Arheološki vestnik
(*Arh. vest., AV*) 36, 1985, str. 107—131

MOST NA SOČI: A PRELIMINARY FAUNAL ANALYSIS OF THE HALLSTATT PERIOD SETTLEMENT

LÁZSLÓ BARTOSIEWICZ

Institute of Archaeology, Hungarian Academy of Sciences, Úri u. 49,
H-1250 Budapest

Introduction

The more than 6.5 thousand Iron Age cremation graves at Most na Soči (formerly known as Sv. Lucija) have attracted international attention for over a hundred years (Žbona-Trkman, Svoljšak 1981). Excavations at the settlement belonging to the necropolis however, have only been carried out in the last fifteen years (Svoljšak 1983).

During the course of field work thirty houses were discovered. Many of these were rebuilt several times during the circa 400—500 years life span of the so-called Sv. Lucija group of the Hallstatt culture which followed Bronze Age occupation in the area around the 11th to 9th centuries B. C. and lasted until the Celtic movements reached the area. Thus, the ante quem dating of the group may be estimated as the middle of the 4th century (Svoljšak 1980), while main occupation occurred during the approximately two and a half centuries preceding that time.

The settlement itself was located on a »peninsula« formed by the confluence of the Soča and Idrijca rivers which served as an almost impenetrable natural defence line on its western, northern and southern sides during Prehistoric times. This location made artificial fortifications unnecessary. On the other hand, hills and elevations of various sizes may be found in the most immediate neighbourhood of the settlement, the greater part of which is spread on northeast and south facing slopes.

The evaluation of the archaeological material from this site has not yet been completed and a part of the animal bones are also yet to be identified. On the other hand, the faunal data gathered to the present seem to be of sufficient amount to warrant setting up in outline a general framework into which hypotheses for later research may be fitted.

Faunal Composition

The faunal list of the settlement is shown in **Table 1.**

The composition of the bone assemblage recovered from the various houses rather uniformly suggests the dominance of cattle and sheep/goat (*Caprinae* subfamily) in the animal keeping of the Sv. Lucija culture.

Species	Size class[1]	
	large	small
cattle (*Bos taurus* L.)	1246	
horse (*Equus caballus* L.)	10	
pig (*Sus scrofa dom.* L.)		236
sheep (*Ovis aries* L.)		479
goat (*Capra hircus* L.)		44
sheep or goat (*Caprinae* subfamily)		889
dog (*Canis familiaris* L.)		5
wild pig (*Sus scrofa* L.)	14	
red deer (*Cervus elaphus* L.)	30	
roe deer (*Capreolus capreolus* L.)		3
non-identifiable fragment	1462	735
TOTAL	2762	2391

Table 1: Frequencies of the animal bones from the Hallstatt period of Most na Soči.

Distinction between bone remains of sheep and goat has always been problematical, as is also the case in this material. Aside from a number of identifiable sheep metapodials and other long bones however, remains of some exceptionally large goats were found. They are mainly represented by enormous horn cores, which according to the patterned cutmarks may have been retained for horn manufacture (**Pl. 1**). Evidence of the above mentioned diagnostic long bones in the kitchen refuse suggest that both species played a role in the diet of the Iron Age settlement.

On the basis of bone remains cattle was of similar importance, especially in regard to body size which may be 15—20 times larger than that of the small ruminants present.

Pig is relatively poorly represented in the sample. There are also an insignificant number of horse bones which very often come from the latest features of the Hallstatt settlement potentially disturbed by Celtic habitation. The rarity of horse remains is particularly interesting in light of the fact that

[1] Animal species in this table have been classified into groups of »large« and »small« species. This arbitrary distinction serves a purely technical purpose. Species with estimated mature weight larger than 100 kg were mechanically registered as »large« independent of their individual, age and sex dependent, live weight. Thus the subdivision between the two classes falls somewhere between wild and domestic pig. This dichotomy offers less information than the determination of the actual species, but may be of use in the case of non-identifiable remains (such as bone splinters, corpora vertebrae etc.). Due to the relatively great number of such pieces, linear extrapolation of the proportions between bones of identified species would have been misleading. That is, remains of large mammals may equally include bone fragments from cattle, horse, red deer and wild pig. The same holds true for pig, sheep, goat, dog and even roe deer in the class of »small« mammals.

at another Slovenian Hallstatt site near Ljubljana (Stična) a significant number of horse bones were found (Bökönyi 1964). Horse of course, is much more the domestic animal of wide open areas as is shown by the faunal inventory of many early Iron Age sites in European Russia as well (Matolcsi 1982).

Dog was probably fairly uncommon as well. Although the lack of dog bones in the kitchen garbage may be due to dietary restrictions, the relatively few animal bones displaying gnawing marks also indicate that even if dogs lived with the human population at this site, they must have been kept and buried predominantly off site (**Pl. 2; 1** and **2**).

Wild animals are not markedly represented in the faunal assemblage except for the sporadic remains of red deer. Some of these are worked or at least altered fragments of antler tine, which may have been the result of occasional gathering of send antler as opposed to actual hunting (**Pl. 2; 3** to **7**).

The above described structure of animal keeping (as far as at least consumption may be reconstructed from the bone refuse material of the settlement) may more or less be attributed to the differential exploitation of the environmental zones around the settlement.

Cattle and sheep could be grazed on the pastures of the lower slopes, while some steeper and rockier hillsides, with less abundant vegetation, probably favoured goat keeping. The narrow and relatively steep banks of the fast flowing rivers did not offer good opportunities for pig husbandry. In addition to these latter two environmental extremes however, there must have been a considerable overlap between the territorial distributions of domestic species in this small area.

Due to the heavy fragmentation of the material little is known about age-dependent kill-off patterns at the site. Old individuals dominate in cattle suggesting more than single meat purpose, white numerous young Caprines were killed because of easier reproduction which may have yielded surplus offspring.

The lack of wild animals in the diet may be explained by the interference of geographical and cultural factors. The apparently peaceful population of the Sv. Lucija culture group had practically no weapons in its artifact inventory known to date (Svoljšak 1982). The isolation of their settlement, however, also inhibited hunting because the fast and wild rivers probably would have made regular hunting expeditions organized on the other side of the river risky and complicated.

Regular trips across the river were inevitable on the occasion of burials as is shown by the massive evidence of the necropolis (Božič 1984). Undoubtedly, the labor expenditure involved in these crossings may even have been beyond the efforts required by shipment of prey animals back to the settlement. Motivations of mortuary behavior however, probably differed from those of food procurement.

Although material evidence of bridges has not yet been brought to light during the excavations, one may well reckon with the Prehistoric use of such constructions as well (Svoljšak 1984). Should this hypothesis hold true, the explanation of the lack of large scale exploitation of wild animals lies with cultural, rather than ecological factors. Minimization of hunting may have been encouraged by established animal husbandry which supplied sufficient amounts of animal protein. In addition, the local game was eventually driven out from

the area by human habitation, possible land cultivation and animal keeping itself.

One of the cultural parallels to the low level of game exploitation is the site of Bludenz, which was also occupied between the late Bronze Age and Roman times and had only about 10 % wild animal remains in its faunal inventory, chiefly from red deer (Amschler 1937).

The restricting effect of the river cut hill environment seems to be shown by the virtual lack of the evidence of aquatic animal protein exploitation in the faunal inventory.[2] Although recovery techniques were not oriented toward the collection of fish remains (no water sieving was carried out) no fish bone or mussel shell found its way into the faunal assemblage of several thousands (!)

[2] No artifacts could be identified as parts of fishing gear in the material from Most na Soči. Even at Tolmin, the nearby, related site (located to the north, in a similar environment) only one hook was found in Gave 155 (Svoljšak 1976 a).

Plates 1—3: Parenthesized provenience descriptions for animal bones shown in these plates (such as House 25, plane 5 for example) are given as defined by D. Svoljšak (1983).

All photographs for plates were made by Pavšič-Zavadlav.

