

The Social Archaeology of Megalithic Monuments

The change from simple tombs to elaborate henges in the Neolithic period of western Europe appears to have coincided with the rise of centralized political control

by Colin Renfrew

Over the past two decades many prehistorians have moved beyond the concept of re-creating the past in terms of culture history toward a concept of "process" that seeks to explain past events rather than being content to narrate them. As Kent V. Flannery of the University of Michigan has put it, some New World archaeologists are not "ultimately concerned with 'the Indian behind the artifact' but rather with the system behind both the Indian and the artifact: what other components does the system have, what energy source keeps it going... and so on?"

The distinction between the two approaches to prehistory is made clear in the Old World by the case of the European megaliths (from the Greek *me-gas*, "great," and *lithos*, "stone"). These impressive monuments have intrigued students of the past for more than a century. They are found in all the countries of Atlantic Europe, from the Mediterranean seaboard to Sweden, and the human bones many of them contain show that they served as tombs. Some are very simple, although they could not have been easy to build. For example, the monuments called dolmens may consist of three or four large boulders supporting a massive capstone. There are some 50,000 dolmens in Europe, and the labor required to group the boulders, to build up earth ramps and then to move the capstones into position must have been prodigious. Other monuments are far more elaborate than dolmens and must have required man-hours of labor totaling in the hundreds of thousands. Examples include the great passage graves of Newgrange in Ireland and of Maes Howe in the Orkney Islands.

Even the early students of the megalithic monuments of Europe realized that they were pre-Roman and indeed prehistoric. The scale and sophistication of such structures as the passage graves, however, made the same scholars reluctant to believe that the megalithic monu-

ments were the unaided work of the barbarian peoples of European prehistory. The absence of metal objects in them indicated that their makers were the simple farmers of the New Stone Age, but before the development of absolute dating techniques their actual age could only be estimated.

Did the structures represent the influence of more advanced ideas, percolating from areas that supported high cultures, such as Crete and Greece, westward to Spain and then northward along the Atlantic coast? Given such an assumption, the "diffusionist" view that barbarian Europe merely mirrored the civilizations of the Near East was quick to rise. Scholars of the culture-history school even mapped the successive advances of the supposed Mediterranean influences.

The development of carbon-14 dating caused the complete collapse of the diffusionist view. It was soon learned that the megalithic monuments in several areas of Europe were nearly 2,000 years older than any of their supposed Mediterranean predecessors. Some of the earliest of them, in Brittany, could be dated back to 4500 B.C. There could no longer be any doubt that the monuments, the earliest stone structures still standing anywhere in the world, were of local European origin.

The dual problem that then faced the archaeologist was not only to find some explanation for the origins of these monuments but also to give some account of their function that could make the monuments intelligible to us. The various historical reconstructions that were once offered are now seen to have failed. Instead one has to think in terms of process, considering the system behind both the monuments and the societies that built them. Today archaeologists still have only a few clues to why the megalithic monuments rose precisely where they did, and not elsewhere in

Europe, but at least one can begin to think about them in social terms.

Although the structures may have had other functions, most of them served as tombs. In some areas, notably in Britain, there are prehistoric stone monuments of other kinds, notably the great stone circles of Stonehenge, Avebury and the Ring of Brogar in the Orkneys. In Brittany great "alignments" of standing stones arrayed in parallel rows three-quarters of a mile long are found at Carnac. Carbon-14 dating and the variety in the form of the monuments in different areas suggest that they may have had five or six quite independent places of origin. One of those places was surely Brittany. Another was in Portugal and perhaps in Spain; others were in Denmark, probably in Ireland and perhaps in southern England. Glyn Daniel of the University of Cambridge has suggested that some of the monuments took their form through the imitation in stone of the wood houses of the local inhabitants and their ancestors. This is in some instances a plausible suggestion, but it does not state precisely why the monuments came into existence.

Faced with such a problem, the archaeologist would do well to ask what the role of these diverse monuments was in the societies of the time. This is in part a question about the actual function of the monuments: How were they used, how did they facilitate the workings of the society? In part it is a further question about the nature of those societies. What kind of societies were they in order for such monuments to have a meaningful place in them? And of course both questions go beyond the issue of "usefulness" in any narrow materialist or "functionalist" sense; it is evident at the outset that these great feats of construction must in many instances have had an enormous symbolic value. They were surely a source of pride to their makers and perhaps of envy to their neighbors. In a social approach to



DITCH SURROUNDING THE RING OF BROGAR, one of two henge monuments on the central Orkney island known as Mainland, was trenched in the course of the author's studies there. It proved to

be the result of quarrying in the sandstone bedrock. The labor investment required to complete the late Neolithic ditch, more than 330 meters in circumference, is estimated to have been 80,000 man-hours.

these questions the human qualities of pride and emulation, of solidarity and competition must have a role.

Whatever their general interest, the two questions must in practice be asked first about a specific region and place. The monuments differ from area to area, and so must the specific interpretive approach, whatever regularities may underlie them. One of the first areas to be examined in this way was prehistoric Wessex: those several counties of southern England where Stonehenge, Avebury and many lesser monuments are found. The period is between the first development of farming communities there in about 4000 B.C. and the development of a technology based on the working of bronze in about 2000 B.C., when the building of megalithic monuments had effectively gone out of fashion. Until recently little was known about the domestic settlements of this area. Even today most of our knowledge comes from the considerable profusion of monuments, many of them on the rolling chalklands that were among the first areas to be settled.

