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Approaches to prehistoric farming

The development of economic prehistory

The Roman poet Lucretius, speculating in the first century B.C. about the origins of mankind, envisaged an age before iron when men knew only bronze, and an age of remotest time when ‘the earliest weapons were the hands, nails and teeth, as well as stones, pieces of wood, flames and fire as soon as they were known’ (*De Rerum Natura* V, 1283–7). The same sort of sequence of development was discussed by several philosophers and scientists after the Renaissance. As antiquarian speculation gave way to the first systematic archaeology in the second half of the nineteenth century, the same Three Age system of stone, bronze and iron was explicitly defined as the major classificatory framework for European prehistory, with the Stone Age further subdivided into old, middle and new (or palaeolithic, mesolithic and neolithic) phases (Daniel, 1964, 1967). At the same time, the sequence of technological development was also correlated with stages of economic and social progress. Three typical syntheses were Nilsson’s *Primitive Inhabitants of Scandinavia* (1868), Westropp’s *Prehistoric Phases* (1872) and Figuier’s *Primitive Man* (1876), all of which argued that (in Westropp’s words) ‘there were but one history for every separate people, one uniform process of development for every race’ and divided the evolution of prehistoric society into four stages of development: hunting, pastoralism or nomadism, farming and state (Table 2). Nilsson’s description of the hunting, herding and farming lifestyles is quoted here in some detail, and illustrated with Figuier’s charming reconstructions, because such men helped mould the intellectual framework for ensuing research on the origins and development of prehistoric farming.

1. The *savage* has few other than material wants, and these he endeavours to satisfy only for the moment. To appease hunger for the day; when requisite, to protect his body against heat or cold; to prepare his lair for the night; to follow the instinct of propagation, and instinctively to guard and tend his offspring – this constitutes all his care, all his enjoyment. He thinks and acts only for the day which *is*, not for the day which is *coming* . . . he is compelled to fish and to hunt, or he must perish . . . (Fig. 2). [Eventually he becomes]

2. A *herdsman* (nomad), subsisting chiefly on the produce of his herds; the flesh of domestic animals his food, milk his beverage, skins his clothes. The chase and fishing, formerly his *chief*, now become his *occasional* occupations . . . (Fig. 3). At last he tires of his wandering life . . . Thus the nomad gradually becomes

Table 2 *Westropp's 'Tabulation of the Stages of Development of Man and Implements', from his Prehistoric Phases (1872)*

<i>Stages of the development of Man</i>	<i>Stages of the development of Implements</i>	<i>Contemporaneous Animals</i>	<i>Contemporaneous Trees in Denmark</i>	<i>Contemporaneous Burials</i>
Barbarous	Palaeolithic	Rough Flints		
Hunting	Mesolithic	Flint Flakes Flints chipped into shape		Tumuli Stone circles Body in a sitting posture
Pastoral	Neolithic	Stone implements ground at edge Stone implements all ground and polished	Sheep Ox Goat	
Agricultural	Bronze	Arrow-heads Spear-heads Swords Flat celts Palstaves Socketed celts	Sheep Ox Horse Pig } Domesticated	Fir Oak Tumuli Cremation
State	Iron	Celts Spears, swords Arrow-heads	Cereals { Wheat Barley	Beech Tumuli Cremation Inhumation



Fig. 2. 'Man in the Great Bear and Mammoth Epoch'. (After Figuier, 1876: fig. 16)

3. An *agriculturalist*, and takes a more stable social position. The movable tent gives place to a permanently fixed dwelling; the tilled cornfields yield a richer harvest the more they are cultivated; the forests surrounding his home give him fuel and building materials; the fields provide him with grass and winter fodder for his cattle, and even the waters yield him their tribute. (Nilsson, 1868: lvii–lxx) (Fig. 4)