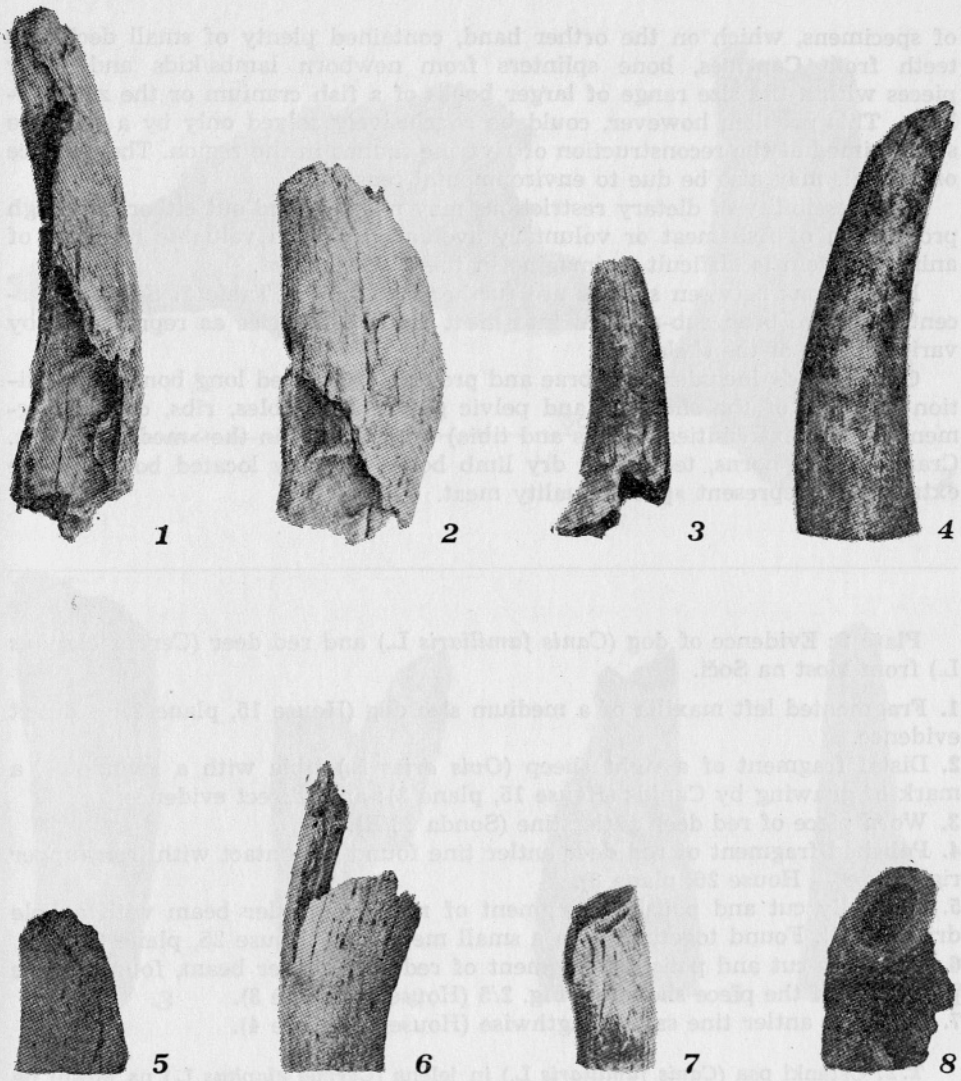
Plate 1: Goat (*Capra hircus* L.) horn cores from Most na Soči.

1. Left horn core from a large individual (House 29, plane 2).
2. Fragmented right horn core from a large individual (House 27, plane 2).
3. Complete right horn core cut off the frontal bone of a small invidual (House 16, sonda 4—41).
4. Complete right horn core sawn off near the base (House 29/I, plane 5).
5. Tip of right horn core sawn off the body (House 25, plane 5).
6. Body of a left horn core with the tip sawn off (House 25, plane 5).
7. Body of a left horn core with cutmarks on both ends (House 26, plane 1).
8. Base of a right horn core with fragment of the frontal bone. The horn core itself was sawn off (House 29/I, plane 5).

T. 1—3: Vse navedbe kraja, kjer so bile najdene živalske kosti na teh tabelah (kot npr.: hiša 25, plast 5), so usklajene s poimenovanjem, ki ga uporablja D. Svoljšak (1983).

Avtor fotografij na tabelah je Foto atelje Pavšič-Zavadlav (Nova Gorica)

T. 1: Kozje (*Capra hircus* L.) rožnice z Mosta na Soči.
1: leva rožnica velikega osebka (hiša 29, plast 2).
2: fragmentirana desna rožnica velikega osebka (hiša 27, plast 2).
3: cela desna rožnica, odrezana od čelnice majhnega osebka (hiša 16, sonda 40—41).
4: cela desna rožnica, odžagana blizu baze (hiša 29/I, plast 5).
5: odžagan vrh desne rožnice (hiša 25, plast 5).
6: leva rožnica z odžaganim vrhom (hiša 25, plast 5).
7: leva rožnica s sledovi rezanja na obeh koncih (hiša 26, plast 1).
8: baza desne rožnice s fragmentom čelnice — rožnica je bila odžagana (hiša 29/I, plast 5).


1
2
3
4
5
6
7
8
0
6cm

of specimens, which on the orther hand, contained plenty of small decidious teeth from Caprines, bone splinters from newborn lambs/kids and other pieces within the size range of larger bones of a fish cranium or the zonoskeleton. This problem however, could be conclusively solved only by a separate study aimed at the reconstruction of riverine faunas in the region. The absence of mussels may also be due to environmental reasons.

The possibility of dietary restrictions may not be ruled out either, although prohibition of fish meat or voluntary avoidance of this valuable resource of animal protein is difficult to imagine in this environment.

Proportions between species are further clarified in **Table 2.** Specific percentages have been sub-divided into meat value categories as represented by various parts of the skeleton.

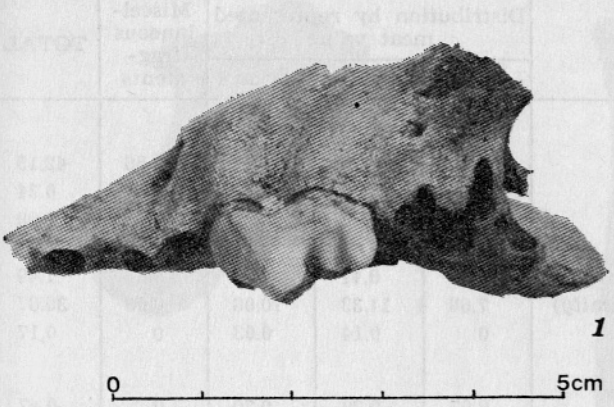
Class »good« includes vertebrae and proximally located long bones, in addition to parts of the shoulder and pelvic girdle. Mandibles, ribs, central segments of the extremities (radius and tibia) are grouped in the »medium« class. Cranial parts, horns, teeth and dry limb bones (distally located bones of the extremities) represent »poor« quality meat.

Plate 2: Evidence of dog (*Canis familiaris* L.) and red deer (*Cervus elaphus* L.) from Most na Soči.

1. Fragmented left maxilla of a medium size dog (House 15, plane 2): a direct evidence.
2. Distal fragment of a right sheep (*Ovis aries* L.) tibia with a »window«, a mark of gnawing by Canids (House 15, plane 2): an indirect evidence.
3. Worn piece of red deer antler tine (Sonda 38/R).
4. Polished fragment of red deer antler tine found in contact with iron (upper right side — House 26, plane 3).
5. Carefully cut and polished fragment of red deer antler beam with a hole drilled in it. Found together with a small metal peg (House 25, plane 3).
6. Carefully cut and polished fragment of red deer antler beam, found in the proximity of the piece shown in Fig. 2/5 (House 25, plane 3).
7. Red deer antler tine sawn lengthwise (House 14, plane 4).

T. 2: Ostanki psa (*Canis familiaris* L.) in jelena (*Cervus elaphus* L.) na Mostu na Soči.

1: fragmentirana leva zgornja čeljustnica srednje velikega psa (hiša 15, plast 2): neposreden dokaz.
2: fragment distalnega dela desne ovčje (*Ovis aries* L.) golenice z »oknom«, sledjo glodanja nekega kanida (hiša 15, plast 2): posreden dokaz.
3: obrabljen jelenji parožek (sonda 38/R).
4: zglajen fragment jelenjega parožka, najden v kontaktu z železom (zgornja desna stran — hiša 26, plast 3).
5: skrbno odrezan in zglajen fragment jelenjega rogovja z izvrtano luknjo, najden skupaj z majhnim kovinskim klinom.
6: skrbno odrezan in zglajen fragment jelenjega rogovja, najden blizu kosa s slike 2/5 (hiša 25, plast 3).
7: podolžno prežagan jelenji parožek (hiša 14, plast 4).



