Archaeological Semiotics

Robert W. Preucel

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Social Archaeology

Titles in Print

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BLACKWELL PUBLISHING
350 Main Street, Malden, MA 02148-5020, USA
9600 Garsington Road, Oxford OX4 2DQ, UK
550 Swanston Street, Carlton, Victoria 3053, Australia

First published 2006 by Blackwell Publishing Ltd

1 2006

Library of Congress Cataloging-in-Publication Data

Preucel, Robert W.
Archaeological semiotics / Robert W. Preucel.
p. cm. — (Social archaeology)
Includes bibliographical references and index.
ISBN-13: 978-1-55786-657-8 (hardcover: alk. paper)
ISBN-10: 1-55786-657-0 (hardcover: alk. paper)
1. Archaeology — Philosophy. 2. Archaeology — Methodology. I. Title. II. Series.
CC72.P74 2006
930.1—dc22

2005037148

A catalogue record for this title is available from the British Library.

Set in 10/13 pt Minion
by Newgen Imaging Systems (P) Ltd., Chennai, India
Printed in Singapore by Markono Print Media Pte Ltd

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For Leslie Homyra Atik

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Preface

In the fall of 1989, I attended the Peirce Sesquicentennial International Congress held at Harvard University in Cambridge, Massachusetts. The Sesquicentennial was a celebration of the diverse contributions of Charles Sanders Peirce to the natural and social sciences. Appropriately, the program was extremely varied and the topics ranged from logic, the philosophy of science, semiotics, metaphysics, epistemology, aesthetics, ethics, psychology, linguistics, geology, and religion. Although I had heard of Peirce, until this conference I had no real understanding of the breadth of his scholarship and little appreciation of his role in the founding of modern semiotics. After the Congress, I began to read everything I could find on Peirce, and to discuss the significance of his insights for anthropology and archaeology with my colleagues in the Department of Anthropology at Harvard, Terry Deacon, David Rudner, and Rosemary Joyce.

This book project has had a long gestation. I originally broached the idea of writing a book on archaeological interpretation with John Davey, the social science editor of Basil Blackwell, during my sabbatical at Churchill College, Cambridge University in 1990. However, my Brook Farm Archaeological Project with Steven Pendery, my collaborative research with the Pueblo de Cochiti, and a number of other writing projects intervened. This book, therefore, is not the one that I would have written in 1990 and this is certainly a good thing. The Peircian approach is now well established in anthropology and there are many new examples to draw from to illustrate this fact. In addition, I have now had the time to explore in my own field projects just how Peircian semiotics can "make a difference" in archaeological interpretation.

When I moved from Harvard to the University of Pennsylvania in 1995, I joined an Anthropology faculty well versed in Peircian semiotics. My colleagues included

Greg Urban, John Lucy, Webb Keane, and Asif Agha. Inspired by our discussions, I taught a graduate seminar on contemporary archaeological theory in the spring of 2000 where I devoted half the seminar to archaeological semiotics. During this time, I also directed a reading course with my graduate student Alexander Bauer and we began collaborating on several papers and writing projects. I also worked with Patricia Capone on a study of Pueblo ceramics, which emphasized the semiotic aspects of interpretation.

I began working on this book in the summer of 1996 in Pomfret, Vermont. I am especially grateful to Tom Hotaling whose farm provided a remarkably tranquil setting for writing and thinking. I completed the book during the summer of 2005 at the School of American Research in Santa Fe, New Mexico where I was an Ethel-Jane Westfeldt Bunting Summer Fellow. I would like to thank George Gumerman, the interim president, James Brooks, the current president, Nancy Owen Lewis, the director of programs, Laura Holt, the librarian, and the entire staff for providing everything a scholar could want. At Penn, I would like to thank Gregory Possehl and Greg Urban, the past and present chairs of the Department of Anthroplogy, as well as Jerry Sabloff and Richard Leventhal, the past and present directors of the University Museum, for their support. I also am grateful to my students, Alex Bauer, Matthew Liebmann, and Craig Cipolla, for their critical advice on semiotic issues and their help with various stages in the production of this book. At Blackwell, I would like to thank Tessa Harvey, Angela Cohen, Ali Wyke, and Jenny Howell for their help in bringing this project to completion.

