Interpretation of firewood management as a socio-ecological indicator

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Summary: We present and discuss the contribution of conceptual and ethnobotanical approaches for understanding firewood management in pre-industrial societies based on biotic ecology (hunting-fishing-gathering, pastoralism, agriculture). The elaboration of a “chaine opératoire” whose final product is fire and that is based on a common knowledge allows us to highlight complex ecological and cultural processes linked to firewood management. However, ethnobotanical methodology and models are rarely directly applicable to charcoal analysis. It is suggested that dendrometrical tools and ethnoarchaeological data must be developed to improve our understanding of firewood management as a socio-ecological indicator.

Key words: charcoal analysis, fuel, firewood, dendrometry, ethnoarcheobotany

INTRODUCTION

Humans belong to a complex adaptive system, whereby societies integrate with their environment through systems of production, exchanges, and transformations. These interactions and adaptations can be at least partially understood through the study of plant resources, which form the basis of subsistence and combustion fuel for human economies. The transition from a system of hunter-gatherers to one of pastoral-farmer-producers 8000 years ago in Western Europe accelerated these processes of “reciprocal influences”. Archaeobotany therefore, is a discipline situated at the heart of these questions, and which allows us to understand the forms of co-evolution between humans and the management of plant resources over the longue durée (Thiébault, 2010).

The production of fire for heating, defense, light, cooking, and the production of goods is a technological act and constitutes in itself a socio-economic activity, dependant on the social context (Dufraisse et al., 2007). It is important to consider whether anthracology represents an adequate approach to comprehend this technological act with its socio-economic dimensions, and how the study of carbonized wood remains can document the forms of co-evolution between humans and the botanical environment.

SOCIO-ECONOMIC ASPECTS OF FIREWOOD SELECTION

To respond to these questions we have adopted the analytic approach of technologists in order to deconstruct a “total fact” (here, the production of fire) and to propose an adapted analytic grid. This permits the systematic collection of data that can be used to inform the anthracologist. Thus, Figure 1 is constructed using a common knowledge base that relies on historical, ethnographic, universal principles and archaeological data.

However, not all of the stages of the chaine opératoire necessarily lead back to the same social, technological, and economic processes. A number of concepts or theories such as time allocation, optimal foraging, or carrying capacity return specifically to the socio-economic organization of these communities and permit the anthracologist to propose better developed socio-ecological interpretations. We mention the comparative example of sites in Central Belgium and French Jura, where at different points during the...
Neolithic, agricultural practices (intensive cultivation of small areas in Belgium vs. extensive cultivation of larger areas in Jura) seem to have determined the management strategies of firewood, and therefore also the paleoecological representativeness of the anthracological assemblages (Salavert and Dufraisse, in preparation). Here, again, the development of dendrometric tools focused on the width of growth rings, should permit us to more precisely narrow down our estimates of the distances traveled, a parameter that seems essential.

On the other hand, ethnoarchaeology’s objective is to seek out interpretative keys that are applicable beyond the narrow framework of a single period, region, or culture (Gallay, 1986). The development of this goal, applied to the management of plant resources, what can be termed ethnoarchaeobotany, begins to enrich our frames of reference (for example Piquè, 1999; Picornell, 2009) and should permit us to understand and interpret the functions and mechanisms that underlie the chaine opératoire.

REFERENCES


