

One of the most troubling problems in archaeology is to determine about what or in what manner did prehistoric people think. A fundamental challenge is to develop the theory, methodology and tools to understand human cognition. Cognitive archaeology as a subject is still in its infancy, and archaeologists are adopting a variety of approaches. One direction has been to develop an 'interpretationist', anti-scientific, literary approach. Another has been to use a linguistic framework and develop a hermeneutic, semiotic approach. A third approach develops a new direction in prehistoric cognitive research which is rooted in the scientific tradition and in an empirical methodology. It draws upon the cognitive, the mathematical and the computer sciences in an attempt to understand what techniques can be used appropriately on archaeological data, and how to implement them efficiently. This is the approach adopted by the contributors of *The ancient mind*. Together, they begin to develop a science of cognitive archaeology.

Cambridge University Press
0521456207 - The Ancient Mind: Elements of Cognitive Archaeology
Edited by Colin Renfrew and Ezra B. W. Zubrow
Frontmatter
[More information](#)

The ancient mind

Cambridge University Press
0521456207 - The Ancient Mind: Elements of Cognitive Archaeology
Edited by Colin Renfrew and Ezra B. W. Zubrow
Frontmatter
[More information](#)

NEW DIRECTIONS IN ARCHAEOLOGY

Editors

Wendy Ashmore
Department of Anthropology, University of Pennsylvania

Françoise Audouze
*Centre de Recherches Archéologiques,
Meudon, France*

Richard Bradley
Department of Archaeology, University of Reading

Joan Gero
*Department of Anthropology, University of
South Carolina*

Tim Murray
*Department of Archaeology, La Trobe University,
Victoria, Australia*

Colin Renfrew
*Department of Archaeology, University of
Cambridge*

Andrew Sherratt
*Department of Antiquities, Ashmolean Museum,
Oxford*

Timothy Taylor
Department of Archaeology, University of Bradford

Norman Yoffee
Department of Anthropology, University of Arizona

Cambridge University Press
0521456207 - The Ancient Mind: Elements of Cognitive Archaeology
Edited by Colin Renfrew and Ezra B. W. Zubrow
Frontmatter
[More information](#)

The ancient mind

Elements of cognitive archaeology

Edited by
COLIN RENFREW
and
EZRA B. W. ZUBROW



Cambridge University Press
0521456207 - The Ancient Mind: Elements of Cognitive Archaeology
Edited by Colin Renfrew and Ezra B. W. Zubrow
Frontmatter
[More information](#)

PUBLISHED BY THE PRESS SYNDICATE OF THE UNIVERSITY OF CAMBRIDGE
The Pitt Building, Trumpington Street, Cambridge, United Kingdom

CAMBRIDGE UNIVERSITY PRESS
The Edinburgh Building, Cambridge CB2 2RU, UK <http://www.cup.cam.ac.uk>
40 West 20th Street, New York, NY 10011-4211, USA <http://www.cup.org>
10 Stamford Road, Oakleigh, Melbourne 3166, Australia
Ruiz de Alarcón 13, 28014 Madrid, Spain

© Cambridge University Press 1994

This book is in copyright. Subject to statutory exception
and to the provisions of relevant collective licensing agreements,
no reproduction of any part may take place without
the written permission of Cambridge University Press.

First published 1994
Reprinted 1995, 1996, 1997, 2000

A catalogue record for this book is available from the British Library

Library of Congress Cataloguing in Publication data
The ancient mind: elements of cognitive archaeology /
edited by Colin Renfrew and Ezra B. W. Zubrow.
p. cm. – (New directions in archaeology)

Includes index.

