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William Y. Adams and Ernest W. Adams

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Classifications are central to archaeology. Yet the theoretical literature on the subject – in both archaeology and the philosophy of science – bears very little relationship to what actually occurs in practice. This problem has long interested William Adams, a field archaeologist, and Ernest Adams, a philosopher of science, who describe their book as an ethnography of archaeological classification. It is a study of the various ways in which field archaeologists set about making and using classifications to meet a variety of practical needs.

The authors first discuss how humans form concepts. They then describe and analyze in detail a specific example of an archaeological classification, and go on to consider what theoretical generalizations can be derived from the study of actual in-use classifications. In a concluding section they review and critique existing theoretical literature on the subject of classification, showing how little relationship it bears to the realities of practice. Throughout the book, they stress the importance of having a clearly defined purpose and practical procedures when developing and applying classifications.

This book will be of interest not only to archaeologists and anthropologists, but also to philosophers of science, linguists, cognitive psychologists, biologists, and to scholars in all other fields in which classification plays a significant role.

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**THE FAR SIDE**

By GARY LARSON



**"So what's this? I asked for a *hammer*! A hammer!  
This is a crescent wrench! ... Well, maybe it's  
a hammer. ... Damn these stone tools."**

*Frontispiece Archaeological typology in a nutshell. THE FAR SIDE, copyright 1986, Universal Press Syndicate. Reprinted with permission. All rights reserved.*

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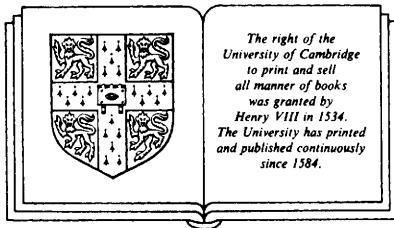
# Archaeological typology and practical reality

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## A DIALECTICAL APPROACH TO ARTIFACT CLASSIFICATION AND SORTING

William Y. Adams  
*University of Kentucky*  
and

Ernest W. Adams  
*University of California at Berkeley*



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**To Lucy W. Adams**  
Our Mother

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If I were permitted to focus upon just a single issue and treat it as the focal point of the complex and tricky business of archaeological theory and its developmental course, I should single out the concept and operation of classification. I think the methodological development of archaeology in the twentieth century centers on the rethinking of classificatory problems.

K. C. Chang (1967: 4)

You have to understand that I don't consider myself to be a theoretician. My primary interest is to explain something out there that impinges upon me, and I would sell my soul to the devil if I thought it would help.

Eric Wolf (quoted in J. Friedman 1987: 114)

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## THE ARCHAEOLOGIST'S PREFACE

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For better or worse, this book represents something of an experiment. It is, so far as we know, one of the first attempts to achieve a genuine, two-way dialogue between archaeology and philosophy – the respective fields of its two authors. (For a predecessor – not concerned specifically with classification – see Kelley and Hanen 1988.)

It has been a common practice in recent years for archaeologists to borrow concepts and analytical tools from the philosophy of science, and apply them to their own field of endeavor (cf. Fritz and Plog 1970; Martin 1971; Watson, LeBlanc, and Redman 1971; Hill and Evans 1972; Kelley and Hanen 1988). However, this usage has often been both selective and uncritical. That is, the archaeologists have borrowed certain tools while ignoring others, and they have frequently overlooked the fact that the concepts they borrowed were the subject of controversy within the field of philosophy itself (cf. Kelley and Hanen 1988; WYA n.d. 2). Moreover, and more importantly, communication was strictly in one direction: from philosophy to archaeology.

In the present book we have tried to initiate a more genuine dialogue. We believe that, if the archaeologist has much to learn from the philosopher of science, the reverse is necessarily also true. In addition to applying philosophical concepts to the practice of archaeology, therefore, we have tried at various points to show how the practices of the field archaeologist reflect upon current controversies and issues in the philosophy of science. Our book is consequently written both for archaeologists and for philosophers; indeed we hope that it may be of interest to scholars in many other fields in which classification plays a key role.

The effort to produce a genuinely cross-disciplinary work is not without its hazards. Contrary to what is sometimes asserted, the boundaries between scholarly disciplines are not merely the result of academic turf battles and compromises. To a very considerable extent they are linguistic boundaries. The anthropologist, the philosopher, the sociologist, and the

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psychologist may be and frequently are debating the same issues, but they are using fundamentally different vocabularies in doing so. Unless they happen to be fluent in two or more of these “languages,” scholars in the different disciplines may never be quite sure how much they understand and/or agree with each other.