Although the role of herding as the necessary intermediate stage between hunting and farming was gradually discounted, the major dichotomy between the nomadic and uncertain lifestyle of the hunter and the sedentary and reliable lifestyle of the farmer remained a fundamental precept of most prehistoric research in Europe for almost a century. One practical result of this concept of a great social divide, compounded by the differences in the archaeological record, was the separation of research activity in the first half of this century on either side of the accepted boundary between hunters and farmers marked by the beginning of the Neolithic. On one side of the boundary stone tools were the principal focus of activity, whereas on the other side was a wider array of artifacts, dominated by pottery. The regional distributions observed in such material from the Neolithic onwards formed the basis of Childe's concept of the prehistoric culture: 'we find certain types of remains – pots, implements, ornaments, burial rites, house forms – constantly recurring together. Such a complex of regularly associated traits we shall term a "cultural group" or just a "culture". We assume that such a complex is the material expression of what would today be called a "people" ' (Childe, 1929: v). The principal thrust of research on the neolithic and later periods of European prehistory from the publication of the first edition of Childe's *Dawn of European Civilisation* until



Fig. 3. 'The art of bread making in the Stone Age'. (After Figuier, 1876: fig. 125)

his death in 1957 was the investigation of the chronological and spatial relationships of prehistoric cultures. The chronology had to be almost entirely relative, with the whole scheme pegged by a few absolute dates established by tenuous cross-dating with the historic and protohistoric civilisations of the eastern Mediterranean.

This kind of cultural archaeology had three important implications for the development of ideas about prehistoric farming. First, the establishment of relative chronologies using typological comparisons between different regions inevitably created a ‘chest of drawers’ sequence of synchronous cultural stages – a series of ‘horizons’, each characterised by a particular cultural repertoire, type of society and way of life. Second, the typological method had to concentrate on inter-regional similarities in the archaeological record (however isolated these sometimes now seem compared with the rest of the material), and so when archaeologists sought explanations for the change from one horizon to the other, the answers had invariably been provided already by the chronological work in terms of cultural contact: the results of either the *diffusion* of ideas or (as more commonly thought) the *migration* of people introducing new ideas, either peacefully or by force. Third, because chronological issues had to take priority – as Wheeler (1954: 245) remarked, the timetables rather than the trains – the recovery of food refuse (the animal bones and plants remains which are the best direct evidence for prehistoric farming) tended to be an incidental rather than a primary goal of excavation in most cases, and a synthesis like the *Dawn* had to throw a very wide net in order to make often the most general comments about the subsistence base of particular cultures or horizons of cultures.

In the most extreme examples of ‘ethno-historical’ prehistory, the archaeological cultures seemed to take on a life of their own, with the bearers of Culture A introducing one



Fig. 4. ‘The cultivation of gardens during the Bronze Age’. (After Figuier, 1876: fig. 207)

way of life to an area only to be swept aside by the Culture B people, their movements being charted on maps increasingly resembling the campaign maps of Europe in the last war. Sir Mortimer Wheeler castigated this approach for its ‘tendency to devolve archaeology into a sort of dehydrated humanism . . . to transform our predecessors into “battle axe folk” or “beaker folk” until . . . we begin almost to personify battle axes or beakers with a sort of hungry latter-day animism’ (Wheeler, 1954: 229). Grahame Clark’s *Prehistoric Europe – The Economic Basis*, a masterly synthesis which squeezed an impressive amount of subsistence information from artifacts, settlement forms, food debris, environmental evidence and rock art, was all the more remarkable because it deliberately cut right across the chronological and cultural boundaries of contemporary research (Clark, 1952). Through such a perspective he was able to show that it was impossible to divide prehistoric Europe into the series of neat subsistence stages commonly proposed (pre-neolithic hunting, fishing and gathering; neolithic primitive farming; late neolithic and early bronze age pastoralism; late bronze age and iron age mixed farming) – there was clear evidence for far more complexity in subsistence development, both chronological and geographical, than hitherto imagined.