ISBN 0 521 43488 2

I. Archaeology. 2. Cognition and culture. I. Renfrew, Colin,
1937–. II. Zubrow, Ezra B. W. III. Series.

CC175.A53 1994

930.1'01–dc20 93–25033 CIP

ISBN 0 521 43488 2 hardback

ISBN 0 521 45620 7 paperback

Transferred to digital printing 2004

Contents

		7 Ancient Zapotec ritual and religion: an application of the direct historical approach <i>Joyce Marcus and Kent V. Flannery</i>	55
		8 The meaning of death: funerary beliefs and the prehistorian <i>Chris Scarre</i>	75
		9 Prehistoric cognition and the science of archaeology <i>James N. Hill</i>	83
		PART IV PREHISTORIC CONCEPTIONS OF SPACE AND TIME	93
		10 Symbols and signposts – understanding the prehistoric petroglyphs of the British Isles <i>Richard Bradley</i>	95
		11 Knowledge representation and archaeology: a cognitive example using GIS <i>Ezra B. W. Zubrow</i>	107
		12 Dials: a study in the physical representation of cognitive systems <i>Charles O. Frake</i>	119
<i>List of figures</i>	page viii		
<i>List of tables</i>	x		
<i>List of contributors</i>	xi		
<i>Preface</i>			
<i>Colin Renfrew and Ezra B. W. Zubrow</i>	xiii		
PART I INTRODUCTION	1	PART V THE MATERIAL BASIS OF COGNITIVE INFERENCE: TECHNOLOGY	133
1 Towards a cognitive archaeology <i>Colin Renfrew</i>	3	13 Cognitive aspects of ‘technique’ <i>S. E. van der Leeuw</i>	135
PART II THE INTERDISCIPLINARY UNDERPINNING	13	14 Mindful technology: unleashing the <i>chaîne opératoire</i> for an archaeology of mind <i>Nathan Schlanger</i>	143
2 Interpretation and testability in theories about prehistoric thinking <i>James A. Bell</i>	15	15 Prehistoric technology: a cognitive science? <i>C. Karlin and M. Julien</i>	152
3 Archaeology and cognitive science <i>Erwin M. Segal</i>	22	PART VI THE MATERIAL BASIS OF COGNITIVE INFERENCE: WRITING SYSTEMS	165
4 From domain specific to generalized intelligence: a cognitive interpretation of the Middle/Upper Palaeolithic transition <i>Steven Mithen</i>	29	16 Variation and change in symbol systems: case studies in Elamite cuneiform <i>John S. Justeson and Laurence D. Stephens</i>	167
5 Are images animated? The psychology of statues in Ancient Greece <i>Alain Schnapp</i>	40	17 Text and figure in ancient Mesopotamia: match and mismatch <i>J. N. Postgate</i>	176
PART III APPROACHES TO CULT PRACTICE AND TRANSCENDENTAL BELIEF SYSTEMS	45	PART VII CONCLUSION	185
6 The archaeology of religion <i>Colin Renfrew</i>	47	18 Cognitive archaeology reconsidered <i>Ezra B. W. Zubrow</i>	187
		<i>Index</i>	191

Figures

1.1	Model of a Maltese temple of the third millennium BC	<i>page</i> 7	7.11	Artist's reconstruction of a Monte Albán II temple	68
1.2	Ranking expressed symbolically	8	7.12	Plan of Structure 35 temple	69
5.1	Cognitive map of images and their medium of figuration	41	7.13	A sample of the obsidian artefacts found on the floor of Structure 35	69
5.2	Schematic representation of the opposition between iconic and aniconic images in Greek sculpture	43	7.14	Two stone masonry offering boxes	70
6.1	Religion as interpreted by Rappaport	49	7.15	Two jade statues	70
7.1	Distribution of Zapotec, Mixtec and Mixe speakers	58	7.16	Artist's reconstruction of the ritual scene	71
7.2	Zapotec effigy vessel showing an anthropomorphic Cociyo, or Lightning, with four containers on his back	59	8.1	Royal pyramid construction in Ancient Egypt, in terms of estimated pyramid volume	77
7.3	Flying 'cloud person' modelled in stucco on the wall of a late prehistoric tomb from Zaachila, Oaxaca	60	8.2	Early Dynastic mastaba tombs	78
7.4	The two species of quail most often sacrificed in Zapotec temples	61	10.1	Cup-marks at Cairnbaan, Mid Argyll, Scotland	97
7.5	Artefacts used in ritual bloodletting (auto-sacrifice)	62	10.2	Cup-and-ring marks at Cairnbaan, Mid Argyll, Scotland	98
7.6	Representations of the 'fire-serpent' or 'sky-dragon' in the art of 1150–850 BC	63	10.3	Regions of the British Isles referred to in the text	99
7.7	A carved stone which depicts a sacrificed individual	64	10.4	The location of the rock art in the prehistoric landscape of north Yorkshire	99
7.8	Ground plans of Zapotec temples	65	10.5	The rock art of north Northumberland	103
7.9	Battered fragment showing anthropomorphic figure with the typical buccal mask, serpent tongue, flat nose and gaping mouth of Cociyo	66	11.1	The Earth as a medium of information exchange	108
7.10	Reconstruction drawings of superimposed Monte Albán II temples	67	11.2	The Niagara frontier	112
			11.3	Part of the archaeological database	113
			11.4	The application of the 'ideal' trade pattern based upon economic considerations to the 'real' settlement pattern	114
			11.5	The application of the 'ideal' wampum pattern to the 'real' settlement pattern	115
			11.6	The application of the 'ideal' partial longhouse pattern to the 'real' settlement pattern	116
			11.7	The application of the 'ideal' complete longhouse pattern to the 'real' settlement pattern	116
			12.1	Dials	121
			12.2	The Micronesian 'Star Compass'	125
			12.3	The Micronesian 'Star Compass' as locally displayed in teaching diagrams	126
			13.1	Horizontal variations in shape variation among bowls from Tzintzuntzan	139
			13.2	Vessel mould with centrally placed handle	140
			13.3	Complex closed vessel shapes	140
			14.1	Lithic technology as a system of production	146
			14.2	The Levallois concept	147
			14.3	The model of recurrent Levallois exploitation	148
			15.1	Organization of the technical scheme defining different stages for Magdalenian blade production	155
			15.2	The differences between the three levels of technical skill identified in Magdalenian knapping at Pincevent	157
			15.3	Operative sequence of Magdalenian knapping	160
			17.1	Neo-Babylonian dog from Sippar	177