Precisely because of the linguistic problem, the writing of this book has been a far more difficult task than the authors first imagined. It has taken years of dialogue for us to discover the full extent of our agreement on particular issues, and it has taken additional years to decide on the right words in which to communicate our ideas both to archaeologists and to philosophers. To make sure we are understood by both parties in the dialogue, we have had unavoidably to introduce various explanatory passages as well as an extensive glossary (Appendix A).

There may well be readers who will find all of this cumbersome, and who will wish that we had addressed ourselves exclusively to one audience or the other. Undoubtedly, a simpler and clearer book would have resulted. We feel strongly, however, that our respective fields of archaeology and philosophy have reached a point where they need each other – not just as a source of concepts to be uncritically borrowed, but as a basis for enlarged self-understanding. Whether our first effort in that direction succeeds or fails can be judged only by our readers, but we believe in any case that the effort has been necessary.

*Specific objectives*

More specifically, our book has a number of concrete objectives that can be briefly stated:

- 1 We hope to clear away some of the conceptual confusion surrounding the processes of classification, insofar as it results from inadequate or inadequately defined vocabulary.
- 2 We hope to show that the concept of a “type” is a far more complex matter than is usually supposed. In the case of archaeology it has separate physical, mental and representational dimensions, none of which is wholly determined by any other.
- 3 We want to insist that the making and use of typologies can never be an automatic or a wholly objective process. Typologies are created to serve human purposes, which strongly affect the ways in which they are made and used.
- 4 We want to explore some of the diversity in classificatory systems in relation to the different purposes they serve.

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- 5 We want to argue the need for practicality and cost-effectiveness in archaeological classifications.

*Some non-objectives*

Because the theory and the practice of classification are beset by many misunderstandings, it is also important to state at the outset some of the things that our book is not:

1. Although it is written by an archaeologist and a philosopher of science, this book does not reflect the orthodox or currently fashionable view of classification in archaeology, philosophy of science, or any other discipline that is known to us. Both of the authors are in fact regarded as mavericks in their respective fields. From time to time we meet like-minded scholars, in our own disciplines and in others, but so far as we know they are not in the majority anywhere. We therefore claim to speak with authority for no one but ourselves.

The most obvious point of difference between the present authors and most of their colleagues is that our views on the subject of classification are thoroughly eclectic. Not only are they a distillation of ideas derived from our separate disciplines, but they have been influenced by the rather diverse and unorthodox interests that each of us has pursued within those disciplines.

2. Our book is mainly about the practice and not about the theory of archaeological classification, as it is currently understood. To emphasize this fundamentally important distinction we can do no better than to quote the recent words of Robert Dunnell (1986: 150): “two features emerge as characteristic of the contemporary classification literature: (1) this literature is concerned, almost exclusively, with technique and method to the virtual exclusion of the *raison d'être* of classification; and (2) while there is a clear commitment to a single general model of archaeological classification (within which there is considerable technical debate), in-use classification is entirely different and of a much earlier vintage. Nowhere . . . is the archaeological record organized and understood in terms supplied by the means debated in the contemporary programmatic literature. The ‘theoretical’ literature has diverged from practice to such a degree that the two are now unrelated.”

The reasons for this discrepancy between theory and practice are not far to seek. For the last twenty years theoretical writing on the subject of archaeological classification has concerned itself very largely with computerized programs of one sort or another. These programs are fun to play with (cf. Rodrigues de Areia 1985: 404); they are much more

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methodologically intriguing than are old-fashioned, semi-intuitive classification methods. They are also invaluable for producing frequency seriations and informational taxonomies, as we will see in Chapter 17. Nevertheless, computers can only order the data that is fed into them; that is, they can only classify material that is already in hand. They cannot, at least up to now, produce an “open” typology (see Chapter 18) that is continually applicable to newly excavated material (cf. Margolis 1987: 91, 115), which is the first requirement of the field archaeologist. The present generation of computers also cannot perform two functions that are essential in all practical typologies: they cannot make purely qualitative distinctions, and they cannot make purely arbitrary judgments (cf. *ibid.*: 3).

Field archaeologists must therefore continue for the most part to employ the “in-use classifications . . . of a much earlier vintage,” to which Dunnell (1986: 150) referred. It is these classifications, and the ways in which they are developed and used, that are the subject of our book. We hope therefore that field archaeologists will find much that is familiar in these pages, and perhaps find food for thought with reference to their own problems and procedures. On the other hand, pure theoreticians may find less of interest. Only in the last chapters (Part V) do we turn our attention from questions of practice to those of theory.

