Collapse?

After penetrating below the level of the last phase represented by the probable domestic huts, we removed the most part of the stratigraphic unit number one (the repeatedly mentioned filling) and reached the well-done sascab floor. We noticed that the fill had some localized variations across the mound and it probably was due to the different working teams bringing material from different places. The large amount of potsherds is symptomatic. There are no connecting sherds, an additional prove that all the material was thrown inside when already broken. There are many ceramics from Preclassic times inside the fill, fragments of vessels produced perhaps one thousand years before their insertion in the filling. It shows how Maya workers brought earth from special dumping areas with garbage from previous centuries or maybe extracted from Preclassic contexts while digging out the earth for the construction. It is obvious that the informational potential of the great amount of potsherds in that excavation is very low.

In the southeastern corner of the mound, stratigraphically corresponding to the white floor, we discovered a circular element, probably the basement of a circular altar. It is made of simple masonry, stones connected by some earth, about 40 cm high and 3 meters in diameter. On the northern part of the low circular basement, we discovered the skull of a child built in the wall. The skull faces inside, the occipital and parietal bones are visible from the outside. That is the skeleton 9. We cannot tell if it is a decapitated head, a removed skull or the extreme of a body buried inside the altar. We had no time to verify it as the end of the campaign and the hurricane season hurried our work. The circular altar reminds the religious features dedicated to Ehecatl, the Mexican Wind God, an hypostasis of Quetzalcoatl, although this is supposed to be a much later import from the Highlands. The Maya equivalent, Ik, could be taken into account. But, as mentioned above, we are not sure about the character of the Maya religion during Classic and Terminal Classic times, so the meaning of a circular feature like that stays in the field of speculation (fig. 6).

More to the west, an alignment of parallelepiped sascab blocks marks a sort of a threshold, or maybe the line of the entrance, with wooden poles as a sort of porch resting over the blocks. The white floor stops there, it is the limit of the roofed area. Together with other architectonic elements that I cannot detail here, and considering the stratigraphic analyses, it is possible to say that the white sascab floor, the alignment and the altar form the remains of a possible small temple. It was oriented to the south, with the entrance facing the plaza encircled between structures 27, 28, 29 and 30. And the possible story developed as following.

The temple-like building we call 27 was a civic or ceremonial facility by the Late or Terminal Classic times, that is around 9th century AD. It formed part of a ceremonial clustering in the southern part of the urban core of El Astillero. Suddenly, some fast changes in the social and political structure of the Maya society reflected in the building's destiny. The temple was quickly disaffected, it ceased to function as such, and the building was dismantled and buried under a 40-50 cm-thick filling. But that inhumation was not aggressive, neither destructive. Before throwing the earth and the heavy stones on it, the floor was carefully and uniformly covered, protected with a thin and homogeneous layer of fine grey clay. The altar was carefully protected with stones and after that covered with the fill. The fill contained earth, stones, broken stone artifacts, ceramics used by the workers and ceramics brought together with the dirt. Probably the layer was constantly compacted with mallets. On top of the new substructure, some perishable structures were erected, with clay floors made over a previous preparation with pebbles. The new buildings probably were residential, as grinding stones and domestic garbage indicates. The people who occupied the former temple seems to be different at least socially, as their burials show few inventory or do not have any inventory at all. Their skeletons suggest a hard and physically stressful life. They built their homes over a mound that previously has been a temple. Nevertheless, they protected the temple before burying it, they still felt some kind of respect, or maybe fear to that special place. They also buried their dead in the fill. In several successive episodes, during several generations, maybe along a century as V. Tiesler (2008) suggests.

In some cases, the mourning rituals allowed them eat oysters recollected from the local mangroves and imported fresh from the Gulf of Mexico. Who were they?

The excavation was very small and very short so we cannot say too much. Nevertheless, the data we own allow us propose conjunctures, hypothesis to be tested in the next field seasons. The archaeological material found scattered in the filling rise interesting questions. It is not possible to talk extensively about the materials in this pages, because it would require large introductions and numerous suggestive illustrations and the space is limited. But I will refer to some of the most relevant aspects. The burials seem to indicate low-class people. It is not certain, but it is plausible. They show physical effort in life, poor nutrition, diseases, infections, etc. They have no rich offerings, and lack funerary chambers. We have arguments to consider them proceeding from the inferior stages of the social hierarchy. Moreover, we discovered many fragments of rich ceramics as the fine-orange potsherds of the Provincia Plano Relief type of the Balancan group (figs. 11 and 12). This is a ceramic type characteristic for the Late to Terminal Classic in the region. These vessels are of fine paste and high quality; they have glyphic and iconographic designs with incised contours and white slip. These are usually considered as elite ceramics. We found them simply rejected and broken between the refuse and dirt of the filling. That could mean several things, for example that those ceramics did not have the same value for the last inhabitants of E27 as for the anterior ruling class. We also discovered similar treatment for some lithic articles, for example a fragment of greenstone earring. Fascinating silex and chert knifes and spear points appeared in different parts of the excavation roughly concentrated in the area of the altar, but as they were thrown inside the fill, with no clear association to the burials, difficult any intent of contextual interpretation (figs. 13 and 14). Vargas demonstrated that in El Tigre, the greatest settlement of the Candelaria River, very fine silex and obsidian artifacts with absolutely no traces of use, were deposited as offerings in a variety of contexts[18]. It teaches us that if unused high-valued stone instruments are thrown into a fill, that does not mean a loss of significance, but rather a highly-appreciated offering. The future excavations planned in several buildings in El Astillero will try to clarify these aspects.

The domestic huts over a temple or high-status building; a shift in the use and social pertinence of a structure. In my opinion, as a worth-testing hypothesis, the last occupants of E27 were members of the inferior social groups that took part in the rebellion against the Maya ruling class and, after the destruction of the established social and political order, settled over the vanishing symbols of the extinguished world. Nevertheless, they still recognized the sacred imprint of that kind of platforms, their connection to the divine, to the Metnal (the Underworld) or the Classic equivalent. Maybe that is why they did not just destroy the remains of the previous phase; they protected it and buried it as a dead being[19]. The place was good for the eternal rest, so they buried their dead in the same place. The long-lasting exploitation of the low social groups by the ruling elites led to a generalized rebellion, stimulated by the environmental crisis and the destruction of the Mesoamerican exchange routes. The new order of the inverted social pyramid started with the settling of the revolted winners in the formerly exclusive central ceremonial spaces. They built their houses over the former temples and palaces. A situation that is visible in many other sites across the Maya Lowlands by that time. They continued to practice their particular culture and bring into the archaeological record customs and rituals that were different from the previous Classic elite way of life. After a while, the new social differentiation began to establish new elite, probably kin-related to the ancient defeated elites. The new process resulted successful only in some regions; many others never recovered their previous splendor and their cities progressively lost their population as new urban centers attracted the peasants, the artisans, the traders. That was the beginning of the Postclassic society.

Concluding remarks

The Middle Candelaria basin offers an interesting settlement pattern closely related to the ecological niche of the El Chechén wetlands. Three major sites of very similar size occupied a relatively small territory in close connection between each other. The archaeological materials suggest an occupation from the Preclassic until the collapse processes of the Terminal Classic, during about one thousand years. The low internal density of the sites and the empty spaces separating them talk about social, political and demographic realities somehow different from the rest of the Maya

[18] Ernesto Vargas, personal communication, 2008.

[19] In the Mesoamerican cultures, the buildings were believed to have souls, to be alive, like humans and animals. The essence of the foundation sacrifices and offerings rests on that belief.

Lowlands of that time. The settlements discovered and mapped in the wetlands region share some spatial and architectural characteristics that make them define a specific cultural subregion. The discovery of a funerary complex in a small platform at El Astillero leads the research to the problem of the collapse at the end of the Classic period and hypothetically supports the social rebellion theory. A small civic or ceremonial building from Late Classic times was carefully buried under a layer of fill and a new construction phase erected residential huts on top. The apparent inferior social condition of the defunct together with the stratigraphic panorama seems to indicate that low-class people occupied the core of the site in Terminal Classic. The future investigations are meant to verify the hypothesis by searching the probable repetition of similar contextual data in other points of the site and in the neighboring settlements.

Acknowledgements: I wish to thank the different institutions of the Government of the State of Campeche, as well as the City Council of Candelaria for all the support and sponsorship offered to this research.

