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# Early neolithic economy at Vhò

## Introduction

Recent excavations at Vhò di Piadena (Bagolini and Biagi, 1976) recovered a small faunal sample which can be integrated with the economic data from earlier excavations of the site (Bagolini and Biagi, 1975a; Barfield, 1975). The total data from Vhò are still limited but are nonetheless very important, for they allow the construction of a preliminary model of early neolithic economy in the central Po plain which we can compare with the better known evidence for the character of early neolithic settlement elsewhere in northern Italy.

In general the animal bones from Vhò are poorly preserved and in a very friable condition. The bones were also smashed into fragments in antiquity, presumably for the extraction of marrow, and make up a typical collection of food refuse. The latest sample was mainly recovered from one pit and one well, although a few specimens were also found in three other areas of the excavation. 209 fragments were recovered in all, of which 118 (57%) were identifiable. The identifications are listed in Table 1. As the total sample is small, and as the five pits are roughly contemporary, I have shown the total number of identifiable fragments for each species and their percentages in the last two columns of the table.

TABLE 1

VHO': SPECIES REPRESENTATION (NUMBERS OF FRAGMENTS)

| | | Pit 1 | Pit 2 | Well 3 | Pit 4 | Pit 6 | Total | % |
|---|---|---|---|---|---|---|---|---|
| Anser sp. | Goose | — | — | 1 | — | — | 1 | 0.8 |
| Bos taurus | Cattle | — | — | 4 | — | — | 4 | 3.4 |
| Capreolus capreolus | Roe deer | — | — | 20 | — | — | 20 | 16.9 |
| Cervus elaphus | Red deer | 29 | 1 | 5 | — | — | 35 | 29.9 |
| Lepus europaeus | Hare | — | — | 2 | — | — | 2 | 1.7 |
| Ovis/Capra | Sheep/Goat | 2 | — | 2 | — | — | 4 | 3.4 |
| Sus scrofa | Pig | 8 | — | 16 | 5 | 1 | 30 | 25.4 |
| Bos taurus/Cervus elaphus | Cattle/Red deer | 18 | — | 4 | — | — | 22 | 18.5 |
| | Total identifiable | 57 | 1 | 54 | 5 | 1 | 118 | 100.0 |

In terms of numbers of fragments, red deer is the most common animal. In view of the scarcity of cattle and the frequency of red deer, most of the 22 specimens which had to be identified loosely as cattle/red deer are almost certainly red deer. If this is in fact the case, then red deer would account for about 50% of the total sample, followed by pig (25%) and roe

deer (17%). Cattle and ovicaprids (sheep and goat), the other main food-bearing animals, each make up only 3.4% of the total. However, the amount of meat provided by the different species varies considerably and the simple percentage of an animal in a sample is not necessarily a guide to the importance of the animal in the diet of the ancient community. These percentages have therefore been translated into meat weights in Table 2. I have excluded the minor species from the table and recalculated the percentages of the main food-bearing animals. I have based the figure for red deer on Fraser's calculation of the meat weights of the Star Carr deer (Fraser and King, 1954) and on Jochim's figures for modern red deer in eastern Europe (Jochim, 1976: 99), both of comparable size to the Vhò specimens. The figure for roe deer is taken from Fraser and King (1954) and Jochim (1976: 100). The domestic pig today supplies about 100 lbs of meat; the Vhò pigs are extremely large and I have allowed a figure for them of 150 lbs, a figure which is very similar to Jochim's for wild boar in mesolithic Europe (1976: 100). The figures for cattle and sheep/goat are normal estimates for prehistoric stock. If the percentages of fragments in Table 1 indicate in general terms at least the relative numbers of animals killed at Vhò, then Table 2 suggests that red deer provided about 65% of the total meat supply of the ancient community, followed by pigs (21%), and cattle (10%), whilst roe deer and ovicaprids were unimportant.

TABLE 2

**VHO': THE RELATIVE IMPORTANCE OF THE SPECIES IN TERMS OF MEAT SUPPLY**

| | Numerical % | Meat per animal. (lbs.) | Total meat (lbs.) | Meat supply % |
|---|---|---|---|---|
| Bos taurus | 3.5 | 500 | 1750 | 9.5 |
| Capreolus capreolus | 17.4 | 35 | 609 | 3.3 |
| Cervus elaphus | 49.5 | 240 | 11880 | 64.7 |
| Ovis/Capra | 3.5 | 60 | 210 | 1.2 |
| Sus scrofa | 26.1 | 150 | 3915 | 21.3 |
| Total | 100.0 | — | 18364 | 100.0 |

The minimum number of individuals represented in a sample is a further indication of the relative importance of the different animals. In the case of a very small sample such as this one, the calculation of this figure tends to exaggerate the importance of rarer animals and minimise the importance of animals which are absolutely dominant in terms of numbers of fragments and were probably the most important food source. In Table 3 I have listed the occurrence of a selection of bones which tend to survive in faunal samples for the main food-bearing animals. The goose in Well 3 was represented by a single tarsometatarsus, the hare in Well 3 by two tibia fragments. The table is a guide to the minimum number of individuals represented in the Vhò sample, and reaffirms the basic dominance of red deer followed by pig suggested by the numbers of fragments and the calculation of the meat supply.