The radiocarbon method of dating first developed in the 1950s transformed the study of European prehistory in the 1960s and 1970s (Renfrew, 1973a). In the first place, the long chronologies indicated by the first radiocarbon dates (the beginning of the European Neolithic, for example, was dated to *c.* 6000 b.c. in southeast Europe and *c.* 4500 b.c. in temperate Europe, rather than to *c.* 3000 B.C. as Childe had originally argued) tended to place an entirely new emphasis on long-term stability rather than sudden change in the archaeological record, and many narrow ‘horizons’ were found to span considerable periods of time. Secondly, the regional chronologies which could now be considered independently of their neighbours revealed in several instances that synchronised horizons inferred from typological studies were in fact illusory. In short, the new timetables frequently demanded some entirely new trains. Clark’s reappraisal of British prehistory emphasising cultural continuity and rejecting the succession of folk movements favoured previously is a typical example of the fresh analyses precipitated by the new chronologies (Clark, 1966). Although some archaeologists continued to favour population movement as the major explanation for changes in material culture (e.g. Gimbutas, 1965; Hawkes, 1968), the growing consensus was that the new regional prehistories were poorly served by such models. The principal remaining folk movement accepted by most prehistorians was the colonisation of Europe by neolithic farmers: the early radiocarbon dates indicated a movement west and northwest from Greece between *c.* 6000 b.c. and *c.* 4000 b.c., with a secondary colonisation of the alps, western France, Britain, the Low Countries and Scandinavia after *c.* 3500 b.c. (Clark, 1965; Fig. 5). Clark’s thesis was restated later, with the greater precision allowed by increased numbers of radiocarbon dates, by Ammerman and Cavalli-Sforza (1971). As I shall be arguing in the following chapters, however, the evidence for this invasion or colonisation movement is far more equivocal than commonly supposed.

Alongside the construction of the first radiocarbon chronologies in the 1960s were major developments in archaeological theory, characterised in the United States as the New Archaeology or processual archaeology, epitomised then by the writings of Binford

(1962, 1964, 1965) and resoundingly thrust upon British archaeology in 1968 by Clarke's *Analytical Archaeology*. In essence clear scientific thinking was advocated, as well as techniques of systematic analysis appropriate to such an approach, to develop an explicit theory for archaeological investigation – that is, what should be the legitimate