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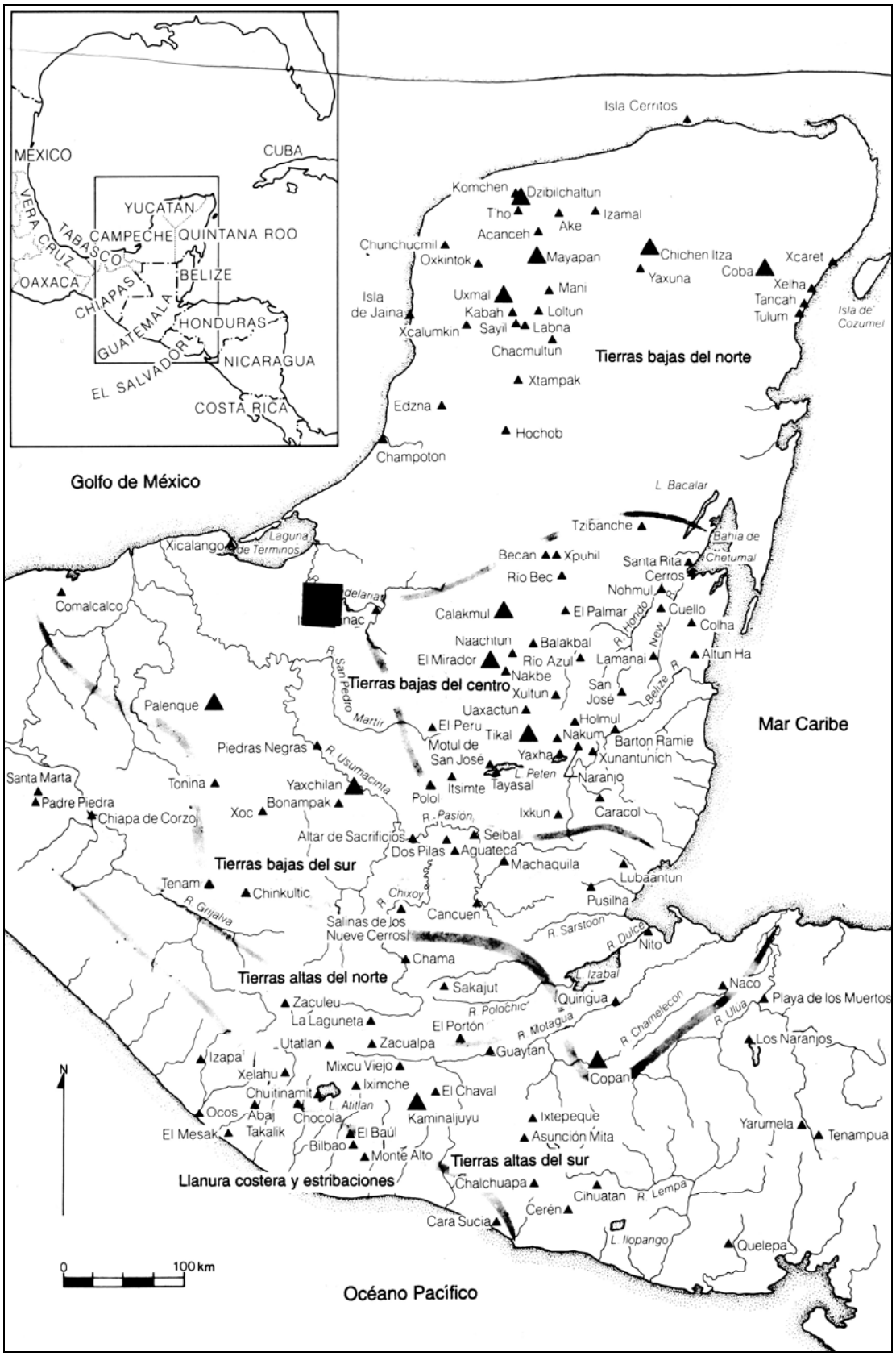

Fig. 1. General map of the Maya area showing the main archaeological sites. The black square marks the location of the El Chechén Wetlands on the Candelaria River (adapted from Sharer 1998, p. 37, fig. 1.1).
Harta generală a zonei Maya, cu indicarea principalelor situri arheologice. Pătratul negru delimitează poziţia zonei umede El Chechén, pe râul Candelaria (după Sharer 1998, p. 37, fig. 1.1).

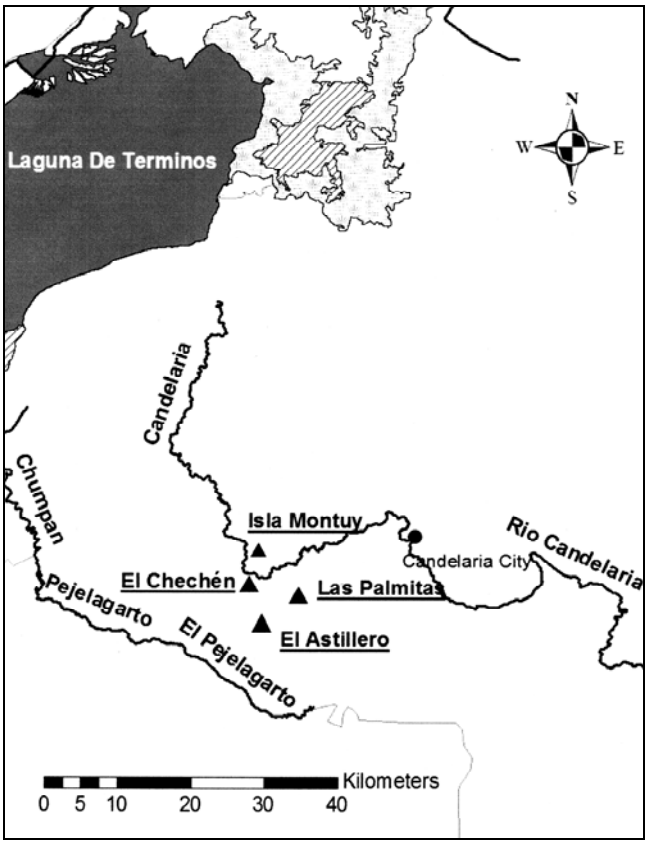

Fig. 2. The four main sites around the El Chechén wetlands of the Middle Candelaria River.
Cele 4 aşezări principale din jurul zonei umede El Chechén de pe cursul mijlociu al râului Candelaria.

Fig. 3: E1, one of the major monumental buildings in Las Palmitas, covered by sediments and huano palm-trees. The photo was taken in May, soon after the cyclic cremation of the vegetation, a practice the local farmers employ to increase the fertility of the soil. The shape and general aspect of this mound is typical for most of the local Maya "pyramids" (photo: C. Ardelean).
E1, una dintre principalele clădiri monumentale din Las Palmitas, acoperită de sedimente şi palmieri. Fotografia a fost făcută în luna mai, puţin după arderea periodică a vegetaţiei, o practică curentă pe care fermierii din zonă o folosesc pentru creşterea fertilităţii solului. Forma şi aspectul general al movilei sunt tipice pentru majoritatea "piramidelor" Maya din zonă (foto: C. Ardelean).