The amount of mortality information supplied by the sample is extremely limited. Tooth eruption and wear can be used to calculate the age at death of an animal, as can the fusion of the epiphyses to the shafts of the long bones. These stages are best known for modern domesticated animals, but unfortunately modern improved breeds mature very fast and hence the accurate ageing stages known for them are probably too young by several months at least when they are used for stock from a prehistoric site (Silver, 1969). However, they are at least a general guide to the population structure of the animals killed on an ancient site. The other main body of data supplied by the sample is a series of measurements listed in the appendix to this paper, an indication of the size of the animals killed at Vhò. The different species are considered separately in the following sections and the data are

TABLE 3

VHO': MINIMUM NUMBRES OF INDIVIDUALS

| | mandible | tooth | scapula | humerus | radius | ulna | metacarpal | pelvis | femur | tibia | calcaneum | astragalus | metatarsal | phalange |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pit 1 | | | | | | | | | | | | | | |
| Cervus elaphus | — | — | 1 | 4 | 3 | 1 | 1 | — | — | 1 | 3 | 2 | — | — |
| Ovis/Capra | — | 1 | — | — | — | — | — | — | — | — | — | — | 1 | — |
| Sus scrofa | — | 1 | 2 | 2 | 2 | — | — | — | — | 1 | — | — | — | — |
| Pit 2 | | | | | | | | | | | | | | |
| Cervus elaphus | — | 1 | — | — | — | — | — | — | — | — | — | — | — | — |
| Well 3 | | | | | | | | | | | | | | |
| Bos taurus | — | — | — | 1 | — | — | 1 | 1 | — | — | 1 | — | — | — |
| Capreolus capreolus | — | 7 | 1 | 4 | — | — | — | 3 | 2 | 1 | — | — | 1 | — |
| Cervus elaphus | 1 | — | — | 1 | — | — | — | — | — | — | — | 1 | — | — |
| Ovis/Capra | — | — | — | — | — | — | — | — | — | — | — | — | 1 | — |
| Sus scrofa | — | — | — | 2 | — | — | 2 | 3 | 1 | 3 | 1 | 1 | — | 1 |
| Pit 4 | | | | | | | | | | | | | | |
| Sus scrofa | 1 | — | — | 1 | — | — | — | — | — | — | — | — | — | — |
| Pit 6 | | | | | | | | | | | | | | |
| Sus scrofa | — | 1 | — | — | — | — | — | — | — | — | — | — | — | — |

then integrated in the final section in a general discussion of the relevance of the sample to our understanding of neolithic economy in northern Italy.

### Bos taurus

The single measurable cattle bone, a calcaneum, falls well within the size range for **Bos taurus** rather than **Bos primigenius.** Both have been reported from the older excavations at Vhò. The same specimen was the only bone which could be aged, having a fused tuber calcis. In modern stock this bone would derive from an animal over 30/36 months old at the time of death. Cattle mortality evidence from agricultural sites where cattle were important usually falls into three categories, although all three may not be represented at one site: immature or young mature animals — surplus males killed for meat; older animals — dairy and breeding cows; and very old cattle — plough cattle killed at the end of their working lives (Barker 1973, 1975, 1976a, 1977). It is extremely unlikely that the ard was being used in the area in early neolithic times, so it would not have been necessary to maintain old and powerful cattle at Vhò. The fused calcaneum could be from a meat or dairy animal. Although numerically cattle seem to be unimportant, it must be remembered that one cow could produce a far greater yield of meat or milk than a sheep or a goat — in medieval Europe, for example, a cow was commonly valued as worth ten sheep (Slicher Van Bath, 1963).