1

0 5cm

2

3

4

5

6

7

0 4cm

	Distribution by represented meat value			Miscellaneous fragments	TOTAL
	good	medium	poor		
Domestic					
cattle *(Bos taurus)*	10.69	14.78	15.12	1.56	42.15
horse *(Equus caballus)*	0	0.10	0.24	0	0.34
pig *(Sus scrofa dom.)*	2.84	2.77	2.37	0	7.98
sheep *(Ovis aries)*	2.43	5.68	8.09	0	16.20
goat *(Capra hircus)*	0.07	0.47	0.95	0	1.49
sheep or goat *(Caprinae subfamily)*	7.68	11.33	10.08	0.98	30.07
dog *(Canis familiaris)*	0	0.14	0.03	0	0,17
Wild					
wild pig *(Sus scrofa)*	0.07	0.20	0.20	0	0.47
red deer *(Cervus elaphus)*	0.07	0.10	0.84	0	1,01
roe deer *(Capreolus capreolus)*	0.03	0.03	0.03	0	0.10
TOTAL	23.88	35.62	37.96	2.54	100.00

Table 2: Percentages of the animal bones from the studied archaeological period of Most na Soči

Skeletal Parts, Butchering Techniques, Cooking

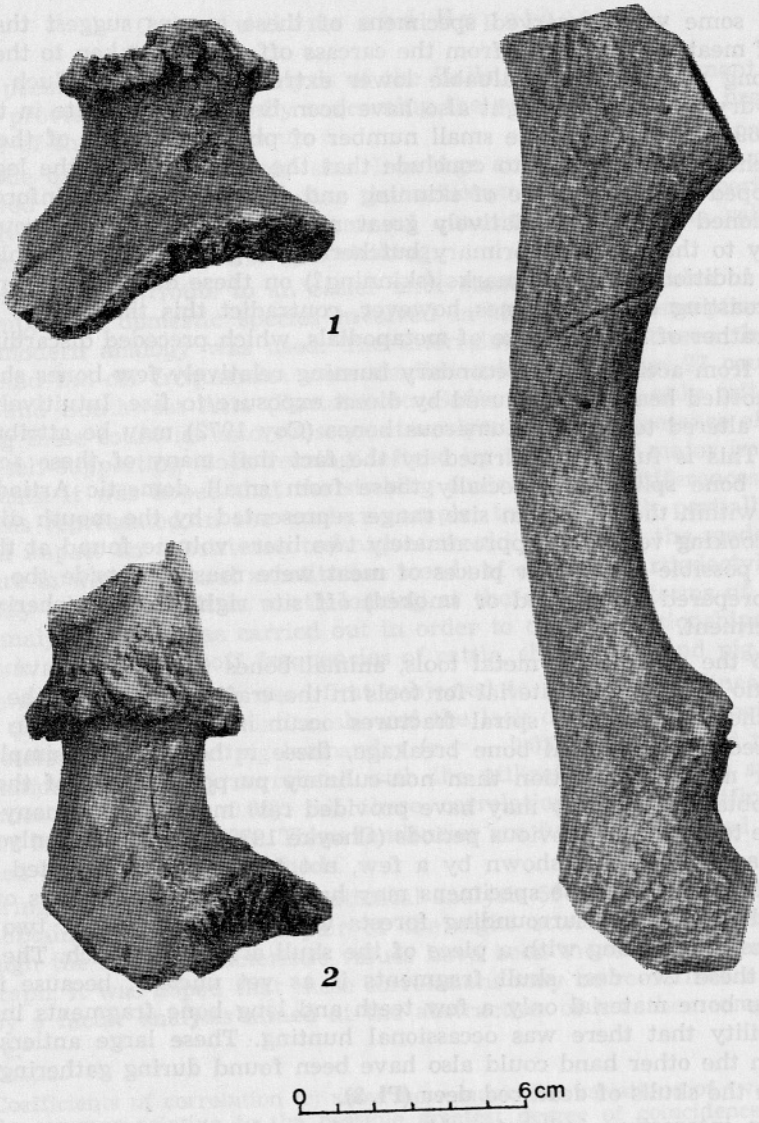
In general, the faunal material of this settlement is dominated by the diaphyses of long bones, especially those from the lower fore and hind leg region and metapodials. Although lower survival rates may be predicted for vertebrae, flat bones and long bone epiphyses with more spongious structures, the pre-

Plate 3: Red deer (*Cervus elaphus* L.) antler working debris from Most na Soči.

1. Right antler rose from a large stag with attached fragment of the frontal bone (House 16, plane 2).
2. Right antler rose from a stag with attached fragment of the frontal bone (House 27, plane 4).
3. Left antler beam from an 8 points stag. All the tines were sawn off (House 15, plane 5).

T. 3: Odcepki jelenjih *(Cervus elaphus* L.) rogovij z Mosta na Soči.

1: desni rog velikega samca skupaj z odlomkom čelnice (hiša 16, plast 2).
2: desni rog samca skupaj z odlomkom čelnice (hiša 27, plast 4).
3: levi rog samca z osmimi parožki — vsi so bili odžagani (hiša 15, plast 5).


1
2
3
0
6cm

sence of some well preserved specimens of these groups suggest that large pieces of meat were stripped from the carcass off-site and taken to the settlement along with the less valuable lower extremity segments. Such distally located »dry limb bones« might also have been brought to the site in the skin (Daly 1969, Yellen 1977). The small number of phalanges (most of them heavily butchered) permit one to conclude that the distal ends of the legs were also chopped off at the place of skinning and dismemberment (Binford 1981). As mentioned above the relatively great number of metapodials could find their way to the site after primary butchering as part of Daly's »schlepp effect«. In addition to fine cutmarks (skinning?) on these distal bones, traces of cooking/roasting on these bones however, contradict this theory and are indicative rather of a dietary use of metapodials, which preceded discarding.

Aside from accidental or secondary burning relatively few bones show the typical mottled heat marks caused by direct exposure to fire. Intuitively however, the altered texture of numerous bones (Coy 1972) may be attributed to cooking. This is further confirmed by the fact that many of these »cooked« bones or bone splinters (especially those from small domestic Artiodactyls) fall well within the 14—15 cm size range represented by the mouth diameter of some cooking vessels of approximately two liters volume found at the site. It is also possible that larger pieces of meat were roasted outside the houses or even prepared (e. g. dried or smoked) off site right after butchering and dismemberment.

Due to the presence of metal tools, animal bones themselves have played virtually no role as raw material for tools in the craft industries of the settlement. Although numerous spiral fractures occur in the bone sample which were caused by intentional bone breakage, these rather indicate simple butchering or marrow extraction than non-culinary purposes. Some of the bone splinters obtained this way may have provided raw materials for many expedient bone tools during previous periods (Choyke 1979). At this site only antler was regularly used as is shown by a few, not too carefully executed antler implements. Many of these specimens may have been made of pieces of shed antler gathered in the surrounding forests with the exception of two large antler roses found along with a piece of the skull attached to each. The exact origin of these two deer skull fragments is as yet unclear, because in the identifiable bone material only a few teeth and long bone fragments indicate the possibility that there was occassional hunting. These large antlers with pedicles on the other hand could also have been found during gathering trips along with the skulls of dead red deer **(Pl. 3).**

Another interesting indirect evidence of prehistoric craftmanship using faunal resources is shown by the previously mentioned carefully cut goat horn cores. Accumulations of such bones are known from Roman and Medieval tanning pits in Switzerland. Those pieces however, were roughly hacked off the skull. Neatly sawn off horn cores from cattle are also known from Augusta Raurica and are regarded as evidence of Roman horn manufacture at the site (Schmid 1972). An even closer parallel is known from Italy, where sawn off got horn cores were found in an Iron Age deposit of goat bones at Monte-Ozol (Chaix 1982).

Conclusions and Hypotheses

The preliminary faunal analysis of the Hallstatt period settlement at Most na Soči provided results chiefly concerning the meat consumption practices of this site of the Sv. Lucija group.

