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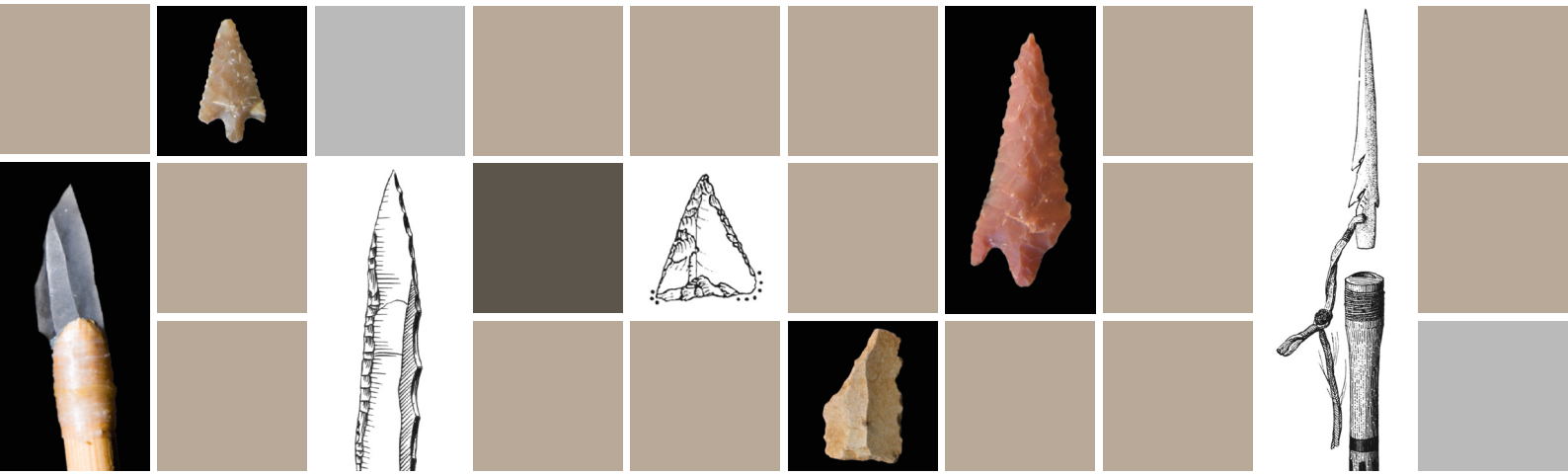
PROJECTILE WEAPON ELEMENTS
FROM THE UPPER PALAEOLITHIC TO THE NEOLITHIC

Proceedings of session C83



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NEW LIGHT ON PALAEOLITHIC, MESOLITHIC AND NEOLITHIC PROJECTILE WEAPON ELEMENTS

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Stone or bone, transverse heads or points, barbs, foreshafts, harpoon heads... Projectile weapon elements are found in many forms in prehistoric sites, at least from the beginning of the Upper Palaeolithic. These artefacts first attract archaeologists with their great numbers, often dominating proportions in tool assemblages, but they are also interesting due to their clearly dynamic role in prehistoric material culture: the morphology and/or technical characteristics of many of them vary significantly through time and space, thus constituting a useful tool for archaeologists in the construction of chronologies and the definition of cultures. Researchers often integrate these variations with other types of transformations—such as ecological or economic ones—to build interpretative models of the evolution of societies.

The important role of projectile weapon elements in archaeological research is also due to their association with activities that are never mundane: hunting activities, of course, but also, very likely, in the context of conflicts between individuals or groups.

