# ZOOARCHAEOLOGY AND SOCIAL ORGANIZATION IN NON-STATE SOCIETIES

Jonathan C. DRIVER*


## Summary

*It is argued that zooarchaeological studies of social organization have been based on simple models which assume that different classes of people eat different foods. Recent archaeological research concerning non-state societies has demonstrated that there is considerable variability in social organization, and that a model of social classes is inappropriate. An example from the Pueblo III period in the American Southwest demonstrates the problems and possibilities of trying to use zooarchaeological data to examine social relationships in non-state societies. Some suggestions for future work are made.*

## Résumé

***Archéozoologie et organisation sociale dans les sociétés pré-étatiques.***

*Les études archéozoologiques portant sur l'organisation sociale sont, pour la plupart, fondées sur des modèles simples présumant que des classes sociales différentes ont une alimentation différente. Les recherches archéologiques récentes concernant les sociétés pré-étatiques ont démontré qu'il existe une variabilité importante des organisations sociales, et qu'un modèle de classes sociales est inapproprié. Un exemple dérivé de la période Pueblo III dans le sud-ouest des États Unis met en évidence les problèmes et les possibilités résultant de l'utilisation des données archéozoologiques pour examiner les relations sociales dans les sociétés non-étatisées. Nous soumettons ici quelques suggestions pour les travaux futurs.*

## Zusammenfassung

***Archäozoologie und soziale Organisation in vorstaatlichen Gesellschaften.***

*Es muß davon ausgegangen werden, daß zooarchäologische Studien zur sozialen Organisation bisher von vereinfachenden Modellen ausgegangen sind, die auf der Annahme beruhen, daß sich verschiedene Gesellschaftsschichten auch unterschiedlich ernähren. Neuere archäologische Forschungen zu nichtstaatenbildenden Gesellschaften haben gezeigt, daß es in den gesellschaftliche Organisation beachtliche Unterschiede gibt und daher ein verallgemeinerndes Modell des Sozialgefüges unangebracht ist. An einem Beispiel aus der Pueblo III-Periode des amerikanischen Südwestens werden die Probleme und Möglichkeiten bei der Anwendung zooarchäologischer Daten zur Untersuchung sozialer Beziehungen erläutert. Abschließend folgen einige Anregungen für künftige Arbeiten.*



## Key Words

*Social Organization, Pueblo III, Anasazi, Colorado.*

## Mots clés

*Organisation sociale, Pueblo III, Anasazi, Colorado.*

## Schlüsselworte

*Soziale Organisation, "Middle Level Societies", Pueblo III, Anasazi, Colorado.*


## Zooarchaeology and social organization

For a number of years zooarchaeologists have attempted to use data from faunal studies to assess the socioeconomic status of the people who deposited the animal bones. The potential of these types of studies has been summarized recently by Crabtree (1990), and one can use her review article as a summary of the "state of the art" of this type of archaeological analysis, which, for want of a better term, I will call "social zooarchaeology".

One obvious feature of most social zooarchaeology is that it is confined to societies which displayed some sort of hierarchical social organization. Typically, social zooarchaeology is undertaken on faunal remains left behind by members of state societies. These might include archaic civilizations such as those of Mesopotamia (Zeder, 1991), or Medieval Europe (Maltby, 1979). In North America, some of the more successful applications of social archaeology have been undertaken on historic sites (Schulz and Gust, 1983; Crader, 1984). As a result, many zooarchaeological studies of social organization are self-fulfilling. Samples of bone are collected from areas of sites known to have been occupied by high and low status people, and, not surprisingly, one finds that they consumed different types of food. Sometimes, expectations are not met, resulting in

*Department of Archaeology, Simon Fraser University, Burnaby, British Columbia, Canada V5A 1S6.

somewhat more interesting studies (Crader, 1990; Reitz and Zierden, 1991). However, in most cases the results are disappointingly predictable.