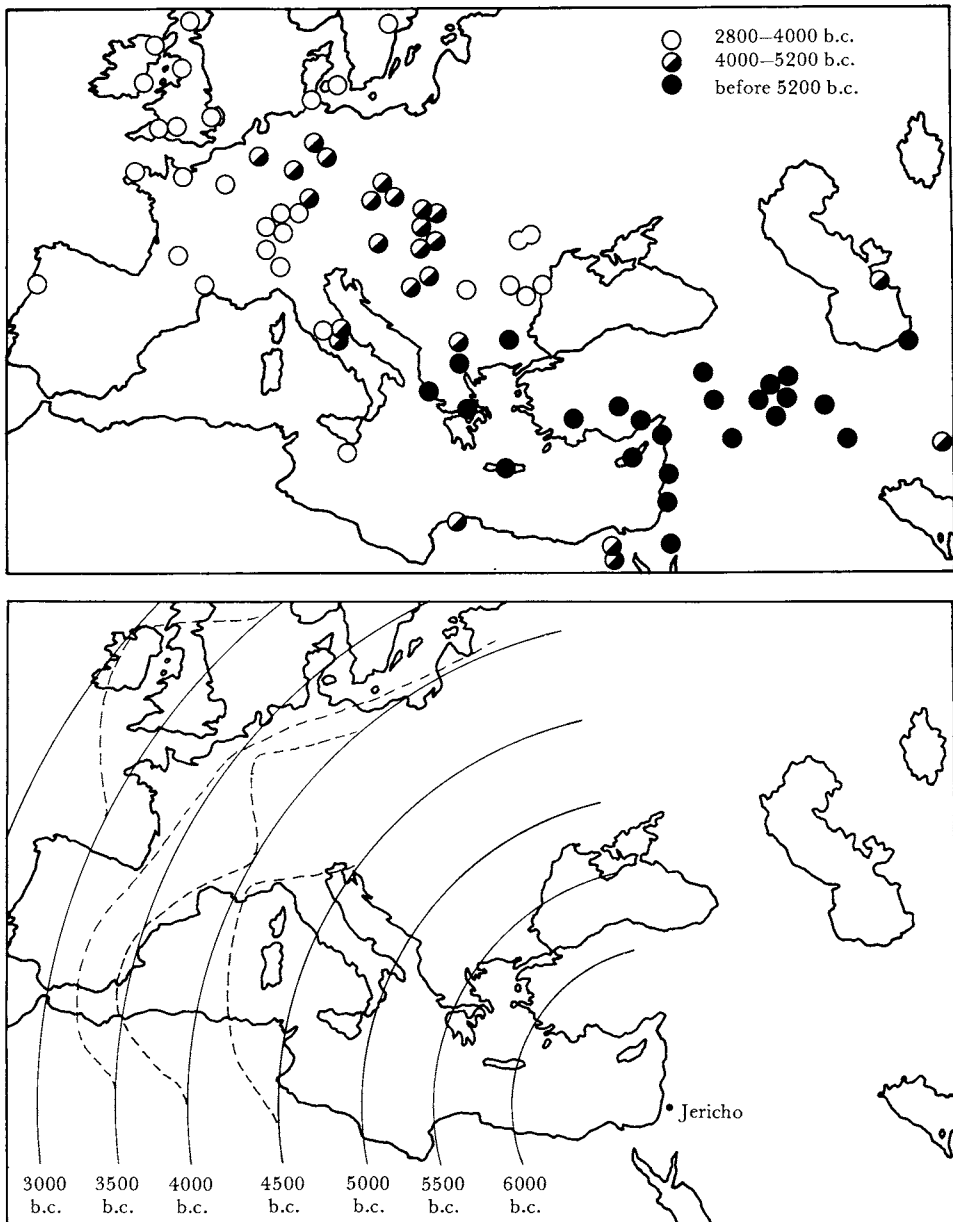


Fig. 5. Radiocarbon dating and early European agriculture: above, the spread of agriculture into Europe from southwest Asia according to the first series of radiocarbon dates, after Clark, 1965: fig. 2; and below, the 'wave of advance' of early farming (the arcs indicating the predicted position of the spread, the broken curved lines denoting regional variation), according to Ammerman and Cavalli-Sforza's model (1971: fig. 6).

questions we should ask the data, and how best should they be tackled? The traditional narrative prehistory appeared increasingly suspect in the face of such questioning: archaeological data seemed far more capable of answering questions of how prehistoric communities functioned as social and economic systems than quasi-historical questions about the origins of the Magdalenian culture or the Beaker folk. It is no coincidence that the period has also witnessed major improvements in the range of archaeological techniques available for investigating social and economic processes in prehistory: for example, in surface surveys and regional settlement studies; in recovery and sampling procedures on excavations; in the techniques of subsistence analysis and environmental reconstruction discussed later in this chapter; in physical and chemical techniques of artifact analysis to study technology and trade; in social reconstruction using settlement and cemetery studies; and in the application of quantitative approaches to all these fields of study. The account in this book of how the development of prehistoric farming in Europe appears to us today rests almost entirely on the results of the revolution in chronologies, theories and methodologies in the thirty years following *Prehistoric Europe – The Economic Basis*.

The origins of agriculture

The principal question that has dominated the study of economic prehistory during the last thirty years has been the problem of the origins of agriculture. As far as Europe was concerned, the baseline for research has always been the assumption that farming did not begin as an indigenous process but was introduced by neolithic colonists from the ‘hearth of domestication’ in the Near East, so the focus of work on agricultural origins has been there.