3. Unlike much of the recent literature on archaeological classification, this is not a programmatic or “how-to” book, although it does include a number of practical suggestions about how to proceed in particular circumstances. In general, however, our book should be regarded as an ethnography of archaeological classification, a study of the various ways in which field archaeologists go about making and using classifications to meet their different needs. Classification methods, in our view, are essentially tools, and like other tools they are nearly always good for something. Some of them work better for some purposes and some for others, and it may be also that some classification systems work better for certain individuals than for others. Insofar as we engage in evaluation in the present work, it is only evaluation of a highly situational sort. That is, we try to discover what kinds of tools work best for what purposes, and why.

4. Although our approach to classification is empirical and eclectic, we have not attempted to present a complete or a balanced overview of all the different classificatory procedures employed by the archaeologist. Such a comprehensive treatment would entail a far more detailed knowledge of the field than either of us possesses. We have tried at least to mention a good many classificatory approaches, but our discussion is heavily weighted toward the systems that are familiar in the

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personal experience of the authors. In discussing the theoretical literature we have also given disproportionate attention to certain issues that are especially important or interesting to us, in particular to the ever-elusive pursuit of “objectivity.”

Our discussion, especially in Part V, may be more germane to what archaeologists write about than to what they talk about among themselves. One friend and colleague (George Cowgill, personal communication) has reminded us more than once that archaeologists are not nearly so committed to computerized classifications, even in theory, as we have made out. However, this will not be apparent to anyone whose only knowledge of classificatory procedures comes from the published literature. Be it noted, therefore, that Part V is specifically a critique of what archaeologists say in print, and may or may not be relevant to what they say in private.

5. The point has already been made that our book is not written exclusively either for archaeologists or for philosophers. The practical problems and procedures of archaeological classification furnish a convenient springboard for the discussion of more general issues that will, we hope, be of interest to scholars in all of the different fields in which classifications are made and used, and also to those disciplines like ethno-science, cognitive psychology, and philosophy of science, in which classifications themselves are a subject of analysis.

6. Finally and emphatically, our book is not meant to be the last word on any subject. We have changed quite a few of our ideas in the course of writing it, and will undoubtedly change others in the course of discussing and defending it. We are hoping to begin a dialogue, not end one.

*About the authors*

We argue throughout the book that classification is always partly subjective, and our approach to the subject is itself necessarily subjective. Readers therefore need at the outset to know something about the authors and their respective backgrounds and experiences. We are, to begin with, brothers who grew up in the same household, mainly in Arizona and California. For the past thirty years, however, we have pursued markedly different careers in different parts of the world. I will here detail a few particulars about my own background, while my co-author will do the same in the Philosopher's Preface that follows.

I (identified in subsequent text as WYA) have for thirty years been purely a salvage archaeologist, working in areas that were soon to be inundated by man-made reservoirs (see WYA 1973d; 1984). I have conducted excavations in more than 160 sites, ranging in age from paleolithic to late



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medieval, and in areas from the Napa Valley to the Nile Valley, but the choice of sites was usually dictated by the necessities of salvage and not by any personal interest of mine. I have had to develop classifications of pottery (WYA 1962d; 1964a; 1986a), of house architecture (not yet published), of church architecture (WYA 1965a), and of Nubian cultural phases (WYA 1964b: 241–7) simply to get on with the jobs of excavation and publication, and not because of any particular interest either in the material being classified or in the processes of classification itself. Most of my work has been done in countries that do not permit the export of antiquities, even for study, and I have therefore been obliged to carry on the tasks of excavation and the analysis and classification of the excavated material simultaneously. Finally, most of my field work has been carried out under conditions of severe time restraint, and usually of financial restraint as well. These circumstances, by no means unfamiliar to field archaeologists of earlier generations, will account for the pragmatic outlook and the extreme concern for practicality and cost-effectiveness that are reflected in the present work.

It is relevant to mention also that I was trained as an ethnologist rather than as an archaeologist (see WYA 1963), and that I have in addition a longtime interest in languages and linguistics. The essentially cognitive approach to classification that is offered in this book owes much more to the literatures of ethnology and linguistics than it does to the literature of archaeology, where the issue of cognition is almost wholly ignored. It probably owes even more to the fact that I have at one time or another been fluent in half a dozen languages, including Navajo and Arabic as well as modern European languages. Like all polyglots I am keenly appreciative of the interrelationship between language and cognition, of the arbitrariness of categorical systems, and the untranslatability of many categorical concepts from one language to another.

