

REMARKS ON THE FAUNAL REMAINS OF SOME EARLY FARMING COMMUNITIES IN CENTRAL EUROPE

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Summary

Animal remains from six sites of the earliest Linear Pottery in Germany are evaluated for their taxonomic composition and compared to published sites of the same period. The conventional listing of taxonomic units does not provide any clear pattern of similarities between the sites. Grouping the animal remains into four units, however, makes a geographical pattern visible. These groups comprise: 1 - wild and domestic cattle; 2 - wild ungulates except wild cattle; 3 - middle-sized domestic artiodactyles (pig, sheep, goat); 4 - others. The quantitative relationships between these groups show similarities between the sites in south Germany versus those in the Rhine-Main area. Sites in central Germany and Austria show different patterns. Problems of the interpretation of the relative proportion of wild and domestic animals at Neolithic sites are discussed. A final evaluation appears impossible at present.

Key Words

Neolithic, Linear pottery, Animal remains, Economy, Methodology.

Résumé

Remarques sur les restes fauniques de quelques unes des premières communautés agricoles d'Europe centrale.

La composition taxonomique des restes animaux provenant de six sites du plus ancien Rubané d'Allemagne est examinée et comparée avec des sites publiés de la même période. La liste classique des unités taxonomiques ne fait pas apparaître de claires ressemblances entre les sites. Par contre, si l'on regroupe les restes animaux en quatre groupes, un modèle géographique apparaît. Ces groupes comprennent : 1 - bovins sauvages et domestiques ; 2 - ongulés sauvages à l'exception des bovins sauvages ; 3 - artiodactyles domestiques de taille moyenne (porc, mouton, chèvre) ; 4 - autres. Les relations quantitatives entre ces groupes montrent des similitudes entre les sites d'Allemagne du Sud par rapport à ceux de la région Rhin-Main. Les sites d'Allemagne centrale et d'Autriche présentent des modèles différents. Le problème de l'interprétation des proportions entre animaux sauvages et domestiques dans les sites néolithiques est discuté. Une évaluation finale paraît impossible pour le moment.

Mots clés

Néolithique, Rubané, Restes animaux, Économie, Méthodologie.

Zusammenfassung

Bemerkungen zu den Faunenresten früher bäuerlicher Ansiedlungen in Mitteleuropa.

Säugetierreste von sechs Fundstellen der Ältesten Bandkeramik werden einer ersten quantitativen Auswertung unterzogen und mit anderen Faunenkomplexen dieser Zeitstellung verglichen. Die konventionelle Auflistung der taxonomischen Einheiten ergibt ein unübersichtliches Bild, das kaum Gemeinsamkeiten zwischen den verschiedenen Fundplätzen erkennen läßt. Durch eine Zusammenfassung der Faunenelemente in vier Gruppen wird ein geographisches Verteilungsmuster sichtbar. Diese Gruppen umfassen: 1 - Wild- und Hausrinder; 2 - wildlebende Huftiere außer Rindern; 3 - domestizierte mittelgroße Paarhufer (Schwein, Schaf, Ziege); 4 - Sonstige. Im Verhältnis dieser Gruppen zueinander zeigen sich Gemeinsamkeiten zwischen den Fundplätzen in Süddeutschland einerseits und jenen im Rhein-Main-Gebiet andererseits. Fundplätze in Mitteldeutschland und Österreich weisen abweichende Faunenspektren auf. Die Problematik der Interpretation des Wildtier/Haustier-Verhältnisses im Neolithikum wird diskutiert. Eine abschließende Bewertung ist noch nicht möglich.

Schlüsselworte

Neolithikum, Bandkeramik, Tierknochen, Wirtschaft, Methodik.