On the basis of the animals' size, Iron Age animal husbandry is generally considered in terms of a lull after the achievements of earlier periods (Bökönyi 1974, Matolcsi 1975). In terms of quantity however, the reliance on domestic species at several sites is striking.

In order to contribute to an easier understanding of the roles of the four most important domestic species involved in the meat consumption at this site a modern analogy was used. The interrelationships between the size of stocks and kill-off frequencies were studied using data from 27 countries in Africa and Southwest Asia (Bartosiewicz-Sáfár 1983). The only criterion for entering these countries into subsequent analyses was the presence of a more-or-less self-supporting stock rearing defined by the lack of major importation of animals. It was hoped that the striking environmental differences between the areas represented in the modern sample, together with partially related cultural impact on subsistence techniques would »polarize« the model toward a picture in which general substitution trends of domestic Artiodactyls may be indirectly understood. It is worth looking at the results in terms of the statistical analysis which was carried out in order to clarify relationships between the stock sizes and kill-off frequencies of cattle, sheep, goat and pig.

The data of that study were first subjected to the study of linear correlations.[3] Coefficients of correlation showed the lack of relationship between the parameters of sheep and pig husbandry ($r = -0.03$ to -0.05) and that cattle exploitation is positively correlated with the utilization of goat in subsistence economies ($r = 0.86$ to 0.89). All these correlations were significant on a $p < 0.02$ level of probability. These tendencies are further supported by results obtained by multivariate methods.

During the first step of the statistical analysis 56 coefficients of correlation were obtained between each pair of the eight attributes listed in Table 3. Although the most characteristic values have been mentioned in the previous paragraph, it was hoped that these correlations may be re-defined and simplified by a factor analysis aimed at the abstraction of a rather comprehensive picture.[4]

---

[3] Coefficients of correlation (r) show how much the variations of two attributes have in common relative to the possible greatest degree of coincidence ($r = 1$). If changes in the two attributes follow opposite tendencies, the coefficient has a negative value, while results around 0 indicate the lack of a relationship (Williams 1979). Since the square of the above mentioned coefficient of correlation ($-1 \leq r \leq 1$) follows the χ^2 distribution as the function of the number of observation entities, its probability may be predicted. In the study referred to in the text reliable correlations were expected to exist 95 times out of 100 trials. This means a 5 % level of statistical significance, more accuratey a $P \leq 0.05$ level of probability. The significance of results mentioned in this study is even more favourable since the probability of positive correlations is 98 %.

[4] This procedure is aimed at the identification of relationships between attributes as well. Its end results are however, easier to interpret since they show correlations

Factor loadings in Table 3 express the relative importance of cattle, pig, sheep and goat in the two types of contemporary meat economies in the studied area of Afro-Asia.

This model may be relatively easily interpreted in light of cross-references between nature and culture which may be directly studied in the modern example. At the same time however, it seems to express general functional relationships as well which may be of use in archaeological interpretations.

The most important of these seem to be that (independently of actual environmental and cultural circumstances) sheep and pig may complement each other in meat production, and that uniform factor loadings for cattle and goat may be partly due to the complementary role goat plays in milk production (Dahl — Hjort 1979).

Variables	Factors defined by large factor loadings	
	Type 1	Type 2
Pig, kill-off frequency	**0.972**	(— 0.065)
Pig, size of stock	**0.985**	(— 0.040)
Goat, kill-off frequency	0.782	0.535
Goat, size of stock	0.696	0.663
Cattle, kill-off frequency	0.547	0.814
Cattle, size of stock	0.679	0.641
Sheep, kill-off frequency	(— 0.045)	**0.969**
Sheep, size of stock	(— 0.034)	**0.974**
Explanatory value (percentage of latent roots):	46.512	46.137

Table 3: Interrelationships between four domestic Artiodactyls in the subsistence farming of 27 developing countries. The factor loading matrix presented here defines two extreme types of meat production.

Possible generalizations suggest that the faunal composition reflected in Tables 1 and 2 may be assigned to the meat production pattern labeled »Type 2«

between two synthetic variables (defined by the contributions of individual attributes; Type 1 and Type 2 in this case) and all the 8 attributes under discussion here. In other words, instead of having eight columns and eight rows in Table 3 (as was the case with tabulated coefficients of correlation in the original study), calculations reduced the number of columns to two. This simplification resulted in a slight loss of in explanatory value (7.35 %) which is however, still within acceptable limits. Measures of the relationships tabulated this way are called factor loadings. Their interpretation is similar to that of the coefficients of correlation. Values listed in Table 3 were obtained by Varimax rotation discussed elsewhere (Dixon et al 1981). Due to the lack of extreme negative values, both factors may be considered unipolar according to the terminology proposed by Harman (1967).

in Table 3. This type is characterized by sheep as »pilot species«, which may not dominate meat consumption from a quantitative point of view but is diagnostic of the basic character of animal husbandry at this site.

The tendencies outlined by this analogy may contribute to the development of a synthetic model which includes a largely standard and spatially limited environment (the arid surfaces of the Soča river's basin which was particularly well isolated by natural defence lines — Svoljšak 1976 b), a potentially different distribution of cattle, sheep, goat and pig in the grazing area and the evidence of meat consumption patterns provided by the excavations.

Thus, the following hypotheses are to be tested after recoding of the complete bone material and using the archaeological periodization of the site:

Null hypothesis: Cultural changes observed at the site showed a rather continuous, peaceful evolution during which houses followed each other frequently at the same spot. Thus, it is also possible that no dramatic changes took place in the livestock keeping, and possible archaeological periods left similar kitchen refuse behind which in a standard environment should indicate conservative farming practices.

Research hypotheses: Some important phases in the settlement's history such as the transition from Bronze Age, the sudden appearance of improved stone architecture around the first quarter of the group's life (Svoljšak 1982) and finally the influence of Celts. These should all be reflected either in the proportions of the animals consumed, or at least in the change of availability of or preference for certain body parts which should be seen in the varying frequencies for different parts of the skeleton. (Availability and preference in this case are viewed as economic indicators: availability means restricted food resources shown by less selected body parts; preference means better meat supplies reflected by more obvious selection).

a) The change in the proportions of species or bone classes in this sample may be due to external and internal factors as well as changing dietary habits, but should at least partly reflect the tendencies outlined using the modern analogy as far as simultaneous increase or decrease in the kill-off patterns of certain species coincides with the archaeological periodization of the site.

b) If changes in livestock may be detected but do not coincide with chronological turning points indvidual houses must be looked at in order to establish differences on the level of social stratification or ownership patterns using the external evidence (Neustupný 1978) provided by the overall archaeological evaluation.

Acknowledgements

I would like to acknowledge the help of the excavator, Prof. Drago Svoljšak (*Goriški Muzej*, Nova Gorica) who entrusted me with the analysis of the bone material and also contributed by way of numerous personal communications to the final form of this paper. Thanks are due to Dr. Alice M. Choyke who corrected the English text.

