



Ethnoarchaeological observation and archaeological patterning: A processual approach to studying sedentism and space use in pitstructures from central New Mexico



Matthew F. Schmader^a, Martha Graham^{b,*}

^a University of New Mexico, United States

^b SRI Foundation, United States

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ABSTRACT

Ethnoarchaeology is one of the most significant and lasting contributions developed by Lewis Binford as a mainstay of processual archaeology. Observations about the organization and use of space by contemporary groups are used as one method to investigate material patterns found in archaeological record. Ethnoarchaeological research by Graham (1989) among the Rarámuri of northern Mexico generated models of residential site structure that operate at several spatial and organizational scales. Further ethnographic survey of groups who use subterranean dwellings was conducted by Schmader (1994). Resulting expectations about residential mobility and site structure are presented. Excavations of ancestral puebloan pitstructures in central New Mexico by Schmader (1994) applied Graham's models to explain patterning of interior floor assemblages. Distributions of floor items are used to identify activity areas and maintained interior space. Discussions concerning structure function, architectural responses to mobility, and inferences about varying degrees of site sedentism are presented. The potential and applicability of connecting ethnoarchaeological observations with archaeological patterns is described.

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1. Introduction

The scientific study of ethnoarchaeology is one of the most significant and lasting contributions developed by Lewis Binford as a mainstay of processual archaeology. At least a decade of interest in ethnographic study by archaeologists took place from the mid-1960s to the mid-1970s. Hill (1968) was among the first of Binford's early students to apply the notion that cultural and social organization can have material consequences in the archaeological record, as demonstrated by work at Broken K pueblo in Arizona. Longacre (1970), Binford's first PhD student, examined ceramic distributions in fine detail to infer social units at Carter Ranch, Arizona.

Particular focus on hunter-gatherers was carried out by Gould (1969) among Australian groups and Lee (1965) with the !Kung San. One of the most detailed hunter-gatherer studies with direct implications for archaeology was Yellen's (1977) work among the !Kung. Donnan and Clewlow's (1974) edited volume was the first to explicitly discuss the roles of ethnoarchaeology and experimental archaeology as they emerged as important subfields of study.

Binford spent much of the same time period constructing multiple arguments about the role of the present in understanding the past, resulting in several influential articles (Binford, 1976, 1978a, 1980) and the publication of *Nunamiut Ethnoarchaeology* (Binford 1978b).

Binford (1978b: 5) described ethnoarchaeology as a method “to seek experiences in the world . . . that can elucidate the usefulness and accuracy of [archaeologists'] tools for apprehending and describing reality.” Ethnoarchaeology offers archaeologists the opportunity to evaluate our understanding of present-day cultural processes and identify appropriate means to recognize and interpret meaningful variation in the archaeological record. Ethnoarchaeological observations about the organization and use of space are one method used to explore the range of behaviors represented by patterns in material remnants of cultural activity at archaeological sites. Understanding the conditions under which the material record is created helps us to develop methods for capturing important patterning in the archaeological record and interpret it in meaningful terms.

Artifact distributions are patterning of the material record created at, and observable at, varying scales. These scales are operational from a broader landscape level all the way down to micro-scale patterning in the placement of individual artifacts inside

* Corresponding author.

E-mail address: graham@srifoundation.org (M. Graham).

structures and on other kinds of living floors and surfaces. At the largest end of the spectrum, materials are arranged at and between sites across a landscape, and thus at a settlement pattern level. Within sites, the arrangement of features and structures forms what Binford (1983) termed the “site framework” (including site furniture), and all artifact distributions have a reference to that framework. At a medium scale of observation, patterns such as distributions of trash or debris generated from occupation may be found across sites. Floor items or the contents found within features are more specific to individual structures or living areas. At an even smaller scale, differential patterns of artifacts can be found at or around a feature, within parts of structures, or across occupational surfaces. These distributions cross-cut, and are representative of, every type of material technology available to and used by any group of occupants. Taken together, this is the relationship between technological organization and site structure that is potentially present at every investigated site.

2. Site structure: people in their life space

By the time his landmark book *In Pursuit of the Past* (1983) was published, Binford’s theoretical and applied analytical approach to site structure had been explicitly set in place. Development of theory about the use of space at sites, artifact disposal, modeling, and ethnoarchaeology were all used to explain variations in site function, artifact assemblages, artifact distributions, and spatial patterning. In particular, the study of site structure sought “ways to understand how early man organized his life space – the location and the spatial relationship of activities such as sleeping, eating, food-getting, [and] tool manufacture” (Binford, 1983: 144).