### Capreolus capreolus

The mortality evidence for roe deer consisted of a single long bone with a fused epiphysis (a distal metatarsal) and seven permanent teeth, all fairly worn and from mature animals. The remains of this animal are relatively common at Vhò, but, as Table 2 shows, its contribution to the diet of the ancient community was very limited. Although roe deer are well sited to the same deciduous woodlands favoured by red deer, they are more solitary animals, more difficult to stalk, and because of their small body weight much less an attractive food source than red deer. There is little evidence for significant size change in Italian roe deer in the Upper Pleistocene and Postglacial (Barker, 1976b). The single measurable metatarsal from Vhò falls squarely

in the middle of the size range of middle and upper palaeolithic metatarsals, but is the largest of the neolithic metatarsals that I have measured from Italian sites (Fig. 1). As Jarman pointed out in his discussion of prehistoric economy on the northern side of the Po plain (Jarman, 1971), roe deer size in neolithic times may be related to environment, human selection, or both; in a rich woodland environment, and under little human pressure, it is perhaps not surprising that the roe deer of Vhò were comparatively large animals.

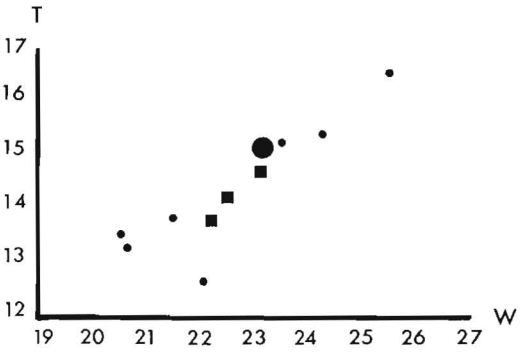


Fig. 1 - **Capreolus capreolus:** metatarsal, maximum width (W) and thickness (T) of the distal epiphysis, in millimetres. Large circle - Vhò; small circle - middle and upper palaeolithic; square - neolithic.

### Cervus elaphus

The red deer at Vhò were clearly mature animals when they were killed. All the long bones found were fused (four distal humeri, one distal radius, two proximal radii, one calcaneum), apart from a tibia with an unfused proximal epiphysis. One tooth was found; according to Lowe's criteria for ageing red deer according to tooth wear (Lowe, 1967), the tooth was derived from an animal of about eight years old.

The social and territorial behaviour of red deer makes it relatively easy for hunters to practise a considerable degree of selection. Various neolithic sites demonstrate different killing policies. At Molino Casarotto, for example, the middle neolithic settlement in the Berici Hills on the northern margins of the Po valley (Barfield, 1971: 41-2), 80% of the red deer (the commonest animal in the faunal sample) were killed in the first four years of life and 20% in the 4-15 age range (Jarman, 1971). At Burgäschisee-Sud in Switzerland a higher proportion of the deer aged four and older were killed, in a ratio of seven males to three females (Boessneck, Jéquier and Stampfli, 1963). In peninsular Italy middle and upper palaeolithic hunters seem to have consistently selected deer in their prime, between the third and tenth years (Barker, 1974). Although the killing patterns vary, the general bias at sites where red deer were an important food source was towards deer in their prime years and the mortality data from Vhò, although obviously very limited, are at least consistent with this pattern. The absence of very old animals at all the sites might mean that they died from old age or non-human predation, but an alternative and perhaps more likely explanation, in view of the degree of selection practised by prehistoric man over a long period of time (Jarman, 1972), is that in many areas where red deer were a staple food source few it any were allowed to reach very old age.

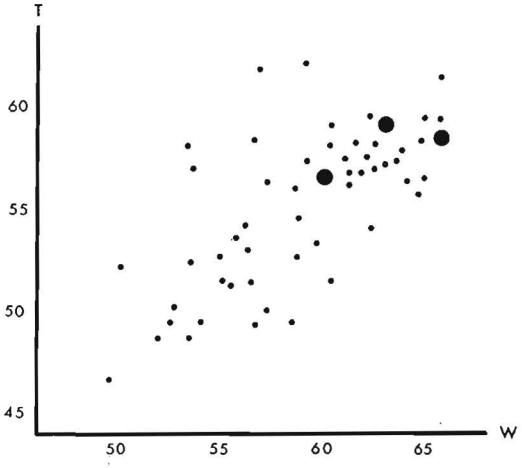


Fig. 2 - **Cervus elaphus:** humerus, maximum width (W) and thickness (T) of the distal epiphysis, in millimetres. Large circle - Vhò; small circle - middle and upper palaeolithic.