I have benefited from past and ongoing discussions on semiotic issues and archaeology with numerous friends and colleagues. These include Asif Agha, Wendy Ashmore, Alexander Bauer, K. C. Chang, Phil Chase, Larry Coben, Meg Conkey, Terry Deacon, Harold Dibble, Clark Erickson, John Fritz, Gautam Ghosh, Michael Herzfeld, James Hill, Ian Hodder, Mark Johnson, Matthew Johnson, Rosemary Joyce, Webb Keane, Igor Kopytoff, Joseph Kovacik, C. C. Lamberg-Karlovsky, Mark Leone, Matthew Liebmann, Richard Meadow, Randy McGuire, Lynn Meskell, Jon Muller, Richard Parmentier, Tom Patterson, Tim Pauketat, Bob Paynter, Steve Pendery, Uzma Rizvi, David Rudner, Jerry Sabloff, Robert Schuyler, Michael Shanks, Bob Sharer, Michael Silverstein, Matthew Spriggs, Laurajane Smith, Greg Urban, Gordon Willey, and Alison Wylie. None of these individuals is likely to agree with everything I have written, but hopefully they will recognize my debt to our conversations.

I especially want to thank Steven Pendery of the National Park Service and the co-director of the Brook Farm Project. Steve was the moving force behind Brook Farm archaeology and many of the results presented here are the result of our joint research. I would also like to acknowledge the following individuals and organizations for their assistance in various phases of our research. These

include Judith McDonough, Brona Simon, and Constance Crosby of the Massachusetts Historical Commission and Illyas Bhatti, Tom Mahlstedt, and William Stokinger at the Metropolitan District Commission. Bob Murphy, president of the West Roxbury Historical Society, and Ralph Moeller, director of the Gethsemane Cemetery. Peter Buck, dean of the Harvard University Summer School, Lawrence Buell of Harvard University, and Rick Delano of Villanova University provided advice and support. I thank John Shea, William Griswold, and John Fox who served as our teaching assistants and Chet Swanson who assisted as laboratory supervisor. Special thanks go to two "Brook Farmers" — Nancy Osgood, for her research on Josiah Wolcott and Peter Drummey, Librarian of the Massachusetts Historical Society, for his assistance with historical research. Finally, I would like to express our appreciation to the numerous Harvard University students and volunteers who participated over the course of the project. The Brook Farm Project was supported by grants from the Harvard University, Department of Anthropology, and the Harvard University Summer School.

I am especially grateful to the Tribal Council and people of Cochiti Pueblo for the opportunity to conduct our collaborative research at Kotyiti, their ancestral village. Michael Bremer and Rita Skinner of the U.S. Forest Service and Chip Wills of the University of New Mexico facilitated permits and site access. For assistance with the Pueblo Revolt research, I thank Herman Agoyo, Duane Anderson, Eric Blinman, Patricia Capone, Linda Cordell, Carol and Andre Dumont, Mike Elliott, T. J. Ferguson, Richard Ford, Dody Fugate, Tim Kohler, Charles and Pat Lange, Matthew Liebmann, Anita McNeese, Barbara Mills, Lori Pendleton, Bob and Willow Powers, Diego Romero, Mateo Romero, Curt and Polly Schaafsma, Michael Schiffer, Doug Schwartz, Joseph Suina, David Hurst Thomas, and Peter Whiteley. I am indebted to my project colleagues including Leslie Atik, Ron Atik, Patricia Capone, Ginny Ebert, Genevieve Head, Elga Jefferis, Robert Sharer, Monica Smith, James Snead, Nick Stapp, Loa Traxler, Michael R. Walsh, Courtney White, Michael Wilcox, and Lucy Williams. I am especially grateful to my Cochiti student interns including John Patrick Montoya, J. R. Montoya, Thurman Pecos, James Quintana, Gilbert Quintana, Wilson Romero, Jeff Suina, April Trujillo, and Martina Valdo. This research was supported by grants from the American Philosophical Society, the University of Pennsylvania Research Foundation, the University of Pennsylvania Museum, and the generosity of Ruth Scott, Annette Merle-Smith, and Douglas Walker.

Finally, I want to acknowledge Ian Hodder for his intellectual stimulation and support. I have known Ian since I was a graduate student at UCLA and he has consistently challenged me and the profession to consider the multiple implications of a social archaeology.