AMSCHLER	1937	J. W. Amschler: Vorgeschichtliche Tierreste aus den Grabungen von Bludenz. *Mitteilungen der Prähist. Kommission der Akademie der Wissenschaften,* Wien 1937. 217—242.
BARTOSIEWICZ-SÁFÁR	1983	L. Bartosiewicz-L. Sáfár: *Interspecific relationships in mixed herd farming.* Paper delivered at the First Hungarian-Egyptian Conference of Animal Production, Gödöllő 1983. September.
BINFORD	1981	R. L. Binford: *Bones. Ancient Man and Modern Myths.* Academic Press, New York 1981.
BÖKÖNYI	1964	S. Bökönyi: Angaben zur Kenntnis der eisenzeitlichen Pferde in Mittel- und Osteuropa. *Acta Arch. Hung.* 16, Budapest 1964. 227—239.
BÖKÖNYI	1975	S. Bökönyi: *History of Domestic Mammals in Central and Eastern Europe.* Akadémiai Kiadó, Budapest 1975.
BOŽIČ	1984	D. Božič: Personal communication, Ljubljana 1984.
CHAIX	1982	L. Chaix: *Goat deposit at Monte-Ozol (Trentino, Italy).* Paper delivered at the Fourth Conference of the International Council for Archaeozoology, London 1982.
CHOYKE	1979	A. M. Choyke: A classification of bone and antler tools from the Bronze Age hill-fortress at Pákozdvár. *Alba Regia* 17, Székesfehérvár 1979. 9—21.
DAHL-HJORT	1979	G. Dahl-A. Hjort: *Having Herds: Pastoral herd growth and household economy.* Stockholm 1979.
DALY	1969	P. Daly: Approaches to Faunal Analysis in Archaeology. *American Antiquity* 34/2, Washington D. C. 1969. 146—153.
DIXON et al	1981	W. J. Dixon et al eds: *BMDP Statistical Software.* University of California Press, Berkeley 1981. 480—499.
HARMAN	1967	H. H. Harman: *Modern Factor Analysis.* University of Chicago Press, Chicago—London 1967. 100.
MATOLCSI	1975	J. Matolcsi: *The Origin of Domestic Animals* (in Hungarian). Mezőgazdasági Kiadó, Budapest 1975.
MATOLCSI	1982	J. Matolcsi: *Animal Keeping in the Time of Our Ancestors* (in Hungarian). Gondolat Kiadó. Budapest 1982. 93—96.
NEUSTUPNÝ	1978	E. F. Neustupný: Mathematics in Jenišův Újezd. In J. Waldhauser ed: *Das keltische Gräberfeld bei Jenišův Újezd in Böhmen* II. Archeologický výzkum v severních Čechách 6—7, 1978. 40—66.
SCHMID	1972	E. Schmid: *Atlas of Animal Bones.* Elsevier Publishing Company, New York 1972.
SVOLJŠAK	1976 a	D. Svoljšak: Utrinki o gospodarstvu v Posočju v starejši železni dobi (Some thoughts on the economy during the

older Iron Age in the Upper Soča Valley). *Goriški letnik* 3, Nova Gorica 1976, 65—69.

SVOLJŠAK 1976 b D. Svoljšak: Prehistoric settlement at Most na Soči. *Archaeologia Iugoslavica* 17, Beograd 1976, 13—20.

SVOLJŠAK 1980 D. Svoljšak: Prazgodovinska naselbina na Mostu na Soči. *Situla* 20/21, Ljubljana 1980, 187—193.

SVOLJŠAK 1982—1984 D. Svoljšak: Personal communications, Nova Gorica 1982—1984.

SVOLJŠAK 1983 D. Svoljšak: Kronologija raziskovanj s topografskimi podatki. In S. Gabrovec-D. Svoljšak ed: *Most na Soči (S. Lucija)* I. Katalogi in monografije 22, Narodni muzej v Ljubljani 1983, 29—35.

WILLIAMS 1979 F. Williams: *Reasoning with Statistics.* John Wiley and Sons, New York 1979.

YELLEN 1977 J. E. Yellen: Cultural patterning in faunal remains: Evidence from the Kung Bushmen. In D. W. Ingersoll, J. E. Yellen and W. MacDonald edit. *Experimental Archaeology.* Columbia University Press, New York 1977. 271—331.

ŽBONA-TRKMAN-SVOLJŠAK 1981 B. Žbona-Trkman-D. Svoljšak: *Most na Soči* 1880—1980. *Sto let arheoloških raziskovanj.* Tolmin 1981.

MOST NA SOČI — UVODNE RAZISKAVE ŽIVALSKIH OSTANKOV HALŠTATSKE NASELBINE

LÁSZLÓ BARTOSIEWICZ

Uvod

Že več kot sto let priteguje pozornost mednarodne arheološke javnosti nad 6500 žganih železnodobnih grobov z Mosta na Soči — prej poznanega kot Sv. Lucija (Žbona-Trkman in Svoljšak 1981). Vendar pa so izkopavanja pripadajoče naselbine potekala šele zadnjih petnajst let.

Z izkopavanji so odkrili trideset hiš. Mnoge od njih so bile v času 400 do 500 let, kolikor naj bi bila trajala tako imenovana svetolucijska skupina halštatske kulture, ki je sledila bronastodobni naselitvi od nekako 11. do 9. stoletja in trajala do prihoda Keltov, večkrat predelane. Torej lahko za čas ante quem postavimo sredino 4. stoletja (Svoljšak 1980) in za obdobje glavnega razcveta poltretje stoletje pred tem.

Naselbina stoji na polotoku, ki ga tvori sotočje Soče in Idrijce in ki je v prazgodovinskem času predstavljalo tako rekoč neprehodno naravno obrambno linijo na zahodu, severu in jugu. Zaradi tega bi bili umetni obrambni sistemi odveč. Po drugi strani pa lahko najdemo v najbližji okolici naselbine, ki leži večinoma na pobočjih, obrnjenih proti severovzhodu in jugu, hribe in vzpetine najrazličnejših višin.

Izvrednotenje arheološkega gradiva tega najdišča še ni dokončano, prav tako je še treba določiti del živalskih kosti. Vendar pa do sedaj zbrani favnistični podatki že predstavljajo dovolj trdno osnovo za izdelavo nekega splošnega okvira, v katerega lahko vgradimo hipoteze za nadaljnje raziskave.

Zastopanost živalskih vrst

Vrste, zastopane na naselbini, so predstavljene na **sliki 1.**

Sestav kosti, zbranih v različnih hišah, dokaj enotno predstavlja gojenje goveda in ovc/koz (poddružina *Caprinae*) kot glavno panogo živinoreje svetolucijske kulture.

Ločevanje kostnih ostankov ovc in koz vedno predstavlja določeno težavo, pa je tako tudi pri tem gradivu. Poleg številnih določljivih metapodialnih in drugih dolgih kosti so bili najdeni ostanki nekaj izjemno velikih koz. Predstavljajo jih predvsem ogromne rožnice, za katere lahko po enakih sledovih rezanja na njih sklepamo, da so bile na nek način uporabljene pri roževinski obrti (**T. 1**). Prisotnost omenjenih določljivih dolgih kosti med kuhinjskimi odpadki dokazuje, da sta obe vrsti imeli vlogo v prehrani te železnodobne naselbine.

Vrste	Velikostni razred[1]	
	veliki	majhni
govedo (*Bos taurus* L.)	1246	
konj (*Equus caballus* L.)	10	
prašič (*Sus scrofa dom.* L.)		236
ovca (*Ovis aries* L.)		479
koza (*Capra hircus* L.)		44
ovca ali koza (*Caprinae* subfamily)		889
pes (*Canis familiaris* L.)		5
divji prašič (*Sus scrofa* L.)	14	
jelen (*Cervus elaphus* L.)	30	
srna (*Capreolus capreolus* L.)		3
nedoločljivi fragmenti	1462	735
Skupaj	2762	2391

Sl. 1: Preglednica števila živalskih kosti po posameznih vrstah.

Sodeč po kostnih ostankih, je bilo govedo enako pomembno, še posebej zaradi svoje velikosti, ki je lahko 15—20 krat večja od velikosti takratne majhne drobnice.

Prašič je med kostnim gradivom dokaj skromno zastopan. Pojavi se tudi zanemarljivo število konjskih kosti, ki prihajajo običajno iz najmlajših plasti halštatske naselbine, za katere je mogoče, da je nanje vplivala keltska naselitev. Redkost konjskih kostnih ostankov je še prav posebno zanimiva, če jo primerjamo z drugim slovenskim halštatskim najdiščem v bližini Ljubljane (Stična), kjer je bilo najdeno kar precejšnje število konjskih kosti (Bökönyi 1964). Seveda pa je konj pretežno domača žival širokih planjav, kot nam to kažejo tudi najdbe iz zgodnje železne dobe v evropskem delu Rusije (Matolcsi 1982).

Zelo redek je bil verjetno tudi pes. Čeprav je majhno število pasjih kosti med kuhinjskimi odpadki lahko posledica jedilnika, pa tudi relativno redke oglodane kosti govorijo o tem, da so pse, če so že živeli skupaj s prebivalci, imeli in pokopavali nekje izven naselbine (**T. 2:** 1 in 2).