Fundamental to much research was the belief in an enormous disparity between the hunting and farming lifestyles. Childe originally proposed that farming probably began in the Near East as a result of postglacial desiccation, with men, plants and animals being compelled to concentrate together in oases (1953, 1954). He characterised the process in the memorable phrase ‘the Neolithic Revolution’, a great leap forward in human progress on a scale commensurate with the Agricultural and Industrial Revolutions of recent history: ‘throughout the several hundred millennia of the Old Stone Age all human societies remained parasitic, depending entirely for their food on what natural processes happened to supply. Neolithic societies began deliberately cooperating with nature to increase the productivity of edible plants and to protect and foster the multiplication of animals’ (Childe, 1958: 34). Braidwood, one of the main researchers on agricultural origins in the Near East, likewise argued early in his work that ‘the appearance of the village farming community marked a transition . . . of great import for what was to follow. Before it were some half a million years of savagery during which small wandering groups of people . . . led an essentially “natural” catch-as-catch-can existence’ (1960: 130).

In the 1950s and 1960s, intensive research took place in the hills of Palestine, Turkey, Iraq and Iran, the so-called ‘hilly flanks of the Fertile Crescent’, regarded as the primary habitats of the wild progenitors of domesticated cereals, sheep and goats (Helbaek, 1959). This research (summarised by Clark, 1978) demonstrated that village com-

munities practising mixed farming (using wheat, barley, cattle, pigs, sheep, goats and dogs) were widely established here by c. 6000 b.c. and probably earlier. The transition from late glacial and early postglacial hunting and foraging to these systems of farming was not very clear, but the complexities of the material certainly destroyed the idea of a sharp boundary between two sets of technology, economy and society (palaeolithic/mesolithic hunters with chipped stone tools on the one hand, and neolithic farmers on the other with pottery, polished axes and grinding stones). Research in Mesoamerica and Peru over the same period indicated rather similar shifts from foraging to farming during the opening millennia of the Postglacial or Holocene (from c. 10,000 b.c.), although the resources exploited were quite different from those of the Old World – domestic animals were not very important and the agricultural staples were plant foods such as maize, squashes, beans and chili peppers (MacNeish, 1964, 1965). Clearly these events had to be explained as independent processes, and a variety of cultural, ecological and demographic models was put forward in the 1960s to account for the origins of agriculture in the Old and New Worlds, notably by Binford (1968), Braidwood (1960), Flannery (1965, 1969), Flannery *et al.* (1967), MacNeish (1965), and Patterson (1971).

One study with a major impact on agricultural research at this time was *Man the Hunter* (Lee and DeVore, 1968), a collection of studies of modern hunting and gathering peoples. This destroyed once and for all the long-lived archaeological tenet that the hunting way of life was a desperate, uncertain and laborious quest for food, compared with the ordered ease of the agricultural economy. As this and related research showed, the subsistence base of most modern hunting peoples was in fact characterised by the systematic exploitation of a series of resources, normally on a seasonal basis, requiring regular movement from one resource to another, with secondary foods available if the primary resource failed. Furthermore, the time and energy requirements for obtaining food were conspicuously low compared with the demands of primitive husbandry. Moreover, as Boserup had argued in 1965 (in a study of modern farming in Africa that has had a major impact on archaeological thinking about subsistence intensification), increasingly productive methods of agriculture demand increasingly more time and effort from the farmer, and (in her case study) were adopted only in response to population pressure. Clearly, there were some uncomfortable implications for the traditional archaeological concepts of pre-agricultural savagery on the one hand (Braidwood's 'essentially natural catch-as-catch-can existence'), and the neolithic Garden of Eden on the other – and for many of the models previously used to explain the shift from the one to the other (Fig. 6).