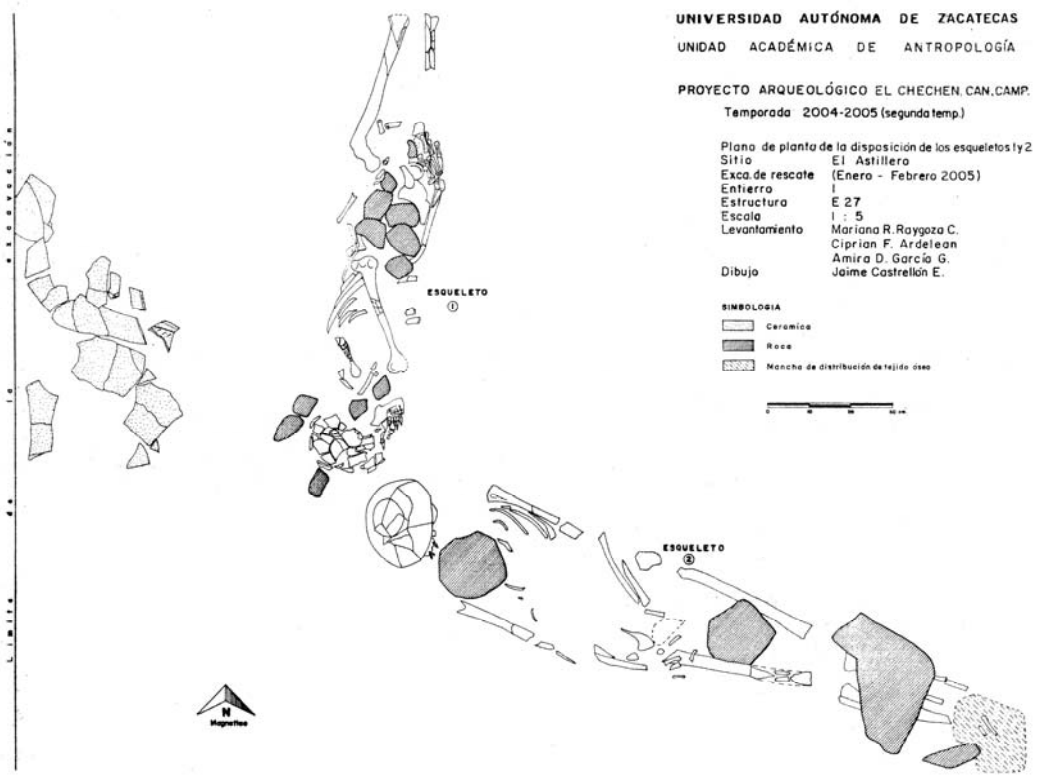

Fig. 4. The first two skeletons discovered in the inhumation complex of E27 at El Astillero (C. Ardelean 2006, p. 67, fig. 3).
Primele 2 schelete descoperite în complexul de inhumaţie E27 de la El Astillero (C. Ardelean 2006, p. 67, fig. 3).

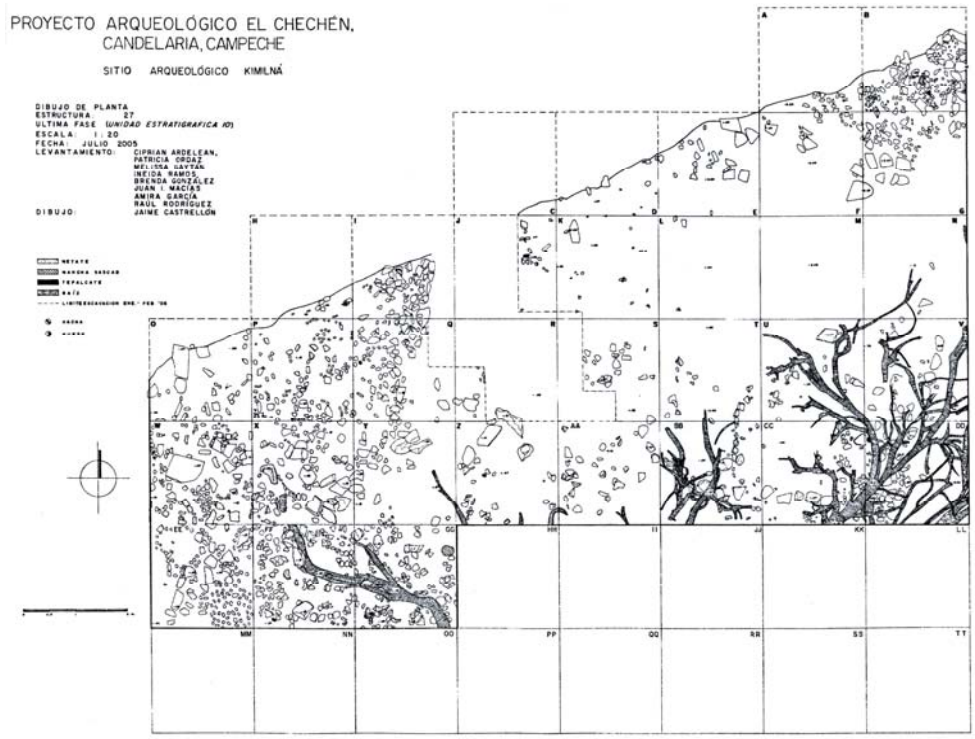

Fig. 5. The last occupational phase of structure 27: the accumulations of stones that sustained the floors of perishable material residential huts (C. Ardelean 2006, p. 68, fig. 4).
Ultima fază de locuire a structurii 27 : acumulări de pietre care susţin podelele locuinţelor realizate din materiale perisabile (C. Ardelean 2006, p. 68, fig. 4).

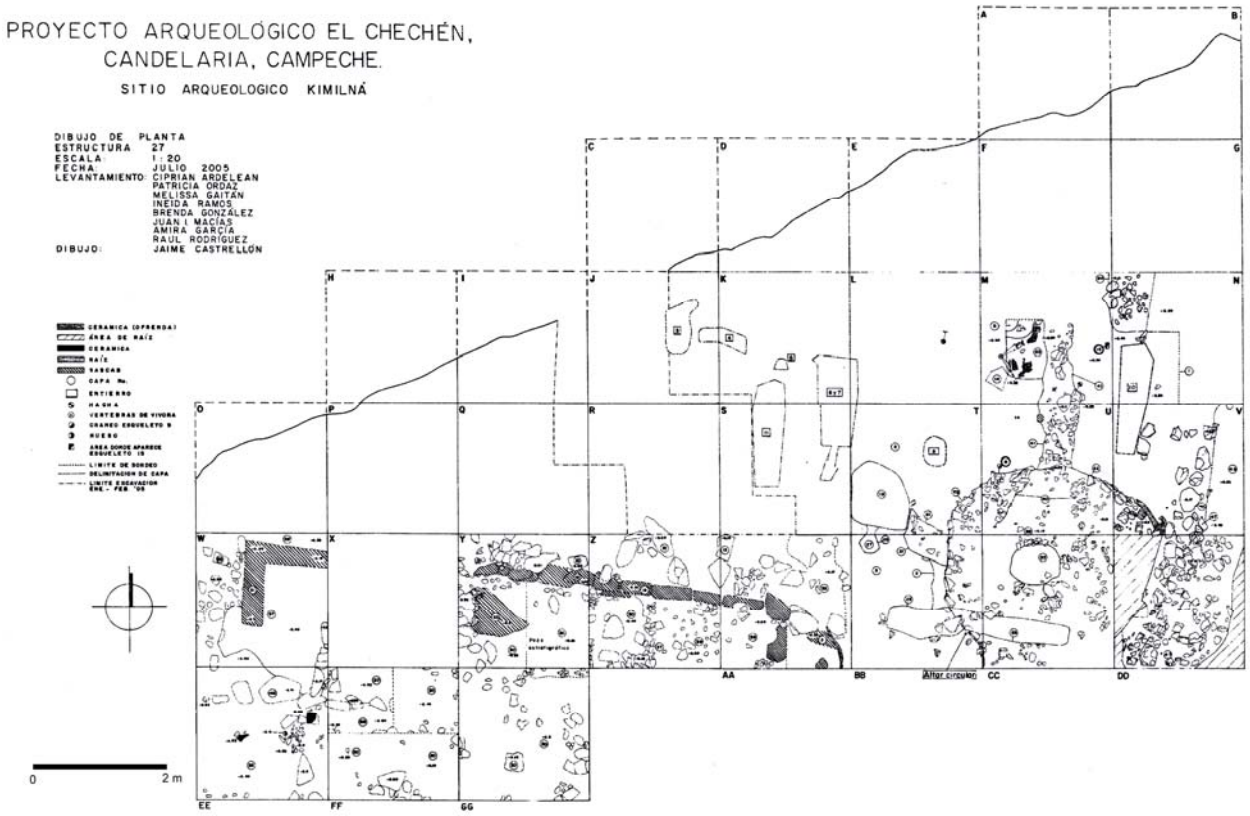

Fig. 6. The phase of the temple: a possible ceremonial facility manifested as a plastered floor, a circular altar in the southeastern corner, and an alignment of sascab blocks at the entrance. The drawing also shows the contours of the burials excavated in the 2005 summer season (C. Ardelean 2006, p. 69, fig. 5).
Faza templului : o posibilă amenajare pentru ceremonii reprezentată printr-o podea, un altar circular în colţul sud-estic şi un aliniament de blocuri de piatră la intrare. Desenul arată de asemenea conturul mormintelor săpate în vara anului 2005 (C. Ardelean 2006, p. 69, fig. 5).