A second feature of most social zooarchaeology is the shared body of middle range theory which links faunal assemblages and social organization. Expressed simply (which it usually is), this middle range theory assumes that human societies are composed of classes, and that each class has access to different economic resources. In the case of animal foods, access to resources can be expressed in two ways. First, some classes have exclusive use of certain species - peasants don't eat pheasants; the chief gets the beef. Second, it is generally assumed that higher classes have access to "better" cuts of meat from the same species - the elite don't eat feet; "his nibs" gets the ribs. "Better" is often defined in Eurocentric terms, or one can get scientific and look at utility indices, although even these indices make assumptions about maximization or optimization which conform well to ecological theory or capitalist economics, but don't necessarily take taste into account. This middle range theory works fairly well for state societies (although it does involve some assumptions about which foods would have been perceived as most desirable). However, it will not necessarily work for studies of societies which are not organized as states. This paper examines the problem of developing middle range theory in zooarchaeology to address the social organization of societies which are "between bands and states" (Gregg, 1991).

## "Middle level" societies

Archaeologists from western societies have relatively little difficulty understanding how bands and states operate socially. Band society is familiar to us as a social system built around the nuclear family. Most people from western society are familiar with short term band society if they are involved in community activities which do not involve elected officials, and it is relatively easy to make the analogy between such groups and band societies based on age, gender and kinship relationships. As participants in highly developed states we also have little difficulty in understanding how complex hierarchical structures might be operated. We therefore have an appreciation of the two ends of the continuum of social evolution which has been modeled by anthropologists since at least the mid-nineteenth century. However, most western archaeologists have little experience living in societies where permanent populations of hundreds of people manage to maintain a viable social structure with little formal hierarchy. Such societies have been described as "tribes" or "segmentary societies" and they appear to grade into "chiefdoms", itself a highly variable category (Johnson and Earle, 1987).

The archaeological study of the social organization of middle level societies is undergoing a significant shift. Although processual archaeologists attempted to understand the processes whereby social change was effected, a lot of discussion about prehistoric social organization concerned the correct placement of Prehistoric societies in evolutionary typologies, such as the band-tribe-chiefdom-state typology defined by Service (1962). Attention was directed towards finding the material culture "clues" which would define different forms of social organization (e.g. Longacre, 1970; Peebles and Kus, 1977). As Lee (1990: 226) has pointed out, archaeologists seeking evidence of social inequality generally accepted evidence for social complexity as evidence for unequal (hierarchical) social structures.

More recently, both empirical and theoretical studies have redirected the attention of archaeologists away from the rather rigid typological schemes into which archaeologists attempted to fit "their" societies. Feinman and Neitzel (1984) examined ethnographic data on pre-state societies in the western hemisphere. They found little evidence that one could divide pre-state societies into types and subtypes. Although there was significant correlation between certain variables (e.g. population size and administrative complexity), variation was continuous rather than discrete, and correlation between variables often pointed to very general trends rather than highly correlated variables.

Upham (1990) used a digital/analog metaphor to distinguish between earlier typological studies of social organization (digital) and more recent conceptualizations which emphasize the continuous nature of social variability (analog). This is in keeping with theoretical developments in archaeology during the 1980's and 1990's, loosely characterized by North American archaeologists under the "post-processualist" banner. One outcome of the debate about various post-processual approaches has been the tendency for archaeologists to stop thinking about cultural change as a series of short "revolutions" followed by stability. Instead, a variety of approaches emphasize the continuous nature of change and the importance of cultural and historical context. The current popularity of Marxist or Marxist-influenced approaches (typically arriving in archaeology at least a generation later than other disciplines) is partly because such theoretical positions refer to the constant realignment of social relations (e.g. Bender, 1990; McGuire, 1992; Trigger, 1993). This may also account for the re-emergence of historical, contextual approaches to archaeological explanation (e.g. Hodder, 1986; Duke, 1991), in which antecedent events and cultural context are seen as important motivators of human actions.