Cambridge University Press
0521456207 - The Ancient Mind: Elements of Cognitive Archaeology
Edited by Colin Renfrew and Ezra B. W. Zubrow
Frontmatter
[More information](#)

List of figures ix

17.2 Middle Babylonian dog from Aqar Quf	177	17.5 Cylinder seal, Ur III Dynasty	181
17.3 The functions of anthropomorphic effigies	178	17.6 Cylinder seal, Akkad Dynasty	182
17.4 Cylinder seal, Ur III dynasty	180	17.7 Cylinder seal, Early Dynastic period	183

Tables

10.1	The relationship between selected attributes of the prehistoric rock art of Mid Argyll	page 101	16.3	Intervocalic instances of harmonic (Ca-at) and broken (Ca-ut) spellings in Achaemenid Elamite according to the consistency of geminate vs. non-geminate spellings in the words involved, and according to the presence or absence of Cat signs for the sequence involved	171
10.2	The relationship between the number of separate motifs on sites in Mid Argyll, the diameter of the circular motifs and the percentage of design elements joined by connecting lines	101	16.4	Word-final and preconsonantal instances of harmonic (Ca-at) and broken (Ca-ut) spellings in Achaemenid Elamite according to the presence or absence of Cat signs for the sequence involved	172
10.3	The percentage of cup-and-ring marks among the carved rocks of Strath Tay in relation to their height above sea level	102	16.5	The correlation between broken spelling and phonological context as a function of token frequency	173
10.4	Contrasts between the two main groups of rock art in north Northumberland	102	16.6	Morphological correlation of broken (Ca-ip) spelling with a plural-marking function for -p and of harmonic (Ca-ap) spelling with no grammatical function	173
10.5	Contrasts between three groups of rock art in north Northumberland	104	16.7	Broken vs. harmonic spellings of Cap sequences as a function of the correlation between consonant-specific Cap sequences and the ratio of presence to absence of a plural suffix -p in those sequences	173
10.6	The associations between specific motifs and burials in Northumberland	104			
12.1	Time of day by points and hours	129			
16.1	Proportions of CV-VC spellings that are spelled broken in Achaemenid Elamite CVC sequences	170			
16.2	Intervocalic instances of harmonic (Ca-at) and broken (Ca-ut) spellings in Achaemenid Elamite according to the consistency of geminate vs. non-geminate spellings in the words involved	171			

Contributors

JAMES A. BELL
 Department of Philosophy
 University of South Florida

RICHARD BRADLEY
 Department of Archaeology
 University of Reading

KENT V. FLANNERY
 Museum of Anthropology
 University of Michigan

CHARLES O. FRAKE
 Department of Anthropology
 State University of New York at Buffalo

JAMES N. HILL
 Department of Anthropology
 University of California at Los Angeles

M. JULIEN
 Laboratoire d'Ethnologie Préhistorique
 Université de Paris I

JOHN S. JUSTESON
 Department of Anthropology
 State University of New York, Albany

C. KARLIN
 Laboratoire d'Ethnologie Préhistorique
 Université de Paris I

S. E. VAN DER LEEUW
 Department of Archaeology
 University of Cambridge

JOYCE MARCUS
 Museum of Anthropology
 University of Michigan

STEVEN MITHEN
 Department of Archaeology
 University of Reading

J. N. POSTGATE
 Faculty of Oriental Studies
 University of Cambridge

COLIN RENFREW
 Department of Archaeology
 University of Cambridge

CHRIS SCARRE
 McDonald Institute for Archaeological Research
 University of Cambridge

NATHAN SCHLANGER
 Department of Archaeology
 University of Cambridge

ALAIN SCHNAPP
 UFR d'Histoire de l'Art et Archéologie
 Université de Paris I

ERWIN M. SEGAL
 Department of Psychology
 State University of New York at Buffalo