The earliest monuments in Wessex are not in fact megalithic: they have no large stones. They are nonetheless burial monuments. These great oblong mounds, up to 70 meters long, are known as long barrows. Made of chalk, they are in some ways the local equivalent of the stone-built tombs commonly

found to the west and, more sparingly, in the Wessex area itself. Because early investigators did not find tomb chambers in them, the structures were at first called unchambered long barrows. Later excavations, however, revealed that most of them did originally contain wood structures that had long since collapsed. Like megalithic chambered tombs, the barrows undoubtedly served as places of burial, but the number of individuals represented by the remains in them is in most instances small. Moreover, the remains are incomplete, suggesting that the dead had been allowed to decompose elsewhere in preparation for secondary burial in the barrow (a custom that is well documented for cultures in many parts of the world).

Grave goods are sparse in the long barrows, as they are in nearly all the European megalithic tombs, and what there is very simple. The finds are generally restricted to the normal range of Neolithic artifacts: pottery, polished stone axes and chipped-flint tools. Except in the tombs of Spain and Portugal hardly any attempt was made to immure richly decorated objects such as stone carvings or pieces of incised or otherwise decorated stone. It is thus fair to say, both for Wessex and a larger area, that the tombs did not serve for displays of personal wealth, nor do the objects included in them indicate that the dead were of high social status. This contrasts markedly with the finds from the suc-

ceeding early Bronze Age in Wessex. In the centuries immediately after 2000 B.C. individual burials were accompanied by rich grave goods, including objects of bronze, amber and gold.

A second class of stoneless Wessex monument is known as a causewayed camp. Most of the camps are roughly circular enclosures about 200 meters in diameter surrounded by concentric rings of ditches. The ditches are not continuous; they are broken by undug areas (the causeways), and it is now clear that the banks thrown up with the chalk excavated from the ditches, rather than the ditches themselves, are what were originally significant. Recent excavations at Hambledon Hill in Dorsetshire by Roger Mercer of the University of Edinburgh have shown the enclosure to have been defended by outlying timber palisades on the approaches to it. Moreover Mercer found evidence, in the form of human skulls and skeletal fragments in the ditches, that amplified earlier interpretations of these sites as the meeting places of scattered communities from the surrounding areas. Mercer suggests that the enclosure served as a "corpse exposure center, ... a vast, reeking open cemetery, its silence broken only by the din of crows and ravens."

Both the long barrows and the causewayed camps belong to the earlier part of the British Neolithic, from about 4000 to 3500 B.C. Later, in about 3000 B.C., a different kind of monument made



SUPPOSED DIFFUSION of the megalithic tradition in Atlantic Europe, as mapped in the days before carbon-14 dating, was based on the assumption that the beehive tombs of Crete and Greece, with their corbeled, earth-covered roofs, were older than similar tombs in Italy and Sicily and that the latter in turn had inspired such pre-megalithic oddities as the rock-cut tombs of Malta and Sardinia. Thereafter diffusion of the megalithic tradition through the Iberian penin-



sula to western France, northern Germany and parts of Scandinavia and finally to England, Wales, Scotland and Ireland would have followed (map at left). With the development of absolute dating, which showed that certain French megalithic monuments had been built in about 4500 B.C. and that even the monuments in the remote Orkney Islands were centuries older than the pyramids of Egypt, the diffusionist view gave way to one emphasizing local origins (map at right).

its appearance: the henge, a term derived from the famous Wessex monument Stonehenge. Most henges are not, however, a circle of great stones. They are a circular enclosure surrounded by a single ditch with a well-constructed bank that is usually on the outside of the ditch. There are generally either one or two entrance causeways, and the entire arrangement is much more regular than the earlier causewayed enclosures. Excavations at a number of henge sites (notably those at Durrington Walls undertaken by Geoffrey Wainwright, Inspector of Ancient Monuments for the U.K. Department of the Environment) have shown that some of them included massive circular timber buildings. Henges are sometimes very large, up to 500 meters in diameter.

Finally in this brief review of the Wessex monuments mention must be made of Stonehenge itself, with its circle of stones linked together by lintels, and of the colossal artificial earth mound, Silbury Hill, near a stone circle far larger than Stonehenge: Avebury. Until the time of the Industrial Revolution, Silbury Hill ranked as the largest man-made structure in Europe.

In trying to make sense of such a profusion of material two analytical approaches are potentially useful. The first approach takes into account spatial distribution. The second considers absolute scale. Both approaches may give indications of hierarchy, and this in turn may reflect an underlying social ranking within the society itself. For example, when the Wessex monuments are mapped, it becomes clear that the 132 long barrows outnumber the seven causewayed camps by nearly a factor of 20. The map also shows a dispersed distribution of long barrows. They fall into perhaps five groupings, and within each of the groupings is a convenient causewayed camp. (The two camps left over do not fit as well among the long barrows.) Thus it is already possible to speak of a modest spatial hierarchy if one regards each causewayed camp as a local center for the small region defined by each group of long barrows. When one goes on to look at the distribution of the major henges (those more than 200 meters in diameter), a spatial pattern emerges that is similar to the pattern of the causewayed camps. Each causewayed camp, again with two exceptions, is superseded in this later period by a major henge.

