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### ► To cite this version:

Laure Fontana, Anne Bridault, François-Xavier Chauvière. In search of total animal exploitation : introduction. L. Fontana, F.-X Chauvière & A. Bridault. In search of Total Animal Exploitation. Case Studies from the Upper Palaeolithic and Mesolithic., 42, pp.1-3, 2009, British archaeological Reports - International Series 2040. halshs-00458210

**HAL Id: halshs-00458210**

**<https://shs.hal.science/halshs-00458210v1>**

Submitted on 28 May 2020

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# In search of total animal exploitation

## Introduction

Laure FONTANA\*, Anne BRIDAULT\*\* & François-Xavier CHAUVIÈRE\*\*\*

For nearly thirty years, questions related to resource exploitation by prehistoric societies have renewed and expanded chrono-cultural and paleoecological approaches. The characterisation of economies preceding the advent of agriculture and the explanation of the processes of economic change were an important part of the research stimulated by the so-called "School of Cambridge" and led by E.S. Higgs in the 1960s and 1970s (Higgs 1972, 1975). Other questions focused on the dynamic relationships between population and resources (e.g. Bailey 1983, Sieveking *et al.* 1976, Sheridan & Bailey 1981) or on the decision-making processes taken by human groups regarding the exploitation of animal and mineral resources, as well as the organisation of tasks and mobility patterns (e.g. Mithen 1990, Torrence 1983). The idea is that, in order to achieve hunting or gathering goals, individuals are expected to face multiple and conflicting constraints or opportunities and consequently to switch between them. Indeed, decision making may be considered as a universal feature that applies to every domain of the everyday life of human groups and individuals. For instance, the daily - to some extent - management of various resources implies a whole series of choices (eating food implies going hunting which implies making stone tools) related to locations of resource procurement, strategies of predation (*i.e.* hunting, trapping, collecting), duration of occupation, social organisation of activities. Moreover, such choices are almost all linked to one or several moments of the year, because of the seasonality of availability of most resources, the environment and the climate. Finally, the issue of resource exploitation is systemically linked to that of the spatial organisation of human occupations (*i.e.* settlement pattern studies). This question may be broken down according to various integrated spatio-temporal scales, such as a site, several

sites, the succession of occupations, usually perceived as seasonal ones, within a specific exploitation territory. The patterns of remains abandonment at each of the sites provide theoretically the material and temporal fingerprint of human activities, of events that took place while on the move. The re-occupation - that may take different forms - of sites is however one of the main problems affecting the visibility of the archaeological record (Binford 1982). Archaeological studies have largely focused on mobility patterns (direction, distances, etc.), based on raw material sourcing (Féblot-Augustins 2008) or inter-site refitting analysis (Close 2000). Finally, seasonal procurement systems have been mostly addressed by ethnoarchaeology and actualistic studies (e.g. Gould 1975, Winterhalder & Smith 1981), their archaeological application remaining mostly theoretical or at best partially documented. In Europe, the accumulation of data related to lithic raw material sourcing, modes of production (and use) of lithic and osseous weapons and tools, game treatment and selection has helped improve our knowledge about certain aspects of mineral, vegetal and animal resource exploitation (*sensu lato*: procurement, exploitation and consumption/use). However, the contribution of such data to the reconstitution of interactions between the various sub-systems that may be relevant to characterise a given society seems limited. It seems more of a synthetic than a truly dynamic approach.

Firstly, at the level of the economic sub-system, the exploitation of resources is rarely envisioned and questioned globally. Every type of resource (*i.e.* plant, animal and mineral) is studied separately, which prevents the formulation of any common and cross questioning, and thus the study of the whole economic system (see details

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in Fontana *et al.* 2009). The latter one would require to take into account the interdependence of choices and the organisation of resource procurement and exploitation at the scale of the annual cycle. Their consideration would imply the integration of various sets of data and would first require an initial questioning in common. Such a perspective is still rarely addressed in the literature.

Secondly, concerning the animal exploitation, one striking feature is the paucity of analyses considering animals as a whole set of potential materials. Indeed, compared to lithics, animals represent a source of potentially varied products: dietary (meat, marrow, internal organs...) and non-dietary (*i.e.* hard skeletal tissues/matters - *matières dures d'origine animale*: bone, tooth, antler, test and keratin- and soft tissues/matters: skin, horn, sinew and feather). Then it makes sense to study animal remains with a global approach. Yet, within almost all analytical frameworks currently found in the literature, faunal remains are sorted out as either refusal of food consumption (subject of zooarchaeological studies) or artifacts - finished products and by-products (within the competence of the technology of "bone industries").

This may be related to the fact that all these animal remains are not considered as originating from a single resource (*i.e.* an animal) as a source of various potential matters. Consequently, one focuses on the transformation process of the given animal raw material into the given artifact (with the potential by-products of its manufacture). Such an approach narrows down this latter item to be studied exclusively from a typological and technological viewpoint. So the study of faunal remains, that should aim at characterising the total exploitation of animal resources in relation to procurement locations and seasons, remains only partially explored. This poor concern for the acquisition patterns of the osseous raw material, as well as for the shape and quantity in which it reaches any site, is quite surprising when compared to the many detailed studies on mineral resources.

When considering two scales of observations (*i.e.* regional and local), at the site level the analysis bears witness to local exploitation patterns whereas at the regional scale the analysis of the exploitation territory and annual cycle documents the economy of animal resources by human groups. Such a statement, as well as a desire to tackle an integrated study in search of total animal exploitation, has

been the main motivation to convey scholars interested by such a perspective. The contributions included in this book are thus attempts at analysing - at different levels depending on the archaeological context - this global exploitation of animal resources. Are thus presented data from the study of Aurignacian sites (French Pyrénées and north-eastern France), of Gravettian sites (Swabian Jura and Moravia), of Magdalenian sites (Massif Central, south-western France, Spanish and French Pyrénées), of Epigravettian sites (southern Italy), and of Sauveterrian sites (southern French Massif Central). May they be focusing on the local and/or regional scale and that they document the global exploitation of one or several animals (Mammoth, Reindeer, Red Deer, Horse, Ibex, birds), these studies formulate essential questions and address methodological problems that arise primarily at the scale of site analysis.

The identification of the acquired and exploited products does not seem to be an issue, with the exception of the materials non-preserved, and the products collected but not exploited at a site. By contrast, it is more problematic to identify priorities in terms of products (meat, fur, Cervid antlers) and the essential practice of quantifying the contribution of each product constitutes a real methodological challenge.

Similarly, the issue of distinguishing and quantifying, among the osseous artifacts abandoned at a site, those that were made previously at another location, was raised by several authors. This may be resolved in some cases, as evidenced by several of the contributions. Assessing the proportion of objects and materials more or less transformed, that were manufactured at a site and then taken away, falls into this realm of questioning.

Let us note also the contribution of ivory which was, according to the regional contexts, a raw material more or less exploited and whose exploitation patterns at the level of annual cycle remains poorly understood.

#### ACKNOWLEDGMENTS

Many thanks to the authors who participated in 2006 in the C61 Symposium of the UISPP Congress in Lisbon, as well as the organizers of that Congress who kindly accepted our symposium proposal. We also express our gratitude to Aliette Lompré and Christophe Delage who greatly contributed to the achievement of this book.

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