Wild animals are a vital resource for most hunter-gatherer groups and they continue to play a significant economic and/or socio-cultural role in many agro-pastoral societies. While faunal remains found in habitat sites allow us to identify the species exploited, acquisition techniques, on the other hand, leave very few traces: collecting and scavenging require very minimal equipment and the majority of objects used for hunting are made from perishable materials (nets, traps, pikes, throw-sticks, slings, bows, quivers, atlatls, etc.). Weapon elements, when they are preserved, are usually the only material allowing us to address this fundamental field of activity. The same is true for war weaponry, at least from periods anterior to the appearance of metal equipment (swords, helmets, greaves, etc.). Here again, weapon elements are one of the few remains that can provide information concerning violence and the practices of war in prehistory. Furthermore, only the rare fragments of weapons made from bone material-such as the Magdalenian atlatl hooks-or the bows and arrows preserved in some Mesolithic and Neolithic sites, allow us to investigate the relationship between whole weapon systems and the individual element(s) of which they are composed.

We will not retrace here the history of research concerning projectile weapons, but refer the reader to the synthetic article by H. Knecht (1997a). This text recounts how the preoccupations of archaeologists, at first essentially classificatory (typology, morphology), expanded in the 1980's to include technological questions in the general sense: reconstruction of the modes of fabrication, use and maintenance of weapon elements. The colloquium "La chasse dans la Préhistoire/ Hunting in Prehistory", held in Treignes (Belgium) in 1990, provided one of the first opportunities to assemble numerous works in progress in Europe in this domain (Bellier *et al.* dir., 2000). A few years later, the collective work *Projectile Technology* (Knecht dir., 1997b) provided a broad perspective of research conducted during the beginning of the 1990's, in archaeology in the strict sense, as well as in the domains of experimental archaeology and ethnoarchaeology.

The pace of these works slowed during the later 1990's, but a new dynamic has emerged over the past several years. The originality of recent research lies in the integration of different approaches, such as the simultaneous study of the fabrication and use of an assemblage of weapon elements, the joint study of the lithic and osseous weapon elements in the same assemblage, and the integration of faunal data. With the goal of promoting these approaches, we decided, around ten years after the publication of *Projectile Technology*, to revive this theme in the context of the 15th Congress of the UISPP.

The idea to organize this colloquium emerged from discussions, exchanges and collective research among the six coordinators. Though we focus on different periods, problems and material types, we realized that we are faced with similar questions concerning the identification and interpretation of weapon elements. Our aim was thus to bring together specialists from different horizons in order to encourage debates and discussions that would reveal common research problems and convergent ideas.

This colloquium was held in Lisbon, Portugal on September 7 and 8, 2006. It consisted of around twenty, 20 minute long presentations, complemented by numerous valuable discussions. There were about fifty attendees at all times. The enthusiasm of the participants was very encouraging and we believe will lead to numerous "sequels"—perhaps in the form of workshops with more limited themes, which we will further discuss below.

Faced with such a broad and complex topic, we obviously had no pretention of exhaustiveness. First, for practical reasons, we had to limit the chronological range of this colloquium to the Upper Palaeolithic, Mesolithic and Neolithic, though we are well aware that this type of restriction is always somewhat arbitrary. Moreover, even within the chronological range chosen, the presentations did not constitute a complete panorama of research in progress (we regret, among others, the under-representation of studies of osseous weapon elements).

In this volume, the reader will thus encounter just a glimpse of a vast domain of research, in the form of 16 articles based on the studies presented during these two days. These contributions represent the work of 25 authors and co-authors working in nine countries. We emphasize that nearly half of them are Ph.D. students or recent graduates without stable employment, and that many of the results presented are part of university theses or collective research projects in progress.

The subjects treated are equally chronologically distributed between the Upper Palaeolithic (6 contributions), the Final Palaeolithic and Mesolithic (4 contributions) and the Neolithic (5 contributions). Geographically, except for two excursions into the African continent—Nubia and South Africa—the colloquium was focussed on Western and Mediterranean Europe (Spain, France, Luxemburg, Germany, Italy, Greece).

In general, the studies presented can be divided equally into two broad approaches and domains of questioning, which we distinguish as functional perspectives and diachronic perspectives.

