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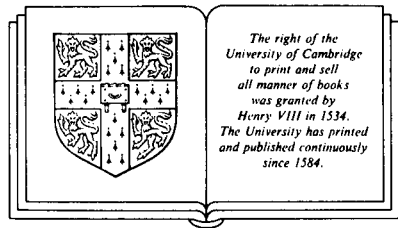
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EDITED BY
GEORGE J. GUMERMAN

A SCHOOL OF AMERICAN RESEARCH BOOK



CAMBRIDGE UNIVERSITY PRESS
Cambridge
New York · New Rochelle · Melbourne · Sydney

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CAMBRIDGE UNIVERSITY PRESS
Cambridge, New York, Melbourne, Madrid, Cape Town, Singapore, São Paulo

Cambridge University Press
The Edinburgh Building, Cambridge CB2 2RU, UK

Published in the United States of America by Cambridge University Press, New York

www.cambridge.org
Information on this title: www.cambridge.org/9780521346313

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First published 1988

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

Library of Congress Cataloguing in Publication data

The Anasazi in a changing environment.
(School of American Research advanced seminar series)
“A School of American Research book.”

Bibliography.

Includes index.

1. Pueblo Indians – Antiquities – Congresses.
2. Indians of North America – Southwest, New – Antiquities – Congresses.
3. Paleoecology – Colorado – Southwest, New – Congresses.
4. Southwest, New – Antiquities – Congresses.

I. Gumerman, George J. II. Series.
E99.P9A52 1988 97'.01 87–25692

ISBN-13 978-0-521-34631-3 hardback
ISBN-10 0-521-34631-2 hardback

Transferred to digital printing 2006

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Foreword

The Advanced Seminar program at the School of American Research is set up to allow scholars to come together for a week of intense interaction and discussion of a specific topic. Sometimes the topics are very general, as in “Trade and Civilization” (see Sabloff and Lamberg-Karlovsky 1975), for example, and sometimes they are specific, as in “Southwestern Indian Ritual Drama” (see Frisbie 1980). Both types of seminar have proven to be successful in the past, and both have produced results that have contributed to a greater understanding of the human condition.

When the seminar on “Anasazi Cultural Developments and Paleoenvironmental Correlates” was held in 1981, it was intended as a “specific-type” seminar that would lead to new insight into prehistoric cultural developments in the northern Southwest. The seminar certainly accomplished its immediate ends. For the first time in the Southwest, the paleoenvironmental data were brought together in a comprehensive way with the archaeological data.

Both of these data sets are in many ways unparalleled anywhere in the world. The kinds and quality of information extracted from tree rings, pollen, and hydrology by Dean, Hevly, and Karlstrom, respectively, are rarely available elsewhere, and nowhere do they provide such an

Foreword

accurate reconstruction of past environment as in the Southwest. The archaeological data base utilized by Euler, Powell, Plog, and the others, in turn, is almost unequaled. The Southwest has been an archaeological training ground and laboratory for much of American archaeology for a full century, and the excellent data reflect the breadth and intensity of research in this area. Bringing these two kinds of data together in a lucid and provocative model of prehistoric cultural development across the Colorado Plateaus represents, by itself, a significant achievement in the archaeology of the Southwest. I expect it to stimulate both active discussion and future directed research across the region.

On a parallel track with the specific accomplishments of the volume run the broader implications of the research presented by Gumerman and his colleagues. The ramifications of this volume extend far beyond the borders of the southwestern United States, and spread from the archaeological past into the anthropological present. The authors truly provide an outstanding study of the relationship between human beings and their environment. To what extent is human behavior determined by environment, demography, and the technological foundations of culture? How do humans respond to both short- and long-term changes in their environment, and what is the impact of the environment on the long-term evolution of cultural systems? These are questions that have assumed critical importance in the field of anthropology in the past forty years as we seek to understand the ultimate causes underlying patterns of human thought and action.

Gumerman and his colleagues have provided a new and extraordinarily valuable data base for addressing these questions empirically. They demonstrate, for example, that human social systems adjust to short-term fluctuations in the environment without undergoing major changes, and that the real evolutionary transformations occur in the face of the long-term trends in rainfall, erosion, temperature, and demography.

Such information offers a new dimension of insights into the modern world, as we are attempting to assess such things as the impact of cyclical droughts in Africa or the effect of a long-term warming trend resulting from increased carbon dioxide in the atmosphere. Droughts and broad climatic changes (although today perhaps stimulated by human actions) are not unique phenomena, and we need not turn to conjecture or crystal balls to estimate how humans are likely to respond in general ways to such phenomena. The authors in this volume have outlined a

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thousand-year chronicle of environment, demography, and culture history which stands out as an experimental baseline for explaining broad patterns of interaction between humans and their environment in the past and for predicting similar patterns in the future. *The Anasazi in a Changing Environment* sets a new standard in archaeological research, and at the same time it serves to link the ancient past with the modern world. This is anthropology at its best.

JONATHAN HAAS
School of American Research

Preface

The genesis of this volume occurred in 1966 when Thor Karlstrom, who was with the U.S. Geological Survey in Flagstaff, asked archaeologists at the Museum of Northern Arizona to look at some sites south of the Hopi villages. The study area was the Hopi Buttes where the U.S. Geological Survey was training astronauts and testing equipment for the proposed lunar landing. Karlstrom was interested in dating surficial deposits and caliche formations, and he believed some of the buried sites in the area had the potential for providing ceramic-derived dates. The USGS therefore found itself funding an archaeological study.

This initial cooperative venture provided a model for the many years of interaction by the authors of this volume. Karlstrom could have gotten the information he needed by having archaeologists put in a few test trenches. However, he realized that better cooperation would result from allowing the archaeologists great latitude to explore not only those areas of interest to the USGS, but those of the archaeologists as well.