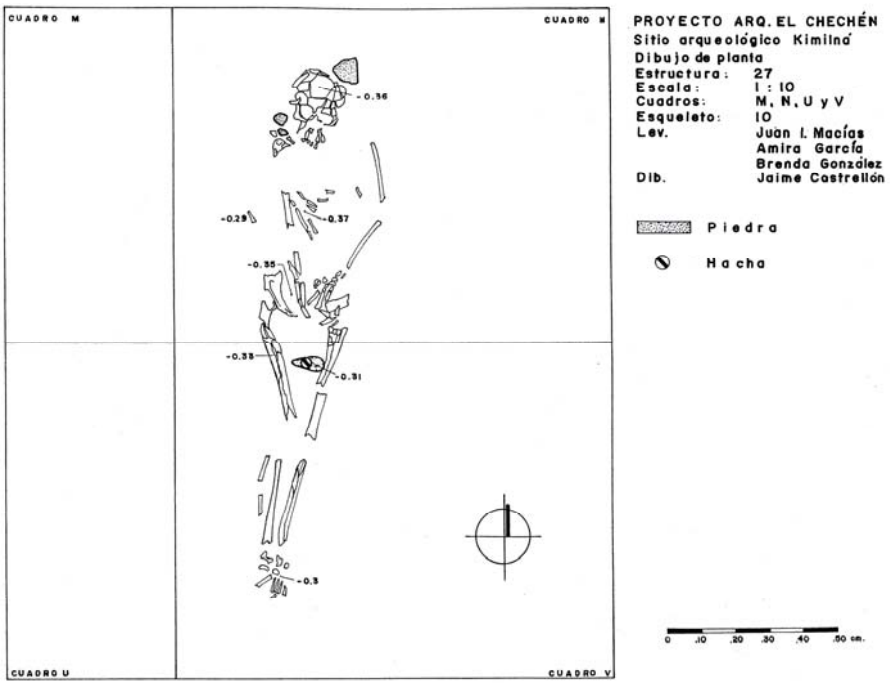

Fig. 7. The drawing of the skeleton 10 (C. Ardelean 2006, p. 70, fig. 6).
Planul scheletului 10 (C. Ardelean 2006, p. 70, fig. 6).

Fig. 8. Burial 11 during excavation. The bottom of its inhumation pit affected the previous-phase plastered floor (photo: C. Ardelean).
Mormântul 11 în timpul săpăturilor arheologice. Baza gropii de inhumaţie afectează faza anterioară a podelei (foto: C. Ardelean).

Fig. 9. Detail of the skeleton 10's dentition showing aesthetic dental mutilation on superior incisives (photo: C. Ardelean).
Detaliu al scheletului 10 cu mutilarea estetică a incisivilor superiori (foto: C. Ardelean).

Fig. 10. Skeleton 1 during excavation (photo: C. Ardelean).
Scheletul 1 în timpul săpăturilor arheologice (foto: C. Ardelean).

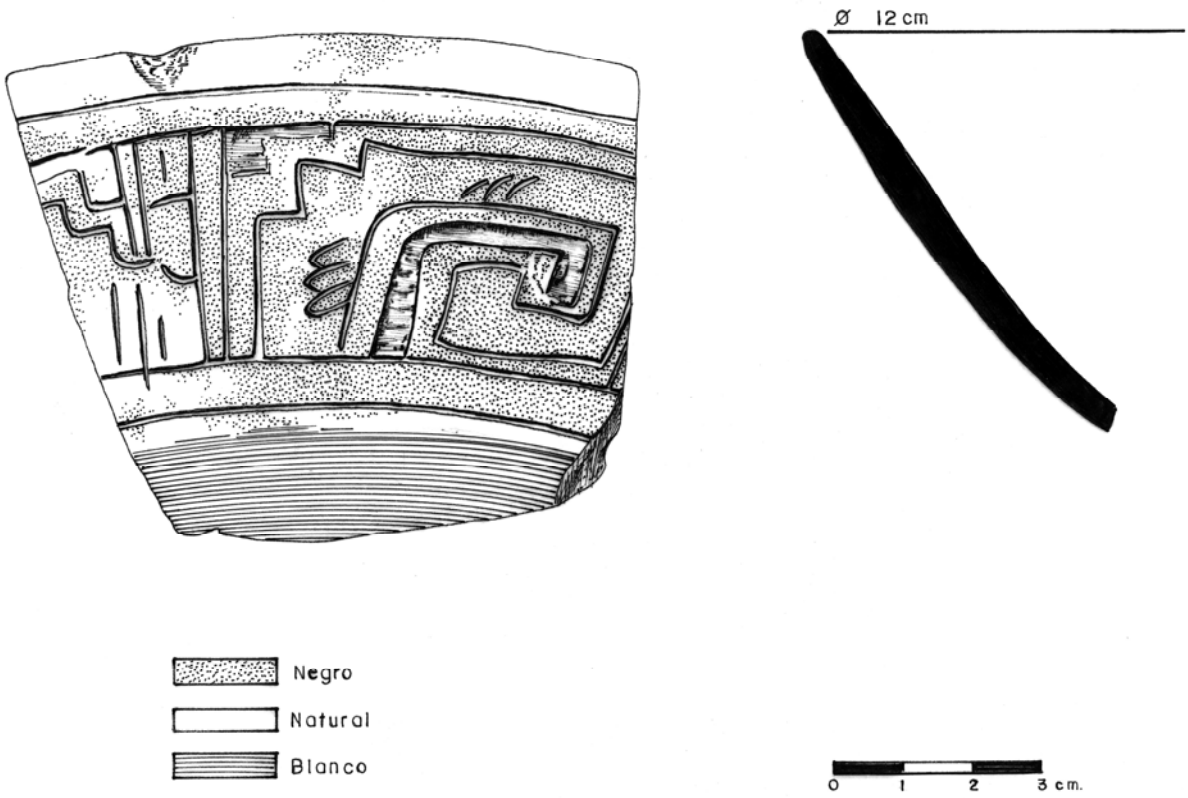

Fig. 11. Fine Orange potsherd, a Balancan Plano Relief variety, high status vessels diagnostic for the Terminal Classic period (drawing: Jaime Castrellón).
Fragment de vas fin, o varietate a tipului Balancan Plano Relief, vase cu standard ridicat diagnostice pentru perioada Clasică finală (desen: J. Castrellón).

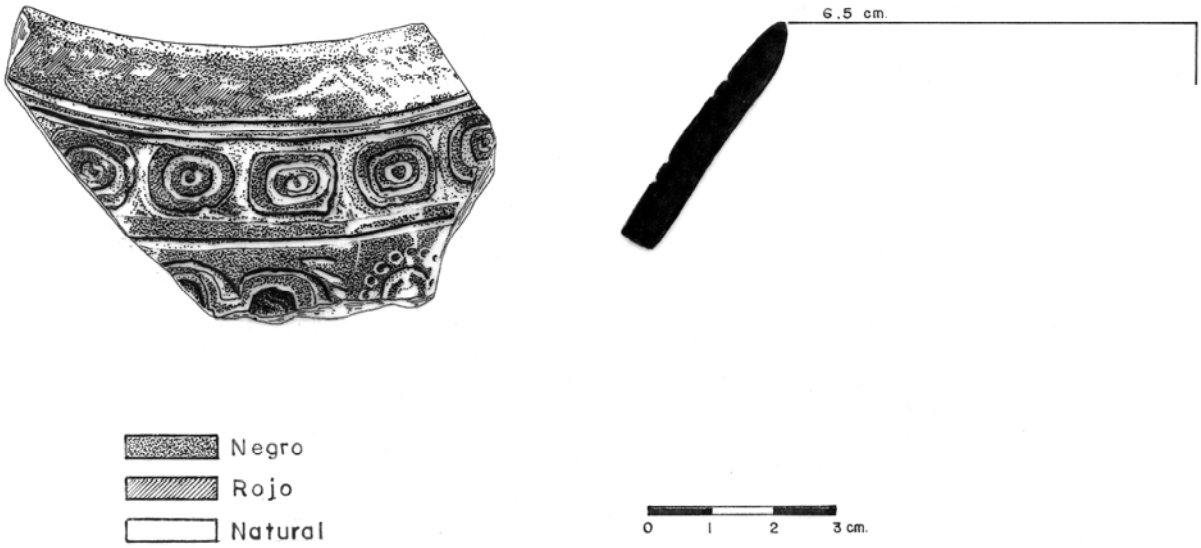

Fig. 12. Another variety of a Balancan Fine Orange (drawing: J. Castrellón).
O altă varietate a ceramicii de tip Balancan.