Drawing on clearly laid out examples, Binford (1983, *infra*) presented cases of present-day observations that connected causal frameworks to patterns seen in the archaeological record. At the core of this orientation was the need to observe behavioral patterns in a present-day context to identify the dynamics responsible for producing tell-tale signs in the record. Binford delved into the relationships and locations of primary activities such as sleeping, eating, food-getting, and tool making. He defined site structure as “the spatial distribution of artifacts, features, and fauna on archaeological sites” (Binford, 1983: 144). Further, the arrangement of facilities at a site was the site framework or “skeleton around which activities are organized” (1983: 145): made up of facilities, features, use-areas, and circulation pathways as seen in patterning of items and spatial clustering of artifacts. In turn, activity areas were places, facilities, or surfaces where technological, social, or ritual actions occurred (1983: 148).

A key principle in this theory-building was the unifying element of the way people consistently use space as individuals, in groups, or when engaged in specific types of activities. One consistent factor is the size of the human body, human biomechanics, and how activities such as working at a hearth and placing things at arm’s length or tossing debris resulted in distinctive signatures. Another constant is the repetitive nature with which these organizational patterns are found in groups around the world.

Binford’s observations led him to construct models of various activities and develop tools for identifying telltale signs of artifact patterning that could result. He generated models of seating around exterior hearths and of work activities at a hearth, bone disposal patterns produced by people eating at a hearth, and larger-scale activities such as butchering or processing game. These models were based on observations from geographically disparate groups such as the Nunamiut Eskimo, Ngatatjara Australian aborigine, and the !Kung San Bushmen (1983, *supra*).

People organize and use their space quite differently when structures or dwellings are compared, as opposed to external areas.

Exterior activities may be spatially extensive in comparison to the constraints of confined interior space. Thus, the organization of space inside dwellings or structured space necessarily has different characteristics that are recognizable in the present and in the archaeological record. Internal organization may need to accommodate serial uses, overlapping activities, changes in group size, and maintenance requirements. For example, Binford’s detailed descriptions of bone splinter and lithic artifact densities within a Nunamiut structure offered the chance to reconstruct the way men’s hunting parties repeatedly arranged themselves within interior confines and in response to other resources such as heat or light (Binford, 1978b: 176–182).

Several factors contribute to these observable patterns. First, people consistently maintain at least some part of their living spaces, whether those spaces are exterior or within structures. The degree to which certain parts of any living space are maintained, and how intensively and carefully they are maintained, can vary cross-culturally. Descriptions of this variation and possible explanations for it are subjects for theory-building that have not been strongly pursued since Binford’s original work. A notable exception is Kent’s (1990) global survey of cultural complexity and associated segmentation of architectural space.

The present article hopes to offer some additional advances in this realm of theory-building. Second, groups effectively monitor and adjust to the amount and distribution of debris they generate in terms of organizational properties. These properties include duration and intensity of occupation, site function within a settlement system of sites, internal functional specificity of designated living space, and anticipated future use in comparison to the net accumulation of debris from past usage. All of these properties are describable, measurable, and to an extent, predictable in terms of any observed present or past record of material artifact distribution. The purpose of the present article is to explore the potential for further theory-building about the organization and use of space and to demonstrate its applicability in practical terms.

3. Ethnoarchaeology and site structure

Ethnoarchaeology is an anthropological approach by which archaeologists seek to answer questions in the context of studying living peoples. The purpose of such studies is to understand the relationship between cultural processes, human behaviors carrying out those processes, and the material consequences of those human behaviors. While the relationship between material culture and the archaeological record is by no means a direct or one-to-one correlation, ethnoarchaeological research into the material outcome of behavior provides a useful understanding that archaeologists can test in the present and can then apply towards the archaeological study of the past.

Ethnoarchaeology is not merely pattern recognition, however. It is important to remember the difference between resemblance and a direct causal relationship. Thus, part of the challenge of ethnoarchaeological research is to demonstrate *why* patterns mean something in particular when they are identified. By identifying the factors that influence behaviors – with specific emphasis on behaviors with material consequences – ethnoarchaeologists and archaeologists can move beyond recognizing similarity in patterning, to addressing whether such patterns share an underlying causal relationship.

Site structure may be thought of as the organization and use of space at a place. At the foundation of site structural analysis is the relationship between the dimensions and mechanics of the human body, and how that influences the use of space. Such analysis goes beyond basic physical principles by explaining the placement of kinds of activity areas, the overlap of these areas, and the

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