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CHAPTER 1

Introduction

> Archaeology studies all changes in the material world that are due to human action – naturally, in so far as they survive. The archaeological record is constituted of the fossilized results of human behaviour, and it is the archaeologist's business to reconstitute that behaviour as far as he can and so to recapture the thoughts that behavior expressed.
>
> V. Gordon Childe (1956:1)

In his books, *The Order of Things* (1970), *The Archaeology of Knowledge* (1973), and *Discipline and Punish* (1979), Michel Foucault uses the word "archaeology" in a distinctive manner. In addition to referring to the eponymous discipline, he uses it to describe a method of analysis appropriate for the human sciences. This analysis involves determining the discursive practices associated with the historical development of each episteme or intellectual sphere. These discursive practices refer to the complex and largely hidden interrelations between institutions, techniques, social groups, and perceptual modes. The analysis also requires revealing how the configurations of these discursive practices are radically different from those of the sciences. For Foucault, "it is useless, then, to say that the 'human sciences' are false sciences; they are not sciences at all" (Foucault 1970:366). He immediately notes that this status should not be interpreted as some kind of deficiency or an obstacle to research. Rather, what we call the human sciences constitute distinctively different configurations of knowledge.

Foucault's use of the term archaeology and his analysis of the human sciences raises interesting questions for the field of archaeology. What might an archaeology of archaeology look like? One way to begin our investigation is to start with the epistemological standing of Anglo-American archaeology.[1] Is it a natural

science like physics or chemistry? Is it a social science like cultural anthropology and sociology? Is it a humanity like English literature and art history? Or is it something else? Perhaps a hybrid of all three? Related to these questions are a series of other questions regarding archaeology's representational practices. Is there a single "grand theory" for archaeology similar to the Unified Field Theory of physics, the New Synthesis in evolutionary biology, or the Universal Grammar of linguistics, that is applicable to all cultural contexts past and present? Or, are there multiple "little theories," each of which is appropriate to specific historical contexts? And, if the latter is the case, how do these different theories articulate with one another? What resolutions are possible and appropriate when they appear to come into conflict?

In the modern era, archaeologists have offered a multiplicity of responses to these questions. These responses have tended to be structured by the disciplinary distinctions between anthropology and history as they have been articulated on either side of the Atlantic. American scholars, like Gordon Willey and Philip Phillips (1958), Lewis Binford (1962), James Deetz (1967), and William Longacre (1970), have argued that archaeology is part of anthropology. British scholars, such as Stuart Piggott (1959), Glyn Daniel (1964), and Ian Hodder (1982b), have generally regarded it as a historical discipline. A small number of scholars, particularly David Clarke (1968), a British archaeologist, and Michael Schiffer (1976), an American archaeologist, have held that archaeology is a distinctive field of study in its own right, capable of producing its own laws and theories. The controversy over the disciplinary status of archaeology continues to this day (e.g., Gillespie and Nichols 2003; Hodder 2005). And yet, however much these approaches may diverge, all of them share something in common: the view that the defining characteristic of the field is the study of material culture.

In this book, I intervene in this debate in two ways. I begin by rejecting the artificial oppositions between different kinds of disciplines which, in the end, are the result of historical and political factors. To do this, I argue that archaeology is a semiotic enterprise. This assertion, while perhaps not familiar to many archaeologists, is not particularly novel.[2] All academic disciplines can be seen as semiotic enterprises. This is because all disciplines must attend to the linkages between their theories, data, and social practices in the pursuit of meaning. It can be argued that all archaeologists of whatever theoretical persuasion, be they processualists, behavioralists, selectionists, agency theorists, feminists, indigenous archaeologists, and so on, make use of the same procedures of logical reasoning in giving meaning to the past. To be sure, this claim can be seen as a kind of unification thesis. Some colleagues, who worry that unification is a technology of power, may even find it troubling. But, as Ian Hacking (1996) points out, there are different kinds of unification. Unification at the cognitive level does not necessarily entail unification

at the interpretive level. It is thus possible, and indeed highly desirable, to foster theoretical disunity within semiotic unity.

It is surprising that so few archaeologists have engaged with the literature on semiotics, the multi-disciplinary field devoted to how humans produce, communicate, and codify meaning. The term "semiotics" appears in none of the recent overviews of archaeological method and theory (e.g., Bintliff 2004; Hodder 1999; O'Brien et al. 2005; Preucel and Hodder 1996; Renfrew and Bahn 2000; Ucko 1995; Willey and Sabloff 1993). One reason for this neglect may be the perception that semiotics is now "passé" or out-of-date because of its intimate association with structuralism. This view may be enhanced by the fact that there are now several critiques of structuralism and various poststructuralist agendas are emerging within postprocessual archaeologies. Ian Hodder (1982b:8), for example, has identified the problems of structuralism as including the lack of a theory of practice, the limited role of the individual, the absence of an adequate model of change, and the problem of verification. For Christopher Tilley (1999:3), structuralism has been superceded by a growing interest in various forms of discourse theory, including rhetoric and linguistic tropes.