Over the years all of us have pursued our own research directions but have recognized the common need for an area of overlap where all our interests coincided. When funds were available we would help one another – not viewing other disciplines as ancillary and demanding strict adherence to narrowly focused paleoenvironmental research. Rather,

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individual researchers were given free rein, in the expectation that some of our efforts would contribute to the common cause. It was only in this fashion that it was possible to sustain an informal research effort over so many years with scholars from different disciplines in widely scattered places.

Throughout the 1970s and early 1980s we worked on developing a detailed cultural and environmental sequence for the Christian era for the Black Mesa region of northeastern Arizona. Karlstrom developed the hydrostratigraphic curve, Hevly the pollen record, Dean the dendroclimatic curve, and Euler and Gumerman the archaeological sequence. The pan-Colorado Plateaus implications of our work became obvious because it was apparent that it was necessary to use published data from throughout Anasazi country in order to interpret our more localized data. It seemed clear to us that there were regular, predictable patterns between the reconstructed environmental conditions, demography and culture change throughout the Colorado Plateaus.

The Anasazi-wide implications of our work were not immediately apparent nor did we have in mind a well-articulated goal for our collective research. Rather, the need for a volume of this type grew as our general patterns became more apparent, and it was obviously necessary to support our conclusions about human and environmental linkages with our data.

The large number of researchers involved in our informal group made it difficult for all of us to meet for more than a day or two to discuss the ramifications of the independently derived but highly interrelated aspects of our work. The need became obvious for a week-long meeting to contemplate the articulation of the alluvial, plant, and tree-ring records with human demography and behavior in an atmosphere such as provided by the School of American Research's Seminar House.

In addition, we felt it was necessary to have discussants for each of our disciplines who held opposing view to ours or at least were somewhat skeptical about our approach or results. This was a necessity also because over the years we have not only generated some skepticism among our colleagues, but some of us also felt inadequate to evaluate competently all the details of disciplines other than our own. The result was an Advanced Seminar entitled "Anasazi Cultural Developments and Paleoenvironmental Correlates" held in October 1981.

The composition of the seminar participants was not the same as represented by the authorship of this volume, and some of the roles of

Preface

the participants have changed. Fred Plog was invited as a discussant because he was somewhat skeptical of our earlier efforts. His contributions at the seminar and the subsequent meetings to draft the final synthesizing chapter of this volume, as well as his “conversion,” prompted us to recognize him as more than a discussant to our papers; therefore he is the senior author on the summary chapter. Because of the change in Plog’s role, after the seminar we requested Jim Judge to evaluate our efforts in relationship to Southwestern archaeology. Shirley Powell’s contribution was solicited after the seminar because of our realization that the volume would be improved with a more thorough discussion of the role of demography in culture change. Pat Kirch, who has published widely on cultural evolution and adaptation, was asked to participate in the seminar as someone who could provide a non-Southwestern perspective to our research.

A summation of some of the results of the Advanced Seminar has been published (Dean, J. S., R. C. Euler, G. J. Gumerman, F. Plog, R. H. Hevly, and T. N. V. Karlstrom, “Human Behavior, Demography, and Paleoenvironment on the Colorado Plateaus,” *American Antiquity* 1985). This article is also known more widely but more informally as “The Gang of Five, Plus One, Minus Two, Meet Bombay Gin Martinis at Sweeny’s,” the result of a Dean, Euler, Gumerman, Plog (the latter is “the plus one”) meeting (minus Hevly and Karlstrom) at a bar/restaurant (Sweeny’s) in Durango that provided inspirational martinis.

The organization of this volume reflects the cooperative venture. Unlike most edited volumes, this monograph is not a compilation of articles about a single topic. While each paper can stand alone, the value of the studies is that they are essential segments of a whole. Each article is a building block for understanding the total edifice of the Anasazi in relation to their changing environment. After the first chapter, a historical perspective on culture and its relationship to environment, a model is presented for understanding the relationships between environment, demography, and behavior. Data from the fields of hydrogeology, pollen, tree rings, population, and archaeology are then presented. Finally, there is a chapter in which the natural and cultural data presented in earlier chapters are analyzed and attempts are made to explain how the Anasazi reacted to their changing environment. This is accomplished by describing different environmental and demographic situations and then predicting appropriate behavioral

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responses. The fit of the predicted response to the real situation is then examined.

As in all our earlier published work, we do not view this as the final word on the relationship between the Anasazi and their environment. Archaeologists' early views on Southwestern culture and environment were hampered by a paucity of hard data. In many instances, the implications of our work became obscured by the diversity and immense quantity of data and it was necessary for us to adopt a synthesizing view. It is our hope that Anasazi scholars can use this method, data, and the theory represented by this volume to refine further our understanding of past peoples and environments on the Colorado Plateaus.

All the seminar participants are greatly indebted to Douglas W. Schwartz and the personnel of the School of American Research for their encouragement and hospitality. Special thanks go to Jane Barbarousse, whose warmth and congeniality made the Seminar House a homey refuge that encouraged stimulating thought and conversation. O. J. Sarah and the kitchen crew at the Seminar House can be blamed for our more spherical shapes at the end of the week. Jane Kepp, Director of Publications for the School of American Research, helped shepherd the manuscript through the publication process.

The final preparation of this manuscript was aided at Southern Illinois University by Barbara Cohen, Lee Hill, and Susan Wilson who did the technical editing, by Kathy Zeh, who directed the manuscript typing and assembly, and by Terri Mathews who did most of the typing. The drawings were rendered by Carole Prowse and Karen Schmitt. Special thanks for financial support go to Peabody Coal Company of St. Louis, Missouri, and to the Office of Research, Development, and Administration at Southern Illinois University at Carbondale.

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