The size range of red deer in prehistoric Italy seems to have been extraordinarily stable compared with, for example, cattle or pigs (Barker, 1976b). The three measurable distal humeri from Vhò are as large as many of the largest specimens from middle and upper palaeolithic sites in peninsular Italy (Fig. 2). The width of the Vhò

distal radius is also very similar to the mean of seventeen examples from the middle and upper palaeolithic sites and the mean of two specimens from the bronze age site of Isolone (Fig. 3). Clearly both red deer and roe deer thrived in the rich damp woodlands of the Po plain, but their exploitation by the Vhò community differed in several ways. Red deer were by far the most important animal killed at the site whereas roe deer were only an occasional food source. Selective hunting probably did not allow many red deer to live to old age, whereas the less intense pressure on roe deer allowed more of them to mature to a great age. The number of head and feet bones and antler fragments suggests that both red and roe deer were carried back to the site as complete carcasses rather than being butchered where they were killed. The antlers and metapodials of the red deer would have been a particularly important source of bone for the manufacture of harpoons, fishing hooks and so on. A distal radius of a red deer had been almost hacked through above the fusion point with some kind of heavy chopping tool (a stone axe?), presumably during the process of separating the meat-bearing bones from those (in this case the metacarpal) needed for tool manufacture (Fig. 4).

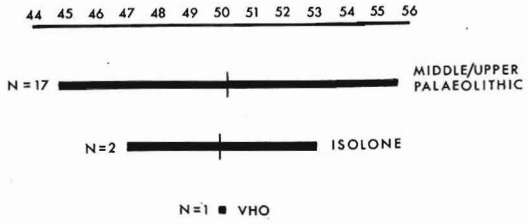


Fig. 3 - **Cervus elaphus:** radius, mean and maxima of the maximum width of the distal epiphysis, in millimetres. Isolone measurements after Riedel, 1975.

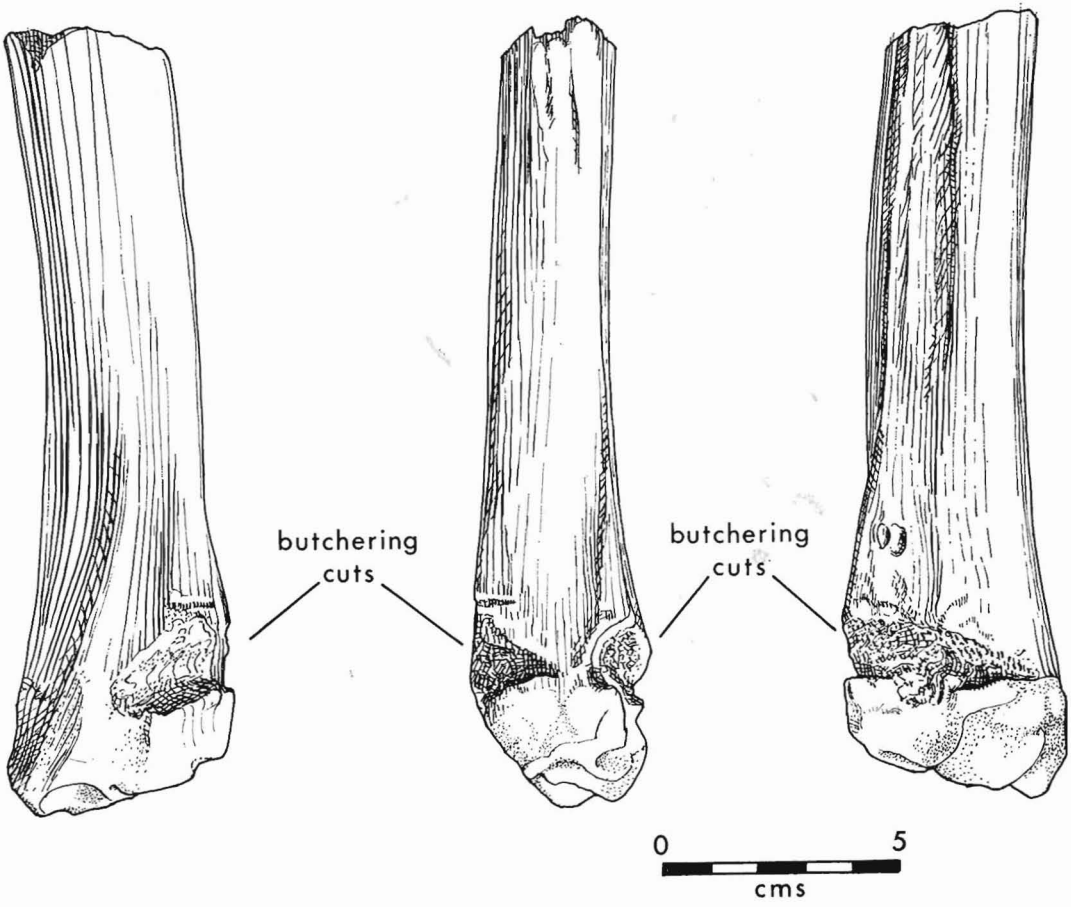


Fig. 4 - The distal radius of a red deer **(Cervus elaphus)** from Vhò, with butchery cuts. Drawn by Patricia Roberts.