Another reason for the lack of engagement may be the close association of semiotics with literary theory, a field that some archaeologists regard as having limited application to the study of material culture. For example, Lewis Binford (1987:402), a leading processual archaeologist, has labeled postprocessualists as "textual-contextualists" and critiqued them for "adopting an approach that assumes that all artifacts are symbols and are direct semiotic evidence, or, in a more structuralist posture, present themselves as clues to the intellectual determinants of the ancients' behavior." Matthew Johnson (1999:226), a leading postprocessualist, has held that text metaphor is flawed since it depends upon a perceived cultural proximity, the lack of difference between the past and our own present. Both of these critiques have some valid points and thus my goal is to present an argument for a specific kind of semiotics.

The dominant approaches to semiotics in archaeology today are those offered by postprocessual and cognitive archaeologists. These are all, in one form or another, derived from the writings of Ferdinand de Saussure and the various revisions made by his structuralist and poststructuralist followers. I contend, along with many other scholars (e.g., Gottdeiner 1995; Keane 2003; Parmentier 1997), that the Saussurian model, by itself, cannot provide an adequate account of material culture meaning. This is because of its flawed characterization of the sign and its focus on codes and rules at the expense of social practice. These limitations thus pose as much a problem for Colin Renfrew (1994a) and his cognitive archaeology program, as it does for Tilley (1991, 1999) and his celebration of ambiguity and metaphor.

I, therefore, advocate an alternative semiotic approach based upon the work of Charles Sanders Peirce (Gardin 1992; Knappett 2005; Lele 2006; Preucel and Bauer 2001). Such an approach requires identifying the different kinds of signs that humans use in the semiotic mediation of culture. Here Peirce's tripartite notion of the sign relation and his famous distinction between icon, index, and symbol are especially relevant. This approach also highlights how different cultures deploy specific signs and sign combinations toward particular semiotic ends. Certain meanings are given preeminent status in the negotiation of power relations and these can be seen as semiotic ideologies (Keane 2003). Finally, this approach involves acknowledging that archaeological interpretation is itself a social semiotic act. This fact implies that our collective interpretations are, and always will be, partial and provisional. It does not imply, however, that everything is relative or that there is no growth of archaeological knowledge. As Peirce argues, science is a social phenomenon and the conception of reality "essentially involves the notion of *community*, without definite limits, and capable of an indefinite increase of knowledge." (Peirce Edition Project 1984:239, his emphasis).

My second intervention in this debate involves reconsidering material culture as social practice. I suggest that archaeology's longstanding interest in material culture needs to be augmented by a focus on *materiality*. The distinction between material culture and materiality is crucial. Material culture can be defined as the manifestation of culture through material fabrications. As Henry Glassie (1999:41) puts it, material culture is "the tangible yield of human conduct." The standard view, embodied in Childe's quote at the beginning of this chapter, is that material culture stands for beliefs, thoughts, and behavior. Jules Prown (1993:1) offers a concise contemporary statement of this position, "human made objects reflect, consciously or unconsciously, directly or indirectly, the beliefs of the individuals who commissioned, fabricated, purchased, or used them and, by extension, the beliefs of the larger society to which these individuals belonged." There is thus an inherent semiotic dimension to the study of material culture since, as a product of human activity, material culture must always signify something other than itself.

This view of the artifact as a "mirror of man" was challenged by Ian Hodder (1982c) in the context of his ethnoarchaeological study of social groups and boundaries in the Baringo district of Kenya. He originally sought to identify the spatial patterning of material culture and determine how it correlated with ethnic groups. What he found was considerable variability expressed at several different scales. In the Lozi kingdom, for example, status groups actively used material culture to establish their authority while within Lozi households family tensions were supported and continued by means of particular kinds of pottery decoration. He concluded, "whether an artifact does or does not 'reflect' a particular type of

interaction or information flow depends on how it comes to be used as part of the strategies and ideologies of particular groups" since "individual artifact types may be used to emphasise or deny, to maintain or disrupt, ethnic distinctions or networks of information flow" (Hodder 1982c:85). Material culture is thus not a passive reflection of human behavior, but rather an active social practice constitutive of the social order.