The analysis is taken further when we turn from spatial distribution to scale. For example, the long barrows are of rather modest size. Calculation of the amount of labor required for their construction (following estimates based on simple earth-moving methods and the use of very basic tools, such as wood shovels and antler picks) suggests that


each would have taken 5,000 to 10,000 man-hours to build. This is an investment of labor with an order of magnitude of from 10^3 to 10^4 man-hours: the amount of work 20 men could do in 50 days. The labor required for the causewayed camps, next in hierarchical rank, is an order of magnitude greater. They would have required between 40,000 and 100,000 man-hours, that is, up to about 10^5 man-hours.

The great henges of the late Neolithic represent a labor investment again an order of magnitude larger, approaching 10^6 . For example, Wainwright has estimated a total of 900,000 man-hours for the construction of Durrington Walls. And if the great henges rank as superstars among prehistoric monuments, Wessex provides two megastars: Silbury Hill and Stonehenge. Richard J. C. Atkinson of University College, Cardiff, has estimated the labor requirement for Silbury Hill and Stonehenge (including the labor necessary for the transport of the stones to Stonehenge) at 18 million and 30 million man-hours respectively. This is well in excess of 10^7 man-hours.

There is thus a man-hour hierarchy to set beside the evident spatial hierarchy. Some years ago I suggested that we should postulate social structures correlating with these space-cum-energetics hierarchies and that, for the late Neolithic, it might be appropriate to talk of "chiefdom" societies centered on the five very large Wessex henges. The approximate territories can be inferred by dividing up the landscape with each of the major henges as the dominant focus of its region. I pointed out that for so

great an investment of labor it is necessary to think of some central organizing authority and that it is possible to list a number of relevant features of chiefdom societies as ethnologists recognize them. Fundamental among these features, of course, is the existence of a ranked society (with a chief at its head) sustained by a system based on a redistribution, organized by the chief, of produce, including some of the necessities required for subsistence. Chiefdoms characteristically have a higher population density and more clearly defined territorial boundaries than more egalitarian societies. They have centers that coordinate social and religious activities as well as economic ones, and they show an increase in specialization, as well as the ability to organize and deploy labor for major works.

Some of these features might already be inferred for polities with sites like Durrington Walls or Avebury at their center. As the next step upward some further centralization would have arisen: an amalgamation or association of formerly independent chiefdom territories into a federation, perhaps with Stonehenge as its ritual focus and Silbury Hill as its largest monument. On the basis of his excavations at Silbury Hill, Atkinson has suggested that the monument was built within the space of only two years. Even with workers laboring eight hours a day for 300 days a year a full-time team of 3,700 men would have been needed to construct the great tumulus, and each member of the team would have needed to be sup-



SILBURY HILL, a large artificial earth mound near Avebury in Wiltshire, appears at the center of this aerial photograph. It was the largest manmade structure in Europe until the time of the Industrial Revolution, requiring an estimated investment of 18 million man-hours to build.

plied with food by the organization of his respective chiefdom.

Such a "social archaeology" approach calls for thinking in terms of a well-defined social context for the larger monuments. It situates them within a dynamic development where the simpler societies of the early period developed into the more centralized social units of the later period, which should have had a greater population density and hence a larger population. It is an approach that also allows one to separate the question of the larger monuments (the great henges and Silbury Hill), which we can regard as the product of chiefdom societies, from smaller local monuments such as long barrows. This is important because the large majority of the European megalithic monuments can be more appropriately compared with long barrows. They too are burial monuments, often requiring about 10,000 man-hours for their construction, and many of them are as dis-

persed as the long barrows. Major monuments are much rarer: henges and stone circles are hardly found on the European mainland (although, at least as far as scale is concerned, the great alignments at Carnac undoubtedly belong in the Stonehenge category).

Concepts of scale and spatial organization are again useful whether one looks more closely at the long barrows of Wessex or at stone monuments of the same antiquity, such as the megalithic tombs on the island of Arran off the west coast of Scotland. In either case if one draws lines midway between the monuments to divide the landscape into separate units (a process geographers call forming Thiessen polygons), one finds that with few exceptions the landscape is divided into roughly equal productive units. For example, on Arran each such polygon contains at least some of the island's limited arable land. Setting aside the instances where the monu-

ments are found in pairs, the pattern is also a dispersed one. If in addition one takes into account the size of the monuments, there is still no sign of a hierarchical structure: at least within one order of magnitude the tombs are approximately the same size. The pattern is not chiefly but egalitarian.