Reflections on the animal economy of the earliest farming communities are always sure to arouse the interest of prehistorians, due to on-going discussions about possible local origins of the Neolithic. In Central Europe - as in many other parts of the world - the earliest farmers are named after the pottery which they left behind. They will

be referred to here as the early LBK (from the German "Linearbandkeramik"). There are many sites of this pottery style in the loess areas of Central Europe, but faunal preservation is generally bad. For a long time, knowledge of the fauna was mainly based on research by H.-H. Müller (1964), who studied the animal bones from a number of

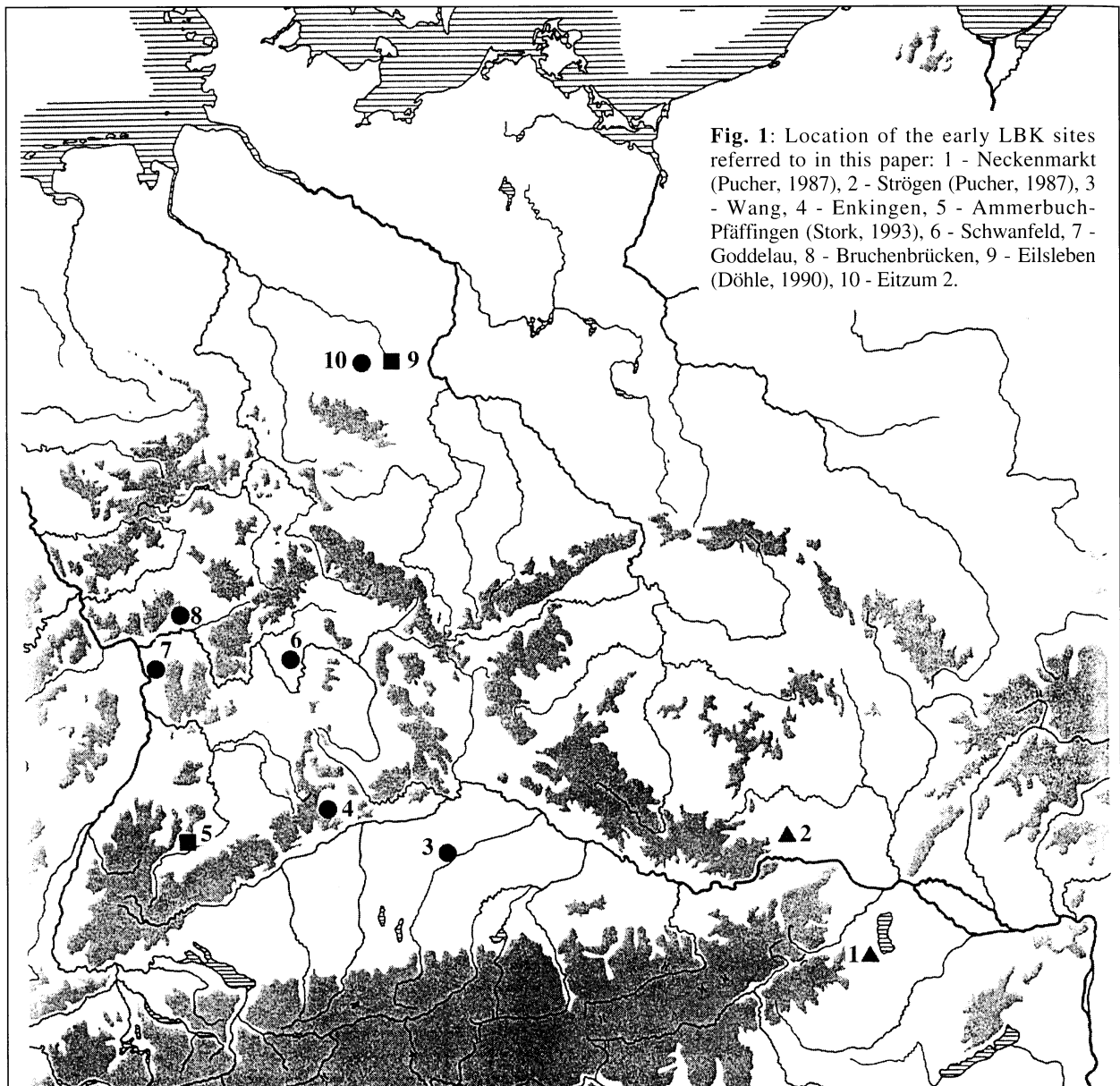
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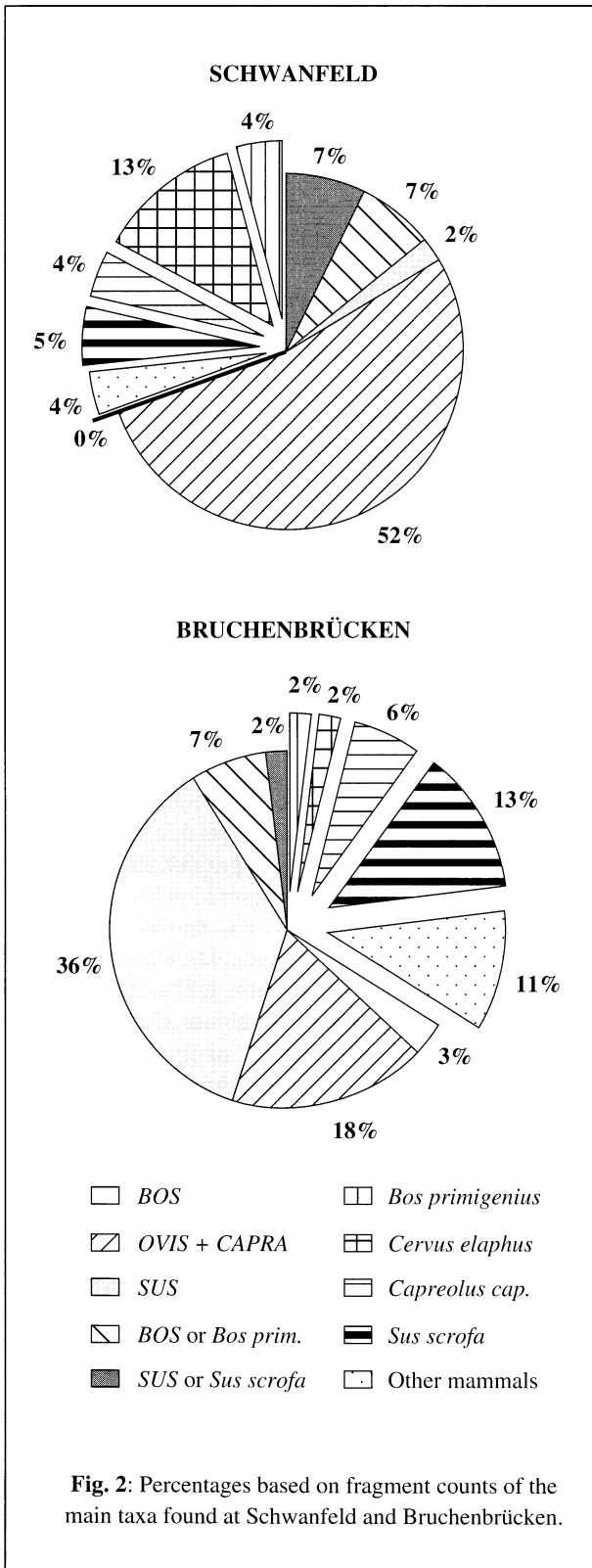
sites in east central Germany and found signs for a remarkable uniformity of the subsistence economy in that region. According to him, cattle were the most important component of the animal economy, the contribution of hunting was almost negligible. His results have been generalized and accepted as representative for the whole of the LBK cultural complex.