**Ovis/Capra**

Mortality data for sheep/goat was limited to two specimens. There was a third lower molar from an animal killed a few months after the tooth had erupted, a stage reached at 18/24 months in modern stock but not until three or four years in the case of hill sheep two hundred years ago (Silver, 1969: 29). Presumably the Vhò ovicaprids were more like the latter than the modern breeds. There was also a metatarsal from Pit 1 with a fused distal epiphysis, from an animal at least two to two and a half years old. Using Boessneck's method of distinguishing sheep from goat (Boessneck, 1969: 355), the Vhò metatarsal falls into the size range for goat. The lower third molar is within the size range and close to the mean of a hundred neolithic and bronze age specimens from central Italy (Barker, 1976b: 75). The ovicaprids at Vhò seem to have been killed when they were at least three years old. Such animals may have been adult males killed for meat, although even given the slower maturing rates in antiquity we would not expect meat animals to have been kept so long. Perhaps the sheep and goats at the site were usually breeding females kept particularly for their milk. Either way, however, sheep and goats were clearly extremely rare at Vhò, making up 3.5% of the main meat animals in terms of numbers of fragments but only 1.2% of the meat supply. At Molino Casarotto, too, sheep and goats made up less than 1% of the faunal sample (Jarman, 1971: 61).

**Sus scrofa**

The pig mortality sample consisted of two radii with fused proximal epiphyses, a humerus and tibia with fused distal epiphyses, a fused calcaneum, and an unfused distal metacarpal. The radii and humerus are from animals older than 12 months (on modern figures), the tibia from a pig over two years old, the calcaneum from one over 24/30 months, and the metacarpal from a pig under two years old. According to the stages of tooth wear put forward by Grant (1975), two molars in Pit 1 and Pit 6 were probably from pigs killed at about 36 months. Today pigs are normally killed within the first year, but pigs in antiquity clearly took far longer to fatten and the pigs at several prehistoric sites in Italy were usually slaughtered in their second and third years (Barker, 1972, 1975, 1976a, 1977; Jarman, 1970, 1971, 1975). This seems to have been the case at Vhò - pigs were left for two or three years until their body weights made slaughter worthwhile.

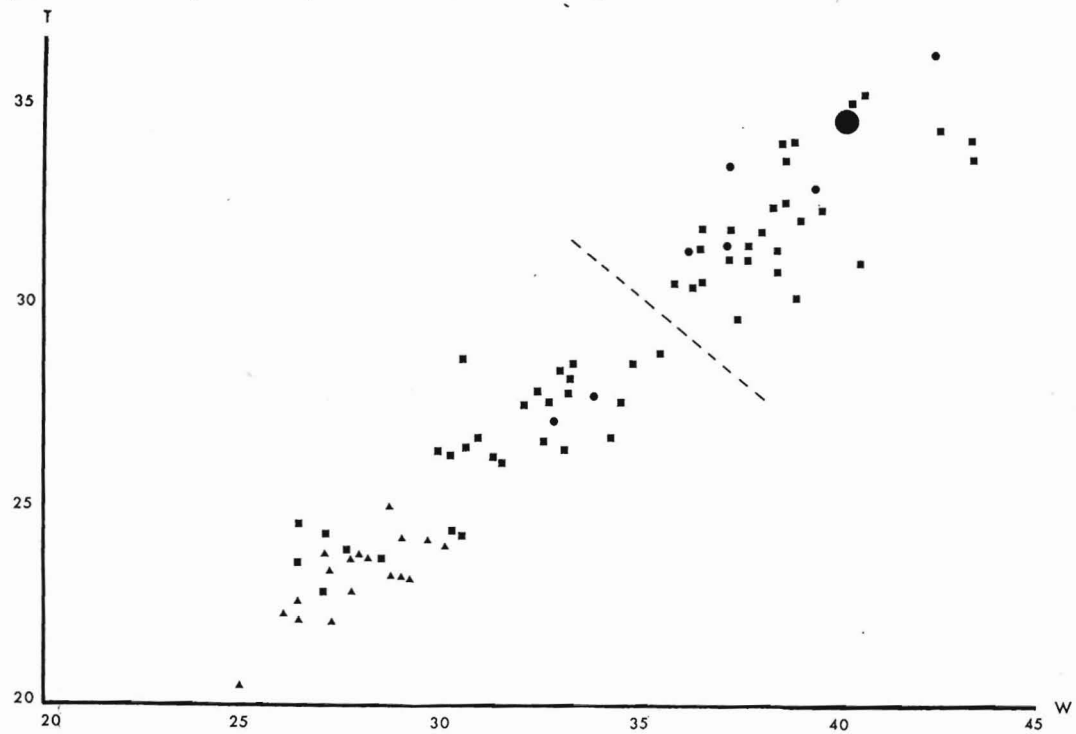


Fig. 5 - **Sus scrofa**: tibia, maximum width (W) and thickness (T) of the distal epiphysis, in millimetres. Large circle - Vhò; small circle - middle and upper palaeolithic; square - neolithic; triangle - bronze age.