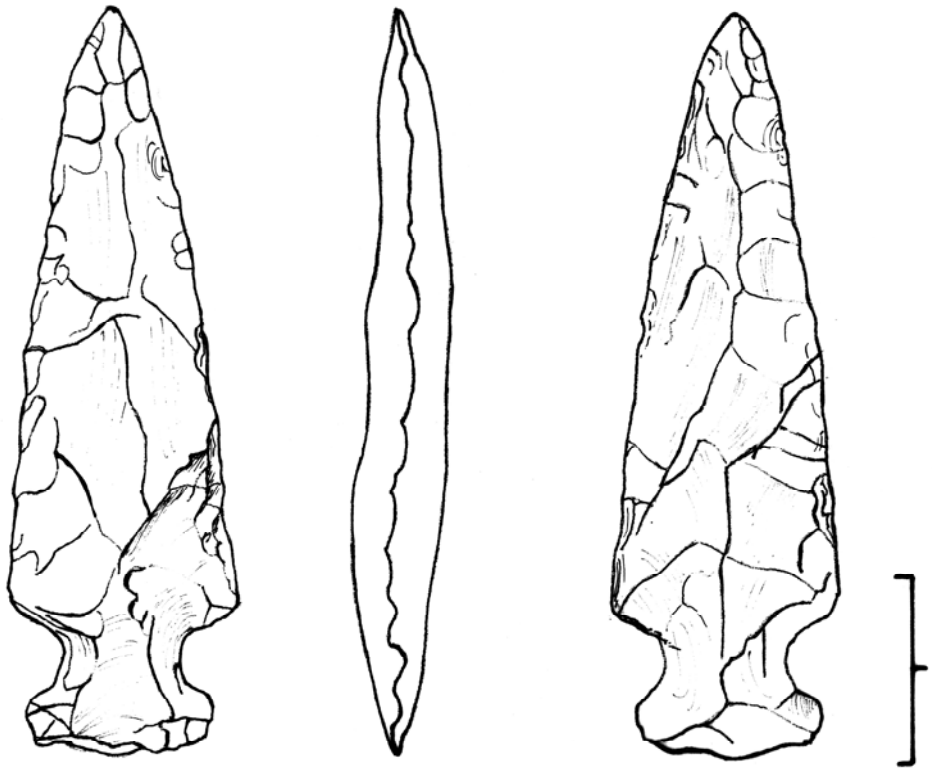

Fig. 13. Dart points typical for the initial Postclassic period. This was not a proper spear, but the active part of an atlatl (thrower) projectile (drawing: J. Castrellón).
Vârf de suliţă tipică pentru perioada Postclasic. Aceasta nu a fost o suliţă propriu-zisă, ci partea activă a unui proiector/aruncător (desen: J. Castrellón).

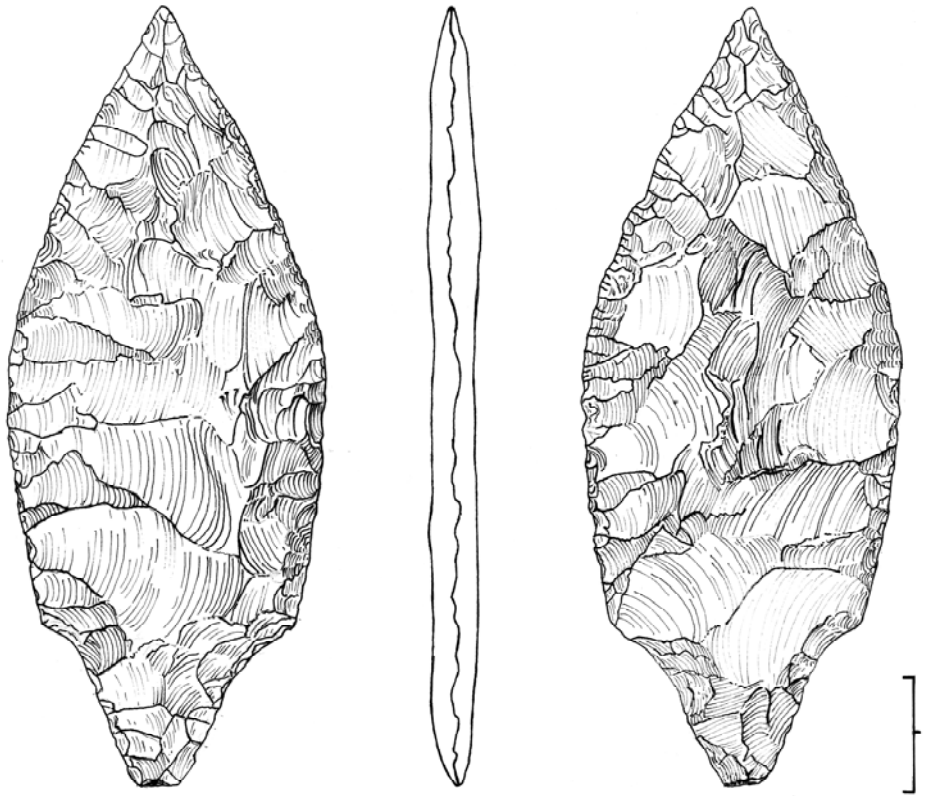

Fig. 14. This finely made biface is one of the finest findings of the project: a white transparent silex knife, completely intact, probably thrown as an offering in the filling layer (drawing: J. Castrellón).
Această bifacială este una dintre cele mai deosebite piese descoperite în cadrul acestui proiect: un cuţit de silex alb transparent, complet intact, probabil depus ca ofrandă.

Prezentări de carte

Umberto Albarella, Keith Dobney, Anton Ervynck and Peter Rowley-Conwy Eds., *Pigs and Humans. 10,000 years of interaction,* Oxford University Press. Hdb., 2007, ISBN 978-0-19-920704-6, 488 p.

Adrian BĂLĂŞESCU*

Această carte a fost editată de către Umberto Albarella (University of Sheffield), Keith Dobney, (Wellcome Trust Bioarchaeology, University of Durham), Anton Ervynck, (Institute for the Archaeological Heritage of the Flemish Community, Bruxelles) şi Peter Rowley-Conwy (Environmental Archaeology, University of Durham), cercetători cunoscuţi pentru preocupările lor legate de studiul suinelor.

Volumul este în bună parte rezultatul proiectului *Bioarchaeology of Pig Domestication* care a fost în majoritate finanţat de către Wellcome Trust şi Arts and Humanities Research Council şi care s-a desfăşurat în cadrul Departamentului de arheologie al Universităţii din Durham (Marea Britanie).

Acesta reuneşte 20 de articole extrem de interesante care aparţin unui număr de 37 de autori din toată lumea care rescriu istoria comună a convieţuirii dintre suine şi oameni. Aceste studii acoperă o gamă diversă de teme temporale, geografice şi topice fondate pe diferite discipline cum ar fi arheologia, zoologia, antropologia, dar şi istoria artei şi istorie.

Cartea este structurată în 5 părţi, numerotate alfabetic astfel: A. *Evolution and Taxonomy* (Evoluţie şi Taxonomie); B. *The History of Pig Domestication and Husbandry* (Istoria domesticirii şi creşterii porcului); C. *Methodological Applications* (Aplicaţii Metodologice); D. *Ethnographic Studies* (Studii etnografice); E. *Pigs in Ritual and Art* (Porcii în ritual şi artă).

Cartea prezintă un cuvânt înainte al doamnei Melinda Zedder, cunoscut arheozoolog american (Smithsonian Institution, Washington DC) care surprinde în două pagini relaţia extrem de complexă dintre oameni şi suine. Introducerea scrisă de către cei patru editori : Umberto Albarella, Keith Dobney, Anton Ervynck şi Peter Rowley-Conwy prezintă în mare, problematica abordată de către această culegere de articole care s-a născut ca un concept în urma workshop-ului internaţional "Pigs and Humans", găzduit între 26-28 septembrie 2003 la Walworth Castle, County Durham, Marea Britanie.

În prima parte a volumului (A. *Evolution and Taxonomy*, p. 13-54) care conţine trei articole sunt prezentate ultimele informaţii asupra taxonomiei şi zoogeografiei genului *Sus* (de către Colin Groves), asupra filogeografiei şi domesticirii porcului pornind de la studiile de paleogenetică ale ADN mitocondrial (Greger Larson, Umberto Albarella, Keith Dobney şi Peter Rowley-Conwy), dar şi asupra bazei moleculare pentru schimbările fenotipice din cursul domesticirii porcului (Leif Andersson).