One ironic implication of post-processual developments is the increased need for better middle range theory. Middle range theory developed in the context of processual archaeology when it became clear that the quality of reconstructions of past behaviour was inadequate to fulfill the goals set by the processualists. Middle range theory has been developed through experimental, ethnoarchaeological and cross-cultural studies in order to provide tested links between archaeological data and past behaviour. Post-processual archaeology demands greater attention to the particular contexts in which past behaviours and actions occurred; consequently, post-processual approaches require better reconstruction of the past and place greater reliance on the development of middle range theory.

The changes which have taken place in the approach to social organization of non-state societies have important implications for zooarchaeology. If archaeologists wish to examine the historical development of social processes, it is necessary to have much better middle-range theory. Rather than use a few familiar attributes such as burial customs or settlement patterns to "type" a prehistoric social system, archaeologists will increasingly demand empirical data about how social organization was manifest in a wide range of behaviours. There is little doubt that animal husbandry and (especially) hunting have numerous social and ideological implications in middle level societies (see, for example Kent, 1989). Can zooarchaeologists develop methods to contribute more to the study of social organization than they have done so far?

## A Southwestern example

To exemplify some of the possible prospects and problems one may face when undertaking social zooarchaeology of non-state societies, I will briefly outline a current project which has yielded some preliminary results and posed some methodological problems. We have recently begun to work on the zooarchaeology of Pueblo III sites in southwestern Colorado (Munro, 1994; Driver *et al.*, in press). The focus of our study is the Sand Canyon Locality where the Crow Canyon Archaeological Center has been excavating sites from the Pueblo III period (1150 to 1300 AD). In southwestern Colorado Pueblo III is the final phase of Anasazi settlement. The Anasazi were sedentary horticulturalists who relied mainly on dry farming to produce the bulk of their subsistence needs. Studies of human bone chemistry suggest that meat was of relatively little importance in their diet in this region (Decker and Tieszen, 1989).

The Sand Canyon locality is an arbitrarily defined area of about 200 square kilometres (Lipe, 1992). The topography consists of a rolling mesa top which supports fertile soils currently suitable for dry farming. Incised into the mesa top are steep-sided canyons with limited space for settlements along benches, terraces and talus slopes. Some canyons contain springs, usually at the canyon head. Intensive survey of 2600 ha produced over 400 archaeological sites on the mesa top (Adler, 1992). Survey of Sand Canyon itself resulted in the discovery of over 50 sites on 364 ha (Gleichman and Gleichman, 1992).

The settlement pattern of the locality underwent a significant shift during this relatively short time. From 1150 to 1250 the population was dispersed over the locality in relatively small hamlets, each consisting of a few rooms, a subterranean structure (kiva) and sometimes a tower (Varien *et al*, 1992). These settlements were dispersed over the mesa top. By the 1250's many of the mesa top settlements had been abandoned, and populations were moving into the canyons. Some of these new settlements were hamlets, but more aggregated settlements also appeared. Of these, the most notable was Sand Canyon Pueblo (Bradley, 1992) which was built between about 1250 and 1285, and contained over 500 masonry structures (mainly rooms and kivas). The locality was abandoned completely by 1300 AD, part of a much larger regional abandonment by the northern Anasazi.