[1] Živalske vrste na tej sliki smo razdelili v skupini »velike« in »majhne» vrste. To umetno in samovoljno delitev smo izvedl iz strogo tehničnih vzrokov. V r s t e, pri katerih je teža o d r a s l e g a osebka ocenjena na več kot 100 kg, so bile avtomatsko uvrščene med »velike«, ne oziraje se na od starosti in spola odvisno živo težo. Tako pade meja razredov nekako med divjega in domačega prašiča. Ta cepitev nudi sicer manj podatkov kakor pa delitev na posamezne vrste, je pa lahko zelo koristna pri nedoločljivih ostankih (koščeni odlomki, corpora vertebrae, itd.). Zaradi dokaj velikega števila takšnih kosov, bi bila linearna ekstrapolacija proporcev med kostmi opredeljenih vrst lahko zmotna. To pomeni, da lahko ostanki velikih sesalcev vsebujejo kostne odlomke goveda, konja, jelena in divjega prašiča. Isto velja za prašiča, ovco, kozo, psa in celo srno v razredu »majhnih« sesalcev.

Divje živali med kostnim gradivom niso posebno opazno zastopane, če izvzamemo posamične ostanke jelena. Od teh je nekaj obdelanih ali na kakšen drug način spremenjenih fragmentov parožkov, ki pa so jih verjetneje pridobili s pobiranjem odvrženih rogov kot pa z lovom (**T. 2**: 3—7).

Opisani ustroj živinoreje (kolikor moremo vsaj prehrano rekonstruirati na podlagi kostnih ostankov med odpadki naselbine) lahko bolj ali manj gotovo pripišemo diferencirani eksploataciji okolice naselbine.

Govedo in ovce so lahko pasli na položnih pašnikih, medtem ko so koze vodili v bolj kamnita in strma pobočja s slabšo pašo. Tesna in dokaj strma obrežja hitro tekočih rek niso dajala možnosti za razvoj prašičereje. Vendar pa je na tem majhnem prostoru moralo priti do prekrivanja v prostorski razdelitvi vrst domačih živali, kljub prej omenjeni razliki v bivalnem okolju.

Zaradi močne fragmentarnosti ohranjenega gradiva vemo le malo o tem, pri kateri starosti so imeli posamezno vrsto živali zrelo za zakol. Pri govedu prevladujejo stare živali, kar govori o tem, da ga niso vzgajali samo zaradi potrebe po mesu. Številne mlade *Caprinae* pa so lahko pobili zaradi njihove hitre reprodukcije, ki omogoča dovolj velik prirastek.

Odsotnost divjih živali na jedilniku lahko razložimo z delovanjem geografskih in kulturnih dejavnikov. Kakor nam je zaenkrat poznano, očitno miroljubno prebivalstvo svetolucijske kulturne skupine v svojem inventarju tako rekoč nima orožja (Svoljšak 1982). Redne lovske pohode je delno onemogočala tudi izoliranost naselbine, saj je bil prehod preko deroče reke tvegan in zapleten.

Prečkanje reke pa je bilo neizogibno pri pogrebih, kar nam dokazujejo številne najdbe na nekropoli (Božič 1984). Trud, potreben za te pohode, je bil nedvomno manjši kot delo, povezano s prevozom lovskega plena do naselbine. Sicer pa se je tudi motiviranost pri posmrtnih obredih verjetno razlikovala od motiviranosti za preskrbo s hrano.

Čeprav med izkopavanji niso našli nobenih dokazov za obstoj mostu, lahko sodimo, da so tudi v prazgodovinskem obdobju uporabljali takšno ali pa kako podobno konstrukcijo (Svoljšak 1984). Če upoštevamo to trditev, potem ima izostanek večjega izkoriščanja lovnih živali svoj vzrok bolj v kulturnih kot pa v ekoloških danostih. Tako majhna potreba po lovu je lahko pogojena tudi z dobro razvito živinorejo, ki je naselbino preskrbovala z zadosti velikimi količinami živalskih beljakovin. Poleg tega pa se je okoliška divjad prav zaradi človekove bližine, poljedelstva in živinoreje morda celo umaknila.

Podoben primer imamo tudi v Bludenzu, ki je bil prav tako naseljen od kasne bronaste dobe do prihoda Rimljanov in kjer nam približno 10 % kostnih ostankov divjih živali med živalskim inventarjem, večinoma gre za ostanke jelena, kaže na podobno nizko stopnjo izkoriščanja divjadi (Amschler 1937).

V živalskem gradivu se nam restriktivni vpliv okolja, z rekami omejenega hribovja, verjetno odraža tudi v odsotnosti dokazov za izkoriščanje beljakovin vodnih živali.[2] Čeprav izkopavalna tehnika ni bila usmerjena k zbiranju ribjih ostankov (ni bilo izpiranja), se ni med več tisoč (!) primerki zbranega kostnega gradiva, ki je med drugim vsebovalo mnogo majhnih mlečnih zob Caprin,

[2] Med gradivom iz Mosta na Soči med orodji ne zasledimo predmetov, potrebnih pri ribolovu. Tudi v Tolminu, bližnjem in sorodnem najdišču, lociranem severneje, a v podobnem okolju, je bil na grobišču (grob 155) najden le en trnek (Svoljšak 1976 a).

	Razporeditev glede na kakovost mesa			Mešani fragmenti	Skupaj
	dobro	srednje	slabo		
Domače živali					
govedo (*Bos taurus*)	10,69	14,78	15,12	1,56	42,15
konj (*Equus caballus*)	0	0,10	0,24	0	0,34
prašič (*Sus scrofa dom.*)	2,84	2,77	2,37	0	7,98
ovca (*Ovis aries*)	2,43	5,68	8,09	0	16,20
koza (*Capra hircus*)	0,07	0,47	0,95	0	1,49
ovca ali koza (*Caprinae subfamily*)	7,68	11,33	10,08	0,98	30,07
pes (*Canis familiaris*)	0	0,14	0,03	0	0,17
Divjačina					
divji prašič (*Sus scrofa*)	0,07	0,20	0,20	0	0,47
jelen (*Cervus elaphus*)	0,07	0,10	0,84	0	1,01
srna (*Capreolus capreolus*)	0,03	0,03	0,03	0	0,10
Skupaj	23,88	35,62	37,96	2,54	100,00

Sl. 2: Odstotkovno razmerje živalskih kosti.

odlomke koščic novorojenih jagnjet/kozličev ter druge ostanke, približno enako velike, kot bi bile večje kosti ribje lobanje ali hrbtenice, znašla nobena ribja kost ali školjčna lupina. Dokončen odgovor na to vprašanje bi lahko dobili le s posebno študijo, ki bi imela namen rekonstruirati rečno živalstvo tega področja. Odsotnost školjk je ravno tako lahko posledica okolja.

Možnosti umetnih omejitev v jedilniku sicer ne moremo izključiti, čeprav si takšno prepoved ali pa celo prostovoljno izogibanje temu dragocenemu viru živalskih beljakovin v tem okolju težko predstavljamo.

Razmerja med vrstami so razložena na sliki 2. Posamezne odstotke smo razdelili v stopnje glede na kakovost mesa, kakor ga predstavljajo različni deli okostja.

Razred »dobro« zajema poleg kosti rame in okolčja še vretenca in proksimalno ležeče dolge kosti. Spodnje čeljustnice, rebra in osrednji deli okončin (koželjnica in golenica) so uvrščeni v »srednji« razred. Kosti lobanje, rogovi, žobje in metapodialne kosti (distalne kosti okončin) predstavljajo meso »slabe« kakovosti.

Deli okostja, mesarske tehnike, kuhinja

Na splošno prevladujejo med favnističnim gradivom naselbine diafize dolgih kosti, od teh predvsem diafize distalnih kosti sprednjih in zadnjih nog ter metapodialne kosti. Čeprav pri vretencih, ploščatih kosteh in epifizah dolgih kosti z veliko spongioznega tkiva slabšo ohranjenost že pričakujemo, nam prisotnost nekaj dobro ohranjenih primerkov govori o tem, da so živali razkosali

nekje drugje in potem večje kose mesa skupaj z manj vrednimi spodnjimi deli okončin prinesli v naselbino. Te metapodialne kosti bi lahko prinesli v naselbino tudi s kožo (Daly 1969, Yellen 1977). Majhno število prstnih členkov, večina od njih je močno razmesarjenih, nam dovoli sklepati, da so tudi distalne konce nog odsekali na prostoru, kjer so živali odirali in razkosavali (Binford 1981). Kot je že bilo omenjeno, bi relativno veliko število metapodialnih kosti lahko po primarnem razkosavanju prišlo do najdišča kot posledica Dalyjevega »schlepp efekta«. Na teh distalnih kosteh so poleg finih vrezov (odiranje?) opazni tudi sledovi kuhanja oziroma pečenja, ki tej tezi nasprotujejo in kažejo na uporabo metapodialnih kosti v prehrani. Šele potem so kosti zavrgli.