More recent research data, especially from northeastern France, other parts of Germany, and Poland have sometimes confirmed Müller's results, but on the whole they indicate that the animal economy of the LBK was not as

uniform as it had seemed. H.-J. Döhle (1993) has recently presented an overview of the available evidence and hinted at possible explanations of the emerging diversity.

The LBK complex extends over a large geographical area and spans more than a millennium in time. One would expect that at least part of the observed variability resulted from the length of time involved. As the result of an excavation program carried out by J. Lüning, it is now possible to look at the animal economy of the first phase of the LBK separately. Lüning and his group excavated some twelve sites of the so-called "oldest LBK" or LBK 1





in Austria and different parts of Germany. The faunal remains from the Austrian sites of this project have been evaluated by E. Pucher (1987). Those from the German sites are presently under study by the authors. Some basic questions, which have emerged from the first results, will be discussed in this paper.

At the present stage of the project, the bone remains from six sites have been quantified (fig. 1). Although substantial areas of the sites were excavated, most of the faunal samples are small, comprising between some 30 and 200 identified specimens. Only Goddelau and Schwanfeld have yielded samples of around 1000 identified pieces. The identifiability of the remains is very bad, ranging from about 15% to 40% based on fragment counts, while by weight the identified portion is always above 80% of the total. In addition to our own results, the published counts for the Austrian sites of the project (Pucher, 1987), and those of the recently published sites of Eilsleben (Döhle, 1990) and Ammerbuch-Pfäffingen (Stork, 1993) will be included in our discussions. All these sites were farmsteads or little villages of the earliest farmers in Central Europe during the first half of the sixth millennium BC (calibrated). Environmental details and short archaeological descriptions of all sites are given by A. Kreuz (1990) in her comprehensive archaeobotanical and palaeoeconomic evaluation of the sites excavated in the Lünig project.

The expectation that the variability of the faunal complexes would decrease when the time span involved was narrowed down was not fulfilled. On the contrary, most of the bone complexes of the earliest LBK not only diverged from each other, they were also different from most of what was known before. As an example, figure 2 compares the two sites of Schwanfeld and Bruchenbrücken. The only obvious similarity between them is the proportion of wild versus domestic animals. At both sites, at least half of the bones are from domesticates. About a third is of definitely wild animals and the remaining 10% to 15% are either of domesticates or wild animals. Neither the proportions within the domesticates nor those among the wild species are similar. The domesticates at Schwanfeld are dominated by sheep and goat, while at Bruchenbrücken pig was the most numerous animal. This is paralleled among the wild species by the dominance of wild boar. At Schwanfeld, red deer was the most important game. Quite frequent at Bruchenbrücken were the "other mammals", which comprise the fur-bearing species beaver, otter, marten, and fox. Some few bird and fish remains, which are not contained in the graphs, are present at both sites. Recovery techniques were the same for all complexes.

Both sites differ from most of the known LBK sites with regard to the percentage of cattle. At Schwanfeld we have only one bone which is clearly below the size range of the aurochs, while 41 bones are above what we consider to be the upper size limit of domestic cattle. Most cattle bones are in the overlap zone. At Bruchenbrücken there are more remains of domestic cattle and fewer of aurochs, but at neither site can cattle be regarded as a dominant species - even if the debatable borderline between wild and domestic forms was higher than we assume. There are divergent opinions on this matter, indicating that an objective solution of the problem is not possible at the present state of research. As discussed by Döhle (1993), the separation of wild and domestic *Bos* does not only influence the proportion of cattle among the domesticates but also the proportion of wild to domestic animals, which is often considered an important parameter for Neolithic subsistence (Uerpmann, 1977).

This problem must be kept in mind, but compared to the magnitude of the differences between faunal complexes of the early LBK, the added artificial divergence seems negligible for the time being. The differences between our faunal complexes are beyond what could be due to ambiguously identified specimens. The variability is, therefore, part of historical reality. If faunal analysis is intended to contribute to the understanding of early farming communities in Europe, an explanation for this variability should be given.

The LBK is among the most uniform and widespread pottery styles of the Neolithic in Europe. If nothing else, this uniformity means that the people who produced this pottery were part of a common tradition and kept up some communication as long as this tradition lasted. It contradicts the basic assumptions of our profession that their animal economy should have varied irregularly and unpredictably from site to site. Therefore, we must first ask ourselves whether the variability of the faunal remains really reflects a general variability of the LBK subsistence strategies.