The obvious suggestion arises that these monuments of 5,000 or 6,000 years ago serve as indicators of small, rather scattered groups of farmers living in societies that were not centrally organized. No doubt these groups were linked by marriage and hence by kinship ties (and perhaps also by exchanges of goods), but they may well have been politically independent. Tribal ties between them, initially on a rather modest scale, may be indicated by the next phase: the construction of causewayed enclosures. We may imagine the dead of all the 20 or so long-barrow territories in the Hambledon Hill region, so vividly described by Mercer, being brought



BURIAL MONUMENTS of ancient Wessex (modern Dorsetshire and Wiltshire) in England form clusters that are concentrated largely in the unwooded chalk uplands (white areas) that were preferred by the Neolithic farmers who first settled the region. Their burial mounds (dots) were long earth barrows and therefore not megalithic monuments at all. When they are grouped into five or six clusters (colored boundary lines), however, each of the four lower clusters contains a single causewayed camp (colored bull's-eyes), which seems to have been an area where the dead were first exposed before their bones were finally interred in the associated group of long barrows (map at left). The grave goods found in the long barrows are few and



simple, suggesting that the farmers formed egalitarian social groups. When, about 500 years later, new kinds of circular henge earthworks that may all have included timber structures within their bounds were built in this same part of England, several of the larger ones (triangles on map at right) lay within the same bounds of clustered long barrows as the earlier causewayed camps did. The henge monuments, which rarely include megaliths, are substantially more elaborate than the earlier causewayed camps. This suggests that the social organization they served had become more hierarchical. Further evidence to the same effect is the appearance of two "megastar" monuments in the region (rectangles): Stonehenge and, to the north, Silbury Hill.

there for exposure and the bones of some of them being later taken back to the local long barrow for interment. Since the long-barrow territories are about 10 square kilometers in area, taking a modest figure of between 10 and 50 hectares of land to support each person in a simple farming economy, we may think in terms of populations of between 20 and 100 people per territory. These small units may be regarded as "segmentary societies," to use the social anthropologist's term, each segment being a group of people, an economically and politically autonomous, self-sustaining perpetual body exercising effective control over its productive resources.

From this perspective we can begin to think more clearly about the far more ambitious megalithic chambered tombs. They were, of course, burial places. Indeed, with the possible exception of the timber-chambered long barrows, they were collective burial places. But a group of perhaps 50 people, even a permanent group occupying the same piece of land for centuries, does not actually need a monumental tomb to dispose of its dead. There would be nothing simpler than to bury them quickly, without any fuss. The monumentality of the chambered tombs, therefore, is not logically implied by their funerary function. It hints at another purpose altogether. In the words of Andrew Fleming of the University of Sheffield, these were "tombs for the living," that is to say, their monumental character is the result of the deliberate activities of the living members of the society and must have served the objectives of that society. Three different explanations can be put forward for the role of the chambered tombs. The three are not contradictory but serve rather to complement one another.

First, with respect to these ambitious monuments, I have suggested a function in terms of what may be called social cohesion. In times of stress, perhaps particularly in circumstances of high population pressure, a community could function more effectively when its social unity was emphasized and felt by all. The building of such an enduring monument was a major symbolic act asserting just this unity. It should be remembered that these people lived in a world where other obvious lasting human creations were few: even the houses were usually made of wood and other perishable materials. Once the monument was built, however, it would be the major manmade landmark of the territory. Sometimes there must even have been competition between neighboring territories to have the largest and most conspicuous center.

I argue, then, that we should view these monuments not merely as tombs but as public centers. Often they might

have served as meeting places: perhaps the locus for an entire range of religious rites relating the community as a whole to its ancestors as well as to its more recent dead. The building of a focal monument could have given visible expression to the communal aspirations of the local group, serving to ensure the group's continuing cohesion and hence its survival.

Second is a closely related idea developed by Arthur A. Saxe of Ohio University, who has pointed out the relevance of such funerary activities to a community's maintenance of its right to ancestral lands. As he puts it: "To the degree that corporate group rights to use and/or control crucial but restricted resources are attained and/or legitimized by means of linear descent from the dead (i.e., lineal ties to ancestors), such groups will maintain formal disposal areas for the exclusive disposal of their dead." Title to communal land is thus asserted by the maintenance of the ancestral tomb. Both views may be summarized as saying that the monuments served as the territorial markers of segmentary societies.

Third, Christopher Tilley of the University of Lund has taken a neo-Marxist approach to suggest a further function of the monuments, one that does not contradict the two preceding ideas. Tilley stresses the role of mortuary ritual, in common with other life-cycle rituals, in "legitimizing sectional interests" within the society. Even within the relatively egalitarian framework of a segmentary, lineage-organized society, he suggests, there are class contradictions, notably between the elders of the group and the junior members. He argues that control over ritual, emphasized by such monuments, helped to facilitate the continuing dominance of the elders. I am not sure that such an argument takes us much further than seeing the monuments as symbolizing and facilitating social cohesion, as has already been suggested, but Tilley certainly sets this idea in a different framework.

Each of the three explanations is functionalist. That is to say no one of them effectively explains the origin of megaliths but each shows how the monuments played a useful and meaningful role in the societies that erected them. This point of meaningfulness must be at least one component of any satisfactory explanation for them, and these are certainly explanations in social terms.