Poleg nenamerno ali sekundarno ožganih kosti ima le sorazmerno majhno število kosti značilne lisaste madeže, ki jih povzroči neposreden stik z ognjem. Vendar pa lahko kuhanju pripišemo spremenjeno zgradbo mnogih kosti (Coy 1972). To trditev potrjuje tudi dejstvo, da je precej teh »kuhanih« kosti ali odlomkov kosti (posebno kosti majhnih domačih sodoprstarjev) velikih med 14 in 15 cm, kar sovpada s premerom ustja nekaterih kuhinjskih posod, ki držijo nekako dva litra in so bile najdene v naselbini. Prav tako je možno, da so večje kose mesa pekli na prostem ali pa so jih pripravljali (npr. sušili, dimili) celo izven naselbine, takoj po razkosavanju.

Ker so že uporabljali kovinsko orodje, niso imele živalske kosti dejansko nobene vloge kot surovina za orodja obrtne industrije naselbine. Veliko število spiralno zlomljenih kosti, ki so bile polomljene namerno, kaže bolj na preprosto razkosavanje in odstranjevanje kostnega mozga, kot pa na nekulinarične namene. Nekateri od tako nastalih odlomkov bi v zgodnejših obdobjih predstavljali izvrstna koščena orodja (Choyke 1979). Nekaj ne preveč skrbno izdelanih primerkov nam dokazuje, da so na tem najdišču v te namene uporabljali le jelenje parožke. Večina jih je bila izdelanih iz kosov odvrženih rogov, nabranih po okoliških gozdovih. Izjemo predstavljata dve veliki jelenji rožnici, najdeni skupaj s pripadajočim delom lobanje. Natančen izvor teh dveh jelenjih lobanjskih odlomkov je še negotov, ker med določljivim kostnim gradivom le malo zob in odlomkov dolgih kosti dopušča trditi, da je občasen lov vendarle obstajal. Sploh pa bi tudi takšne kose lahko našli med svojimi nabiralnimi pohodi pri mrtvih živalih (**T. 3**).

Ob že prej omenjenih, pazljivo odrezanih kozjih rožnicah se nam ponuja še en zanimiv posreden dokaz za uporabo živalskih surovin v prazgodovinski obrti. Prave kupe takšnih kosti poznamo iz rimskih in srednjeveških strojarskih jam v Švici. Vendar pa so bili ti kosi grobo odsekani od lobanje. Skrbno odžagane goveje rožnice so znane tudi iz Auguste Raurice in jih imajo za dokaz tamkajšnje roževinske obrti (Schmid 1972). Še bližja paralela nam je poznana v Italiji, v Monte-Ozolu, kjer so našli odžagane kozje rožnice v železnodobnem depoju kozjih kosti (Chaix 1982).

Sklepi in hipoteze

Uvodne raziskave živalskih ostankov halštatske naselbine na Mostu na Soči so nam posredovale predvsem ugotovitve v zvezi s potrošnjo mesa na tem najdišču svetolucijske skupine.

Na podlagi velikosti živali bi imeli železnodobno živinorejo lahko za dokaj pasivno v primerjavi z dosežki prejšnjih obdobij (Bökönyi 1974, Matolcsi 1975), če pa se ozremo na količine, postane odvisnost od domačih živali na nekaterih najdiščih prav osupljiva.

Da bi pripomogli k lažjemu razumevanju vloge štirih, na tem najdišču za prirejo mesa najpomembnejših vrst domačih živali, smo uporabili sodobne primerjave. Pri študiji razmerij med velikostjo živali in klavno frekvenco smo uporabili podatke iz 27 afriških in jugozahodnoazijskih dežel (Bartosiewicz-Safar 1983). Edino merilo za upoštevanje teh dežel v sledeči analizi je bila stopnja v razvoju živinoreje, ki je morala bolj ali manj zadoščati potrebam prebivalstva, kar se je kazalo v izostanku uvoza živine. Upali smo, da bodo ogromne razlike v okolju obravnavanih sodobnih primerov skupaj z delno sorodnimi kulturnimi vplivi na tehnike, potrebne za preživetje, »polarizirale« model k neki predstavi, s pomočjo katere bi lahko posredno razumeli glavne substitucijske trende pri vzreji domačih sodoprstarjev. Če želimo razjasniti razmerja med velikostjo živine in klavnimi frekvencami pri govedu, ovcah, kozah in prašičih, se je vredno ozreti na te rezultate s statistično analizo.

Podatke te raziskave smo najprej uporabili pri študiji linearne korelacije.[3] Korelacijski koeficienti so pokazali vrzel pri razmerjih med parametri ovčereje in prašičereje ($r = -0{,}03$ do $-0{,}05$) in potdili, da je govedoreja povezana z izkoriščanjem koz (v eksistenčnih ekonomijah) ($r = 0{,}86$ do $0{,}89$). Vse te korelacije so bile signifikantne na $p < 0{,}02$ nivoju verjetnosti. Te tendence so kasneje podprli tudi rezultati, pridobljeni z multivariacijskimi metodami.

V prvi fazi statistične analize smo med vsakim parom osmih faktorjev s slike 3 dobili 56 korelacijskih koeficientov. Čeprav smo najznačilnejše vrednosti omenili že v prejšnjem odstavku, smo se nadejali, da bi te korelacije lahko na novo definirali in poenostavili s faktorsko analizo, ki naj bi omogočila iz tega izluščiti neko dokaj razumljivo sliko.[4]

---

[3] Korelacijski koeficient (r) nam pove, koliko imata variaciji dveh atributov skupnega glede na največjo možno skladnost ($r = 1$). Kadar spremembe obeh atributov sledijo nasprotnim tendencam, potem ima koeficient negativno vrednost, rezultati okoli 0 pa pomenijo pomanjkanje povezanosti (Williams 1979). Ker sledi kvadrat zgoraj omenjenih korelacijskih koeficientov ($-1 \leq r < 1$) distibuciji χ^2 kot funkcija števila opazovanih osebkov, je njeno verjetnost lahko napovedati. V študiji, na katero se navezujemo v besedilu, so bile zanesljive korelacije pričakovane v 95 od 100 poskusov. To predstavlja 5 %-stopnjo statistične signifikance, bolj natančno $P < 0{,}05$ stopnjo verjetnosti. Pomen rezultatov, omenjenih v tej študiji, je še večji, ker je verjetnost pozitivnih korelacij 98 %.

[4] Namen tega postopka je tudi v razpoznavanju zvez med atributi. Vendar pa je končne rezultate laže interpretirati, ker izražajo korelacije med dvema umetnima spremenljivkama (določenima s prispevki posameznih atributov, v tem primeru tip 1 in tip 2) in vsemi 8 atributi, ki tu sodelujejo. Z drugimi besedami, namesto osmih stolpcev in osmih vrstic na sliki 3 (kot je bilo to s tabelarnimi korelacijskimi koeficienti v originalni študiji), so kalkulacije zmanjšale število stolpcev na dva. Ta poenostavitev ima sicer za posledico nekoliko manjšo razlagalno vrednost (7,35 %), ki pa je še vedno v sprejemljivih okvirih. Mere na ta način tabeliranih zvez imenujemo faktorske uteži. Njihova interpretacija je podobna interpretaciji korelacijskih koeficientov. Vrednosti s slike 3 smo dobili s pomočjo Varimax rotacije, opisane na drugem mestu (Dixon et al. 1981). Zaradi pomanjkanja izjemno nizkih vrednosti, imamo lahko oba faktorja za unipolarna, če uporabljamo terminologijo, kot jo je predlagal Harman (1967).

Faktorske uteži s slike 3 izražajo relativno pomembnost goveda, prašičev, ovc in koz v obeh tipih sodobne preskrbe z mesom v proučevanih deželah Afrike in Azije.

Ta model lahko dokaj enostavno razložimo z ozirom na medsebojne vplive naravnega okolja in kulture, kar lahko na sodobnem primeru neposredno opazujemo. Vendar pa izraža obenem očitno tudi neka splošna funkcionalna razmerja, uporabna pri arheoloških interpretacijah.