When dealing with this question, one has to take into account the notoriously small sample sizes of LBK faunal complexes. A few bones more or less of one or the other species change the proportions considerably. However, there is empirical evidence that the general features of faunal complexes become visible after the evaluation of a few dozen bones - provided that the sample is representative for the problem under study. It is quite possible that faunal remains from settlements of the LBK often do not reflect the whole spectrum of the animal economy of the respective place. Due to the nature of the sites, all bone finds come from pits, very often from the ditches along the sides

of the long-houses. There are indications that these longitudinal ditches were dug during the construction of the houses and then filled in again within a short span of time (Stäubli, 1990). Only a few weeks around the building time of a new house might thus be represented in the bone waste which became included in the fill of such a ditch, whereas the thirty years or so during which the house was inhabited may not have left any traces and may not be reflected at all in our finds.

If this is the case, the faunal contents of the ditches along different houses should vary. This was checked for Bruchenbrücken (Uerpmann, unpublished). There are differences between the bone remains from longitudinal ditches of different houses, but interestingly enough, these differences pertain mainly to the bones of wild animals. The proportion of wild to domestic species is almost the same in the compared ditches, and so is the ranking of the domestic species. Among the wild animals, fish were only present near house 2, while the proportion of fur-bearing versus meat-bearing species is almost reversed between the two complexes. In this particular case, it seems that animal husbandry, as the more stable part of the subsistence, is represented equally in both ditches, while the evidence for the less predictable hunting and fishing activity is divergent. It is obvious from this example that at least some of the variability of the early LBK faunal complexes is due to the nature of the samples, some of which may only represent random clippings or seasonal parts of the subsistence activities of the respective settlements.

Another aspect of variability is the fact that it also depends on the nature of the criteria, which are used to distinguish the categories then found to be variable. It is not certain that what we see as different, was also different for the prehistoric producers of the bone finds. An example may illustrate what this means: to most of us a fish is a fish and ten fish are just a basketful of them. For an ichthyologist, ten fish are ten different specimens from which a diversity of information can be obtained. Archaeological bone remains are identified to the best of our capabilities and separated to the lowest possible categories. We try - for example - to separate wild and domestic cattle, but who knows whether these categories were important for the LBK people?

The difficulty in recognizing a pattern in the composition of the 10 early LBK faunal complexes shown in figure 3 may therefore also have something to do with the way in which the categories of this graph are defined and ordered. We have tried to shift and combine the various subdivisions of this graph in different ways in order to see whether we could force an inherent pattern to become