In a recent work, Elman Service (1985: 289–313) has categorized ethnologists as falling into two “moieties,” as follows:

**Moiety A***is characterized by*

Natural science approach  
 Determinism  
 Evolutionism  
 Emphasis on social structure  
 Generalization  
 Comparative method  
 Environmentalism  
 Organismic analogy

**Moiety B***is characterized by*

Humanistic approach  
 Free-willism (or individualism)  
 Relativism  
 Emphasis on culture  
 Particularism  
 Holism  
 Mentalism  
 Language analogy

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To the extent that this dichotomy is valid, it may be further observed that a substantial majority of American ethnologists, at least in the past, have belonged to Moiety B, while the overwhelming majority of archaeologists have always adhered to Moiety A. It is not, for the most part, a matter of conditioning within the respective sub-fields; it is more a reflection of the very different personality types who are attracted respectively to ethnology and to archaeology. Readers of the present work will in any case have no trouble in recognizing that I, as an imperfectly reformed ethnologist, belong with the other ethnologists in Moiety B.

*Acknowledgements*

Many persons read the manuscript, or parts of it, prior to publication. Two who deserve special mention are Paul Teller, Professor of the Philosophy of Science at the University of Illinois (Chicago), and George Cowgill, Professor of Anthropology at Brandeis University. Many changes, additions, and deletions have been made at their suggestion, although perhaps not as many as either of them would have liked. In any case our book is very much the better for their input. Two other commentators whose suggestions have been beneficial are Alison Wylie, Professor of Philosophy at the University of Western Ontario, and an anonymous reviewer for Cambridge University Press.

While the book was in preparation, both the authors conducted graduate seminars on the subject of classification at their respective universities. I would like especially to thank my archaeology students for their many helpful comments and useful contributions: Frank Bodkin, Bet Ison, Jack Rossen, and Chris Turnbow.

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## THE PHILOSOPHER'S PREFACE

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I (identified in subsequent chapters as EWA) received a BS in electrical engineering and a PhD in philosophy, with a minor in mathematics, at Stanford University. I have been a Fellow of the Behavioral Models Project at Columbia University, Instructor at Wesleyan University, and Professor of Philosophy at the University of California, Berkeley. Aside from philosophy of science I have published papers on mathematical psychology, decision theory, theory of probability, and probabilistic aspects of logic, including a book, *The Logic of Conditionals, an Application of Probability to Deductive Logic* (EWA 1975). In philosophy of science I have studied and written on induction and confirmation, causation, scientific concept formation, theory of measurement, and the foundations of physical topology and geometry, on which I am presently writing a book.

A word should be said about my philosophical development in relation to the present work. My initial orientation was toward the highly abstract and formalistic approach of the logical positivists (empiricists) and their allies, such as Rudolf Carnap, Carl Hempel, and Karl Popper. This approach dominated the philosophy of science in the 1940s and 1950s, and my early work, especially on measurement, was in that tradition. However, my faith in positivism was shaken by the criticisms of Thomas Kuhn (1962), though I did not accept the Kuhnian historicist position (the “dialectic of scientific paradigms”) that came to succeed positivism as the dominant trend in the philosophy of science in the 1960s and 1970s. (Aspects of this “revolution in philosophy of science” will be discussed in Chapters 1 and 26.)

Seeking to identify what was missing both in the positivist and in the historicist approaches, I concluded that neither of them took sufficient cognizance of the purposes of scientific endeavor, and particularly of their importance in shaping scientific concepts. Following up that idea, I used mathematical information theory in a paper, “On the nature and purpose of measurement” (EWA 1966), to formulate a theory according to which

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numerical measurement systems are designed so that the measures they yield will be “maximally informative indices of phenomena.” (The same approach is now offered, in regard to systems of classification, in Chapter 21 of the present book.) As will be noted in Chapter 1, informal conversations with my co-author (designated in later chapters as WYA) brought to light the fact that he had, quite independently, arrived at views on the subject of archaeological classification that closely paralleled my own about measurement. Those conversations led ultimately to the research on which a joint article, “Purpose and scientific concept formation” (EWA and WYA 1987), as well as the present book, is based.

An additional word should be said about the chapters in this book (Chapters 12, 21, and 26) that are specifically devoted to philosophical issues. Their aim is to discuss the implications of our views, on the one hand on archaeological typology and on the other hand on general topics and issues in the philosophy of science. Among the latter are included: the nature of concepts in science and their definitions; the existence (or realism) of abstract types; relations between empiricism and the Kuhnian theory of the dialectic, including the possibility of progress in science; and the so-called “problem of pseudoproblems” that arises because of the difficulty of distinguishing between factual claims and definitions in many scientific contexts. These are very diverse topics, each of which is important in its own right, and we obviously cannot give them careful or rigorous treatment in the present brief compass. We aim only to record unsystematic reflections concerning the relationship of each of the themes to our instrumentalist, purpose-oriented views on typology construction and use. The point should also be stressed that these reflections are not put forward as definitive “philosophical positions,” but only as “working hypotheses,” arrived at in an ongoing search for philosophical solutions to problems of methodology and philosophy that have engaged leading thinkers almost since the dawn of science.