This is an extremely valuable insight, but it begs the question of how and why specific meanings come to be regnant in particular social contexts. Subsequent studies of meaning have tended to get caught up in the "style debates" (Hegmon 1992). It can thus be argued that material culture has not been adequately theorized. There have been very few considerations of the "socialness of things" and how they transform culture by their multiple imbrications in regimes of value. These issues are the subject of new studies of materiality in social anthropology (Appadurai 1986b; Buchli 2002; Gell 1998; Miller 2005; Myers 2001) and are now being explored in archaeology (Chilton 1999; Meskell 2004; Orser 1992; Tilley 1999). Materiality, or material agency, can be defined as the social constitution of self and society by means of the object world. As Lynn Meskell (2004:28) perceptively notes, it "links both to the radical ideas of mimesis, simulacra, and agency and to the more mundane notions of goods, services, and economic structures." A focus on materiality demands that we consider the myriad ways in which material culture mediates social being. We thus need to shift our focus away from material culture per se toward the whole range of material engagements with the world. An archaeology so constituted is especially well positioned to contribute to a fuller understanding of cultural semiosis.

What is Semiotics?

Semiotics can be defined as the field, multidisciplinary in coverage and international in scope, devoted to the study of the innate capacity of humans to produce and understand signs.[3] What are signs? Signs are such things as ideas, words, images, sounds, and objects that are multiply implicated in the communicative process. Semiotics thus investigates sign systems and the modes of representation that humans use to convey their emotions, ideas, and life experiences. Semiotic analysis, in various forms, is widely used today in a broad range of disciplines, including anthropology, architecture, art, communications, cultural studies, education, linguistics, literature, political science, sociology, and psychology.

Semiotic issues have occupied scholars since antiquity (Clarke 1990; Nöth 1990). Plato, for example, held that verbal signs are only incomplete representations of the true nature of things since the realm of ideas is independent of its

representation by words. Aristotle recognized the instrumental nature of the linguistic sign, observing that human thought proceeds by the use of signs and that spoken words are the symbols of mental experience. The Stoics distinguished the thing signifying (*semeion*) from the thing signified (*semeionomenon*). The former was immaterial and separate from the existing object. Medieval scholars, such as William of Ockham, considered the concepts of sign and signification to be fundamental to logic (Tabarroni 1989). Ockham redefined the sign by introducing the concept of supposition. This move allowed him to reformulate traditional ontological issues, such as the questions of universals, the number of categories, and the ontological status of relations, as semantic questions.

John Locke, who coined the term "semiotics" from the Greek, was the first scholar to establish semiotics as a scientific discipline. In *An Essay Concerning Human Understanding* (1993:414–415) published in 1690, he considered it one of the three branches of science. He defined physics (*phusike*) as "the knowledge of things, as they are in their own proper beings, their constitution, properties, and operations," practice (*pratike*) as "the skill of right applying our own powers and actions, for the attainment of all things good and useful," and semiotics (*semeiotike*) as "the doctrine of signs; the most usual whereof being words, it is aptly enough termed also logic (*logike*)." He regarded logic as the study of "the nature of signs, the mind makes use of for the understanding of things, or conveying its knowledge to others."

Modern semiotics began in the 19th century and most scholars identify two distinct intellectual trajectories. The first of these might be termed "linguistic" and is due to the work of the Swiss linguist, Ferdinand de Saussure. The second trajectory can be considered "philosophical" and is associated with the writings of American philosopher, Charles Sanders Peirce. Of these two trajectories, the Saussurian approach is best known and has been the most influential across the humanities, social sciences, and natural sciences. This situation is due largely to the inaccessibility of the majority of Peirce's writings (see Chapter 3). It is, therefore, semiotics in its Saussurian manifestation that has given rise to structuralism and the so-called "linguistic turn" in the human sciences.

Saussure coined the word "semiology" (*sémiologie*) to refer to "a science that studies the life of signs within society" (Saussure 1966:16). He proposed that the true nature of language systems could only be revealed by studying what they share in common with all other semiologic systems. "By studying rites, customs, etc., as signs, I believe that we shall throw new light on the facts and point up the need for including them in a science of semiology and explaining them by its laws" (Saussure 1966:17). For Saussure, linguistics was just one branch of this general science, albeit the most complex and universal of all representational systems. Because of this characteristic, he argued that linguistics can serve as

"the master-pattern for all branches of semiology" (Saussure 1966:68). Saussure did not himself pursue these other branches of semiology and instead devoted his efforts to the study of language as a structured system.