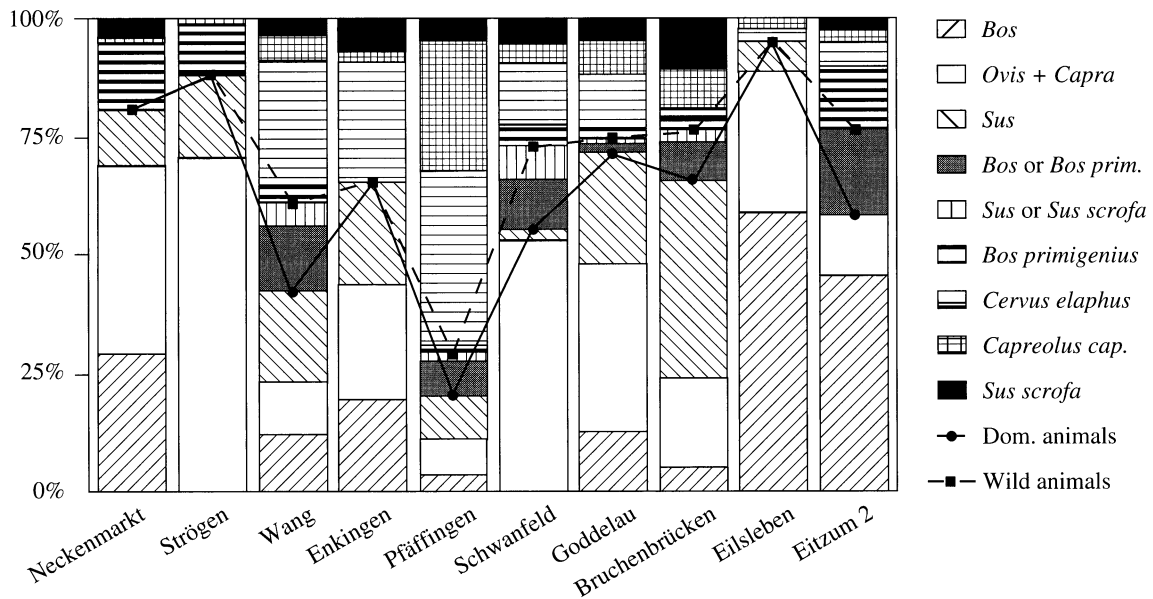


Fig. 3: Early Linear Pottery (LBK I): comparison of faunal complexes 1. Percentages based on fragment counts in conventional order (wild animals - wild or domestic animals - domestic animals).

visible. For the basic graph of figure 3 we only manipulated the available information insofar, as we restricted the data table to the ungulates. The additional variability deriving from the presence or absence of dogs and other furbearers, birds and fish, is suppressed here. This seems legitimate, because these animals have other economic functions and were of minor importance for the subsistence. In addition, the presence or absence of the smaller species is strongly influenced by the soil and excavation conditions, which may vary from site to site.

The sites of figures 3 and 4 are ordered geographically from east to west and from south to north (fig. 1). Except for the fact that high percentages of cattle only occur at the northern sites, not much can be seen from this more or less traditional representation of the quantitative data. However, a geographical pattern becomes evident if the same data are presented in a different order and form as shown in figure 4.

The sites of Schwanfeld and Bruchenbrücken were used in figure 2 to demonstrate the differences between their faunal remains. In the representation of figure 4 they look similar and form a group together with Goddelau, which is their next geographical neighbour. The three sites in south Germany, Wang, Enkingen, and Ammerbuch-

Pfäffingen, also form a kind of a group, and the two Austrian sites Neckenmarkt and Strögen to the left, as well as the two northern sites Eilsleben and Eitzum 2 to the right of the graph, are also closer to each other than to any of the remaining sites. In order to obtain this picture, we have partly given up the subdivision of the faunal remains into wild and domestic animals by graphically grouping aurochs and cattle together. The next group is formed by red and roe deer, together with wild boar. Where present, wild equids would also fall into this group. Sheep, goat, and pig make up the third group. It is the graphical trick of enhancing the hunted middle size ungulates together with a new arrangement of the categories which makes the pattern visible.

What could such a pattern mean in terms of the animal economy of the early farmers? It might mean that the lack of morphologically domestic cattle at Strögen and Schwanfeld may not have been of importance, because this category could be substituted by morphologically wild cattle. Alternatively the variation within this category of the large artiodactyles could be completely artificial and only due to the difficulties in separating wild and domestic forms. In any case, by combining morphologically wild and domestic cattle into one group, these prob-

lems are avoided. The result is a fairly uniform proportion of about 10% to 15% of *Bos* remains at the majority of the sites in south central and southern Germany, to which Strögen can be added.