Such ideas, of course, are difficult to test directly in the way that one would wish to test a generalization or a hypothesis in the exact sciences. They can nonetheless be examined afresh in the light of new work in the field. It was with this intention that between 1972 and 1974 I undertook field work in the Orkney Islands at the northernmost tip of the British Isles—

The Orkneys are virtually without trees and have been since the last ice age because of the prevailing strong winds. The local rock is an easily fractured laminar sandstone, so that the prehistoric population had readily available an abundant building resource other than timber. All Orkney buildings were therefore built of sandstone, and they have survived particularly well. Until very recently farming practices on the islands were not mechanized, and so the cairns of stone that are today the indicators of buried prehistoric remains have not been demolished.

The prehistoric antiquities of the Orkneys have long been famous, notably two henge monuments with circles of standing stones, the settlement at Skara Brae and the splendid passage grave of Maes Howe. Skara Brae, excavated in the 1930's by V. Gordon Childe, is a magnificently preserved village from the time of the island's early farmers (about 3000 B.C.). The walls of the houses still stand to a height of up to two meters, and some internal furnishings such as beds and cupboards, being also built of stone, have survived. Maes Howe has an impressive stone-built chamber entered by a passageway. The stonework is of such quality, the stones having been carefully fractured, that only with difficulty can one accept that no metal tools were used in its construction. On the old diffusionist theory for the origin of the megaliths, Maes Howe, being the finest monument in the Orkneys, was also considered to be the oldest: the first inspired effort of the supposed new immigrants as they landed with their civilized ideas still unimpaired by decades of living in the remote north.

At the time I began work, no carbon-14 dates at all were available from the Orkneys, and one of my aims was to obtain datable samples of organic material relevant to the chronology of the Orkneys chambered tombs. The main site chosen for excavation was the tomb of Quanterness. From a report written early in the 19th century I knew that Quanterness had been entered at that time and had then been closed. My colleagues and I hoped to find evidence for its date of construction and by conducting further studies to contribute to the understanding of the islands' monuments in general. At about the same time fresh excavations directed by David Clarke of the National Museum of Antiquities of Scotland were beginning at Skara Brae, and Graham Ritchie of the Royal Commissions for Ancient and Historical Monuments of Scotland was starting work at one of the Orkneys henge monuments, the Stones of Stenness.

The roof of Quanterness had collapsed, and we had to enter the chamber

from above. As the 19th-century sketch plan indicated, there were six side chambers leading off the rectangular main chamber, with an entrance passageway from the east, now blocked. The early account had not, however, prepared us for the handsome, regular stonework, which makes this one of the most impressive buildings of its period in existence anywhere. Nor had we expected the tangled profusion of human and animal bones we encountered once the debris had been removed from the upper levels. The floor of the main chamber was covered with disarticulated human remains, strewn around in great confusion, together with fragments of pottery and other objects. It was necessary to use a water-sieving technique on all the material from the tomb in order to extract small fragments of artifacts and of bone, including the bones of fishes and birds.

The clearance of these main-chamber finds enabled us to enter the side chambers of the tomb. Four of the six were intact. Once the connecting passages were cleared it was evident that these side chambers were not blocked; it was possible to bend down, crawl in and stand upright in a perfectly complete stone chamber, beautifully roofed, that had existed for more than 4,000 years.

Carbon-14 dating later revealed that the tomb had been in service from about 3200 B.C., and so the structure was fully 5,000 years old: older by some centuries than the oldest pyramids of Egypt.

There were few grave goods in the tomb. We found the fragmentary remains of some 34 pots, only three polished stone knives and an occasional piece of chipped flint. The animal bones, clearly the remains of joints of meat that had been brought into the tomb either as offerings to the dead or as food for consumption during funeral rituals, represented parts of a minimum of seven sheep, 18 lambs and five oxen. Also present were the bones of red deer and other wild mammals, of at least 35 birds of various species and of seven species of fishes.

Analysis of the very fragmentary human bones by Judson Chesterman of the University of Sheffield produced surprising results. From the sample of 12,600 pieces we recovered he was able to estimate that the partially excavated main chamber of the tomb and the one side chamber we fully examined held parts of at least 157 individuals. As in the Wessex long barrows, the dead had clearly been exposed before their bones were collected for final burial in the

