# THE ARCHAEOLOGY OF FIRE

**Understanding Fire** as Material Culture

Edited by Dragos Gheorghiu and George Nash



### Front Illustration:

Pit firing using dung as fuel. Vadastra village, August 2003 (Photo: Dragos Gheorghiu)

Back Cover Illustration:

Copper smelting in a pit. Archaeodromde de Bourgogne (Photo: ABAB)

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### **Preface**

This volume constructed from 12 carefully chosen chapters, specifically tackles fire and its presence within the archaeological record. The archaeological record suggests that fire plays a number of essential roles in society. Fire is a heatmaker, a homemaker, a lightmaker, a signalmaker and ritual-symbolic marker; it aids performance as well as serving the domestic and mundane. Despite these roles, fire within the archaeological record is seldom discussed. Within a ritual context, fire is considered merely as a tool of illumination. Within domestic contexts, fire is usually recorded as heating and cooking things. However, social anthropology and numerous ethnographies around the World tell a very different story. To many non-western societies fire is symbolically vital in everyday working life. Fire controls and manipulates the life cycle of many. It is not only a functional tool but it also possesses many supernatural qualities. Much oral story telling, from the Dream-time and to post-medieval poetry tells of mystical animals rising from or falling into fire. Social anthropologists such as Claude Lévi-Strauss talk of fire being part of structural opposition (i.e. Fire: Water). Ritual fire is also, according to the African ethnographic record, a vital tool in creating [ceramic] pots, not just as the heatmaker but also as heat injecting life and history into each vessel. One can assume that the fire power was also present in ancient pots. More importantly, the potmaker too would possess power. Both maker and the product would have constituted a special relationship that would have put them outside the mundane. The same can be said for the metalmaker.

It is clear that the secularity of present day society appears to take for granted of pyro-technology; one strike, one has heat and light. However, in ancient society, fire, similar to other day-to-day chaos, would have been approached in a number of very different ways. Again, according to LÉVI-STRAUSS (1986) there are essentially two types of fire. Both fires physically do the same thing. However, one is earthly, fulfilling the mundane needs of society, and the other is celestial and clearly used within ritual events. Based on a number of ethnographies fire transcends both worlds; from ignition to the disposal of the ash and embers (MOORE 1986).

In essence, this volume discusses a number of fundamental roles that fire plays. It is clear that fire is more than just fire and means different things to different people (PARKER PEARSON – RICHARDS 1994, 41). Papers within this volume, although diverse in content, follow three fundamental themes; archaeology, ethnography and experimentation. Chapters by Dods, Gheorghiu, Kroll-Lerner,

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Nash, Odgaard and Purhonen focus on the sociology of fire, while Andrews, Frère-Sautot and Harding discuss the interaction between things, society and technology. Audouze and Rowlett discuss the problems of understanding the fragmentary evidence of the distant past; Rowlett boldly tackling the use of fire by early hominids.

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# Bibliography

## LÉVI-STRAUSS, C. 1986

The Raw and the Cooked, Harmondsworth: Penguin.

# MOORE, H. L. 1986

Space, Text and Gender: An Anthropological Study of the Marakwet of Kenya, Cambridge: Cambridge University Press.

# PARKER PEARSON, M. - RICHARDS, C. 1994

Architecture and Order: Spatial Representation and Archaeology. In: Parker Pearson, M. – Richards, C. (eds.), *Architecture and Order. Approaches to Social Space*. London & New York, Routledge, 38–72.