The most direct and cogent criticisms of previous research on the origins of agriculture stemmed from the British Academy Major Research Project at Cambridge University investigating the early history of agriculture in the Near East and Europe, directed by Eric Higgs from 1967 until his death in 1976 (Higgs, 1972, 1975; M. R. Jarman *et al.*, 1982). The argument was summarised in two review papers by Higgs and Jarman (1969, 1972). First, zoological and botanical evidence indicated the possibility of early postglacial farming in the Old World outside the traditionally supposed core area. Second, the accepted dates for the domestication of a variety of plants and animals throughout the world demonstrated the continuous development of the process from the early

Postglacial to the present day, not a single sudden event. Third, the origins of agriculture probably had to be sought much further back in time than hitherto suggested if domestication was, as seemed likely, some kind of process of natural selection on the human population and not, as so often argued in the past, the result of 'cultural opportunism' (with innovative hunters 'inventing' agriculture by recognising and learning to exploit quickly some chance combination of relationships with plants or animals).

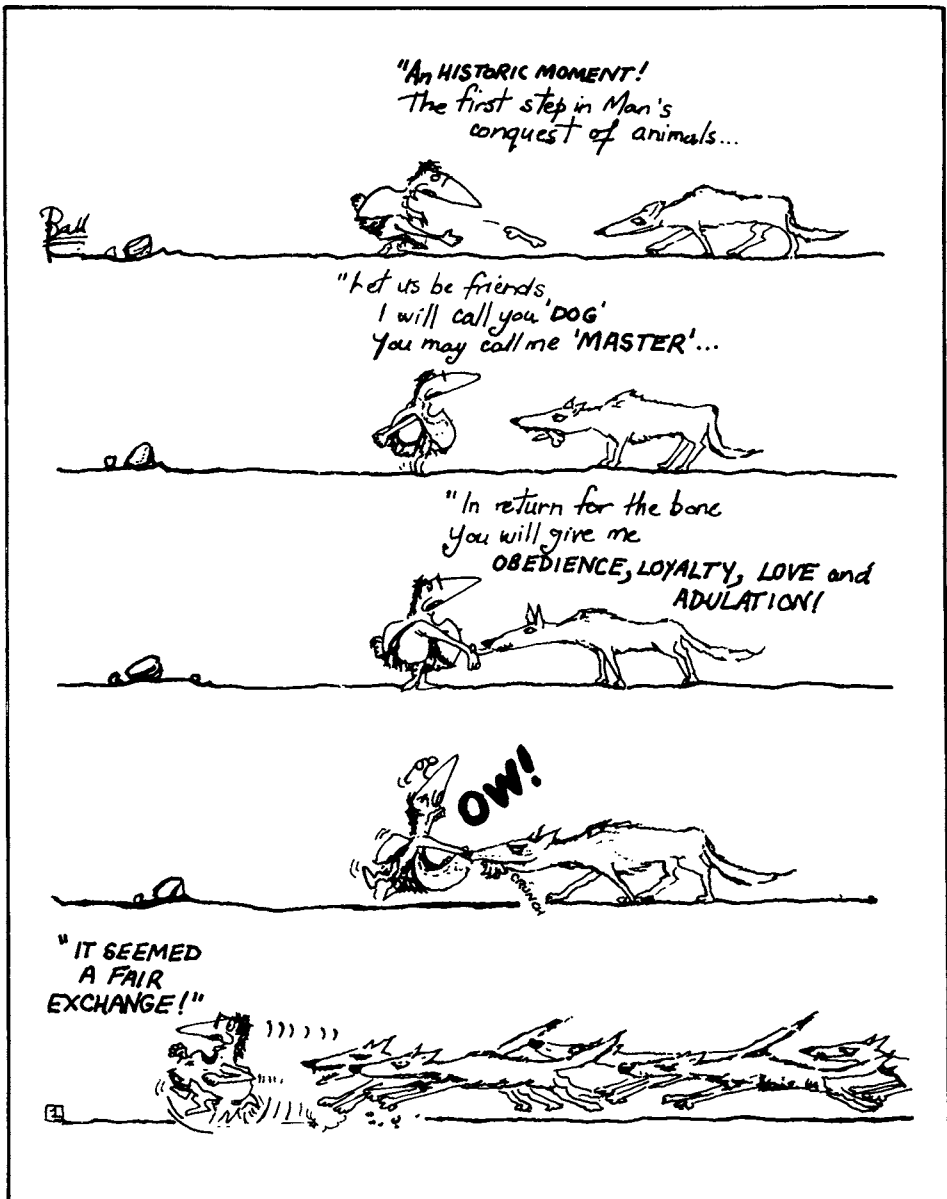


Fig. 6. A trial run for the Neolithic Revolution? – the adventures of Stanley, the Great Palaeolithic Hero. (Cartoon by Murray Ball, redrawn from *Punch*, 1973, reproduced here by kind permission of the editors of *Punch*)

‘Domestication can be regarded as a long-term process whose limit at one end is defined by the present day, and at the other only by the earliest date that anyone has yet had the temerity to propose’ (Higgs and Jarman, 1972: 13).

Two other papers in the first major volume of the project, by H. N. Jarman (1972), and M. R. Jarman and Wilkinson (1972), pointed to the logical and practical inadequacies of the botanical and zoological criteria proposed in the 1950s and early 1960s for detecting domestication on the assumption that it must have been a relatively rapid and measurable event in the early Postglacial. Furthermore, other studies by members of the project indicated the intensive exploitation during the last glaciation of a number of species now considered wild: for example, gazelle in the Near East (Legge, 1972), red deer in southern Europe (Barker, 1973, 1975a; M. R. Jarman, 1972), and reindeer in northern Europe (Sturdy, 1975). The exact nature of this exploitation was not clear, and various forms of selective hunting, loose herding or