Med temi razmerji sta najpomembnejši dognanji, da se ovca in prašič (neodvisno od dejanskih naravnih in kulturnih danosti) lahko pri prireji mesa dopolnjujeta, ter da so enake faktorske uteži pri govedu in kozi lahko deloma posledica dopolnjevalne vloge, ki jo ima koza pri prireji mleka (Dahl-Hjort 1979).

Spremenljivke	Faktorji, definirani z velikimi faktorskimi utežmi	
	tip 1	tip 2
prašič, klavna frekvenca	**0,972**	(— 0,065)
prašič, velikost živali	**0,958**	(— 0,040)
koza, klavna frekvenca	0,782	0,535
koza, velikost živali	0,696	0,663
govedo, klavna frekvenca	0,547	0,814
govedo, velikost živali	0,679	0,641
ovca, klavna frekvenca	(— 0,045)	**0,969**
ovca, velikost živali	(— 0,034)	**0,974**
Razlagalna vrednost (odstotek lastne vrednosti)	46,512	46,137

Sl. 3: Razmerja med štirimi vrstami domačih sodoprstarjev v eksistenčnih živinorejah 27 držav v razvoju. Tukaj uporabljena matrika faktorskih uteži opredeljuje dva ekstremna tipa prireje mesa.

Posplošitev, ki jo iz tega lahko izvedemo, nam živalski sestav, predstavljen na slikah 1 in 2, pripiše mesnoprodukcijskemu vzorcu, označenem kot »tip 2« na sliki 3. Za ta tip je značilna ovca kot »vodilna vrsta«, za katero sicer ni potrebno, da količinsko prevladuje pri potrošnji mesa, je pa pomembna za določitev osnovnega značaja živinoreje na najdišču.

Težnje, izražene s to analogijo, lahko prispevajo k razvoju umetnega modela, ki vključuje neko dokaj enotno in prostorsko omejeno okolje (nerodovitne površine porečja reke Soče, izjemno dobro izoliranega z naravnimi obrambnimi linijami — Svoljšak 1976 b), morebitno različno porazdelitev goveda, ovac, koz in prašičev po pašnih površinah in vzorce porabe mesa, izpričane z gradivom, ki so ga preskrbela arheološka izkopavanja.

Zato bo potrebno hipoteze, ki jih bomo navedli potem, ko bo pregledano vse kostno gradivo in bo upoštevana tudi arheološka periodizacija, ponovno ovrednotiti.

Ničelna hipoteza: Spremembe v kulturi, ki smo jih opazili na najdišču, kažejo dokaj tekoč in miren razvoj, med katerim so si hiše sledile često na istem prostoru. Zato je možno, da v živinoreji ni prihajalo do kakih dramatičnih sprememb, tako da so kuhinjski odpadki verjetno različnih arheoloških obdobij podobni, kar bi v vedno enakem okolju kazalo na konservativno kmetijstvo.

Raziskovalne hipoteze: Zgodovina naselbine pozna nekaj pomembnih faz: prehod iz bronaste dobe, nenaden pojav razvite kamnite arhitekture v prvem delu naselbine (Svoljšak 1982) in končno vpliv Keltov. Te spremembe bi se morale odražati bodisi v velikosti konzumiranih živali ali vsaj v različnem izboru kosov mesa zaradi drugačnega okusa ali drugačne razpoložljivosti teh kosov, kar vse lahko razpoznamo s pomočjo različnih količin ostankov določenih delov skeleta. (Razpoložljivost in okus sta v tem primeru razumljena kot ekonomska indikatorja: razpoložljivost predstavlja omejene vire hrane, ki se odražajo v manj izbranih kosih; okus za izboljšane vire, ki se kažejo v bolj očitnem izbiranju določenih kosov.)

a) Sprememba velikosti vrst, oziroma kostnih razredov je v tem vzorcu lahko posledica zunanjih in notranjih dejavnikov, ali pa spremenjenih prehranjevalnih navad; mora pa vsaj deloma odražati razvoj, ki smo ga skicirali s pomočjo sodobnih analogij, kolikor sočasna rast ali upadanje v klavnih vzorcih določene vrste sovpada z arheološko časovno razdelitvijo najdišča.

b) Če spremembe v čredi opazimo, se pa ne skladajo s kronološkimi mejniki, moramo upoštevati posamezne hiše, da bi ugotovili razlike v socialnem položaju oziroma lastništvu, in uporabljati zunanja pričevanja (Néustupný 1978), ki nam jih da celovito arheološko ovrednotenje.

Zahvala

Za pomoč bi se rad zahvalil izkopavalcu dipl. arheologu Dragu Svoljšaku (*Goriški muzej*, Nova Gorica), ki mi je zaupal analize kostnega gradiva in ki je s številnimi pripombami pripomogel h končni obliki tega dela. Zahvalo sem dolžan tudi dr. Alice M. Choyke, ki je pregledala angleško besedilo.

MOST NA SOČI: UNE ANALYSE FAUNIQUE PRÉLIMINAIRE DE L'HABITAT DE LA PÉRIODE HALLSTATTIENNE

Résumé

Au cours des fouilles de l'habitat (groupe de Sv. Lucija) de la période hallstattienne à Most na Soči, trente maisons ont été découvertes.

Les données fauniques, rassemblées jusqu'à présent, ont été utilisées pour esquisser un cadre général, dans lequel les hypothèses engendrées durant les fouilles archéologiques et fauniques postérieures peuvent être rangées. La majeure partie du

matériel représente un espace de temps d'environ trois siècles précédant le 4e siècle avant J.-C. Etant donné que les études détaillées de la chronologie du site devront se rapporter à la stratigraphie archéologique, qui est couramment établie, cette analyse préliminaire vise à la reconnaissance des tendances globales de la nature d'environnement fonctionnel.

Le bétail et les caprins dominent le matériel faunique mis en commun de ce site. Le porc est représenté par des os fort peu nombreux, tandis que la contribution de l'animal sauvage à l'échantillon est négligeable. Des restes sporadiques du cheval et du chien se présentent aussi dans le matériel **(Tableau 1).** Aucun témoin de poissons ou d'autres animaux riverains n'est présent dans l'inventaire faunique. Bien que les techniques de la récupération ne fussent pas orientées vers la collection des restes de poissons, il est étrange qu'aucune arête n'ait trouvé place dans ce rassemblement faunique de plus de 5000 os. Le manque de restes de poissons coïncide cependant avec le manque d'équipements de pêche dans le matériel archéologique.

Etant donné que les os des mammifères domestiques constituaient la majeure partie du matériel archéozoologique en ce site, les moyens possibles d'exploitation de la viande ont été étudiés à la lumière des fouilles antérieures concernant les relations interspécifiques entre le bétail, le mouton, la chèvre et le porc. La typologie développée utilisant ces quatre espèces artiodactyles aide à la caractérisation exacte des pratiques de l'économie animale de Most na Soči, orientée vers le mouton. Cette observation s'aligne pour une grande part sur le fonds écologique fourni par les surfaces arides de la vallée de la Soča. On ne devrait cependant pas passer sous silence le modèle culturel de l'exploitation de la viande, comme la confiance presque exclusive dans les animaux domestiques, la présence des porcs et la question contradictoire de la pêche.

A part la consommation de la viande, les industries artisanales ont aussi contribué des spécimens caractéristiques à l'assemblage des os. Parmi ceux-ci, les noyaux de cornes de chèvres découpés avec soin peuvent être indicatifs de la manufacture des cornes, tandis que les diverses pièces du faisceau des andouillers et les cors du cerf roux sont des restes du travail de l'andouiller. Contrairement aux autres os, l'andouiller semble avoir été plutôt utilisé conséquemment dans l'outillerie et l'acquisition de cette matière première peut avoir contribué une impulsion additionnelle à la chasse occasionnelle du cerf. Il est cependant possible aussi que plusieurs produits manuels aient été faits avec de l'andouiller mué.

Enfin, des hypothèses pour les études ultérieures ont été établies sur la base des informations disponibles concernant le développement de l'économie animale dans le secteur et ses liens possibles avec l'évolution générale du site. Ces suppositions seront testées sur la base de la périodisation archéologique en utilisant l'évidence fournie par l'évaluation générale.