A distinct trend towards smaller pig size during the Postglacial has been noted at many sites in Italy (Barker, 1976b; Jarman, 1971). Although there is a general process of diminution from the late Palaeolithic to the Iron Age, neolithic sites in Italy commonly produce the bones of two pig populations, one small, the other as large as the Pleistocene pig population. The Vhò pigs were very large animals: the single measurable tibia lies towards the top of the larger of the two groups (Fig. 5), whilst the Vhò humerus is the largest specimen in the humerus diagram (Fig. 6). The single calcaneum from Vhò was also as large as the mean of three upper palaeolithic specimens and far larger than the mean of four bronze age specimens; whilst the astragalus was at the top of the size range of eight upper palaeolithic examples and was far larger than eleven astragali measured from bronze age sites. It is possible that the large and small clusters in Figures 5 and 6 represent males and females, but the size difference is so striking that this hypothesis is unlikely.

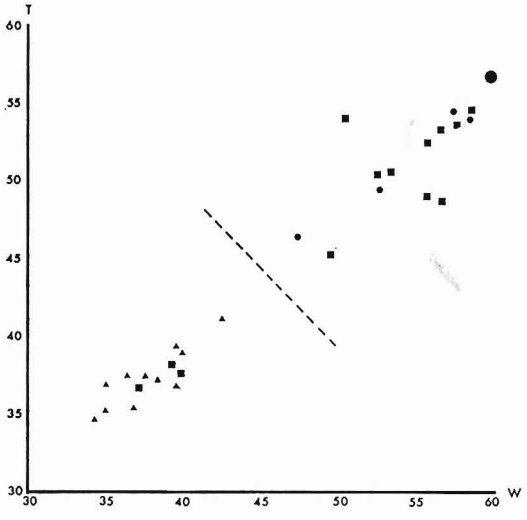


Fig. 6 - **Sus scrofa:** humerus, maximum width (W) and thickness (T) of the distal epiphysis, in millimetres. Large circle - Vhò; small circle - middle and upper palaeolithic; square - neolithic; triangle - bronze age.

Alternatively the large and small clusters might represent wild and domestic populations. As Jarman (1971: 257) has pointed out, however, this hypothesis is almost certainly too simplistic, because animal size was probably related to a variety of environmental, human and demographic factors: size alone cannot be regarded as a useful criterion of domestication (Jarman and Wilkinson, 1972). The overall size decrease noted by the Bronze Age could habe been « a response by the pig population to environmental deterioration ... or to a change in human economic behaviour, such as the early slaughter of large or fast maturing individuals, or the relaxation of selective pressure for large size due to human care of weaklings » (Jarman, 1971: 257). The very large size of the pigs killed at Vhò could well have been related to a complex web of environmental and economic factors including the rich woodland environment, low population densities, limited selective pressures from human predation and so on. Whether or not this is the case, and whether or not the size of the Vhò pigs can simply be ascribed to the fact that they were wild, it is apparent that pigs supplied about a fifth of the meat, they thrived in the Vhò environment, and early neolithic husbandry or hunting at Vhò, like modern pig husbandry, concentrated on killing the surplus pigs off as soon as they reached maturity.

## CONCLUSION

### Neolithic economies in northern Italy

The analysis of the small faunal sample from the recent excavations at Vhò reveals an early neolithic economy which relied very heavily on red deer and pig for meat; cattle and roe deer made a further contribution to the diet, whilst the role of sheep and goats does not seem to have been significant. The deer and pigs at the site were very large specimens compared with contemporary examples from other parts of Italy. This situation may be a reflection, in part at least, of the rich woodland environment beside the Oglio river at Vhò during the early neolithic period (Cattani, 1975). At the same time, however, since loose or non-intensive man-animal relationships have also been suggested as a factor contributing to large animal size, the Vhò fauna may also indicate that the human population in the area was comparatively small and that their presence did not cause intensive selective pressures to work on the animal populations.