driving, and closer manipulation were proposed, but the evidence certainly suggested a wider spectrum of man–animal relationships than formerly envisaged separating the hunting systems which prevailed earlier in the Pleistocene from the husbandry systems of the postglacial villages. Higgs’ arguments about the nature of domestication were frequently misunderstood – after a visit to Italy, for example, he was forever known there as the mad Englishman who thought that Neanderthal man had domesticated the cave bear. His project certainly prompted a long overdue reappraisal of palaeolithic subsistence, even though with hindsight some of the arguments put forward for the intensive exploitation of a single species in the last glaciation were undoubtedly oversimplified. Yet in general, there seems little doubt that foraging systems in the latter part of the last glaciation were far more sophisticated than previously supposed: in northern Europe, for example, there is quite persuasive evidence that horses were ridden (Bahn, 1978, 1980), and by the end of the Pleistocene in the Near East there is increasing evidence to suggest that there was selective hunting (perhaps involving capturing and confining animals), and that einkorn and perhaps other cereals and legumes were being deliberately cultivated (Moore, 1982).

However, whatever the nature of late Pleistocene subsistence and the roots of the domestication process, it seems to be true for most parts of the world that the irreversible transformation in subsistence represented by farming did not crystallise until the millennia immediately following the end of the last glaciation *c.* 10,000 b.c. The range of husbandry systems practised in several parts of the world between *c.* 10,000 and 6,000 b.c. was sufficiently well founded to be clearly recognised as agriculture in the archaeological record. The mix of crops and animals varied from region to region: maize and other crops in different parts of the Americas; wheat, barley, sheep and goats in the Old World, probably from the Mediterranean basin right across to India; millet and pigs and then rice in China; various squashes and gourds and then rice, taro and yams in southeast Asia; but the fundamental process of domestication, and the timescale, were essentially the same (Bender, 1975; Cohen, 1977). Childe’s concept of a revolution in human behaviour is supported and indeed greatly enhanced by the world perspective now available to us, and the models proposed to explain that global revolution must surely be on a commensurate scale. In this respect I find Cohen’s thesis that agriculture