LAURENCE D. STEPHENS
 Department of Classics
 University of North Carolina

EZRA B. W. ZUBROW
 Department of Anthropology
 State University of New York at Buffalo

Preface

One of the most taxing problems in archaeology is to determine about what and in what manner did prehistoric people think. Is it possible to make the 'mute stones speak', and will they tell us how (if not what) our predecessors were thinking? A fundamental challenge in archaeology is to develop the theory, methodology and tools to understand prehistoric cognition. It appears that as processual archaeology revolutionized archaeology in the 1960s and 1970s, cognitive archaeology will revolutionize the 1990s and even the early part of the twenty-first century. Cognitive science is still in its childhood and cognitive archaeology is in its infancy. One direction (already followed by some) has been to develop an 'interpretationist', anti-scientific literary approach. This view, allied to the relativist philosophy of 'post-modernism', has been associated with Hodder, Shanks and Tilley, and Leone. A second, recent approach has been to use a linguistic framework and develop a hermeneutic, semiotic approach. This direction has been espoused by Gardin and Peebles.

However, some workers have sought a rather different direction in prehistoric cognitive research. It is rooted in the scientific tradition and in an empirical methodology. This scientific view of the ancient mind seeks to draw upon the cognitive, and the mathematical and computer sciences. These researchers are beginning to understand which techniques may appropriately be used on archaeological data and how to implement them efficiently. *The ancient mind* is a collection of chapters written in this spirit which seeks to make effective use of cognition in prehistoric research. Together, they begin to lay some of the foundations for a science of cognitive archaeology.

The book is the product of a conference, generously sponsored by the McDonald Institute for Archaeological

Research, which was held at Lucy Cavendish College, Cambridge in April 1990. An attempt was made to delineate:

- (1) what are the trends in artificial intelligence, cognitive psychology and cognitive anthropology that are applicable to cognitive archaeology;
- (2) what is the present level of theory in cognitive archaeology;
- (3) what tools and scientific methodology are necessary for cognitive archaeology;
- (4) what problems are amenable to solutions given the present state of cognitive archaeology;
- (5) how do different scholars in different cognitive fields examine archaeological data in order to make cognitive inferences.

The book is divided into seven sections. To introduce the book Renfrew examines the general issues of cognitive archaeology and outlines some of the philosophical, archaeological and scientific background for this new direction.

In the section entitled 'The interdisciplinary underpinning', Bell examines philosophical issues, Segal the relevance of the cognitive sciences, and Mithen considers some basic issues in the emergence of the cognitive abilities of *Homo sapiens*. Schnapp uses written as well as material evidence to illuminate a specific question: the place of image making in ancient Greek society and religion.

In four chapters concerning 'Approaches to cult practice and transcendental belief systems', some new directions are indicated towards the elucidation of the ideologies of prehistoric communities. Renfrew considers the role of religion in early societies and the manner in which cult practice may be identified. Flannery and Marcus show how ceremonial space can be determined and how it changes over time in the New World. Scarre and Hill provide examples of value in the symbolic dimensions of death and burials in the Old and New Worlds respectively.

The section entitled 'Prehistoric conceptions of space and time' offers three papers. Bradley investigates how prehistoric inhabitants of Britain perceived boundaries and used symbolic means to demarcate space. Zubrow determined what are some of the prehistorically determined definitions of a village distribution in parts of the New World. He uses the concepts of knowledge representation and 'figure and ground' in conjunction with a testing methodology based upon Geographical Information Systems. Frake explores the relationship between space and time and its material representation in early historic populations.

The next two sections of the book, 'The material basis of cognitive inference: technology' and 'The material basis of cognitive inference: writing systems', are closely

related. In the former, the two major areas of prehistoric technology are explored. Van der Leeuw examines prehistoric decision making in pottery production, while the cognitive aspects of stone technology, drawing upon the useful concept of the 'chaîne opératoire', are discussed in two papers by Schlanger and by Karlin and Julien. Similarly, concrete cognitive aspects of writing systems from the Old World are analysed in papers by Justeson and Stephens and by Postgate. In conclusion Zubrow re-examines cognitive archaeology, placing the entire subject in a broader context

for the profession, as well as delineating some areas of future research.

In organizing the seminar which gave rise to this volume we owe much to the energetic administration of Dr Chris Scarre. The very substantial task of putting into publishable form the papers subsequently submitted has been undertaken by Dr Christine Morris, to whom we are most grateful. Our thanks also to Dr Jessica Kuper at Cambridge University Press for her encouragement and support.