However that may be, the mortality data from the sample suggests that the early neolithic community was practising at least a degree of selection, particularly in the case of the staples red deer and pig, killing young animals as they

reached their prime or animals in their prime years. As Darling noted in the case of red deer in Scotland today, maintaining a young hind stock keeps a herd vigorous and productive, and modern culling policy selects surplus males and yeld or barren females (Darling, 1937). Roe deer were probably in the area in considerable numbers: they can achieve population densities of 12 per square kilometre in forested areas, three times that of red deer (Jochim, 1976: 102-3). On the other hand their shyness makes them difficult to hunt and since pigs probably achieved even higher densities of 12/20 per square kilometre (Jochim, 1976: 103-4), were more gregarious, easier to kill and provided four or five times as much meat, it is not surprising that pigs were preferred to roe deer by the Vhò community. Cattle could have coped with the same damp forests and glades which were so ideal for deer and pigs, and ample natural fodder would have been available for them in the winter months. A few dairy cows in particular (rather than beef cattle) would have been a valuable addition to the economic basis of the early neolithic settlement, supplying milk for cheese - a vital form of storable protein in a subsistence economy. However, the same landscape would have been extremely unfavourable for sheep and goats: in summer far better grazing would have been available in the hills north and south of the Po plain and in winter these animals needed dry grazing areas which would have been extremely rare in the central plain. Perhaps the goat would have fared slightly better than the sheep at Vhò being a browser rather than a grazer, but even so the maintenance of even a few goats would have been a marginal activity and the faunal sample suggests that very little use was made of either animal at the settlement.

The earlier excavations at Vhò seem to have recovered much the same kind of faunal material. Red deer dominated all the faunal samples from the Vhò sites, followed by pig, cattle and roe deer (Bagolini and Biagi, 1975b: 116). Sheep and goat bones were recovered, but always in small quantities. Subsistence at Vhò also included fishing and the collection of shellfish (Bagolini and Biagi, 1975b: 116). A flotation sample from the Campo Ceresole site produced a single grain of einkorn (Castelletti, 1975). Apart from this specimen, we have no other evidence for cereal cultivation at Vhò. The pollen evidence reveals two plant communities — mixed oak woodland, and marshy areas near slow-moving rivers (Cattani, 1975) — and most of the soils near the settlement must have been too heavy and too wet to be attractive for cereal cultivation. It is quite possible that cereals, like sheep and goat, arrived in the area as objects of exchange and were not normally husbanded by the Vhò community.

Exactly the same kind of subsistence economy was practised at Molino Casarotto (Barfield, 1971: 41-2; Jarman, 1971). The settlement was established on a lakeshore and, as at Vhò, the woods and marshes surrounding the site meant that little land was suitable for cereal cultivation or sheep/goat grazing. Because domestic cereals and stock were very rare at Molino Casarotto in the middle neolithic period, but were common at late neolithic Rivoli and dominated the samples from bronze age settlements in the area, Jarman argued for a gradual intensification of subsistence activities during this period in northern Italy (Jarman, 1971) — that the deer/pig/plant economy was gradually replaced by the cattle/pig/ovicaprid/cereal economy, in a context of population pressure and associated woodland clearance.

Since the formulation of his model, however, it has become increasingly clear that early neolithic economies in northern Italy embraced a variety of subsistence strategies. At sites like Vhò, Molino Casarotto, or Gaban in the Adige valley (Bagolini and Biagi, 1975a), in marshy and wooded environments, the deer/pig/plant economy prevailed. At the same time, however, agricultural economies were being practised in other areas. On the southern margins of the Po valley, for example, many Fiorano groups practised mixed cereal and stock economies (Evett and Renfrew, 1971), cultivating their cereals on the light well drained soils edgins the Apennine foothills and grazing their stock on the hills above and on the plain. Elsewhere in northern Italy other early neolithic settlements integrated the two kinds of economy (Perini, 1971). In other words a mosaic of early neolithic exploitation systems is emerging across northern Italy, adapted to local resources and conditions, and we should expect to find farming, herding, hunting, fishing and mixed economies emerging in different parts of the landscape in the ensuing years, within the various early neolithic pottery groups.