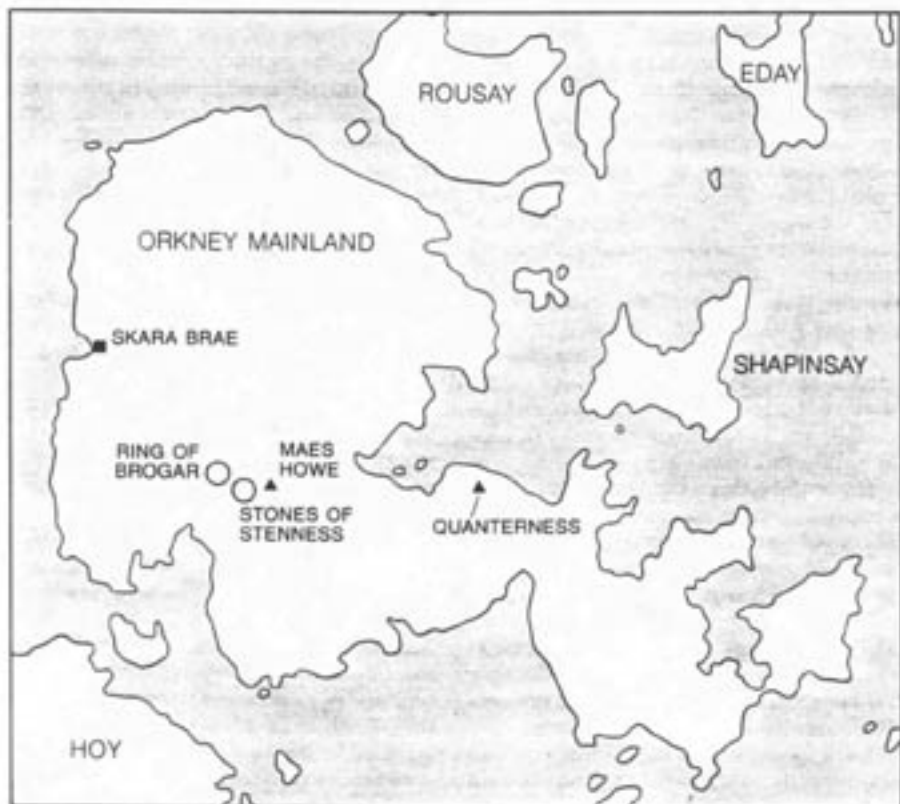
tomb. If this sample figure is increased by a suitable factor to allow for the 20 percent of the main chamber and the other five side chambers that remain unexcavated, Quanterness probably holds the remains of no fewer than 400 individuals.

The ratio of males to females (54:46) is sufficiently close to equality to suggest no exclusion from the tomb on the grounds of sex. With the exception of infants all age groups are represented. The age distribution shows that the mean life expectancy was between 20 and 25 years. Although such a life span is short, it is not out of keeping with finds from other Neolithic sites, and it suggests that what we uncovered may have been the dead from an entire living community. From the carbon-14 estimate of how long the tomb was in service, about 550 years, we can place the size of that community at between 13 and 20 individuals.

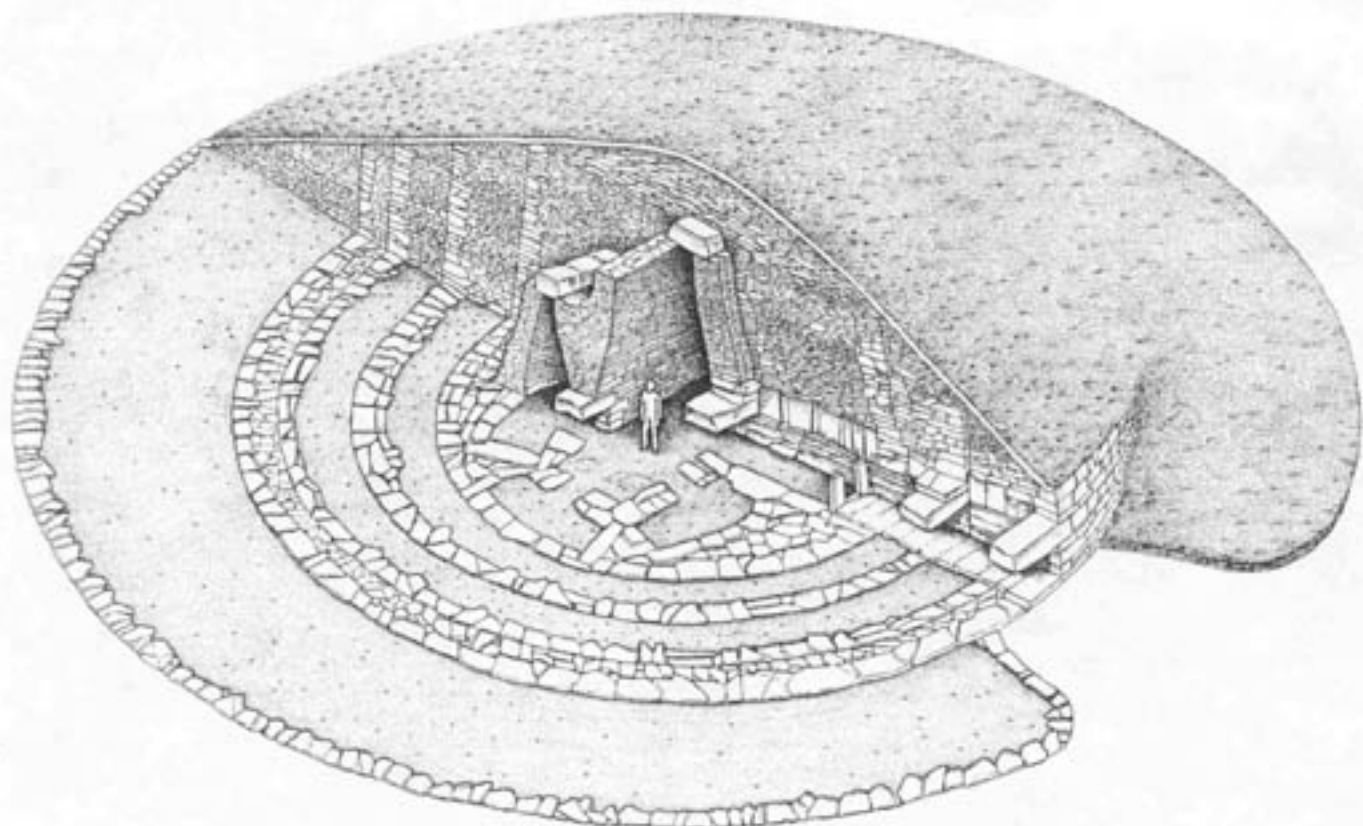
While excavations were continuing at Quanterness we were able to examine some other Orkney sites. Calculation showed that Quanterness represented a labor input of about 7,000 man-hours for the tomb and its enclosing cairn, although this figure takes no account of the skill of the builders. It is clear that most of the other Orkney chambered tombs, which have a notably dispersed distribution, represent labor inputs of the same general order of magnitude.