Functional perspectives

Weapon elements or elements of cutting tools (knives, sickles)? This question is often raised, especially in studies of lamellar (bladelet) tools, and the morphology of the objects alone does not provide a definitive response. Two very distant cases, that of Archaic Aurignacian bladelets (Normand *et al.*) and Holocene circular segments in Nubia (Honegger), illustrate the complexity of this problem. An integration of the contexts of discovery and analysis of microwear and impact fractures allows these authors to propose a distinction between weapon elements and elements of other tools. As a result, in both cases, a population of artefacts usually considered to be homogeneous is shown to be composed of several functional categories.

Venturing beyond the identification of weapon elements, several authors investigate their hafting methods. Were they attached to the extremity of the weapon, or laterally, on its side; in the axis of the projectile or at an angle (lithic "barbs")? This problem is particularly pertinent for Mesolithic microliths (Chesnaux, Grimaldi), but also exists for elements whose hafting mode would seem more evident, such as Gravettian backed points (Borgia) or Hamburgian shouldered points (Weber). Experimentation is now considered to be an indispensible tool for addressing such questions and all of these studies present the results of experimentation with a bow and arrow with the goal of obtaining diagnostic traces on the experimental weapons elements that can be compared with those observed on archaeological objects.

In this domain, the ensemble of this volume reveals a degree of heterogeneity. More than twenty years after the first publications of systematic projectile experiments and descriptions of impact traces, the protocols and methods applied in this type of experimentation are still far from homogeneous; the nomenclature of fracture types is not always standardized; and experimental reference bases for several types of lithic projectile elements are still unrealized. Moreover, all of the authors are aware of the necessity of distinguishing between projectile impact fractures and other types of breaks (trampling, fabrication, etc.), but numerous taphonomic parameters in this domain are still not fully controlled.

This problem alone probably merits the organization of an international colloquium in order to establish conventions accepted by all. Fortunately, speaking the same language does not mean that we all have to say the same thing... but it does have the advantage of facilitating inter-site comparisons, which are currently very difficult (how do we interpret the varying frequencies of a fracture type from one site to another, or the sometimes extremely variable percentages of weapon elements with diagnostic impact traces?).

Some of the experiments published in this volume lead to other functional hypotheses. In the case of Sauveterrian microliths, for example, the short depths of penetration obtained through shots into suidae with a bow and arrow incite the experimenters to wonder if poisons may have been used (Chesnaux), or if these weapon elements were specialized for the hunting of small prey (Grimaldi).

This question of functional specialization constitutes the central theme of two other contributions. Based on the context of discovery of the weapon elements—and in one case on ethnographic comparisons—the authors attempt to determine, respectively, whether we can identify weapon elements specifically associated with war in

the Neolithic during the 3rd Millennium (Dias-Meirinho) and if the barbed points of the Upper Magdalenian were specialized in the acquisition of a specific prey animal (Pétillon). The preliminary nature of the results of these studies demonstrates the difficulty of pushing functional analyses to this fine degree of resolution.

Diachronic perspectives

The eight other articles present either a study of one assemblage replaced in a broader chronological perspective, or the data of several assemblages covering a long time range. All of these contributions address, more or less explicitly, the same question: what factors are at the origin of the typo-technological variations observed among panoplies of weapon elements? The responses given, or at least initiated, and the models proposed are very diverse—at minimum because each archaeological situation is specific and our state of knowledge is highly variable from one period, or one region, to another. Meanwhile, it is important to emphasize that weapon elements are seen in these studies as indicators of social phenomena. Changes in weapon element kits are presented as evidence of social evolutions. These evolutions can, if we greatly simplify the observations of the authors, be divided into two broad categories: cultural and economic.