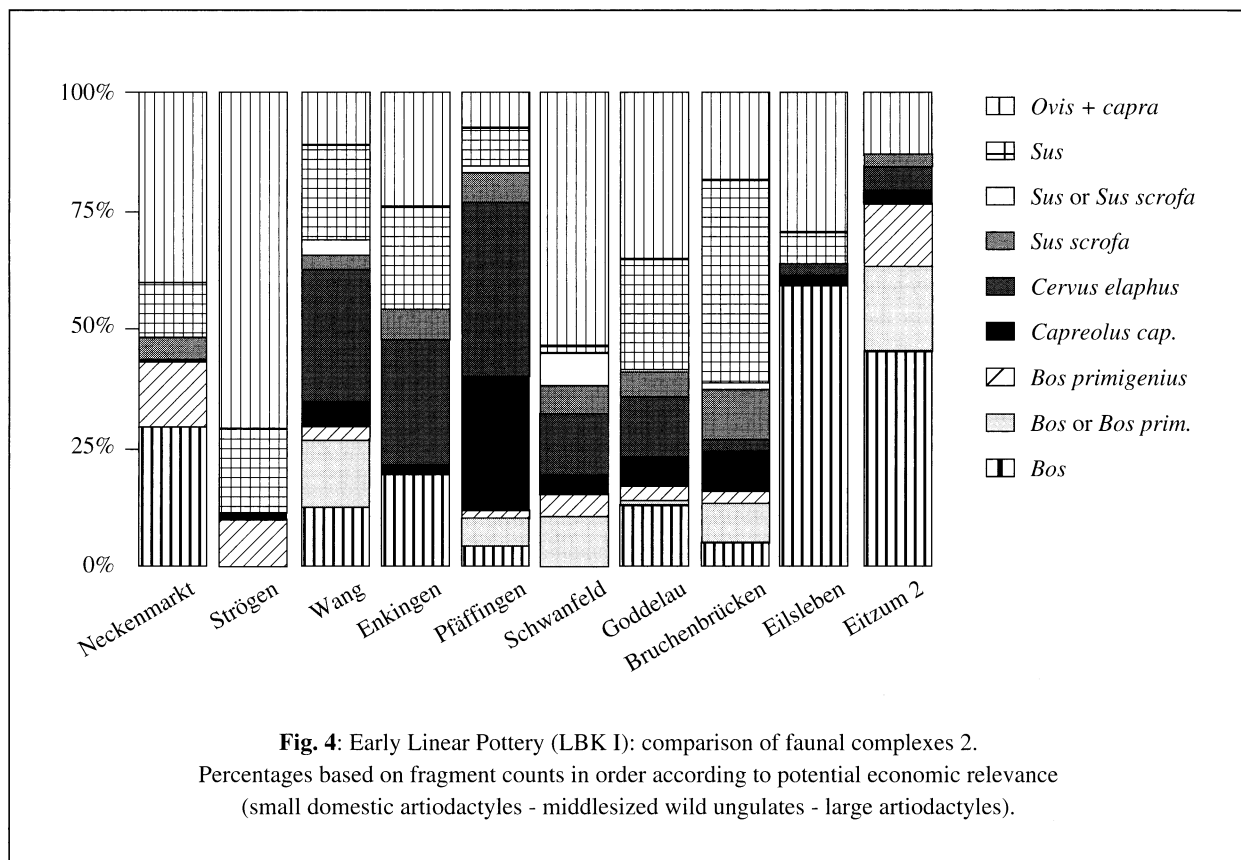
On the other end of the bars in figure 4, it seems that pig and sheep/goat could also replace each other. Taking into account that sheep were still hairy, not wooly, at that time, and that there is no evidence for the milking of either sheep or goat, it is conceivable that their economical function as meat producing animals was closer to that of the pig than in later periods. Depending on the local environments of the respective sites, the emphasis may have been on pig raising when there were oak forests or riverine biotopes to be used, or on sheep and goat husbandry if the vegetation was rich in grasses and shrubs. The numerical role of the small domestic ungulates is quite important at most of the evaluated sites.

The hunted middle size ungulates rank third in numerical importance at most of the early LBK sites. Only the south German sites are an exception. Here, hunting was an essential part of the subsistence. Again species could replace each other according to local availability. Several explana-

tions are possible for this peculiarity of the southwestern sites, which need to be discussed in a general context.