Our work at the other henge, the Ring of Brogar, showed that the ditch surrounding the henge was a product not of earth-moving but of splendid rock-cutting, representing a labor investment of about 80,000 man-hours (not taking into account the erection of the standing stones of the circle). Unfortunately we were not able to date the monument satisfactorily. The best estimate of its age comes from the carbon-14 date, about 3000 B.C., obtained by Ritchie for its smaller sister monument, the Stones of Stenness. We were able to obtain dates from the ditch surrounding the great tomb, Maes Howe, which suggest that it was built in about 2800 B.C. Because the construction stone had to be brought from a considerable distance, Maes Howe represents a labor input more like that of the Ring of Brogar than that of Quanterness.

These various results allow us to draw conclusions of a social nature about early Orkney that can be compared with the more general social-archaeological picture outlined for Wessex. First, at the time of its early use the tomb at Quanterness was not stratified spatially above or below monuments built on a different scale. There simply was no such spatial hierarchy. Second, Quanterness was an "equal access" tomb, containing a balanced representation of both sexes and of all ages except for infants. Third, the



FOUR MEGALITHIC MONUMENTS, two henges and two chambered tombs, are among the eight found on the largest of the Orkney Islands. The author and his colleagues reopened the chambered tomb Quanterness, built in about 3200 B.C., for the first time in nearly two centuries and partially excavated it. They also trenched the perimeter of the Ring of Brogar, a henge monument probably put up in about 3000 B.C., perhaps two centuries before the more elaborate chambered tomb of Maes Howe was built. The simplicity of Quanterness, compared with the other structures, suggests that the farmers who built it formed one small community.



QUANTERNESS TOMB is shown in this cutaway drawing as its northern half probably appeared soon after construction. The human figure at the center (color) gives the scale; the outer stone perimeter is 45 meters in circumference and the tomb's height at the center

was originally some 3.5 meters. Three of the six side chambers can be seen in the cutaway (light color); the author and his colleagues excavated one of the side chambers completely and partially cleared the main chamber. The estimated total number of burials is 400.

grave goods were very simple, indicating no prominent ranking among the occupants of the tomb. This finding, along with the equal-access one, supports the view that the people belonged to a relatively egalitarian society. Fourth, burial practices were elaborate: inhumation of the bones within the cairn was the last stage in the treatment of the deceased, having been preceded by the decomposition of the corpse. Finally, the chamber was in use for at least five centuries.

Let us now consider still other facts that we learned bearing on the nature and sequence of events at the site. Item: The group that used the cairn probably numbered no more than 20, including men, women and children. Item: The labor required for the construction of the monument, less than 10,000 man-hours, could without difficulty have been invested by such a group over the span of a few years, or perhaps over an even shorter time if the builders had the assistance of neighboring groups. Item: Quanterness is just one of a number of similar Orkney burial cairns of comparable scale. Item: The distribution of these cairns is fairly dispersed, suggesting that the group making use of each cairn occupied and farmed the surrounding territory. And lastly, some centuries after the construction of Quanterness a few monuments built on a far larger scale, including the Ring of

Brogar and Maes Howe, were raised in a single central area of the same main island of the Orkneys. The new construction can be taken to imply the emergence of some form of more centralized social organization.

The finds from Quanterness and nearby sites thus lead to, from excavational data, conclusions that harmonize well with those already arrived at Wessex. Whereas the time elapsed between egalitarian and centralized societies is not long enough in the Orkneys to demonstrate this sequence of social development conclusively, it does seem clear that the raising of the major monuments there, indicative of a greater degree of centrality, was relatively late in emerging and that most of the cairns belong to an earlier, more egalitarian phase.

The abundant skeletal remains from Quanterness help to confirm the view that these cairns were not built just to house one or two wandering missionaries. Quite simply they were erected by the local inhabitants: a relatively dispersed farming population. The considerable sophistication of their architecture and their skill in construction both point to the great pride taken by the parent community in its monument.

It is not argued here that the monuments of the Orkneys had an origin independent of the other areas where collective burial in monumental tombs was

practiced. I suggested above that there may have been five or six primary megalithic centers in western Europe, including one in Ireland and perhaps still another in southern England. The spread of farming techniques to Scotland is likely to have been from one or another of these areas, and the colonists probably brought the custom of tomb-building with them. The first inhabitants of the Orkneys in turn must have crossed to the islands from northern Scotland and were no doubt familiar with the rather simple megalithic tombs constructed in the north at the time. What was special about the Orkneys was the impressive development of a local architecture, based on the excellent local sandstone, to give such masterpieces of prehistoric architecture as Quanterness and Maes Howe. And the particular interest of the Orkneys to the archaeologist is the great abundance of prehistoric remains, which makes the attempt to think coherently about these considerable achievements in social terms less difficult.