Testing of a sample of these sites has provided us with four groups of faunal assemblages for study: small and medium sized sites located in the canyons but further away from Sand Canyon Pueblo (lower canyon sites); small hamlets which were situated near Sand Canyon Pueblo and were contemporaneous with it (bench/talus sites); the mesa top sites which pre-date the move to the canyons; the aggregated site of Sand Canyon Pueblo. Analysis of the assemblages from these sites revealed some interesting patterns (fig. 1). A wide variety of faunal remains were recovered. Excluding species which might be intrusive burrowers (e.g. ground squirrels) and species which were relatively rare, three taxa were numerically important: cottontail rabbit (*Sylvilagus* sp.), deer (*Odocoileus* sp.) and domestic turkey (*Meleagris gallopavo*). The earlier mesa top sites contained mainly cottontail rabbit and turkey, and small quantities of deer. When the settlement pattern changed, the sites located in canyons but away from Sand Canyon Pueblo (the lower canyon sites) exhibited a pattern of faunal use very similar to the mesa top pattern. However, the fauna in the aggregated site of Sand Canyon Pueblo and its smaller neighbours was somewhat different. In Sand Canyon Pueblo, deer became much more important, rising to about 14% of the identified bones. In the neighbouring hamlets, deer virtually disappeared, cottontail rabbits were much less frequent, and domestic turkey became much more important.

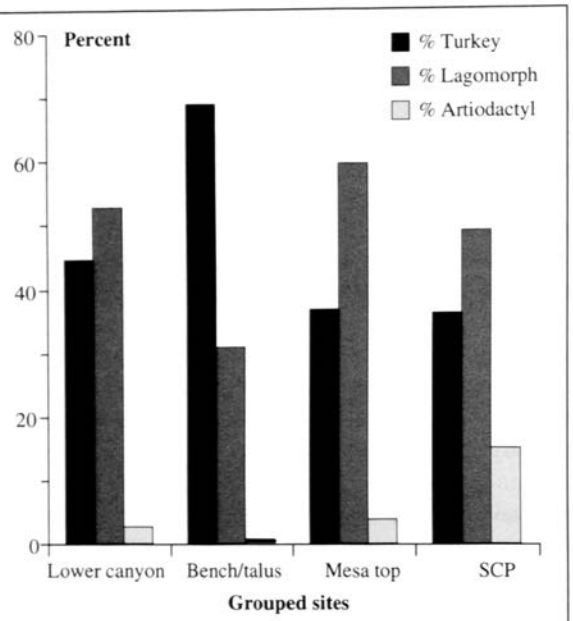


**Fig. 1**: Relative frequency of three common taxa at Sand Canyon Locality Sites, grouped by location. Percentages are based on NISP.

Although one could suggest hypotheses to account for this variability in faunal assemblages in terms of environmental or economic forces, we have been unable to provide convincing evidence to support such hypotheses (Driver *et al.*, in press). Therefore, we argue that differences in faunal assemblages result from either social or ideological practices, bearing in mind that these two general categories of behaviour are not necessarily mutually exclusive in pre-state societies. Our current interpretation suggests that the pattern of faunal procurement seen in the mesa top and lower canyon sites represents a logical ecological and economic "solution" to the need to acquire meat by small-scale horticultural communities. Cottontails were procured locally, and were probably abundant. Turkey had become a numerically important domesticate in Pueblo III times. The species had been domesticated for some time, but is usually found in ritual contexts prior to Pueblo III times. Munro (1994) suggests that the species became a more important meat source during Pueblo III as human populations increased. The rarity of deer is probably a function of the limited availability of the species within the radius of short-range hunting trips.

We suggest that in Sand Canyon Pueblo and the neighbouring bench/talus hamlets there were socio-ideological factors which produced different faunal assemblages. The inhabitants of the small hamlets seem to have been excluded from hunting virtually any deer, may have experienced less chances to hunt cottontails, and responded by increasing the domestic production of turkey. Munro (1994) has also suggested that these people may have had less access to arable land and began to intensify turkey production within the canyon. On the other hand, the more numerous inhabitants of Sand Canyon Pueblo were obtaining deer in far greater numbers than other sites at a time when regional human populations may have been increasing. This disparity between the large pueblo and the small hamlets is suggestive of an imbalance in access to resources. A very preliminary study has also suggested that within the large pueblo deer bones are found more commonly in areas of the site where kivas are more common. Although there is debate about the function of kivas in prehistoric sites (e.g. Lekson, 1988), they do appear to be more than just habitation rooms. We therefore have tentative association between higher frequencies of deer and structures which may have been focal places for social, political or ceremonial activities.