In studies of weapon elements, the "cultural" argument is often favoured to explain the (non) diffusion of discrete technical traits, these "tiny details (...) including—and perhaps especially—the most insignificant in appearance, such as the simple choice of lateralization" (Valentin, 2008, p. 64). Attempts to correlate weapon elements and other aspects of material cultural have yielded nuanced results. In the Moselle region (Hauzeur and Löhr), for example, the distribution of weapon element lateralization does not fully correspond to the zones of influence of different Neolithization trends, thus demonstrating the role played by the traditions of the preceding Mesolithic substratum. Furthermore, these evolutions do not appear to be linked with exchange networks since the left lateralization of armatures is accentuated through time, while the majority of the flint used come from regions where right lateralization dominates. This phenomenon is comparable to that which prevails on the Ionian island of Cephalonia (Stratouli and Metaxtas): though the island participated very early on in abundant exchanges with the rest of the region, the evolution of weapon elements does not reflect this situation since the Middle Neolithic ensembles persisted there well after their disappearance elsewhere. The authors attribute this "technical conservatism" to a specific, insular way of life in which hunting was invested with a particular status. But it is through a well documented Palaeolithic example that we can most clearly approach the mechanisms of the transmission of cultural norms: the technological study of the Gravettian assemblage of Tercis (Simonet) reminds us of the crucial importance of apprenticeship behaviours—and their consequent variation in skill levels—for the perpetuation or transformation of a weapon element "standard".

The evolution of the raw materials and fabrication techniques used to produce weapon elements also reflects the economic structure of prehistoric groups. For example, from the beginning to the end of the Magdalenian, between the Rhone and Ebre Valleys, the variations in lithic ensembles show changes in the degree of anticipation and planning for needs, as well as the more or less broad integration—or on the contrary, autonomy—of different regional groups (Langlais). This problematic echoes that of a project concerning hunter-gatherers of the Quercy region between the 10th and 5th millennia (Valdeyron *et al.*): in this case the model is still being constructed, but already raises the question of the influence of the progressive closing of the landscape on the economy of Mesolithic groups and the repercussions on the composition of weapon kits (changes in the accessibility of raw materials, group mobility, fauna hunted, etc.). The question is also raised for the Azilian in western France (Naudinot) where variations in the standardization of weapon elements appear to be related to more or less simplified debitage

methods, but the technological variations themselves must still be replaced within the global economic evolution of these groups. Long term economic evolution is also proposed to explain the variations in Neolithic weapon elements in eastern Spain (Fernández López de Pablo *et al.*): the decreasing frequency of microliths throughout the Neolithic is correlated with a diminution of hunting activities, while the resurgence of weapons in certain Final Neolithic contexts would reflect the colonization of new territories and the elimination of the existing wild fauna.

The same authors also suggest that an increase in armed conflicts could have played a role in the development of some types of weapon elements. This hypothesis evokes the scenario put forth for Bushmen weapons (Bosc-Zanardo *et al.*). According to the model proposed, the "concretization" of Bushmen weapon elements—in the sense of G. Simondon (2001), meaning the convergence of functions into a structural unit—was made possible in the 19th century by the generalization of metal use and was perhaps strongly incited by the multiplication of wars during this period. For a prehistorian, this contribution provides material for reflection... This study of Bushmen weapons benefited from an integration of historical, ethnological and archaeological sources. It thus reminds us of the difficulty, when our only source is archaeological, of understanding the conditions of the emergence of a technical innovation—and in particular, of identifying the necessary conditions (here the generalization of metal) and the inciting conditions (here increasing conflicts), the two here being, moreover, intimately related!

We will end this brief "tour" of a vast domain by expressing our gratitude to the University of Lisbon for accommodating this colloquium, and of course, the national administration of the UISPP for their organization of the 15th Congress. We also thank all the participants, orators and attendees, in particular those who accepted the role of session president or moderator. Each article in this volume was submitted to a reviewing committee composed of the present authors joined by François Bon, to whom we express sincerest appreciation. We are also grateful to the editorial committee of the journal *Palethnologie* for opening its columns to us, and finally to Noëlle Provenzano for her useful comments on an earlier version of this text.

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