The least likely explanation for high proportions of wild animals seems to be the assumption of "Mesolithic traditions". There is no doubt that hunting activities survived from the early days of mankind to the present for traditional reasons. However, traditional, sportive, ritual, or any other non-economic motivations for hunting do not produce substantial amounts of meat and thus bones of wild animals. Proportions of 5% to 8% (rarely up to 12%) of wild mammal bones at feudal sites of the Medieval period may represent the maximal contribution of this type of hunting to normal forms of post-Mesolithic subsistence.

Proportions of more than 15% wild animals require an explanation based on economic necessities. These do not have to be tied directly to meat production. Hunting of herbivores for the protection of plant crops also results in decreased numbers of slaughtered domestic animals, although this is not its primary purpose. If the early LBK settlements in south Germany had more extensive gardens or fields which needed to be protected against red and roe deer, this might perhaps explain their excessive hunting.



However, crop damage by wild herbivores is part of the complex eco-system around an agricultural settlement. Access of unwanted animal visitors to fields depends to some extent on topographical features of the respective locality, but is mainly limited by the nature of the surrounding vegetation. This last factor is strongly influenced by man and his domestic herbivores. Especially the grazing and browsing of cattle can degrade natural forests to an extent that deer find these habitats quite unattractive. Degradation of the peripheral natural vegetation will increase in severity and space with the length of time for which early farmers had an area under their control. In any case an animal economy with a strong cattle component does not only decrease the economic necessity to hunt deer, it also decreases the natural availability of these wild animals. This, together with relatively high population densities of the early farmers in that area, might explain the low proportions of wild herbivores in faunal complexes of LBK settlements in east central Germany and Poland.

The biological antagonism between cattle and deer also sheds some light on the observation by Döhle (1993) that the high proportions of wild herbivores at the south German sites are correlated with relatively high proportions of pigs. Pigs do not destroy forest vegetation and can co-exist well with red deer populations. An animal economy dominated by pig-keeping would therefore not have a protective effect on the cultivated fields. If field crops and pigs were important for the economy of an early settlement, the hunting of deer might have been a by-product of the agricultural efforts.

However, high proportions of pigs often indicate economic difficulties. Among the domestic ungulates, pigs are the most productive animals in terms of litter sizes. They are also fast and uncomplicated in their reproduction. At all our sites with larger numbers of pig remains, the animals were often killed at an early age, generally before the milk molars were replaced. Premature slaughtering can indicate either affluence or deficiencies in meat supplies. Together with the high propor-

tion of hunted animals it seems more likely that the early farmers in south Germany were generally shorter of meat than their neighbours farther north. Based on the available evidence, we feel unable to decide whether cultural, environmental, or other reasons inhibited the early establishment of a really productive cattle or sheep/goat husbandry in south Germany.

Döhle (1993) has related the north/south differences within the LBK to general ecological adaptations during the period of expansion of early farming. One group of LBK settlers used a southern route from the area of origin in what is now Hungary, coming to south Germany along the Danube. The northern group, on the other hand, spread from the same origin through Bohemia into east and central Germany. This pattern was first proposed by Sielmann (1972). According to this hypothesis, the sites in the Rhine and Main area should belong to the northern group. But there are few similarities between the complexes from Schwanfeld, Goddelau and Bruchenbrücken on one side and Eilsleben and Eitzum on the other. Nor are the Rhine-Main sites intermediate between the southern and northern sites, as might be expected in accordance with this hypothesis. Apparently, the environmental differences between the regional clusters of early LBK sites were deliberately minimized by the early settlers by their specific choices of suitable landscapes (Sielmann, 1971).

Nevertheless, one might argue that the immediate environment of the sites has not sufficiently been taken into account. The wealth of basic information supplied by Angela Kreuz (1990) has not yet been completely evaluated in consideration of potential local influences on the fauna. However, there is no indication that simple explanations will be found on this basis. Small scale ecological analyses of site territories have - for example - revealed similarities between Strögen, Enkingen, and Bruchenbrücken (Kreuz, 1990). Yet the faunal complexes of these sites show almost no common traits. We may have come closer to finding a regional pattern in the animal economies of the first farmers in Central Europe, but we are still far from being able to explain it.

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