The problem we are now faced with is how to elucidate what human behaviour was responsible for the relatively high frequencies of deer at Sand Canyon Pueblo and the relatively high frequencies of turkey at the nearby hamlets. This not only requires that we become more imaginative in our interpretation of faunal assemblages; we also require methods to elucidate more details from the assemblages about the human behaviour responsible for their creation. Although we have begun to outline some very general scenarios, I will discuss the methodological implications of the point we have now reached in our analysis.

## Methods

A common problem for archaeologists is equifinality - the fact that different processes may produce similar assemblages. It does not take much imagination to suggest a variety of socio-ideological hypotheses to account for the extra deer in Sand Canyon Pueblo: the site was a regional centre for religious activity, and required large numbers of deer for ceremonial purposes; emerging leaders attempted to bolster their new social positions by providing deer meat at communal feasts; powerful lineages claimed territorial rights to hunting territories and excluded their neighbours; as men gained social importance during warfare between aggregated communities, the hunting of large game was more highly institutionalized. Much more difficult is to find ways to evaluate many of these hypotheses, and this requires that we develop methods to gain better understanding of what behaviours may have been involved in the

formation of certain assemblages. In the following sections I briefly describe some approaches to this problem.

### Spatial analysis

Much social zooarchaeology has involved relatively elementary spatial analysis, usually by comparing assemblages from different sites or different areas of the same site. Apart from the statistical and sampling problems inherent in such analysis (Carr, 1984), there are also problems of association. Under what circumstances are faunal remains deposited in particular locations? Can one assume that the deposition of fauna was contemporaneous with the occupation of a structure?

### Ethnographic analogy and cross-cultural comparisons

The use of ethnographic data has a long history of debate in archaeology. I would suggest that archaeological views of the way in which animal resources might be used in the negotiation and maintenance of social relationships have suffered from some rather simplistic assumptions about access of powerful people to preferred resources. Zooarchaeologists have contributed significantly to ethnoarchaeology and middle range theory in studies of the economies of animal use; it is now time to review the ethnographic literature and conduct more ethnoarchaeological studies to examine the role of animals as resources which may be controlled by social activities. There have been a number of examples of this type of study. For example, Romanoff (1988) has discussed the social role of hunting in the Interior Plateau of northwest North America. Keswani (1994) has used ethnographic data to develop a model of social use of animals in Prehistoric Cyprus. Marshall (1994) has considered the effect of sharing on bone assemblages.

### Faunal processing

The treatment of a resource may provide clues about the circumstances under which it was obtained and used. Zooarchaeology already possesses a considerable body of methods to examine topics such as season of death, method of butchery, evidence for storage, and method of waste disposal. We have tended to look at such data largely in terms of nutritional and economic models. However, there are other ways to consider the data. For example, evidence for storage of meat may have important social implications (Matson, 1992). We might begin to think of seasonality in terms of the timing of important social events as well as seasonal rounds. Do feasts provide faunal assemblages which differ from the assemblages produced by daily activities?

## Concluding thoughts

This brief paper was written part way through a research project which has revealed patterns of faunal data which seem to require explanation in terms of social behaviour. I have very briefly outlined some of the possible methods we might employ to develop middle range theory which will allow us to do more than simply postulate "social/ideological" causes for the variability in the faunal assemblages. Can we use zooarchaeological data to make statements about social organization which go beyond the egalitarian/hierarchical dichotomy? It is quite clear that recent theory concerning social organization of pre-state societies will find simplistic zooarchaeological treatment of such topics as lacking much essential information. I hope that at future conferences we will be able to report optimistically about the conclusions of our research and about the prospects for integrating zooarchaeological data into detailed studies of the social organization of middle level societies.

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