În *The History of Pig Domestication and Husbandry* (part B., p. 55-194) sunt reunite şase articole, deosebit de interesante, care tratează istoria domesticirii şi creşterii porcului. În articolul *The transition from wild boar to domestic pig în Eurasia, illustrated by a tooth development defect and biometrical data* cei patru autori (Keith Dobney, Anton Ervynck, Umberto Albarella şi Peter Rowley-Conwy) studiază o deficienţă a dinţilor de suine şi anume hipoplazia care este cauzată în general de către stress şi care poate fi extrem de variată în natură. Studiile arată că lipsa de hrană pare a fi cel mai important factor care determină această deficienţă. În general, populaţiile sălbatice de porci prezintă o frecvenţă scăzută a hipoplaziei în timp ce populaţiile domestice neolitice prezintă frecvenţe crescute ale acesteia, ceea ce ar sugera că ele sunt rezultatul influenţei umane în cursul procesului de domesticire.

În articolul *Culture, ecology and pigs from the 5th to the 3rd millennium BC around the Fertile Crescent*, autoarea Caroline Grigson analizează frecvenţele procentuale deţinute de către porci în peste 160 de situri situate în Orientul Mijlociu (în zona Cornului Fertil) şi arată că distribuţia geografică a acestei specii este strâns legată de nivelul precipitaţiilor sau de nivelul irigaţiilor în anumite microregiuni, cum este cazul comunităţilor din Mesopotamia din cursul mileniului al treilea. De asemenea se observă că există un raport între stratificarea socială a populaţiilor din zonă şi consumul porcului.

Hunting or management? The status of Sus în the Jomon Period, Japan, tratează problema relaţiei dintre genul *Sus* şi oameni, inclusiv posibila domesticire locală a acestei specii în arhipelagul japonez. Cei 5 autori (Hitomi Hongo, Tomoko Anezaki, Kyomi Yamazaki, Osamu Takahashi şi Hiroki

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Sugawara) trec în revistă peste 50 de situri din perioada Jomod (13.000-2.500 cal. BP) care prezintă resturi de *Sus* şi care se găsesc situate geografic în centrul şi nord-estul arhipelagului japonez. Studiul curbelor de sacrificare a suinelor şi biometria sunt utilizate în investigarea relaţiei dintre oameni şi aceste animale. Concluziile acestui studiu arată că statutul populaţiilor de *Sus* în perioada analizată rămâne încă neclar, dar că nu se poate demonstra o domesticire locală a mistreţului. Totuşi spre finalul perioadei Jomod se observă o diminuare a taliei şi a molarului 3 inferior (M_3) care mai degrabă se datorează unei presiuni umane mai intense asupra mediului înconjurător în care se găseşte mistreţul. Datele de până acuma sprijină ideea că porcii domestici au fost introduşi în Japonia în perioada Yayoi (2.700-1.700 BP).

Articolul *Wild boar and domestic pigs în Mesolithic and Neolithic southern Scandinavia* tratează descoperirile faunistice ale genului *Sus* în 19 situri situate majoritatea în Danemarca şi mai puţin în Suedia. Cei doi autori, Peter Rowley-Conwy şi Keith Dobney, prezintă cum populaţiile de mistreţ din Mezoliticul târziu din sudul Scandinaviei (nordul Europei) încep să se diferenţieze unele de altele imediat după ce au fost separate din cauza creşterii nivelului mării (efectul insularizării). În ceea ce priveşte porcii neolitici domestici din Danemarca se arată că aceştia au fost importaţi din alte regiuni şi că nu au fost domesticiţi local, totuşi există anumite rezerve datorate studiului biometric şi al hipoplaziei pentru care această concluzie nu este sigură, problema trebuind ca în viitor să fie mai bine studiată şi astfel tranşată.

Marco Masseti cu articolul său *The economic role of Sus în early human fishing communities* face o trecere în revistă a siturilor mezolitice şi neolitice din Europa (Grecia, Italia, Suedia, Danemarca) în care paleoeconomia alimentară de origine animală se bazează în principal pe resursele marine care sunt asociate în general cu consumul de suine. Autorul emite o serie de ipoteze extrem de interesante privind rolul acestui mamifer în cadrul acestor comunităţi preistorice.

Cu următorul articol *An investigation into the transition from forest dwelling pigs to farm animals în medieval Flanders, Belgium* ajungem în Europa în perioada medievală. Autorii (Anton Ervynck, An Lentacker, Gundula Muldner, Mike Richards şi Keith Dobney) îşi bazează studiul extrem de complex (profile de abataj, analize izotopice, osteometrie, hipoplazie) pe şase situri situate în Belgia. Doar în cazul aşezării de la Raversijde se observă diferenţe între diferite etape ale epocii medievale; acestea sunt puse pe seama tranziţiei de la exploatarea în pădure a porcilor la fermele de animale.

Problemele metodologice sunt tratate în partea C. *Methodological Applications* (p. 195-282) care conţine un număr de şase articole. *Age estimation of wild boar based on molariform mandibular tooth development and its application to seasonality at the Mesolithic site of Ringkloster, Denmark* este un studiu de caz realizat de către Richard Carter şi Ola Magnell. Aceştia pun în evidenţă pe baza dentiţiei de mistreţ prezenţa umană în perioada verii în situl Ringkloster, ceea ce vine în contradicţie cu părerile emise până în prezent faţă de această aşezare.

A statistical method for dealing with isolated teeth: ageing pig teeth from Hagoshrim, Israel, este un articol scris de Annat Haber, care reliefează importanţa utilizării metodelor statistice în reconstituirea profilelor de abataj pe baza dentiţiei izolate a porcinelor neolitice (mileniile VII-VI BP).

Studiul *Inter-population variation în recent wild boar from Israel* este efectuat pe populaţii actuale de mistreţi care provin din patru locaţii diferite din punct de vedere geografic. Cei doi autori (Goggy Davidowitz şi Liora Kolska Horwitz) arată că o combinaţie de factori sunt răspunzători pentru variabilitatea mărimii taliei şi morfologiei mistreţilor din Israel, cum ar fi: izolarea geografică, dieta şi clima.

A dental microwear study of pig diet and management in Iron Age, Romano-British, Anglo-Scandinavian and medieval contexts in England este un studiu realizat pe baza dentiţiei de porcine care provine din trei situri cu diferite şi diverse niveluri culturale datate între epoca fierului şi Ev mediu. Autorii (Tom Wilkie, Ingrid Mainland, Umberto Albarella, Keith Dobney şi Peter Rowley-Conwy) pe baza analizei micro-uzurii dentare observă că animalele erau bine hrănite în contexte urbane şi semi-urbane. Această prima aplicaţie a studiului micro-uzuriii dentare la resturi de porc care provin din contexte arheologice demonstrează clar potenţialul acestei metode pentru a înţelege mai bine tehnicile de creştere ale acestui animal în trecut.

Articolul *The histopathology of fluorotic dental enamel în wild boar and domestic pigs* scris de Horst Kierdorf şi Uwe Kierdorf studiază influenţa fluorului asupra smalţului dentar de mistreţ şi porc.

Economic and ecological reconstruction at the Classical site of Sagalassos, Turkey, using pigs' teeth este un articol dedicat studiului dentiţiei de porc (prin reconstituirea curbelor de abataj şi studiul hipoplaziei) în scopul obţinerii de informaţii cu privire la tehnicile de creştere şi de gospodărire ale acestei specii în perioada secolelor I-VII e.n. la Sagalassos. Autorii (Sofie Vanpoucke, Bea De Cupere şi Marc Waelkens) demonstrează că porcii erau sacrificaţi în general înainte sau la începutul iernii; în

urma studiului hipoplaziei s-a renunţat la ipoteza dublei naşteri într-un an a scroafelor de porc, s-a demonstrat că animalele erau crescute în bune condiţii şi nu s-au observat schimbări majore în mediul înconjurător.

Partea următoare a volumului, D. *Ethnographic Studies* (p. 283-356), debutează cu articolul *Ethnoarchaeology of pig husbandry în Sardinia and Corsica*. Autorii (Umberto Albarella, Filippo Manconi, Jean-Denis Vigne şi Peter Rowley-Conwy) trec în revistă o serie de date moderne de natură socio-economică asupra practicilor prezente şi tradiţionale ale creşterii porcinelor în Sardinia şi Corsica şi care pot fi extrem de utile în interpretarea arheozoologică.