The evidence from the Orkneys adds significantly to the picture one gets from Wessex. It is possible to suggest what the function of these monuments may have been, at least in some of the societies that built them, but if one is now to go on to explain megalithic origins, one must also indicate why they

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came about when they did and where they did.

The "when" is not so difficult. These were the monuments constructed by the first farmers in the various regions of Atlantic Europe soon after they had settled down and established a stable way of life in the lands along the Atlantic coast. No monumental tombs of this scale were built by the earlier and much sparser population of Mesolithic hunters, gatherers and fishermen who exploited some of these same coasts before the development of farming.

The "where" is less easy. If the earliest farmers everywhere in Europe had developed similar monuments, there would be less of a problem. Why did the monuments go up in these particular coastal lands and not in either central or eastern Europe? To answer the question one has to isolate some factor special to the Atlantic areas and to show why that factor is relevant.

One such factor is the existence of the sparse but settled Mesolithic population in areas along the Atlantic coast, notably in Portugal and Brittany. We know that these people were already burying their dead systematically in the middens of discarded shells they left behind them. No one has yet explained, however, exactly why the existence of this earlier population should make it more likely that the early farmers would build such monuments.

I propose a different factor and shall do so in demographic terms. It has been suggested that the spread of the early farming economy caused a substantial rate of population increase in every area as it emanated from Greece and the western Mediterranean, until a ceiling was reached at what was for the time a rather high population density. In each

instance the approach to this ceiling would necessitate a decline in the rate of increase. Such a decline could not be brought about without some difficulty. In central Europe there was always the possibility of shedding some of the surplus population by means of emigration toward the west and the north, so that the stress of approaching the population ceiling would have been alleviated. In the lands bordering the Atlantic, however, this safety valve was not available. There was simply nowhere to emigrate to, and the demographic consequences had to be faced as best they might.

It is precisely in these circumstances, I would argue, when the population density had become inconveniently high and a need to curb the rate of population increase was evident, that devices favoring good social cohesion within small farming groups and ways of asserting one's right to farming land would be most useful. Communities that had put up monumental territorial markers would have had an adaptive advantage over less assertive and less cohesive neighboring groups. The seeds of these ideas may already have been present in the burial practices of the earlier, midden-depositing population. In any event the unprecedentedly high rate of population increase, impossible to mitigate by an outflow of emigrants, would make useful any devices favoring both stability and social order.

My proposed explanation is only a sketch. It needs further exploration by means of further excavation. For example, an examination of settlements where the earliest farmers may have come into contact with the last of the midden people would be useful. More work and more thought will be necessary before one can maintain either that



JUMBLED BONES, both human and animal, were found on the floor of the main chamber of the tomb of Quanterness. Grave goods were scarce: a few pieces of chipped flint, three polished stone knives and fragments of some 34 pots. Construction of the tomb is estimated to have required some 7,000 man-hours, or about the same labor investment as that for a long barrow.

the problem has been correctly framed or that the mechanism for its satisfactory solution has been found.

If the picture I have sketched can be accepted as plausible, can it be any more than that? Can it be tested with anything like the rigor that one would wish of a scientific theory? The spatial patterns can certainly be tested in principle with the modern geographer's techniques of locational analysis. The real terrain, however, does not usually approximate the level, "isotropic" plain the geographer often assumes, and the ravages of time have caused the disappearance of many monuments. Moreover, it is often difficult to show that the different sites were in use at the same time, as a strict quantitative analysis would require.

Further, it is clear that there can be more than one motive for monument-building, and even in prehistoric times there are notable concentrations of tombs, not dispersed but clustered in cemeteries. Some of the arguments used here regarding dispersed distributions would not apply to the clustered grave sites. In spite of these limitations the archaeologist need not lose heart. Social archaeology, after all, inevitably labors under the same difficulties as the other social sciences. It is dealing with the activities of human beings, which under the best of circumstances are not easy to quantify and are very difficult to predict. That we can deal at all with social issues in a remote past, datable only with the aid of carbon-14, when half the evidence is forever gone, is remarkable enough.

The French historian Fernand Braudel has differentiated three levels at which the processes and events, the "conjunctures" of history, work themselves out. The personal dramas, the "headlines" of the past, are the short-term crises. Underlying these are the economic and social movements that operate over the medium term. Underlying these again is the secular trend, the *longue durée*, where much larger time factors operate. Among them are the almost constant constraints of the landscape and the basic realities of peasant life. In a curious way the archaeologist, who usually can have little to say about the single individual or the short-term event, can sometimes get much closer to the long-term processes than can the modern historian, overwhelmed by the noisy profusion of his evidence for the recent past. That is why archaeologists working on topics of cross-cultural significance, such as the origins of agriculture, the processes of state formation or (as in the present case) the appropriate way of explaining, in a general social perspective, the building of the world's first monuments, feel that in spite of their practical limitations, they have ideas worth discussing.



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