Peirce, in contrast, defined "semiotics" as the science devoted to the "essential nature and fundamental varieties of possible semiosis" where semiosis is understood as "the nature of signs"(Peirce Edition Project 1998:413). Following the *trivium* of grammar, logic, and rhetoric of the ancient Romans, he distinguished three branches of semiotic – "speculative grammar," "speculative critic," and "speculative rhetoric" (Peirce Edition Project 1998:327). Here the term "speculative" can be understood as being equivalent to "theoretical." Speculative grammar thus refers to the study of "the ways in which an object can be a sign"; speculative critic refers to "the ways in which a sign can be related to the object independent of it that it represents"; and speculative rhetoric refers to "the essential conditions under which a sign may determine an interpretant sign of itself and of whatever it signifies, or may, as a sign, bring about a physical result" (Peirce Edition Project 1998:326, 327).

Semiotics emerged as a major focus in literature and cultural studies in the 1970s and 1980s. This can be largely attributed to the influence of the writings of Roland Barthes and Claude Lévi-Strauss some ten years earlier. In 1957, Barthes (1972) published *Mythologies*, his critique of bourgeois ideology. After completing it, he wrote that

> it was then that I first read Saussure; and having read Saussure, I was dazzled by this hope: to give my denunciation of the self-proclaimed petit-bourgeois myths the means of developing scientifically; this means was semiology or the close analysis of the processes of meaning by which the bourgeoisie converts its historical class-culture into universal nature; semiology appeared to me, then, in its program and its tasks, as the fundamental method of an ideological critique (Barthes 1988:5).

Barthes followed up Saussure's idea of the semiotic study of cultural practices and published on a variety of topics including literture, art, music, and fashion (Barthes 1977, 1990).

Lévi-Strauss's interest in semiotics dates to the period before the Second World War when he lived in New York City and taught at the Free School of Advanced Studies (now the New School). Lévi-Strauss was introduced to structural linguistics by Roman Jakobson, his colleague and fellow émigré from Europe. By 1960, he regarded semiotics as central to his program of structural anthropology. In his inaugural address to the Collège de France, he explicitly defined anthropology as a subset of semiology. He stated, "we conceive anthropology as the bona fide occupant of that domain of semiology which linguistics has not already claimed for its own, pending the time when for at least certain sections of this domain, special

sciences are set up within anthropology" (Lévi-Strauss 1976:9–10). Lévi-Strauss applied his approach to the study of kinship, mythology, totemism, and history (Lévi-Strauss 1963, 1976).

In the last decade or so, semiotics has undergone a significant transformation. The field has moved away from the study of sign systems and their classification toward the study of the modes of production of signs and meanings as they are enacted in social practice. This new approach has been called "social semiotics" or "sociosemiotics" (Gottdeiner 1995; Hodge and Kress 1988; Jensen 1995; Lemke 1995; Thibault 1991, 1997). It focuses on human meaning making practices across verbal, visual, bodily, and other semiotic modalities, and their co-deployment. As Thibault (1991) argues, the basic premise is that meanings are made by construing semiotic relations among patterned meaning relations, social practices, and the physical-material processes which social practices organize and entrain in social semiosis. In social semiotics, the basic logic is that of contextualization. No semiotic form, material entity or event, text, or action has meaning in and of itself. The meanings are made in and through the social meaning-making practices which construct semiotic relations among material processes and social actions. All communities have regular and repeatable patterns of meaning-making. These patterns are thus typical of that community and help to define and constitute it, as well as to distinguish it from other communities.

Yet another important development in semiotics is biosemiotics. This subfield can be defined as the study of living systems from a semiotic perspective. Thomas Sebeok (1979) has identified the origins of biosemiotics in the work of the German biologist Jakob von Uexküll, who was one of the founders of ethology in the first half of the twentieth century. Sebeok (1986) coined the term zoosemiotics to describe the study of animal behavior in 1986. According to biosemiotics, all processes occurring in nature at whatever level, from the single cell to the ecosystem, can be analyzed in terms of sign-processes. All organisms exist within a *semiosphere*, which can be defined as a world of meaning and communication involving the mastery of a set of visual, acoustic, olfactory, tactile, and chemical signs (Hoffmeyer 1998). The semiosphere contains a variety of semiotic niches which are occupied by different populations depending upon their biological characteristics. From this perspective, the evolution of life is associated with the development of increasingly sophisticated means for surviving in the semiosphere.

Archaeology and Semiotics

Archaeology's relationship with semiotics began in the 1960s with the structuralist encounter (Chapter 5). André Leroi-Gourhan (1965, 1968) and Annette