Jacqueline Studer şi Daniel Pillonel prezintă în articolul *Traditional pig butchery by the Yali people of West Papua (Irian Jaya): an ethnographic and archaeozoological example*, tradiţionalele metode de sacrificare, preparare şi consum a porcului în Papua Noua Guinee. Această experienţă etnografică este transpusă apoi într-o analiză arheozoologică extrem de interesantă.

În articolul *Pigs în the New Guinea Highlands: an ethnographic example*, Paul Sillitoe, prezintă studiul său realizat timp de 24 de ani asupra turmelor de suine din cadrul populaţiei Wola. Analiza sa etnografică priveşte demografia populaţiilor de porci, dezvoltarea indivizilor în cadrul turmei şi deplasarea acestora.

Ultima parte a cărţii, E. *Pigs în Ritual and Art* (p. 357- 387), este dedicată imaginii suinelor în practicile rituale, dar şi în artă. Cele două articole *Wild boar hunting în the Eastern Mediterranean from the 2nd to the 1st millennium BC* scris de Anne-Sophie Dalix şi Emmanuelle Vila şi *The pig în medieval iconography* de către Sarah Phillips tratează această problemă.

Cartea prezintă în final un glosar de termeni, precum şi o listă extrem de bogată de referinţe bibliografice. De asemenea trebuie remarcat faptul ca volumul este în ansamblul său generos ilustrat prin fotografii, tabele şi figuri de o bună calitate.

Acest volum *Pigs and Humans. 10,000 years of interaction* se adreseaza studenţilor şi specialiştilor din arheologie (şi în special în arheozoologie), antropologie, etnografie, istorie şi biologie.

Douglass W. Bailey, *Prehistoric figurines. Representation and corporeality in the Neolithic*, 243 pages, 64 figures, 5 front photographs, London and New York, 2005, Routledge, ISBN 0-415-33152-8, Paperback, 44.95 USD.

Alexandru DRAGOMAN[*]

I confess that I am not eager on Neolithic figurines, and, implicitly, I lack the necessary competence to discuss this category of material culture. Therefore, my text is not going to be an actual book presentation or a review. Under the circumstances, one might wonder why I have chosen a book that refers to a topic not included among the themes I care for. What made me write these lines are the architecture and narrative style of the text produced by Douglass W. Bailey. I simply wanted to say a few words about the pleasure of reading this book. Consequently, I am not going to insist on the "scientific content", nor am I going to mention the interpretation provided by Bailey on the Neolithic figurines, because describing this book is like recounting to someone a movie or a novel, and robbing that person of the pleasure (at least in part) of watching/reading.

From the very third page, due to five relevant photographs that, at the same time, vary from the pattern used by most publications dedicated to the topic, Bailey tempts the reader into the world of Neolithic figurines. To prepare her/him for that journey, the author first presents an image of the Neolithic in south-eastern Europe, and then he critically presents various ways in which the anthropomorphic figurines have been interpreted. At the end of this first chapter, Bailey partially reveals, under the form of questions, different from those posed by other archaeologists, the content of the journey, but only with a view to raising the interest and curiosity of the reader. During the reading, the latter is introduced into a series of aspects relating to Neolithic figurines, namely: the

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miniaturism and dimensionality (Chapter 2), the anthropomorphism and the socio-politics of representation (Chapters 4, 6 and 8). The reader's curiosity is constantly stimulated: the chapters that include the analysis of these aspects begin with the story of discovering some Neolithic figurines, followed by the discussion on modern examples relevant for the tackled theme (from the miniature objects, Disneyland, dolls, photographs, to the pictures by some French and English painters from the early 19th century, and to the works by some of the Young British Artists from the late '90s), only for the author to return later to the figurines he started with in the first place. I have to say that the author repeatedly warns the reader that the modern examples are not provided as direct analogies for the Neolithic figurines: e.g., *"The preferred approach has been to ask how these more modern examples of anthropomorphic representation work and then to use the answers obtained to gain a fuller appreciation of Neolithic figurines as particularly powerful material culture"* (p. 84). Between these chapters, in close relationship, the author intercalates three case studies referring to Neolithic figurines in south-eastern Europe, analysed not in themselves, but in relation to the built space and the funerary one: Hamangia (Chapter 3), Cucuteni/Tripolye (Chapter 5) and Thessaly (Chapter 7). And here, Bailey makes use of the same strategy of drawing the reader's attention: the chapters begin with the story of discovering some figurines, continue with the discussion on the case studies, and end up with the return to the figurines from which he began. In each chapter separately, Bailey offers new interpretations, but at the same time asks new questions, opening other research perspectives considered in the next chapters. Finally, after a long journey in time, through various geographic regions and passing through different disciplines, the author widely reveals his own interpretation, his image on the Neolithic worlds discussed (Chapter 9).

The narrative sequence from Neolithic figurines to modern examples, and back to Neolithic figurines, presented in "the more theoretical chapters", pervades the entire book, in alternation of these chapters with the case studies; thus, the reading carries the reader in a captivating winding travel, from the past to the present and back to the past. Regarded in a dialectical relation, the modern examples and the archaeological ones discussed by Bailey help realize a more sensitive understanding of the past, of the Neolithic figurines, and of the present, of the constant fascination of these figurines upon archaeologists. Last but not least, Bailey's work stimulates the reader, if (s)he did not do it already, to visit modern and contemporary art galleries. Moreover, he stimulates a breakthrough of disciplines, the acceptance of the hybrid.

For most Romanian archaeologists, who stick to the cultural-historical approach, Bailey's work will fail to make an impression, as it will rather be perceived as an art book, not an archaeology one; it is very likely for it to be regarded with a mixture of superiority and hostility. Superiority, that is, because in their eyes, Bailey's approach is not "real archaeology": he does not publish new material (a lot or lots of figurines), does not gather in his volume the figurines of a site, of an "archaeological culture" or of a region, does not build up new typologies and chronologies, and, above all, does not offer a recipe-interpretation to which they could mechanically relate the figurines discovered by themselves. Hostility, because they will find themselves (consequently, will feel offended) in Bailey's assertions according to which the analyses and interpretations of many archaeologists from the Balkans regarding the figurines are *"simplistic"*, *"unreflective"*, *"anecdotal"*, *"damaging"*, *"unsupported"*, *"frustrating for their absence of argument"*, *"exasperating for their blind empiricism"*, *"a fetishism of measurement"* (pp. 12-14), epithets that, I for one, find perfectly justified. Therefore, I do not expect the Romanian archaeologists to follow Bailey's example and consider artistic works to be useful for their endeavours, in spite of the fact that, in their own country, some projects of some of the artists are, in my opinion, archaeological; an example of this kind (not relating to the topic tackled by Bailey) is the artist Daniel Knorr's project regarding various refuse found in and selected from the public space (see for details D. Knorr 2007).

At the end, I reiterate the fact that, as far as I am concerned, the argumentative sources, the way in which the text is built up and the narrative style make of Bailey's book a pleasant stimulating reading.

Reference

D. Knorr 2007 *Carte de artist*, Colecţia "Public", Cluj, Editura IDEA.

Paul Goldberg and Richard I. Macphail (cu contribuţii de Wendy Matthews), *Practical and Theoretical Geoarchaeology*, Blackwell Publishing, 2006, 455 pagini, 192 figuri alb/negru, 48 tabele, 12 planşe color, ISBN 0-632-06044-1, format hârtie, 64.95 USD.

Constantin HAITĂ*

Paul Goldberg este Profesor la Departamentul de Arheologie al Universităţii din Boston, desfăşurând proiecte de cercetare ce acoperă un domeniu foarte vast, de la probleme mai generale, legate de reconstituirea paleomediului în Quaternar şi geoarheologia unor aşezări din Orientul Apropiat, California şi Texas la sedimentarea în peşterile din zone ale Chinei şi sudul Africii, Europa sau Statele Unite ale Americii.

Richard I. Macphail este Senior Researcher la Universitatea din Londra, având ca domenii de cercetare sedimentele din context arheologic, solurile şi nivelurile de locuire din Europa şi Statele Unite ale Americii, având şi o bogată experienţă în domeniul patrimoniului britanic, în care a lucrat timp de 20 de ani.

Richard I. Macphail şi Paul Goldberg sunt de asemenea autori, alături de Marie Agnes Courty, ai volumului *Soils and Micromorphology in Archaeology* (Cambridge Manuals in Archaeology, 1989), cel mai important volum consacrat acestei discipline şi mai ales aplicaţiilor acesteia în arheologie.