Furthermore, the economic prehistory of the neolithic period is already appearing to be more complex than Jarman's early model of economic development suggested. In the Vhò area, for example, the subsistence basis does not seem to have altered significantly for thousands of years, for the late neolithic fauna from Campo Donegallo documents an identical system of animal exploitation to that of the early neolithic sites (Barfield, 1975). On the southern margins of the Po valley, however, the Fiorano systems of mixed cereal and stock husbandry (integrated with a certain amount of hunting) continued into the later neolithic. The eneolithic settlement of Sant'Ilario d'Enza, for example, was situated at the junction between the plain and the hills like the earlier agricultural sites, the fauna was dominated by sheep, goats and domestic pigs, and emmer, spelt and vine seeds were also recovered from the excavations (Barfield, Cremaschi and Castelletti, 1975). On the northern side of the Po valley, according to Jarman's model, the deer/pig/plant economy of Molino Casarotto was partially replaced in the middle neolithic period by cereal agriculture and stock keeping, and completely replaced in late neolithic and early bronze age times by the agricultural economy (Jarman, 1971, 1975).

The models of neolithic economy which must now be built will have to embrace differing subsistence strategies across northern Italy and differing rates of economic change. Two questions stand out as the most vital in the construction of these models. First, what were the relationships between the different modes of subsistence? Sites like Molino Casarotto and Vhò could be all year round or seasonal camps occupied by hunter/gatherers, or seasonal camps used by people from agricultural settlements on the edge of the plain; and the rare cattle, sheep and goats could be a small and regular part of the subsistence basis or occasional traded (or even rustled?) commodities. Second, why were the rates of economic change so different? What process or combination of processes — economic, environmental, demographic, social or whatever — brought economic stability to some parts of northern Italy and yet accelerated economic change in others? The Vhò faunal sample is just one small additional piece to the jigsaw, revealing a little more of a new and tantalising economic prehistory in northern Italy.

## APPENDIX: METRIC DATA FROM THE VHO' SAMPLE

The following measurements could be taken. All are in millimetres.

**Mandible:** (1) maximum length M3.

**Humerus:** (1) maximum width distal epiphysis; (2) maximum thickness distal epiphysis; (3) maximum height distal articulation; (4) maximum width distal articulation.

**Radius:** (1) maximum width proximal epiphysis; (2) maximum width distal epiphysis.

**Tibia:** (1) maximum width distal epiphysis; (2) maximum thickness distal epiphysis.

**Calcaneum:** (1) length from most posterior point of bone to most anterior part of articular surface; (2) length of articular surface; (3) height of bone from superior surface of articular surface to base; (4) total length of calcaneum.

**Astragalus:** (1) maximum length lateral side; (2) maximum thickness lateral side, measured from baseline to anterior side; (3) maximum length medial side.

**Metatarsal:** (1) maximum width distal fusion point; (2) maximum thickness distal fusion point.

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| BOS TAURUS | | | | |
| Calcaneum | 48.0 | 28.0 | 52.5 | — |
| CAPREOLUS CAPREOLUS | | | | |
| Metatarsal | 23.2 | 15.0 | — | — |
| CERVUS ELAPHUS | | | | |
| Humerus | 60.0 | 56.4 | 42.3 | 55.1 |
| Humerus | 63.0 | 59.1 | 45.0 | 54.4 |
| Humerus | 65.8 | 58.2 | 46.4 | 58.7 |
| Radius | — | 50.0 | — | — |
| Calcaneum | 42.9 | 24.6 | — | — |
| Astragalus | 55.0 | 29.3 | 50.5 | — |
| Astragalus | 51.7 | 28.4 | 49.5 | — |
| OVIS/CAPRA | | | | |
| Mandible | 20.0 | — | — | — |
| SUS SCROFA | | | | |
| Humerus | 59.5 | 56.5 | 43.8 | 53.3 |
| Radius | 31.0 | — | — | — |
| Tibia | 40.2 | 34.8 | — | — |
| Calcaneum | 36.3 | 16.3 | 39.0 | 103.7 |
| Astragalus | 53.2 | 29.5 | 47.6 | — |


## RIASSUNTO

La campagna 1976 al Campo Ceresole presso il Vhò di Piadena (Cremona), ha restituito una piccola quantità di resti faunistici. Lo studio di questi reperti si è rivelato estremamente importante in quanto permette la costituzione di un modello preliminare dell'economia del Neolitico Inferiore nella Val Padana. L'economia della stazione in questione era basata essenzialmente sul cervo ed i suidi, mentre minore era il contributo alimentare fornito da bovini e caprioli; quasi nullo quello delle capre/pecore. I cervi ed i suidi si sono rivelati di dimensioni notevolissime e le misure ossee di questi animali sono state paragonate con quelle di altri giacimenti italiani. Questo fatto può in parte essere attribuito alla ricchezza di foreste esistenti nell'area tra i fiumi Oglio e Po durante il Neolitico Inferiore. È probabile che i resti faunistici di Campo Ceresole stiano ad indicare che la presenza dell'uomo nella zona in questione era relativamente minima e che la stessa non era quindi causa di gravi selezioni della popolazione animale.

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