Volumul dedicat, de această dată, unui domeniu de cercetare foarte vast, se înscrie în seria lucrărilor foarte complexe dar extrem de bine argumentate şi ilustrate, reprezentând cu certitudine una dintre cele mai valoroase contribuţii cu această temă.

Alături de definirea conceptelor şi termenilor de bază şi prezentarea metodelor de cercetare din domeniul geoarheologiei, exemplificarea printr-o serie de situri arheologice cu o tematică extrem de diversă ajută la explicarea modului în care acestea operează şi contribuie în mod critic la înţelegerea unor probleme care ar fi rămas altfel fără răspuns.

Oferind şi o introducere în domeniu, cartea este deosebit de utilă pentru formarea studenţilor şi a tinerilor specialişti, constituind o resursă importantă pentru arheologii care vor să integreze această problematică în cercetările lor.

Lucrarea este structurată în trei părţi. În prima parte, *Regional scale geoarchaeology* (Geoarheologie la scară regională), sunt introduse conceptele de bază asupra sedimentelor, stratigrafiei, solurilor, sistemelor hidrologice şi depozitelor de pantă, sistemelor atribuite râurilor şi lacurilor, mediilor de sedimentare eoliană, ţărmurilor, peşterilor şi adăposturilor. Prezentarea sedimentelor are în vedere atributele litologice, în scopul de a oferi un set obiectiv de criterii descriptive, dar şi înţelegerii istoriei lor (mod de formare, evoluţie). Prezentarea stratigrafiei urmăreşte atât prezentarea tipurilor de unităţi stratigrafice (litostratigrafice, biostratigrafice, magnetostratigrafice, pedostratigrafice), cât şi a noţiunilor de facies şi microfacies, conceptului de corelare stratigrafică şi a metodei matricei Hariss. În prezentarea solurilor, plecând de la factorii de formare, sunt analizate principalele procese pedologice, în scopul înţelegerii impactului acestora asupra siturilor arheologice dar şi obţinerii de informaţii asupra paleomediului, atunci când sunt analizate solurile îngropate. Sistemele hidrologice sunt prezentate atât din punct de vedere sedimentar (procese şi caracteristici), al tipurilor de soluri, informaţiilor la nivel micromorfologic şi a altor indicatori de mediu, ca şi al potenţialului arheologic (eroziune; deplasarea artefactelor; poziţionarea unor structuri negative - gropi, şanţuri; structuri sau artefacte îngropate; rezoluţie stratigrafică; conservarea artefactelor şi a materiei organice imersate).

În partea a doua, *Nontraditional geoarchaeological approaches* (Abordări geoarheologice netradiţionale) sunt prezentate o serie întreagă de domenii de cercetare, unele de dată foarte recentă, dintre care menţionăm: impactul uman asupra mediului (defrişare, modificarea solului şi cultivare), niveluri de locuire - concepte şi problematică, exemple din Orientul Apropiat, America de Nord şi Europa (cu o largă paletă cronologică de la *tell*-uri, tumuli, situri urbane, aşezări medievale timpurii şi alte locuiri medievale), geoarheologie experimentală, materiale antropice (materiale de construcţie, metale) sau chiar aplicaţii ale geoarheologiei în medicina legală (!). Toate studiile de caz sunt însoţite de date stratigrafice sau informaţii la nivel microscopic şi date chimice.

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Cea de a treia parte, *Field and laboratory methods, data and reporting* (Metode de teren şi de laborator, date şi raportare), este dedicată prezentării metodelor de laborator, analizei datelor şi redactării rapoartelor de cercetare. Această secţiune începe cu prezentarea metodele de teren, cum sunt imaginile satelitare şi fotografia aeriană, cartografia (topografică, geologică, cartarea solurilor), metodele geofizice (rezistivitate, paleomagnetism, prospecţiuni seismice şi georadar), metode de carotaj şi sondaje. Această secţiune este completată cu informaţii despre descrierea unităţilor stratigrafice şi orizonturilor de sol şi prezentarea principiilor şi strategiilor de eşantionare, relevând importanţa corelării tuturor datelor geoarheologice cu celelalte categorii de informaţii (alte date de paleomediu sau rezultate din analiza artefactelor).

Metodele de laborator prezentate sunt devenite clasice în arheologia europeană, printre acestea numărându-se analiza granulometrică; analize (chimice) de sol; analiza fosfaţilor; susceptibilitate magnetică; analize instrumentale şi de minerale grele – pentru identificarea ariei sursă; analize la microscop şi mineralogie, analiza secţiunilor subţiri – microscopie de fluorescenţă, analiza de imagine; microscopie electronică; punându-se accentul mai mult pe motivaţia pentru care trebuie aleasă o metodă sau alta decât pe aspectele tehnice ale fiecărei metode în parte, punându-se la dispoziţie şi o bibliografie esenţială.

Cele 15 planşe color, alături de anexele grafice şi tabelele de date, ca şi exemplele punctuale prezentate completează în mod fericit ilustrarea temelor abordate şi contribuie la realizarea unui volum care va rămâne, cu siguranţă mult timp, o carte de referinţă pentru acest domeniu complex cu deosebite implicaţii în înţelegerea situaţiilor arheologice.

Mark Pollard, Catherine Batt, Benjamin Stern, Suzanne M. M. Young, *Analytical Chemistry in Archaeology*, Cambridge University Press, New York, 2007, ISBN-13 978-0-521-65209-4, 404 pagini, Index.

Marinela FLOREA[*]

Volumul prezentat este publicat în seria *Cambridge Manuals in Archaeology* în 2007. Autorii (Mark Pollard, Catherine Batt, Benjamin Stern, Suzanne M. M. Young) sunt deja cunoscuți cercurilor de cercetători prin publicarea unor articole, studii sau contribuţii în domeniu[1].

Lucrarea este structurată în trei părţi. Primul capitol conţine un scurt istoric al aplicaţiilor chimiei analitice în arheologie. Atât pentru arheologi, cât şi pentru analişti, este interesant de "descoperit" care sunt întrebările la care chimia analitică, aplicată în arheologie, poate oferi răspunsuri. Acestea se referă la identificare, surse, tehnologii de fabricare, datare şi autenticitate, precum şi la procesele degradative suferite de materialele arheologice şi la modalitatea de conservare a acestora. Pe scurt, am putea spune că prima parte a cărţii plasează chimia analitică în context arheologic. În capitolul doi sunt prezentate câteva informaţii referitoare la chimie, în special chimie analitică, ce vor permite parcurgerea şi, într-o oarecare măsură, înţelegerea materialului din cea de-a doua parte.

Pe parcursul capitolelor 3-9, care reprezintă cea de-a doua parte a cărţii, sunt prezentate aplicaţiile chimiei analitice în arheologie. Sunt abordate metode moderne de analiză, cum ar fi spectrometria de absorbţie şi emisie în vizibil şi ultraviolet, spectrometria Raman, spectrometria de raze X, spectrometria de masă şi cromatografia. Sunt prezentate principiile metodelor, aparatura utilizată şi o serie de aplicaţii ale acestora în arheologie. Criteriul de selecţie al metodelor de analiză prezentate în această lucrare a fost reprezentat de contribuţia adusă la completarea informaţiilor referitoare la materialul arheologic analizat.

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[1] Mai cunoscut arheologilor este M. Pollard (Director of the Research Laboratory Edward Hall Professor of Archaeological Science-University of Oxford), o listă completă a lucrărilor sale găsindu-se la http://www.rlaha.ox.ac.uk/php/person?person=AMP.

Partea a treia a cărţii este rezervată unor noţiuni fundamentale de chimie (structura atomului, modul de formare a legăturilor chimice, natura radiaţiei electromagnetice) şi a unor aspecte practice de chimie analitică, referitor la securitatea activităţii în laborator, pregătirea probelor şi a soluţiilor, substanţe standard, etalonare şi modalitatea de evaluarea a erorilor. Informaţiile oferite în această parte a cărţii permit înţelegerea metodelor de analiză prezentate în partea a doua.

Aş vrea să subliniez că, deşi cartea este publicată într-o serie de manuale de arheologie (Cambridge Manuals in Archaeology), este o modalitate de familiarizare a arheologului cu chimia, în special chimia analitică. Înţelegerea materialului prezentat este însă condiţionată de existenţa unui bagaj consistent de cunoştinţe de chimie.

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
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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